As confidentially submitted to the Securities and Exchange Commission on March 16, 2021.
This draft Registration Statement has not been publicly filed with the Securities and Exchange Commission and all information herein remains strictly confidential.

Registration No. 333-

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM S-1
REGISTRATION STATEMENT

Under
The Securities Act of 1933

CODEX DNA, INC.

(Exact name of Registrant as specified in its charter)

Delaware	**3826**	**45-1216839**
(State or other jurisdiction of incorporation or organization)	**(Primary Standard Industrial Classification Code Number)**	**(I.R.S. Employer Identification Number)**

9535 Waples Street, Suite 100
San Diego, CA 92121-2993
(858) 228-4115

(Address, including zip code, and telephone number, including area code, of Registrant's principal executive offices)

Todd R. Nelson
President and Chief Executive Officer
Codex DNA, Inc.
9535 Waples Street, Suite 100
San Diego, CA 92121
(858) 228-4115

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Philip H. Oettinger
Martin J. Waters
Robert F. Kornegay
Wilson Sonsini Goodrich & Rosati, P.C.
12235 El Camino Real
San Diego, CA 92130
(858) 350-2300

Donald J. Murray
Brian K. Rosenzweig
Matthew T. Gehl
Covington & Burling LLP
The New York Times Building
620 Eighth Avenue
New York, New York 10018
(212) 841-1000

Approximate date of commencement of proposed sale to the public: As soon as practicable after the effective date of this Registration Statement.

If any of the securities being registered on this form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box. ☐

If this form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☐	Accelerated filer ☐
Non-accelerated filer ☒	Smaller reporting company ☒
	Emerging growth company ☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act. ☐

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	**Proposed Maximum Aggregate Offering Price** [(1)(2)]	**Amount of Registration Fee**
Common Stock, $0.0001 par value per share	$	$

(1) Includes offering price of any additional shares of common stock that the underwriters have the option to purchase.
(2) Estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(o) under the Securities Act of 1933, as amended.

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until the Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

The information contained in this preliminary prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is declared effective. This preliminary prospectus is not an offer to sell these securities and is not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED , 2021

PRELIMINARY PROSPECTUS

Shares

Common Stock

We are offering shares of our common stock. This is our initial public offering, and no public market currently exists for our common stock. We expect the initial public offering price to be between $ and $ per share.

We intend to apply to list our common stock on the Nasdaq Global Market under the symbol “DNAY.”

We are an “emerging growth company” and “smaller reporting company” as defined under the federal securities laws and, as such, have elected to comply with certain reduced reporting requirements.

Investing in our common stock involves a high degree of risk. See the section titled “Risk Factors” beginning on page 13.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the accuracy or adequacy of this prospectus. Any representation to the contrary is a criminal offense.

	PER SHARE	TOTAL
Public Offering Price	$	$
Underwriting Discounts and Commissions[(1)]	$	$
Proceeds to Codex DNA, Inc., before expenses	$	$

(1) See the section titled “Underwriting” for a description of the compensation payable to the underwriters.

Delivery of the shares of common stock is expected to be made on or about , 2021. We have granted the underwriters an option for a period of 30 days to purchase an additional shares of our common stock. If the underwriters exercise the option in full, the total underwriting discounts and commissions payable by us will be $, and the total proceeds to us, before expenses, will be $.

Jefferies **Cowen** **KeyBanc Capital Markets**

Prospectus dated , 2021

TABLE OF CONTENTS

Through and including , 2021 (the 25th day after the date of this prospectus), all dealers effecting transactions in these securities, whether or not participating in this offering, may be required to deliver a prospectus. This is in addition to a dealer's obligation to deliver a prospectus when acting as an underwriter and with respect to an unsold allotment or subscription.

Neither we nor the underwriters have authorized anyone to provide you any information or make any representations other than that contained in this prospectus or in any free writing prospectus prepared by or on behalf of us or to which we have referred you. We and the underwriters take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We and the underwriters are not making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus is accurate only as of the date on the front cover of this prospectus. Our business, financial condition, results of operations and prospects may have changed since that date.

For investors outside of the United States: we have not, and the underwriters have not, done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than the United States. Persons outside of the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the shares of common stock and the distribution of this prospectus outside of the United States.

PROSPECTUS SUMMARY

This summary highlights selected information contained elsewhere in this prospectus and is qualified in its entirety by the more detailed information and financial statements included elsewhere in this prospectus. This summary does not contain all of the information you should consider before investing in our common stock. You should carefully read this entire prospectus, including the information under the sections titled "Risk Factors," "Special Note Regarding Forward-Looking Statements," "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our consolidated financial statements and related notes included elsewhere in this prospectus before making an investment decision. Unless the context requires otherwise, references in this prospectus to "we," "us," "our," "our company," "Codex," "Codex DNA," or "the Company" refer to Codex DNA, Inc. and its subsidiaries.

Overview

We are a leading synthetic biology company focused on enabling researchers to rapidly, accurately and reproducibly build or "write" high-quality synthetic DNA and mRNA that is ready to use in many downstream synthetic biology enabled markets. Our synthetic biology solution addresses the bottlenecks across the multi-step process of building DNA and mRNA, as well as the significant limitations of existing solutions that prevent the rapid building of virtually error-free DNA and mRNA at a useable scale. A key part of our solution is our BioXp system, an end-to-end automated workstation that fits on the benchtop and is broadly accessible due to its ease-of-use and hands-free automation. We believe our BioXp system can democratize synthetic biology by simplifying the process of building DNA and mRNA, thereby accelerating the discovery, development and production of novel high-value products, including antibody-based biologics, mRNA-based vaccines and therapeutics and precision medicines.

We developed our synthetic biology solution to address the significant unmet need in the market for an approach that can automate, integrate, optimize and standardize the process for building synthetic DNA and mRNA. We commercially launched our current synthetic biology solution in September 2019, which now includes the BioXp 3250 system, BioXp kits with associated cloud-based application scripts, and benchtop reagent kits. Since the introduction of our solution through March 1, 2021, we have launched seven BioXp kits, three benchtop reagent kits, and several other synthetic biology products, including 10 SARS-CoV-2 full-length genomes and RNA controls as well as our Vmax X2 cells. We have placed approximately 150 BioXp systems globally. We target customers in the fields of personalized medicine, biologics drug discovery, vaccine development, genome editing and cell and gene therapy. As of March 1, 2021, our customer base was composed of over 300 customers and included 17 of the 25 largest biopharmaceutical companies in the world ranked by 2020 revenue. Our customer base also includes leading academic research institutions, government institutions, contract research organizations (CROs) and synthetic biology companies.

Background on Synthetic Biology

Synthetic biology is a well-established and rapidly expanding field of science that involves the engineering of biological components such as genes, mRNA, proteins, viruses and living cells starting from a digital DNA sequence, enabling the construction of those macromolecules and organisms with new and improved biological functions. The application of synthetic biology is constantly expanding, and new end markets are emerging, driven by continued innovation, a growing understanding of biology and access to novel research tools. For example, in healthcare, synthetic biology is being used to discover, develop and produce novel DNA-, mRNA-, and protein-based therapeutics and vaccines (e.g., antibody-based biologics, mRNA-based COVID-19 vaccines and personalized cancer therapeutics). In agriculture, synthetic biology is being utilized to improve crop yields and create novel food sources (e.g., plant-based meat products). Similarly, in technology, synthetic biology may lead to the ability to store and retrieve digital data using DNA. Finally, in consumer markets, synthetic biology is being employed in a variety of applications. For example, synthetic biology is used to construct clothes from renewable, bio-based sources, to develop biofuels and renewable energy from engineered microbes, and to produce plastics from biodegradable polymers.

Synthetic biology is enabled by numerous technologies that facilitate the *design-build-test* paradigm of new or modified biological components. Any inefficiency across these three phases can create a bottleneck hindering the rapid iteration within product development. In the build phase, the process of writing synthetic DNA or mRNA for an improved biological function is characterized by multiple, complex processes that involve numerous time-consuming and technical steps, including DNA synthesis, DNA assembly, DNA cloning, and DNA scale-up in *E. coli* with

multiple DNA purification steps in between. If the final product is mRNA, the process continues with additional technical steps including mRNA synthesis, mRNA modifications at each end and multiple mRNA purification steps.

In its January 2020 report, BCC Research estimated that the global synthetic biology market was $5.3 billion in 2019 and projected that market to grow at a compound annual growth rate (CAGR) of 29%, reaching an estimated market size of $18.9 billion by 2024.

Key Limitations in Writing Synthetic DNA and mRNA

Despite these substantial advancements, including the accumulation of a large number of functional discoveries resulting from the wide-spread adoption of DNA sequencing instruments, the profound potential of synthetic biology has been hampered by the complexity within, and among, the multi-step process of writing synthetic DNA and mRNA, as well as significant limitations of existing solutions that prevent the rapid building of virtually error-free DNA and mRNA at a useable scale. Both limitations ultimately affect speed and quality of product delivery.

Currently, the process of writing synthetic DNA or mRNA for an improved biological function is carried out in laboratories by highly skilled researchers using multiple kits, each designed to perform one or more of the technical steps. Depending on the length and complexity of the desired synthetic DNA or mRNA product, the process may involve hundreds of manual steps, require numerous different kits and take days, weeks or months to complete. As an alternative solution, many, but not all, of these steps can be outsourced to a molecular biology CRO for completion, shifting those challenges from the end user to the CRO. However, outsourcing poses additional limitations, including lack of workflow control, unpredictable timelines and security issues.

Whether experiments are performed in-house or through a CRO, existing solutions for building synthetic DNA and mRNA have deficiencies. For example:

- low fidelity of DNA and mRNA fragments reducing overall yields of usable material;
- inability to construct stretches of DNA and mRNA sequence that have particular features;
- inability to construct DNA and mRNA sequences above a certain size; and
- inability to produce the end product in sufficient quantities for downstream applications.

These limitations produce bottlenecks across the build phase, which have significantly hindered the ability of the synthetic biology paradigm to deliver on its full potential. This inefficiency has created a significant unmet need in the market for an approach that can automate, integrate, optimize and standardize the process, and thereby enhance the speed, predictability and reproducibility of the *design-build-test* paradigm.

The Codex DNA Solution

Our synthetic biology solution, which leverages our industry-standard Gibson Assembly method, is aimed at addressing the bottlenecks across the build phase in order to accelerate the *design-build-test* paradigm. Key to our solution is our BioXp system, an end-to-end automated system for synthetic biology that fits on the benchtop and is broadly accessible due to its ease-of-use and hands-free automation. We have developed and commercialized the current version of the BioXp system, the BioXp 3250 system. We believe our BioXp system can democratize synthetic biology by making the build phase broadly accessible in terms of simplicity, accelerating applications and workflows, and greatly facilitating development of novel high-value products across a wide range of synthetic biology enabled markets. Our BioXp system empowers users to rapidly, accurately and reproducibly create high quality synthetic DNA and mRNA that is ready for use in many downstream synthetic biology workflows.

Our synthetic biology solution is comprised of:

- *The BioXp system*: the first and only commercially available push-button, walkaway, end-to-end automated workstation, which requires only a few minutes of set up time, that empowers researchers to translate a digital DNA sequence to endpoint-ready synthetic DNA and mRNA in 8 to 24 hours using a benchtop instrument that is run by sophisticated onboard software;
- *The BioXp portal*: a user-friendly online portal that offers an intuitive guided workflow and design tools for building new DNA sequences and assembling them into vector(s) of choice using Gibson Assembly on the BioXp system;

- *The BioXp kits*: contain all the necessary building blocks and reagents, including our proprietary Gibson Assembly branded reagents, for specific synthetic biology workflow applications;
- *Cloud-based scripts*: product-specific and pre-validated scripts that optimize and simplify the use of the BioXp kits on the BioXp system (e.g., the BioXp system automatically scans barcodes from reagent plates to download scripts, enabling hands-free operation); and
- *Benchtop reagents*: contain all the reagents necessary to proceed with a specific synthetic biology workflow on the benchtop using products generated on the BioXp system, providing additional flexibility to the customer and furthering our end-to-end solution.

Our solution is designed to offer the following benefits:

- *Consolidation of the build phase within a single end-to-end automated system*: We provide researchers all the hardware, software, materials and methodologies required to rapidly and accurately design and build large quantities of synthetic DNA and mRNA, with BioXp kits for synthetically produced protein under development. Our BioXp system reduces the turnaround time for such workflows to days or hours. Moreover, researchers no longer require multiple vendors to complete such workflows, eliminating related bottlenecks and security concerns.
- *Increased speed and scale*: Our BioXp system has the capacity to parallel process as many as 32 samples at once within an 8 to 24 hour period, depending on the BioXp kit being used. It also has the capacity to generate high quality and diverse libraries with short lead times, allowing innovation to be maintained in-house.
- *Capacity to construct a wide array of product formats*: Our BioXp system was designed such that future applications would not require hardware upgrades but only software upgrades that could be installed remotely. This has facilitated new product development efforts to enhance current product specifications and to develop new kits that extend beyond the production of synthetic DNA. For example, since the BioXp system was launched, new scripts have been developed to produce larger gene products, cell-free amplification of cloned DNA, and production of synthetic mRNA. Likewise, new scripts are currently being developed to enhance the mRNA product offering and develop protein synthesis BioXp kits. This capability provides substantial time-to-product and workflow control advantages for customers and gives them the flexibility to select the workflows that meet their unique needs.
- *Ability to construct larger and more complex DNA and mRNA sequences*: Our BioXp system uses proprietary protocols developed for robust DNA synthesis, assembly, and cloning enabling the construction of genes, mRNA, and clones across a wide range of sizes and complexity.
- *Industry-leading quality and performance*: Our BioXp system uses a proprietary two-step error correction process to generate virtually error-free synthetic genes every time.
- *Enhanced productivity*: Our BioXp system creates finished, biologically-active products in as few as eight hours. In addition, it includes protocols for the cell-free amplification of cloned DNA, obviating the need to use *E. coli*, reducing the time to product by days or even weeks. Altogether, this could represent at least a 20-fold productivity increase through accelerated iterations of the *design-build-test* paradigm. Ultimately, product development cycles are accelerated because the desired biological results are identified more quickly.
- *Protection of proprietary vectors*: Our BioXp system permits our customers to maintain their proprietary vectors on site, protecting their intellectual property throughout their entire development lifecycle.

Our Growth Strategy

Our goal is to establish our solution, including our BioXp family of systems, as the industry standard for building synthetic DNA, mRNA and protein, and to democratize synthetic biology, thus accelerating its applications and workflows across a wide range of industries. To achieve this objective, we intend to:

- drive new customer adoption of our BioXp systems;
- maximize the utilization of BioXp system by developing additional BioXp kits for our customers' workflows;
- continue to expand into other attractive markets for synthetic biology that are currently under-served;
- develop and commercialize new, disruptive BioXp systems to further increase utilization, expand breadth of applications, and accelerate product development cycles;

- continue to innovate across our synthetic biology product portfolio;
- establish strategic partnerships leveraging our core competencies and validating our technology; and
- continue to attract leading scientists to work at our company.

Our Products

We have developed and commercialized products that include BioXp systems, BioXp kits for generating a wide array of synthetic DNA and mRNA formats, and benchtop reagents that complement the automated synthetic biology workflow applications and workflow solutions.

Our BioXp 3250 system was launched in September 2020, replacing a legacy BioXp 3200 system. We believe that it is the world's only fully automated benchtop instrument that enables numerous synthetic biology workflows by providing a turn-key, end-to-end solution for generating synthetic DNA and mRNA starting from DNA sequence. Through a combination of increased throughput and scale and reduced hands-on time, we estimate that the BioXp 3250 system offers the potential to significantly enhance productivity several fold, accelerating the development of critical new products in enabled markets. The BioXp 3250 system accelerates the *design-build-test* phases of the customer's product development cycle by enabling rapid, automated synthesis of genes, clones, variant libraries and mRNA. Unlike traditional approaches that can take days, weeks or months, the BioXp 3250 system achieves these workflows in a single run, which can be completed in 8 to 24 hours.

Our BioXp kits contain all the requisite Gibson Assembly branded reagents and allow our BioXp system to perform the steps required to produce various DNA and mRNA products designed for a range of synthetic biology applications. BioXp kits are designed to be backwards compatible with legacy systems and forward compatible with systems under development. Since the introduction of our solution through March 1, 2021, we have launched seven BioXp kits.

We also offer benchtop reagents that are synergistic with our BioXp system and BioXp kits to accelerate the build phase of the *design-build-test* synthetic biology paradigm. Since the introduction of our solution through March 1, 2021, we have launched three benchtop reagent kits.

As part of our continuing effort to improve the processes of synthetic biology, we are currently developing next-generation BioXp systems and BioXp kits with an aim to radically transform rapid demand-response workflows in synthetic biology by consolidating supply chains and enabling global distributed manufacturing for both discovery and clinical applications. Our ultimate goal is to build what we describe as the Digital-to-Biological Converter (DBC). The DBC's approach would begin not with oligonucleotides, which can take days to procure, but with DNA sequence

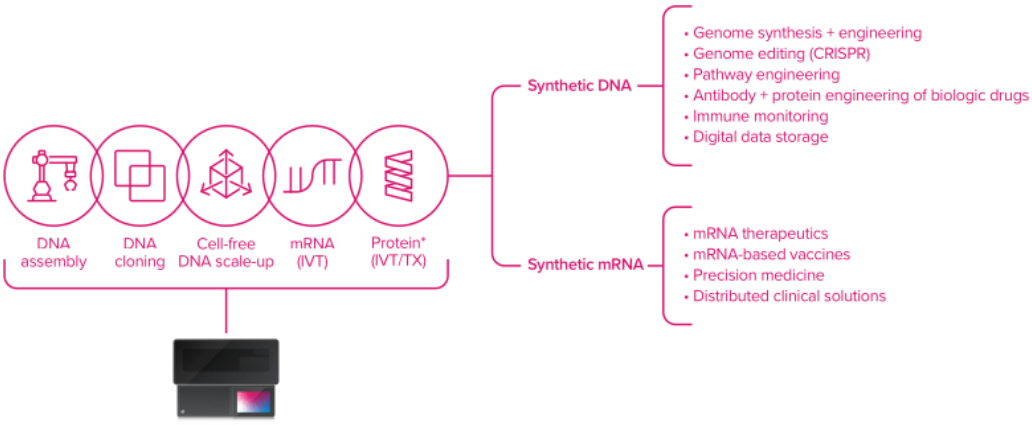
data. The system we envision would take data and produce synthetic genes, or even convert those automatically into mRNA or protein. This would enable the “sequence-in, vaccines-out” concept that could replace the months-long manufacturing processes required today with a process that can be carried out in 24 to 48 hours.

Our Biofoundry Services

We use our BioXp 3250 system, BioXp kits and benchtop reagents to perform biofoundry services for customers. Typically, these customers have not yet purchased our BioXp system or they have custom requirements. We apply sophisticated security protocols to these services designed to protect our customers’ intellectual property rights, which is a key concern for customers. These services enable a customer to order and receive any of the BioXp system endpoint-ready products, such as genes, clones, cell-free amplified DNA and variant libraries. Importantly, our biofoundry services are strategically used in a consultative partner approach through our pilot program, allowing customers to see specific proof points prior to purchasing a BioXp system.

Workflow Solutions for Synthetic Biology Enabled Markets

Our current and future BioXp systems are intended to address the needs of the synthetic biology customer across discovery and pre-clinical development by providing an unmatched capability to synthesize high-quality DNA and mRNA in 8 to 24 hours. With future system releases and extensions, we plan to address the continuum of research needs across the central dogma of molecular biology by enabling cell-free production of high-quality synthetic DNA, mRNA and protein for the discovery, development and manufacturing of enabled products across a wide range of markets. The graphic below demonstrates our solution for DNA and mRNA enabled workflows.



*Future product offering

Risks Associated with Our Business

Our business is subject to numerous risks and uncertainties that you should consider before investing in our company. These risks are described more fully in the section titled “Risk Factors” in this prospectus. These risks include, but are not limited to, the following:

- we are an early-stage synthetic biology technology company with a history of net losses, which we expect to continue, and we may not be able to generate meaningful revenues or achieve and sustain profitability in the future;
- we have a limited operating history, which may make it difficult to evaluate the prospects for our future viability and predict our future performance;
- our operating results may fluctuate significantly in the future, which makes our future operating results difficult to predict and could cause our operating results to fall below expectations or any guidance we may provide;
- we may not be able to achieve or maintain satisfactory pricing and margins for our products;

- the size of the markets for our products may be smaller than estimated, and new market opportunities may not develop as quickly as we expect, or at all, thus limiting our ability to successfully meet our anticipated revenue projections;
- we have limited experience in sales and marketing of our products;
- we may need to raise additional capital to fund our operations, which may be unavailable to us or, even if consummated, may cause dilution or place significant restrictions on our ability to operate;
- we rely on a single contract manufacturer to manufacture and supply our instruments and single source suppliers for certain components of our instruments and raw materials. If this manufacturer or these suppliers should fail or not perform satisfactorily, our ability to commercialize and supply our products would be adversely affected; and
- if we are unable to obtain and maintain sufficient intellectual property protection for our products and technology, or if the scope of the intellectual property protection obtained is not sufficiently broad, our competitors could develop and commercialize products similar or identical to ours, and our ability to successfully commercialize our products and build a strong brand identity may be impaired.

Corporate Information

We were formed in Delaware as a corporation on March 24, 2011 under the name Synthetic Genomics Solutions, Inc., as a wholly owned subsidiary of Synthetic Genomics, Inc. (SGI). On February 26, 2013, we changed our name to SGI-DNA, Inc., and on March 31, 2020 we changed our name to Codex DNA, Inc. Our principal executive offices are located at 9535 Waples Street, Suite 100, San Diego, CA 92121-2993. Our telephone number at that address is (858) 228-4115. Our website address is www.codexdna.com. Information contained on our website is not incorporated by reference into this prospectus and should not be considered part of this prospectus.

We use the Codex DNA logo, BioXp, Gibson Assembly, RapidAMP, Vmax and other marks as trademarks in the United States and other countries. This prospectus contains references to our trademarks and service marks and to those belonging to other entities. Solely for convenience, trademarks and trade names referred to in this prospectus, including logos, artwork and other visual displays, may appear without the TM or ® symbol, but such references are not intended to indicate in any way that we will not assert, to the fullest extent possible under applicable law, our rights or the rights of the applicable licensor to these trademarks and trade names. We do not intend our use or display of other entities' trade names, trademarks or service marks to imply a relationship with, or endorsement or sponsorship of us by, any other entity.

Implications of Being an Emerging Growth Company and a Smaller Reporting Company

We are an "emerging growth company" as defined in the Jumpstart Our Business Startups Act of 2012, as amended (the JOBS Act). We will remain an emerging growth company until the earliest to occur of: (i) the last day of the fiscal year in which we have more than $1.07 billion in total annual gross revenue; (ii) the date we qualify as a "large accelerated filer" under the rules of the Securities and Exchange Commission (the SEC) with at least $700 million of equity securities held by non-affiliates; (iii) the date on which we have issued more than $1.0 billion in non-convertible debt securities during the prior three-year period; and (iv) the last day of the fiscal year ending after the fifth anniversary of our initial public offering.

An emerging growth company may take advantage of relief from certain reporting requirements and other burdens that are otherwise applicable generally to public companies. These provisions include:

- presenting only two years of audited financial statements and only two years of selected financial data;
- an exemption from compliance with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, as amended (the Sarbanes-Oxley Act);
- reduced disclosure about our executive compensation arrangements in our periodic reports, proxy statements, and registration statements; and
- exemptions from the requirements of holding non-binding advisory votes on executive compensation or golden parachute arrangements.

As a result of this status, we have taken advantage of reduced reporting requirements in this prospectus and may elect to take advantage of other reduced reporting requirements in our future filings with the SEC. In particular, in this prospectus, we have provided only two periods of audited financial statements (the period March 8, 2019

through December 31, 2019 and the year ended December 31, 2020), with correspondingly reduced “Selected Financial Data” and “Management’s Discussion and Analysis of Financial Conditions and Results of Operations” disclosure, and have not included all of the executive compensation related information that would be required if we were not an emerging growth company.

In addition, the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards, delaying the adoption of these accounting standards until they would apply to private companies. We have elected to avail ourselves of this exemption from new or revised accounting standards, and, therefore, we will not be subject to the same new or revised accounting standards at the same time as other public companies that are not emerging growth companies or those that have opted out of using such extended transition period, which may make comparison of our financial statements with such other public companies more difficult. We may take advantage of these reporting exemptions until we no longer qualify as an emerging growth company, or, with respect to adoption of certain new or revised accounting standards, until we irrevocably elect to opt out of using the extended transition period. As a result, our financial statements may not be comparable to companies that comply with new or revised accounting standards as of public company effective dates.

We are also a “smaller reporting company” as defined in the Securities Exchange Act of 1934, as amended (the Exchange Act). We may continue to be a smaller reporting company even after we are no longer an emerging growth company. We may take advantage of certain of the scaled disclosures available to smaller reporting companies and will be able to take advantage of these scaled disclosures for so long as our voting and non-voting common stock held by non-affiliates is less than $250 million measured on the last business day of our second fiscal quarter, or our annual revenue is less than $100 million during the most recently completed fiscal year for which audited financial statements are available and our voting and non-voting common stock held by non-affiliates is less than $700 million.

THE OFFERING

The following summary contains basic information about the offering and our common stock and is not intended to be complete. It does not contain all the information that may be important to you. For a more complete description of our common stock, see "Description of Capital Stock."

Issuer	Codex DNA, Inc.
Common stock offered by us	shares.
Option to purchase additional shares	We have granted the underwriters an option for a period of 30 days to purchase up to additional shares of our common stock.
Common stock to be outstanding immediately after this offering	shares (or shares if the underwriters exercise their option to purchase additional shares in full).
Use of proceeds	We estimate that the net proceeds from this offering will be approximately $ million, or $ million if the underwriters exercise in full their option to purchase additional shares of common stock, assuming an initial public offering price of per share, which is the midpoint of the price range set forth on the cover page of this prospectus, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. We currently intend to use the net proceeds from this offering, together with our existing cash and available borrowings for general corporate purposes, including working capital, and funding our research and development and sales and marketing activities. We may use a portion of the net proceeds to repay debt or expand our current business through strategic acquisitions or in-licenses of complimentary companies or technologies; however, we currently do not have any agreements or commitments to complete any such transactions and are not involved in negotiations regarding such transactions. See the section titled "Use of Proceeds" for more information.
Risk factors	See the section titled "Risk Factors" on page 13 for a discussion of factors you should carefully consider before deciding to invest in shares of our common stock.
Proposed Nasdaq Global Market (Nasdaq) trading symbol	"DNAY"

The number of shares of our common stock to be outstanding after this offering is based on the shares of our common stock outstanding as of December 31, 2020 (after giving effect to the automatic conversion of all of our outstanding convertible preferred stock and the automatic exercise of all of our outstanding warrants issued to SGI into an aggregate of shares of common stock immediately prior to the completion of this offering), and excludes:

- shares of common stock issuable upon the exercise of options granted under our 2019 Stock Plan, as amended (the 2019 Plan), outstanding as of December 31, 2020 with a weighted-average exercise price of $ per share;

- shares of common stock issuable upon the exercise of options granted under our 2021 Equity Incentive Plan (the 2021 Plan), after December 31, 2020 with a weighted-average exercise price of $ per share;
- shares of common stock issuable upon the exercise of warrants to purchase shares issued after December 31, 2020 with an exercise price of $ per share; and
- shares of common stock reserved for future issuance under our equity compensation plans, consisting of:
  - shares of common stock reserved for future issuance under our 2021 Plan, as of , 2021, which shares will be added to the shares to be reserved for future issuance under our 2021 Stock Incentive Plan (the 2021 SIP);
  - shares of common stock reserved for future issuance under our 2021 SIP, which will become effective in connection with this offering, as well as any automatic increases in the number of shares of common stock reserved for future issuance under this plan; and
  - shares of common stock reserved for future issuance under our 2021 Employee Stock Purchase Plan (the ESPP), which will become effective in connection with this offering, as well as any automatic increases in the number of shares of common stock reserved for future issuance under this plan.

Unless otherwise indicated, this prospectus assumes or gives effect to the following:

- no exercise of outstanding options;
- no exercise by the underwriters of their option to purchase additional shares of common stock from us in this offering;
- the automatic conversion of all outstanding shares of our convertible preferred stock as of December 31, 2020, into an aggregate of shares of our common stock immediately prior to the completion of this offering;
- the automatic exercise of all outstanding warrants issued to SGI into an aggregate of shares of our common stock immediately prior to the completion of this offering; and
- the filing and effectiveness of our amended and restated certificate of incorporation and the adoption of our amended and restated bylaws, each of which will occur immediately prior to the completion of this offering.

SUMMARY CONSOLIDATED FINANCIAL DATA

The following tables set forth our summary consolidated financial data for the periods indicated. Pursuant to the authority of the SEC under Rules 3-06 and 3-13 of Regulation S-X under the Securities Act of 1933, as amended (the Securities Act), we have substituted audited consolidated financial statements for the period from March 8, 2019 through December 31, 2019 in place of audited consolidated financial statements for the fiscal year ended December 31, 2019. We have derived the consolidated statement of operations data for the period from March 8, 2019 through December 31, 2019 and the year ended December 31, 2020, and the consolidated balance sheet data as of December 31, 2020, from our audited consolidated financial statements included elsewhere in this prospectus. Because of the different length of time for which financial information is presented in the period ended December 31, 2019 compared to that presented for the year ended December 31, 2020, our financial results for those periods are not comparable. Moreover, our historical results are not necessarily indicative of the results that should be expected for any future period. You should read the following summary consolidated financial data together with the more detailed information contained in “Selected Consolidated Financial Data,” “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” and our consolidated financial statements and the related notes included elsewhere in this prospectus.

	Period from March 8, 2019 (Inception) to December 31, 2019	Year Ended December 31, 2020
Statement of Operations and Comprehensive Loss Data (in thousands):		
Revenue:		
Product sales	$ 3,555	$ 5,131
Royalties	1,250	1,445
	4,805	6,576
Cost of revenue	2,677	2,951
Gross profit	2,128	3,625
Operating expenses:		
Research and development	3,318	8,925
Sales and marketing	1,878	6,931
General and administrative	3,908	4,130
Total operating expenses	9,104	19,986
Loss from operations	(6,976)	(16,361)
Other income (expense):		
Interest expense	(1,490)	(690)
Change in fair value of derivative liabilities	62	(880)
Other income (expense), net	102	(74)
Loss before provision for income taxes	(8,302)	(18,005)
Provision for income taxes	—	(5)
Net loss and comprehensive loss	(8,302)	(18,010)
Net loss attributable to common stockholders	$ (8,302)	$ (18,010)
Net loss per share attributable to common stockholders—basic and diluted	$ (0.55)	$ (1.20)
Weighted average common stock outstanding—basic and diluted	15,000,000	15,004,616
Pro forma net loss per share attributable to common stockholders—basic and diluted (unaudited)[1]		$ (0.29)
Pro forma weighted average common stock outstanding—basic and diluted (unaudited)[1]		60,242,616

(1) The unaudited pro forma basic and diluted weighted-average shares of common stock outstanding used in the calculation of unaudited pro forma basic and diluted net loss per share attributable to common stockholders for the year ended December 31, 2020 have been prepared to give effect to (i) the automatic conversion of all outstanding shares of our convertible preferred stock into common stock immediately prior to the closing of this offering and (ii) the automatic exercise of all outstanding warrants issued to SGI into an aggregate of shares of our common stock immediately prior to the closing of this offering, as if this offering had occurred on the later of the beginning of each period or the issuance date of the convertible preferred stock or warrants issued to SGI.

	As of December 31, 2020		
	Actual	Pro Forma[1]	Pro Forma as Adjusted[2][3]
Balance Sheet Data (in thousands):			
Cash	$ 13,463		
Working capital[4]	11,556		
Total assets	26,863		
Long-term debt, net of discount, including current portion	4,686		
Derivative liabilities	1,533		
Convertible preferred stock	38,914		
Total stockholders' equity (deficit)	(25,459)		

(1) The pro forma column in the balance sheet data table above reflects (i) the automatic conversion of all shares of our convertible preferred stock into shares of common stock and (ii) the automatic exercise of all outstanding warrants issued to SGI into an aggregate of shares of our common stock immediately prior to the completion of this offering, as if such conversion and exercise had occurred on December 31, 2020.

(2) The pro forma as adjusted column in the balance sheet data table above gives effect to (i) the pro forma adjustments set forth above and (ii) the receipt of $ million in net proceeds from the sale and issuance by us of shares of our common stock in this offering, based upon the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

(3) Each $1.00 increase or decrease in the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, would increase or decrease, as applicable, the amount of our pro forma as adjusted cash, working capital, total assets and total stockholders' equity (deficit) by $, assuming that the number of shares of common stock offered by us, as set forth on the cover page of this prospectus, remains the same, after deducting estimated underwriting discounts and commissions payable by us. An increase or decrease of 1.0 million shares in the number of shares of common stock offered by us would increase or decrease, as applicable, the amount of our pro forma as adjusted cash, working capital, total assets and total stockholders' equity (deficit) by $ assuming the assumed initial public offering price remains the same, and after deducting estimated underwriting discounts and commissions payable by us.

(4) We define working capital as current assets less current liabilities. See our financial statements included elsewhere in this prospectus for further details regarding our current assets and current liabilities.

RISK FACTORS

Investing in our common stock involves a high degree of risk. You should carefully consider the risks described below, as well as the other information in this prospectus, including our consolidated financial statements and the related notes and the section titled "Management's Discussion and Analysis of Financial Condition and Results of Operations" in this prospectus, before deciding whether to invest in our common stock. The occurrence of any of the events or developments described below could harm our business, financial condition, results of operations and prospects. In such an event, the market price of our common stock could decline, and you may lose all or part of your investment. Additional risks and uncertainties not presently known to us or that we currently deem immaterial also may impair our business operations and the market price of our common stock.

Risks Related to Our Business

We are an early-stage synthetic biology technology company with a history of net losses, which we expect to continue, and we may not be able to generate meaningful revenues or achieve and sustain profitability in the future.

We are an early-stage synthetic biology technology company, and we have incurred significant losses since beginning to operate as a stand-alone entity from Synthetic Genomics, Inc. (SGI) in March 2019, and expect to continue incurring losses in the future. We incurred net losses of $8.3 million for the period from March 8, 2019 through December 31, 2019 and $18.0 million for the year ended December 31, 2020. As of December 31, 2020, we had an accumulated deficit of $26.3 million. These losses and accumulated deficit were primarily due to the substantial investments we have made to develop, commercialize and market our technology and products. Over the next several years, we expect to continue to devote a significant portion of our resources towards the continued development and commercialization of our synthetic biology products. These efforts may prove more costly than we currently anticipate. In addition, as a public company, we will incur significant legal, accounting, administrative, insurance and other expenses that we did not incur as a private company. Accordingly, we cannot assure you that we will achieve profitability in the future or that, if we do become profitable, we will remain profitable.

We have a limited operating history, which may make it difficult to evaluate the prospects for our future viability and predict our future performance.

Our prospects must be considered in light of the uncertainties, risks, expenses, and difficulties frequently encountered by companies in their early stages of operations. For example, our management team has had a limited time working together and many of our key employees are new to our company. Predictions about our future success or viability are highly uncertain and may not be as accurate as they could be if we had a longer operating history or a longer history of successfully developing and commercializing products.

In addition, as a business with a limited operating history, we may encounter unforeseen expenses, difficulties, complications, delays and other known and unknown obstacles. We have encountered in the past, and will encounter in the future, risks and uncertainties frequently experienced by growing companies with limited operating histories in emerging and rapidly changing industries. If our assumptions regarding these risks and uncertainties, which we use to plan and operate our business, are incorrect or change, or if we do not address these risks successfully, our results of operations could differ materially from our expectations, and our business, financial condition and results of operations could be adversely affected.

Our operating results may fluctuate significantly in the future, which makes our future operating results difficult to predict and could cause our operating results to fall below expectations or any guidance we may provide.

Our quarterly and annual operating results may fluctuate significantly, which makes it difficult for us to predict our future operating results. These fluctuations may occur due to a variety of factors, many of which are outside of our control, including, but not limited to:

- the level of demand for our commercialized products, which may vary significantly from period to period;
- our ability to drive adoption of our products in our target markets and our ability to expand into any future target markets, including internationally;
- the prices at which we will be able to sell our products;

- the volume and mix of our sales between our BioXp systems, BioXp kits, benchtop reagents, other products and biofoundry services, or changes in the manufacturing or sales costs related to our products;
- the length of time of the sales cycle for purchases of, or royalties on, our products, including lead time needed to procure critical raw materials from suppliers and finished goods from our third-party contract suppliers and manufacturers;
- the extent to which we succeed in developing and commercializing new products;
- potential shortages, or increases in costs, of our product components or raw materials, or other disruptions to our supply chain;
- the timing and cost of, and level of investment in, research and development and commercialization activities relating to our products, which may change from time to time;
- our ability to successfully manage relationships with customers, third-party distributors and suppliers of our products;
- the timing and amount of expenditures that we may incur to develop, commercialize or acquire additional products and technologies;
- changes in governmental funding sources;
- cyclical changes to the research and development budgets within the pharmaceutical, biotechnology and industrial segments of synthetic biology;
- seasonal spending patterns of our customers;
- the expenses needed to attract and retain skilled personnel;
- future accounting pronouncements or changes in our accounting policies;
- the outcome of any litigation or governmental investigations involving us, our industry or both;
- higher than anticipated service, replacement and warranty costs;
- the costs associated with being a public company;
- changes in the regulatory environment;
- the impact of the COVID-19 pandemic on the economy, investment in synthetic biology and research industries, our business operations, and resources and operations of our customers, suppliers, and distributors; and
- general industry, economic and market conditions and other factors, including factors unrelated to our operating performance or the operating performance of our competitors.

The cumulative effects of the factors discussed above could result in large fluctuations and unpredictability in our quarterly and annual operating results. As a result, comparing our operating results on a period-to-period basis may not be meaningful. Investors should not rely on our past results as an indication of our future performance.

This variability and unpredictability could also result in our failing to meet the expectations of industry or financial analysts or investors for any period of time. If our operating results fall below the expectations of analysts or investors or below any guidance we may provide, or if the guidance we provide is below the expectations of analysts or investors, it could cause the market price of our common stock to decline.

We may not be able to achieve or maintain satisfactory pricing and margins for our products.

The synthetic biology industry has a history of price competition, and we can give no assurance that we will be able to achieve satisfactory prices for our products or maintain prices at the levels we have historically achieved. If we are forced to lower the price we charge for our products, our gross margins will decrease, which will adversely affect our ability to invest in and grow our business. We believe that we will continue to be subject to significant pricing pressure, which may limit our ability to maintain or increase our prices.

Our cost of goods is dependent upon the pricing we are able to negotiate with our suppliers of raw materials, instruments and components. In particular, we have experienced price increases for certain raw materials, such as oligonucleotides, and expect these raw materials to continue to be in high demand. We do not have long term supply contracts for any of our raw materials. If our costs increase and we are unable to offset such increases with a proportionate increase in our prices, our margins would erode, which would harm our business and results of operations.

We may need to raise additional capital to fund our operations, which may be unavailable to us or, even if consummated, may cause dilution or place significant restrictions on our ability to operate.

Based on our current plans, we believe that our current cash, available borrowings, the net proceeds from this offering and anticipated cash flow from operations will be sufficient to meet our anticipated cash requirements for at least twelve months from the date of this prospectus. As a result, we have disclosed that there is substantial doubt about our ability to continue as a going concern. If our available cash resources, net proceeds from this offering and anticipated cash flow from operations are insufficient to satisfy our liquidity requirements, including because of lower demand for our products or the realization of other risks described in this prospectus, we may be required to raise additional capital prior to such time through issuances of equity or convertible debt securities, or seek debt financing or other form of third-party funding. Following the offering, we believe our cash and additional borrowings available under our Loan and Security Agreement with Silicon Valley Bank (SVB), dated as of March 4, 2021 (the 2021 Loan Facility), will be sufficient to meet our capital requirements and fund our operations for at least the next 12 months following this offering. However, we have based these estimates on assumptions that may prove to be incorrect, and we could spend our available financial resources much faster than we currently expect.

We may seek to raise additional capital in the future to expand our business, to pursue strategic investments, to take advantage of financing opportunities or for other reasons, including:

- increasing our sales and marketing and other commercialization efforts to drive market adoption of our products;
- funding development and marketing efforts of our current or any future products;
- expanding our technologies into additional markets;
- acquiring, licensing or investing in technologies and other intellectual property rights;
- acquiring or investing in complementary businesses or assets; and
- financing capital expenditures and general and administrative expenses.

Our present and future funding requirements will depend on many factors, including:

- our rate of progress in increasing penetration of our target markets with current and new products, and the cost of the sales and marketing activities associated with establishing adoption of our products;
- our rate of progress in, and cost of research and development activities associated with, products in research and development; and
- the effect of competing technological and market developments.

If we are unable to obtain adequate financing or financing on terms satisfactory to us when needed, our ability to continue to pursue our business objectives and to respond to business opportunities, challenges, or unforeseen circumstances could be significantly limited, and could have a material adverse effect on our business, financial condition, results of operations and prospects.

The various ways we could raise additional capital carry potential risks. If we raise funds by issuing equity securities, dilution to our stockholders would result. If we raise funds by issuing debt securities, those debt securities would have rights, preferences and privileges senior to those of holders of our common stock. The terms of debt securities issued or borrowings pursuant to a credit agreement could impose significant restrictions on our operations. If we raise funds through collaborations or licensing arrangements, we might be required to relinquish significant rights to our technologies or products or grant licenses on terms that are not favorable to us.

Our Loan and Security Agreement with Silicon Valley Bank contains restrictive covenants that limit our operations.

Pursuant to the terms of the 2021 Loan Facility, we have borrowed $15.0 million and may become eligible to borrow up to an additional $5.0 million, at SVB's sole option. If we are not in compliance with the financial covenants of the 2021 Loan Facility, it is unlikely that SVB will offer to extend the additional $5.0 million of debt financing. The 2021 Loan Facility contains various restrictive covenants, including, among other things, a minimum revenue covenant, and restrictions on our ability to merge or consolidate with any other entity, dispose of all or substantially all of our assets, dissolve or liquidate, incur liens or pay dividends. These restrictions may restrict our current and future operations, particularly our ability to respond to certain changes in our business or industry or take future actions.

See the section titled “Management’s Discussion and Analysis of Financial Condition and Results of Operations—Liquidity and Capital Resources” for additional information.

Our ability to meet these restrictive covenants can be impacted by events beyond our control. Our 2021 Loan Facility provides that our breach or failure to satisfy certain covenants constitutes an event of default. Upon the occurrence of an event of default, our lenders could elect to declare all amounts outstanding under the 2021 Loan Facility to be immediately due and payable. If the outstanding debt under the 2021 Loan Facility was to be accelerated, we may not have sufficient cash on hand to repay it, which would have an immediate adverse effect on our business and operating results. This could potentially cause us to cease operations and result in a complete loss of your investment in our common stock.

We depend on our key personnel and other highly qualified personnel, and if we are unable to recruit, train and retain our personnel, we may not achieve our goals.

Our future success depends upon our ability to recruit, train, retain and motivate key personnel. Our senior management team, including Todd R. Nelson, Ph.D., our Chief Executive Officer; Daniel Gibson, Ph.D., our Chief Technology Officer; Timothy E. Cloutier, our Senior Vice President, Commercial Operations; and Laurence Warden, our Vice President of Engineering and Instrumentation, is critical to our vision, strategic direction, product development and commercialization efforts. We have entered into at-will employment agreements with each of Dr. Nelson, Dr. Gibson, Dr. Cloutier and Mr. Warden, and such agreements may be terminated by either party at any time without cause. The departure of one or more of our executives officers, senior management team members or other key employees could be disruptive to our business unless we are able to hire qualified successors. We do not maintain “key man” life insurance on our senior management team.

Our continued growth depends, in part, on attracting, retaining and motivating qualified personnel, including highly trained sales personnel with the necessary scientific background and ability to understand our systems at a technical level to effectively identify and sell to potential new customers. New hires require significant training and, in most cases, take significant time before they achieve full productivity. Our failure to successfully integrate these key personnel into our business could adversely affect our business. In addition, competition for qualified personnel is intense, particularly in the San Diego area, where our operations are headquartered. We compete for qualified scientific and information technology personnel with other life science and information technology companies as well as academic institutions and research institutions.

We do not maintain fixed-term employment contracts with any of our employees. As a result, our employees could leave our company with little or no prior notice and would be free to work for a competitor. Due to the complex and technical nature of our products and technology and the dynamic market in which we compete, any failure to attract, train, retain and motivate qualified personnel could materially harm our business, results of operations, financial condition and prospects.

If we do not sustain or successfully manage our anticipated growth, our business and prospects will be harmed.

Our anticipated growth will place significant strains on our management, operational and manufacturing systems and processes, sales and marketing team, financial systems and internal controls and other aspects of our business. As of March 1, 2021, we had 84 employees in the United States and seven full-time employees internationally. We expect that we will need to hire additional accounting, finance and other personnel in connection with our becoming, and our efforts to comply with the requirements of being, a public company. Once public, our management and other personnel will need to devote a substantial amount of time towards maintaining compliance with these requirements and effectively manage these growth activities. We may face challenges integrating, developing and motivating our rapidly growing employee base. To effectively manage our growth, we must continue to improve our operational and manufacturing systems and processes, our financial systems and internal controls and other aspects of our business and continue to effectively expand, train and manage our personnel. Our ability to successfully manage our expected growth is uncertain given the fact that we have only been in operation as a stand-alone company since March 2019. As our organization continues to grow, we will be required to implement more complex organizational management structures, and we may find it increasingly difficult to maintain the benefits of our corporate culture, including our ability to quickly develop and launch new and innovative products. If we do not successfully manage our anticipated growth, our business, results of operations, financial condition and prospects will be harmed.

A significant portion of our revenue in the near term will be generated from the sale of our current products.

While we anticipate that a substantial contributor to our growth will come from new product introductions, we expect that we will generate in the near term, a significant portion of our revenue from the sale of our BioXp systems and the increased sale of BioXp kits and benchtop reagents to our current customers. There can be no assurance that our current customers will increase their BioXp kit and benchtop reagent purchases. There can also be no assurance that we will be able to design other products that will meet the expectations of our customers or that any of our future products will become commercially viable. As technologies change in the future for synthetic biology research tools, we will be expected to upgrade or adapt our products in order to maintain the latest technology.

While concentrating our research and development and commercialization efforts on our synthetic biology solution, we may forego other opportunities that may provide greater revenue or be more profitable. If our research and product development efforts do not result in additional commercially viable products within the anticipated timelines, or at all, our business and results of operations will be adversely affected. Any delay or failure by us to develop and release our new products or product enhancements would have a substantial adverse effect on our business and results of operations.

If we fail to introduce compelling new products, our revenues and our prospects could be harmed.

Our ability to attract new customers and increase revenue from existing customers will depend in large part on our ability to introduce compelling new products and pursue new market opportunities that develop as a result of technological and scientific advances. The success of any enhancement to our existing commercialized products or introduction of new products depends on several factors, including timely completion and delivery, cost-effective development and manufacturing, competitive pricing, adequate quality testing, integration with existing technologies, appropriately timed and staged introduction and overall market acceptance. Any new product that we develop may not be introduced in a timely or cost-effective manner, may contain defects, errors, vulnerabilities or bugs, or may not achieve the market acceptance necessary to generate significant revenue.

The typical development cycle of new synthetic biology products can be lengthy and complicated, and may require new scientific discoveries or advancements, considerable resources and complex technology and engineering. Such developments may involve external suppliers and service providers, making the management of development projects complex and subject to risks and uncertainties regarding timing, timely delivery of required components or services and satisfactory technical performance of such components or assembled products. If we do not achieve the required technical specifications or successfully manage new product development processes, or if development work is not performed according to schedule, then the development of such new technologies or products may be adversely impacted.

In addition, there is extensive competition in the synthetic biology industry, which is characterized by rapid and significant technological changes, frequent new product introductions and enhancements and evolving industry demands and standards. Our future success will depend on our ability to maintain a competitive position, including technologically superior and less expensive products compared to those of our competitors. Technological development by others may result in our technologies, as well as products developed using our technologies, becoming obsolete. If we are unable to successfully develop new products, compete with alternative products, or otherwise gain and maintain market acceptance, our business, results of operations and financial condition could be harmed.

Rapidly changing technology in synthetic biology could make the products we are developing obsolete unless we continue to develop and manufacture new and improved products and pursue new market opportunities.

Our industry is characterized by rapid and significant technological changes, frequent new product introductions and enhancements and evolving industry standards. The preferences and needs of our customers may change over time. Our future success will depend on our ability to continually improve the products we are developing, to develop and introduce new products that address the evolving needs of our customers on a timely and cost-effective basis, and to pursue new market opportunities that develop as a result of technological and scientific advances. These new market opportunities may be outside the scope of our proven expertise or in areas which have unproven market demand, and the utility and value of new products developed by us may not be accepted in the markets served by the new products. Our inability to gain market acceptance of new products could harm our future operating results. Our future success also depends on our ability to manufacture these new and improved products to meet customer

demand in a timely and cost-effective manner, including our ability to resolve manufacturing issues that may arise as we commence production of these complex products. Unanticipated difficulties or delays in replacing existing products with new products we introduce or in manufacturing improved or new products in sufficient quantities to meet customer demand could diminish future demand for our products and harm our future operating results.

We may acquire other companies or technologies, which could divert our management's attention, result in additional dilution to our stockholders, disrupt our operations and harm our operating results.

We may in the future seek to acquire or invest in businesses, applications or technologies that we believe could complement or expand our current or future products, enhance our technical capabilities or otherwise offer growth opportunities. The pursuit of potential acquisitions may divert the attention of management and cause us to incur various costs and expenses in identifying, investigating and pursuing suitable acquisitions, whether or not they are consummated. We may not be able to identify desirable acquisition targets or be successful in entering into an agreement with any particular target or obtain the expected benefits of any acquisition or investment.

To date, the growth of our operations has been organic, and we have limited experience in acquiring other businesses or technologies. We may not be able to successfully integrate acquired personnel, operations and technologies, or effectively manage the combined business following an acquisition. Acquisitions could also result in dilutive issuances of equity securities, the use of our available cash, or the incurrence of debt, which could harm our operating results. In addition, if an acquired business fails to meet our expectations, our operating results, business and financial condition may suffer.

If we experience a significant disruption in our information technology systems or breaches of data security, our business could be adversely affected.

We rely, or will rely, on information technology systems to keep financial records, facilitate our research and development initiatives, manage our manufacturing operations, maintain quality control, fulfill customer orders, maintain corporate records, communicate with staff and external parties and operate other critical functions. Our information technology systems and those of our vendors and partners are potentially vulnerable to disruption due to breakdown, malicious intrusion and computer viruses or other disruptive events, including, but not limited to, natural disasters and catastrophes. Cyberattacks and other malicious internet-based activity continue to increase and cloud-based platform providers of services have been and are expected to continue to be targeted. Methods of attacks on information technology systems and data security breaches change frequently, are increasingly complex and sophisticated, including social engineering and phishing scams, and can originate from a wide variety of sources. In addition to traditional computer "hackers," malicious code, such as viruses and worms, employee theft or misuse, denial-of-service attacks and sophisticated nation-state and nation-state supported actors now engage in attacks, including advanced persistent threat intrusions. Despite our efforts to create security barriers to such threats, it is virtually impossible for us to entirely mitigate these risks. In addition, we have not finalized our information technology and data security procedures and therefore, our information technology systems may be more susceptible to cybersecurity attacks than if such security procedures were finalized. Despite any of our current or future efforts to protect against cybersecurity attacks and data security breaches, there is no guarantee that our efforts are adequate to safeguard against all such attacks and breaches. Moreover, it is possible that we may not be able to anticipate, detect, appropriately react and respond to, or implement effective preventative measures against, all cybersecurity incidents.

If our security measures, or those of our vendors and partners, are compromised due to any cybersecurity attacks or data security breaches, including as a result of third-party action, employee or customer error, malfeasance, stolen or fraudulently obtained log-in credentials or otherwise, our reputation could be damaged, our business and reputation may be harmed, we could become subject to litigation and we could incur significant liability. If we were to experience a prolonged system disruption in our information technology systems or those of certain of our vendors and partners, it could negatively impact our ability to serve our customers, which could adversely impact our business, financial condition, results of operations and prospects. If operations at our facilities were disrupted, it may cause a material disruption in our business if we are not capable of restoring functionality on an acceptable timeframe. In addition, our information technology systems, and those of our vendors and partners, are potentially vulnerable to data security breaches, whether by internal bad actors, such as employees or other third parties with legitimate access to our or our third-party providers' systems, or external bad actors, which could lead to the exposure of personal data, sensitive data and confidential information to unauthorized persons. Any such data

security breaches could lead to the loss of trade secrets or other intellectual property, or could lead to the exposure of personal information, including sensitive personal information, of our employees, customers and others, any of which could have a material adverse effect on our business, reputation, financial condition and results of operations.

In addition, any such access, disclosure or other loss or unauthorized use of information or data could result in legal claims or proceedings, regulatory investigations or actions, and other types of liability under laws that protect the privacy and security of personal information, including federal, state and foreign data protection and privacy regulations, violations of which could result in significant penalties and fines. Additionally, a new privacy law, the California Privacy Rights Act (CPRA), was approved by California voters in the election on November 3, 2020. The CPRA will modify the California Consumer Privacy Act (CCPA) significantly, potentially resulting in further uncertainty and requiring us to incur additional costs and expenses in an effort to comply. In addition, U.S. and international laws and regulations that have been applied to protect user privacy (including laws regarding unfair and deceptive practices in the U.S. and GDPR in the E.U.) may be subject to evolving interpretations or applications. Furthermore, defending a suit, regardless of its merit, could be costly, divert management's attention and harm our reputation. In addition, although we seek to detect and investigate all data security incidents, security breaches and other incidents of unauthorized access to our information technology systems and data can be difficult to detect and any delay in identifying such breaches or incidents may lead to increased harm and legal exposure of the type described above. Moreover, there could be public announcements regarding any cybersecurity incidents and any steps we take to respond to or remediate such incidents, and if securities analysts or investors perceive these announcements to be negative, it could, among other things, have a material adverse effect on the price of our common stock.

The cost of protecting against, investigating, mitigating and responding to potential breaches of our information technology systems and data security breaches and complying with applicable breach notification obligations to individuals, regulators, partners and others can be significant. As cybersecurity incidents continue to evolve, we may be required to expend significant additional resources to continue to modify or enhance our protective measures or to investigate and remediate any information security vulnerabilities. The inability to implement, maintain and upgrade adequate safeguards could have a material adverse effect on our business, financial condition, results of operations and prospects. While we currently maintain cybersecurity insurance, our insurance policies may not be adequate to compensate us for the potential costs and other losses arising from such disruptions, failures or security breaches. In addition, such insurance may not be available to us in the future on economically reasonable terms, or at all, or that any insurer will not deny coverage as to any future claim. The successful assertion of one or more large claims against us that exceed available insurance coverage, or the occurrence of changes in our insurance policies, including premium increases or the imposition of large deductible or co-insurance requirements, could have a material adverse effect on our business, financial condition, results of operations and prospects.

A customer may unintentionally misuse our products or a bad actor may intentionally use our products with intent to create harm and, in either case, third parties may seek to hold us liable for the resulting harm.

All orders for our products that we receive are processed through a security filter. We verify that the shipping addresses of our customers are valid, screen the customer versus known agent lists and comply in all material respects with the know your customer rules. Despite these precautions it is possible that one of our customers may unintentionally misuse our products or a bad actor may attempt to misuse our products to create harm. If misuse of our products were to occur, the terms and conditions of our invoices may be insufficient to protect us from liability. Any indemnification that our customers are required to provide to us may be insufficient to cover the costs and damages resulting from the misuse of our products. Further, the product liability insurance we provide may specifically exclude bad acts of our customers from coverage or coverage limits may be insufficient to protect us from the amount of the liability we could incur. Any unintentional or intentional misuse of our products could result in liability or require us to expend costs to defend ourselves, may not be covered by insurance and may have a material and adverse effect on our business or results of operations.

Our recurring losses from operations have raised substantial doubt regarding our ability to continue as a going concern.

As shown in the financial statements included in this prospectus, we have had recurring losses from operations and, as a result, our independent registered public accounting firm has expressed substantial doubt concerning our ability to continue as a going concern and has included an explanatory paragraph in its report on our financial statement as of and for the year ended December 31, 2020 with respect to this uncertainty. Future reports on our

financial statements may also include an explanatory paragraph with respect to our ability to continue as a going concern. We have incurred significant losses since our inception and have never generated profit, and it is possible we will never generate profit. There is no assurance that other financing will be available when needed to allow us to continue as a going concern. The perception that we may not be able to continue as a going concern may cause others to choose not to deal with us due to concerns about our ability to meet our contractual obligations. If we are unable to continue as a going concern, you could lose all or part of your investment.

Risks Related to Supply, Manufacturing and Distribution of Our Products

We rely on a single contract manufacturer to manufacture and supply our instruments and single source suppliers for certain components of our instruments and raw materials. If this manufacturer or these suppliers should fail or not perform satisfactorily, our ability to commercialize and supply our products would be adversely affected.

We do not own or operate, and currently do not plan to own or operate, facilities for manufacturing our BioXp systems. We rely and expect to continue to rely on third parties for the production and packaging of our instruments. We rely on a single contract manufacturer, D&K Engineering, Inc. (D&K), located in San Diego, to manufacture and supply our BioXp systems. Since our contract with D&K does not commit it to carry inventory or make available any particular quantities of instruments outside of accepted purchase orders, D&K may give other customers' needs higher priority than ours, and we may not be able to obtain adequate supplies in a timely manner or on commercially reasonable terms. We do not have a long-term supply agreement with D&K. Instead, we typically issue non-cancellable purchase orders for our BioXp systems on a six-month rolling basis and we currently maintain less than 30 days of inventory of BioXp systems. Our purchase orders with D&K are terminable without cause upon sixty days' notice in writing to the other party.

Our reliance on a third party for the manufacture of our instruments increases the risk that we will not have sufficient quantities of our instruments or will not be able to obtain such quantities at an acceptable cost or quality, which could delay, prevent or impair commercialization of our instruments. In the event it becomes necessary to utilize a different contract manufacturer for our BioXp systems, we would experience additional costs, delays and difficulties as a result of having to identify and enter into an agreement with a new manufacturer. We would also have to prepare such new manufacturer to meet the technical and logistical requirements associated with manufacturing our instruments, and our business could suffer as a result.

In addition, certain of the components used in our instruments are sourced from limited or single-source suppliers. If we were to lose such suppliers, there can be no assurance that we will be able to identify or enter into agreements with alternative suppliers on a timely basis on acceptable terms, if at all. An interruption in our ability to sell and deliver instruments to customers could occur if we encounter delays or difficulties in securing these components, or if the quality of the components supplied do not meet our specifications, or if we cannot then obtain an acceptable substitute. If any of these events occur, our business, results of operations, financial condition and prospects could be harmed.

We also rely on third parties for certain components of our BioXp kits and benchtop reagents, including the nucleotides we use in our BioXp kits, which are primarily sourced from Integrated DNA Technologies, Inc. (IDT), a division of Danaher Corporation. While we have a validation plan for second sources for these components and raw materials, we cannot guarantee that we will be able to source these materials at similar quantities and on similar terms if our preferred supplier were to become unable or unwilling to fulfill our requirements.

Our reliance on third party manufacturers subjects us to risks associated with their businesses and operations. This dependence on others may harm our ability to develop and commercialize our products on a timely and competitive basis. Any such failure may result in decreased product sales and lower product revenue, which would harm our business. For example, even if we have agreements with third parties, they may not perform their obligations to us and they may be unable or unwilling to establish or increase production capacity commensurate with our needs. Disputes may also arise between us and our suppliers that result in the delay or termination of commercialization or that result in costly litigation or arbitration that diverts management's attention and resources. Also, third party manufacturers are subject to their own operational and financial risks that are outside of our control, and potentially their control also, that may cause them to suffer liquidity or operational problems and that could interfere with their business operations. For example, our suppliers have also been impacted by the COVID-19 pandemic and some of our raw materials and components originate in China. We have also experienced supply delays for critical hardware,

instrumentation and supplies that we use for product development, as these other components and supplies are otherwise diverted to COVID-19-related testing and other uses.

We have limited experience producing and supplying our products. We may be unable to consistently manufacture or source our products to the necessary specifications or in quantities necessary to meet demand on a timely basis and at acceptable performance and cost levels.

Our BioXp systems, BioXp kits and benchtop reagents comprise an integrated solution with many different components that work together. As such, a quality defect in a single component can compromise the performance of the entire system. In order to successfully generate revenue from this product line, we need to supply our customers with products that meet their expectations for quality and functionality in accordance with established specifications on a timely basis. Our instruments are manufactured by D&K using complex processes, sophisticated equipment and strict adherence to specifications and quality systems procedures. Given the complexity of this instrumentation, individual units may occasionally require additional installation and service prior to becoming available for customer use.

As we continue to scale commercially and develop new products, and as our products incorporate increasingly sophisticated technology, it will become more difficult to ensure our products are produced in the necessary quantities while maintaining quality. There is no assurance that we or our third-party manufacturers will be able to continue to manufacture our products so that our technology consistently achieves the product specifications and produces results with acceptable quality. In addition, our BioXp kits and benchtop reagents have a limited shelf life, after which their performance is not ensured and many of our products must be shipped and stored at controlled temperatures. Shipment of BioXp kits and benchtop reagents that exceed their shelf life or shipment of defective products to customers may result in recalls and warranty replacements, which would increase our costs and may damage our reputation, and depending upon current inventory levels and the availability and lead time for additional inventory, could lead to availability issues. Any future design issues, unforeseen manufacturing problems, such as contamination of our or our manufacturers' facilities, equipment malfunctions, aging components, quality issues with components and materials sourced from third-party suppliers, or failures to strictly follow procedures or meet specifications, may have a material adverse effect on our brand, business, reputation, results of operations and financial condition and could result in us or our third-party manufacturers losing International Organization for Standardization (ISO) or quality management certifications. If our third-party manufacturers fail to maintain ISO quality management certifications, our customers might choose not to purchase products from us.

In addition, as we scale our commercial operations, we will also need to make corresponding improvements to other operational functions, such as our customer support, service and billing systems, compliance programs and internal quality assurance programs. We cannot assure you that any increases in scale, related improvements and quality assurance will be successfully implemented or that appropriate personnel will be available. As we develop additional products, we may need to bring new equipment on-line, implement new systems, technology, controls and procedures and hire personnel with different qualifications.

An inability to manufacture products and components that consistently meet specifications, in necessary quantities, at commercially acceptable costs and without significant delays, may have a material adverse effect on our business, results of operations, financial condition and prospects.

We must continue to secure and maintain sufficient and stable supplies of components and raw materials.

Certain disruptions in supply of, and changes in the competitive environment for, components and raw materials integral to the manufacturing of our products may adversely affect our profitability. We use a broad range of materials and supplies in our products. A significant disruption in the supply of these materials could decrease production and shipping levels, materially increase our operating costs and materially and adversely affect our revenues and profit margins. Shortages of materials or interruptions in transportation systems, labor strikes, work stoppages, war, acts of terrorism or other interruptions to or difficulties in the employment of labor or transportation in the markets in which we purchase materials, components and supplies for the production of our products, in each case, may adversely affect our ability to maintain production of our products and achieve profitability. Unforeseen discontinuation or unavailability of certain components, such as enzymes or nucleotides, each of which we currently primarily source from single supplier, could cause backorders as we modify our product specifications to accommodate replacement components. If we were to experience a significant or prolonged shortage of critical components from any of our suppliers and could not procure the components from other sources, we would be

unable to manufacture our products and ship them to our customers in a timely fashion, or at all, which would adversely affect our sales, margins and customer relations.

Our products could have defects or errors, giving rise to claims against us, adversely affecting market adoption and negatively impacting our business, financial condition, and results of operations.

Our products utilize novel and complex technology related to writing synthetic DNA and mRNA and may develop or contain undetected defects or errors. We cannot assure you that material performance problems, defects, or errors will not arise, and as we commercialize our products, these risks may increase. We provide warranties at the point of sale that our products will meet performance expectations and will be free from defects. We also provide extended warranties at an additional cost to the customer. The costs incurred in correcting any defects or errors may be substantial and could adversely affect our operating margins.

In manufacturing our products, we depend upon third parties for the supply of our instruments and various components, many of which require a significant degree of technical expertise to produce. If our suppliers fail to make our products or their components to specification or provide defective products to us, and our quality control tests and procedures fail to detect such errors or defects, or if we or our suppliers use defective materials or workmanship in the manufacturing process, the reliability and performance of our products will be compromised.

If our products contain defects, we may experience:

- a failure to achieve market acceptance for our products;
- loss of customer orders and delay in order fulfillment;
- damage to our reputation;
- increased warranty and customer service and support costs due to product repair or replacement;
- product recalls or replacements;
- inability to attract new customers;
- diversion of resources from our manufacturing and research and development departments into our service department; and
- legal claims against us, including product liability claims, which could be costly and time consuming to defend and result in substantial damages.

If we become subject to product liability claims, we may be required to pay damages that exceed our insurance coverage.

Our business exposes us to potential product liability claims that are inherent in the production, marketing and sale of biotechnological and genetic products. Although we believe that we are reasonably insured against these risks, and we generally have limited indemnity protections in our supplier agreements, there can be no assurance that our current insurance is adequate or that we will be able to maintain insurance in amounts or scope sufficient to provide us with adequate coverage against all potential liabilities. Any product liability claim in excess of our insurance coverage, claim that is outside of or exceeds our indemnity protections in our supplier agreements, or recall of one of our products, would have to be paid out of our cash reserves.

Shipping is a critical part of our business. Any changes in our shipping arrangements or damages or losses sustained during shipping could adversely affect our business, financial condition, results of operations and prospects.

We currently rely on commercial carriers for our shipping. If we are not able to negotiate acceptable pricing and other terms with these carriers, or if they experience performance problems or other difficulties, it could negatively impact our operating results and our customers' experience. If a product is damaged in transit, it may result in a substantial delay in the fulfillment of the customer's order, and depending on the type and extent of the damage and whether the incident is covered by insurance, it may result in a substantial financial loss to us. If our products are not delivered in a timely fashion or are damaged or lost during the delivery process, our customers could become dissatisfied and cease using our products or services, which would adversely affect our business, financial condition, results of operations and prospects.

Our business depends on our ability to quickly and reliably deliver our products and in particular, our BioXp kits and benchtop reagents, to our customers. Certain of these products are perishable and must be kept below certain

temperatures and, therefore, we ship these products on dry ice and only ship such products on certain days of the week to reach customers without spoilage. Disruptions in the delivery of these products, whether due to labor disruptions, bad weather, natural disasters, terrorist acts or threats or for other reasons could result in our customers receiving products that are not fit for use, and if used, could result in inaccurate results or ruined experiments. While we work with customers to replace any products that are impacted by delivery disruptions, our reputation and our business may be adversely impacted even if we replace products free of charge. In addition, if we are unable to continue to obtain expedited delivery services on commercially reasonable terms, our operating results may be adversely affected.

In addition, should our commercial carriers encounter difficulties in delivering our products to customers, particularly at the end of any financial quarter, it could adversely impact our ability to recognize revenue for those products in that period and accordingly adversely affect our financial results for that period.

Risks Related to Our Sales, Marketing and Customer Support

We have limited experience in sales and marketing of our products.

We have limited experience in sales and marketing our products. Our ability to achieve profitability depends on our being able to attract customers for our products. To meet our sales objectives, we must expand our sales, marketing, distribution and customer service and support capabilities with personnel with the appropriate technical expertise. In undertaking expansion efforts, we will face a number of risks relating to:

- our ability to attract, retain and manage the sales, marketing and customer service and support personnel necessary to commercialize and gain market acceptance for our technology;
- the time and cost of maintaining specialized sales, marketing and customer service and support personnel; and
- the relative success of our sales, marketing and customer service and support personnel.

We currently enlist, and may in the future seek to enlist one or more third parties to assist with sales, distribution and customer service and support. There is no guarantee that we will be successful in attracting effective sales and distribution partners or that we will be able to enter into such arrangements on favorable terms. If our sales and marketing efforts, or those of any third-party sales and distribution partners, are not successful, our products may not gain market acceptance, which could materially impact our business operations.

A substantial proportion of our sales are through distributors, and we do not control their efforts to sell our products. If our relationships with these third-party distributors deteriorate, or if these third-party distributors fail to sell our products or engage in activities that harm our reputation, our financial results may be negatively affected.

Our current sales model includes direct sales in North America and parts of Europe, and relationships with third party distributors in other parts of Europe and various countries in the Middle East, Africa and Asia Pacific regions. We believe that our reliance on distributors improves the economics of our business, as we do not carry the high fixed costs of a direct sales force in many of the countries in which our products are sold. If we are unable to maintain or enter into such distribution arrangements on acceptable terms, or at all, we may not be able to successfully commercialize our products in certain countries.

Furthermore, distributors can choose the level of effort that they apply to selling our products relative to others in their portfolio. The selection, training, and compensation of distributors' sales personnel are within their control rather than our own and may vary significantly in quality from distributor to distributor. They may experience their own financial difficulties, or distribution relationships may be terminated or allowed to expire, which could increase the cost of or impede commercialization of our products in applicable countries. Disputes may also arise between us and our distributors that result in the delay or termination of commercialization or that result in costly litigation or arbitration that diverts management's attention and resources. Distributors may not properly maintain or defend our intellectual property rights or may use our proprietary information in such a way as to invite litigation that could jeopardize or invalidate our proprietary information or expose us to potential litigation. Distributors could move forward with competing products developed either independently or in collaboration with others, including our competitors.

In addition, although our contract terms require our distributors to comply with all applicable laws regarding the sale of our products, including regulatory labelling, protection of personal data, U.S. export regulations and the U.S. Foreign Corrupt Practices Act (FCPA), we may not be able to ensure proper compliance. If our distributors fail to effectively market and sell our products in full compliance with applicable laws and regulations, our results of operations and business may suffer.

The size of the markets for our products may be smaller than estimated, and new market opportunities may not develop as quickly as we expect, or at all, thus limiting our ability to successfully meet our anticipated revenue projections.

The market for synthetic biology technologies and products is evolving, making it difficult to predict with any accuracy the size of the markets for our current and future products, including our BioXp systems, BioXp kits and benchtop reagents. Our estimates of the total addressable market for our current and future products are based on a number of internal and third-party estimates and assumptions. In particular, our estimates are based on our expectations that researchers in the market for certain synthetic biology research tools and technologies will view our products as competitive alternatives to, or better options than, existing tools and technologies. We also expect researchers will recognize the ability of our products to complement, enhance and enable new applications of their current tools and technologies. Underlying each of these expectations are a number of estimates and assumptions that may be incorrect, including the assumptions that government or other sources of funding will continue to be available to synthetic biology researchers at times and in amounts necessary to allow them to purchase our products and that researchers have an unmet need for performing synthetic biology applications. As a result, the sizes of the annual total addressable market for new markets and new products are even more difficult to predict. The synthetic biology market may develop more slowly or differently than we expect. While we believe our assumptions and the data underlying our estimates of the total addressable market for our products are reasonable, these assumptions and estimates may not be correct and the conditions supporting our assumptions or estimates, or those underlying the third-party data we have used, may change over time, thereby reducing the accuracy of our estimates. As a result, our estimates of the total addressable market for our products may be incorrect.

The future growth of the market for our current and future products depends on many factors beyond our control. For example, in 2020, 11% of our revenue was from products specifically targeting research and development efforts related to COVID-19 vaccines and therapeutic products. As effective COVID-19 vaccines or treatments are developed, approved and rolled out to protect against and treat the COVID-19 virus, demand for these products and biofoundry services may be impacted and the size of our market opportunity for such products may be impacted.

We expect that our products will be subject to the market forces and adoption curves common to other new technologies. The market for synthetic biology technologies and products is in its early stages of development. Sales of new products into new market opportunities may take years to develop and mature and we cannot be certain that these market opportunities will develop as we expect. If the markets for our current and future products are smaller than estimated or do not develop as we expect, our growth may be limited and our business, financial condition and operational results of operations could be adversely affected.

Our success depends on broad scientific and market acceptance of our products, which we may fail to achieve.

Our ability to achieve and maintain scientific and commercial market acceptance of our products will depend on a number of factors. If widespread adoption of our products takes longer than anticipated, we will continue to experience operating losses.

The success of life sciences products is due, in large part, to recognition and acceptance by the scientific community, their adoption of these products in the applicable field of research and the growth, prevalence and costs of competing products. Such recognition and acceptance of our products may not occur in the near term, or at all. Our product offerings are innovative. New synthetic biology technology, including our own, may not be adopted until the consistency and accuracy of such technology has been proven.

Other factors in achieving commercial market acceptance of our products include:

- our ability to market and increase awareness of the capabilities of our products;
- our customers' willingness to adopt new products and workflows;
- whether early adopters and key opinion leaders (KOLs) publish research involving the use of our products;

- our products' ease-of-use and whether it reliably provides advantages over alternative technologies;
- the rate of adoption of our products and services by academic institutions, laboratories, biopharmaceutical companies and others;
- the prices we charge for our products;
- our ability to develop new products and workflows;
- whether competitors commercialize products that perform similar functions as our products; and
- the impact of our investments in product innovation and commercial growth.

We cannot assure you that we will be successful in addressing each of these criteria or other criteria that might affect the market acceptance of any products we commercialize. If we are unsuccessful in achieving and maintaining scientific and market acceptance of our products, our business, financial condition and results of operations would be adversely affected.

The synthetic biology technology market is highly competitive. If we fail to compete effectively, our business and results of operation will suffer.

We face significant competition in the synthetic biology technology market. We currently compete with synthetic biology technology companies and the companies that are supplying components, products and services that serve customers engaged in synthetic biology research. These companies include Thermo Fisher Scientific Inc.; Danaher Corporation; CureVac N.V.; GENEWIZ Group, which was acquired by Brooks Automation, Inc.; GenScript Biotech Corporation; DNA Script SAS; Integrated DNA Technologies, Inc.; Molecular Assemblies, Inc.; Nuclera Nucleics Ltd; Nutcracker Therapeutics, Inc.; Twist Bioscience Corporation and others.

Some of our current competitors are large, publicly-traded companies, or are divisions of large publicly-traded companies, and may enjoy a number of competitive advantages over us, including:

- greater name and brand recognition;
- greater financial and human resources;
- broader product lines;
- larger sales forces and more established distributor networks;
- substantial intellectual property portfolios;
- larger and more established customer bases and relationships; and
- better established, larger scale and lower cost manufacturing capabilities.

We cannot assure investors that our products will compete favorably or that we will be successful in the face of increasing competition from products and technologies introduced by our existing or future competitors or companies entering our markets. In addition, we cannot assure investors that our competitors do not have or will not develop products or technologies that currently or in the future will enable them to produce competitive products with greater capabilities or at lower costs than ours. Any failure to compete effectively could materially and adversely affect our business, financial condition and operating results.

Our revenue, results of operations and cash flows would be adversely affected by the loss of a significant customer.

We have derived, and we may continue to derive, a significant portion of our revenues from a limited number of large customers. We estimate that our twenty largest customers accounted for 85% and 60% of our revenue for the period March 8, 2019 through December 31, 2019 and the year ended December 31, 2020, respectively. The loss of key customers, or the reduction in the amount of product ordered by them may adversely affect our revenue, results of operations, cash flows and reputation in the marketplace.

We generally do not have long-term contracts with our customers requiring them to purchase any specified quantities of products from us.

We generally do not have long-term contracts with our customers requiring them to purchase any specified quantities of products from us. Without such contracts, our customers are not obligated to order our products. We cannot accurately predict our customers' decisions to reduce or cease purchasing our products. Additionally, even where we enter into contracts with our customers, there is no guarantee that such agreements will be negotiated on

terms that are commercially favorable to us in the long term. If many of our customers were to substantially reduce their purchase volume or cease ordering products from us, this could materially and adversely affect our financial performance.

Our business will depend significantly on research and development spending by the pharmaceutical, biotechnology and industrial agricultural customers, as well as academic institutions and other research institutions. Any reduction in spending could limit demand for our products and adversely affect our business, results of operations, financial condition and prospects.

We expect that substantially all of our sales revenue in the near term will be generated from sales to pharmaceutical, biotechnology and industrial agricultural customers, as well as academic institutions and other research institutions. Much of these customers' funding is dependent on annual research and development budgets and in the case of academic and other research institutions will be, in turn, provided by various state, federal and international government agencies. As a result, the demand for our products will depend upon the research and development budgets of these customers, which are impacted by factors beyond our control, such as:

- research and development budgets within the pharmaceutical, biotechnology, agricultural and other industries;
- government funding of research and development;
- changes to programs that provide funding to research laboratories and institutions, including changes in the amount of funds allocated to different areas of research or changes that have the effect of increasing the length of the funding process;
- macroeconomic conditions and the political climate;
- potential changes in the regulatory environment;
- differences in budgetary cycles, especially government- or grant-funded customers, whose cycles often coincide with government fiscal year ends;
- market-driven pressures to consolidate operations and reduce costs; and
- scientific and market acceptance of relatively new synthetic biology products.

In addition, various state, federal and international agencies that provide grants and other funding may be subject to stringent budgetary constraints that could result in spending reductions, reduced grant making, reduced allocations or budget cutbacks, which could jeopardize the ability of funding organizations or the organizations to whom they provide funding, to purchase our products. For example, congressional appropriations to the National Institutes of Health (NIH), have generally increased year-over-year for the last 19 years, and reached a new high in 2020, but the NIH also experiences occasional year-over-year decreases in appropriations, including as recently as 2013. In addition, funding for life science research has increased more slowly during the past several years compared to previous years and has actually declined in some countries. There is no guarantee that NIH appropriations will not decrease in the future, and a decrease may be more likely under the current administration, whose annual budget proposals have repeatedly decreased NIH appropriations. A decrease in the amount of, or delay in the approval of, appropriations to NIH or other similar United States or international organizations, such as the Medical Research Council in the United Kingdom, could result in fewer grants benefiting synthetic biology research. These reductions or delays could also result in a decrease in the aggregate amount of grants awarded for synthetic biology research or the redirection of existing funding to other projects or priorities, any of which in turn could cause our customers and potential customers to reduce or delay purchases of our products. Our operating results may fluctuate substantially due to any such reductions and delays. Any decrease in our customers' budgets or expenditures, or in the size, scope or frequency of their capital or operating expenditures, could materially and adversely affect our business, results of operations, financial condition and prospects.

Our success depends on our ability to service and support our products directly or in collaboration with our strategic partners.

To the extent that we or our strategic partners fail to maintain a high quality level of service and support for our products, there is a risk that the perceived quality of our products will be diminished in the marketplace. Likewise, we may fail to provide the level, quantity or quality of service expected by the marketplace. This could result in slower adoption rates and lower than anticipated utilization of our products, which could have a material adverse effect on our business, financial condition and results of operations.

Risks Related to the COVID-19 Pandemic and Other Natural Disasters

The COVID-19 pandemic and efforts to reduce its spread have adversely impacted, and are expected to continue to adversely impact, our business and operations.

The COVID-19 pandemic has had, and is expected to continue to have, an adverse impact on our operations, particularly as a result of preventive and precautionary measures that we, other businesses and governments are taking. Governmental mandates related to COVID-19 have impacted, and we expect similar infectious diseases or public health crises may continue to impact, our personnel and personnel at third-party manufacturers in the United States and other countries. Such mandates have impacted and likely will continue to impact the availability and cost of materials, which disrupts or delays our receipt of components and supplies from the third parties we rely on to, among other things, manufacture our BioXp systems, BioXp kits and benchtop reagents or source and timely receive parts and components from third parties. For instance, there are standing “stay-at-home” orders in California, and specifically San Diego County where our headquarters is located, that require businesses to implement certain social distancing protocols and other health and safety measures, which may affect productivity and morale. An extended implementation of these governmental mandates could further impact our ability to operate effectively and conduct ongoing research and development or other activities. The COVID-19 pandemic has also had an adverse effect on our ability to attract, recruit, interview and hire at the pace we would typically expect to support our rapidly expanding operations. To the extent that any governmental authority imposes additional regulatory requirements or changes existing laws, regulations and policies that apply to our business and operations, such as additional workplace safety measures, our product development plans may be delayed, and we may incur further costs in bringing our business and operations into compliance with changing or new laws, regulations and policies.

Our ability to drive the adoption of our products will depend upon our ability to attend trade shows and conferences, visit customer sites, the ability of our customers to access laboratories, install our products and train their personnel on our products and conduct research in the face of the COVID-19 pandemic. Additionally, the research and development budgets of these customers, the ability of such customers to receive funding for research, and the ability of such customers to receive instrument installations and visitors to their facilities and to travel to our facilities, other laboratories and industry events, will become increasingly important to the adoption of our products. All of these considerations are impacted by factors beyond our control, such as:

- reductions in capacity or shutdowns of laboratories and other institutions as well as other impacts stemming from the COVID-19 pandemic, such as reduced or delayed spending on instruments or reagents as a result of such shutdowns and delays before re-opened laboratories and institutions resume previous levels of research activities that require new purchases of our products;
- decreases in government funding of research and development; and
- changes to programs that provide funding to research laboratories and institutions, including changes in the amount of funds allocated to different areas of research, changes that have the effect of increasing the length of the funding process or the impact of the COVID-19 pandemic on our customers and potential customers and their funding sources.

The ultimate impact of the COVID-19 pandemic is highly uncertain and subject to sudden change. This impact could have a material, adverse impact on our liquidity, capital resources, operations and business and those of the third parties on which we rely, and could worsen over time. The extent to which the COVID-19 pandemic impacts our results will depend on future developments, which are highly uncertain and cannot be predicted, including new information which may emerge concerning the severity of COVID-19 and the actions to contain COVID-19 or treat its impact, among others. While we do not yet know the full extent of potential impacts on our business, any of these occurrences could significantly harm our business, results of operations and financial condition.

Unfavorable U.S. or global economic conditions as a result of the COVID-19 pandemic, or otherwise, could adversely affect our ability to raise capital and our business, results of operations and financial condition.

While the potential economic impact brought by, and the duration of, the COVID-19 pandemic is difficult to assess or predict, the COVID-19 pandemic has resulted in, and may continue to result in, extreme volatility and disruptions in the capital and credit markets, reducing our ability to raise additional capital through equity, equity-linked or debt financings, which could negatively impact our short-term and long-term liquidity and our ability to operate in accordance with our operating plan, or at all. Additionally, our results of operations could be adversely affected by general conditions in the global economy and financial markets. A severe or prolonged economic downturn could

result in a variety of risks to our business, including weakened demand for our products and our ability to raise additional capital when needed on favorable terms, if at all. A weak or declining economy could strain our customers' budgets or cause delays in their payments to us. Any of the foregoing could harm our business. We cannot anticipate all of the ways in which the current economic climate and financial market conditions could adversely impact our ability to raise capital, business, results of operations and financial condition.

If our facilities or our third-party manufacturers' facilities become unavailable or inoperable, our research and development program and commercialization of our products could be adversely impacted and manufacturing of our products could be interrupted.

Our San Diego, California, facilities house our corporate, research and development and quality assurance teams. Our instruments are manufactured at our third-party manufacturer's facilities in San Diego, and our BioXp kits and benchtop reagents are manufactured at various locations in the United States and internationally, including our San Diego facilities. We do not have a second or back-up facility to use if our San Diego facility becomes inoperable.

Our facilities in San Diego and those of our third-party manufacturers are vulnerable to natural disasters, public health crises, including the impact of the COVID-19 pandemic, and catastrophic events. For example, our San Diego facilities are located near earthquake fault zones and are vulnerable to damage from earthquakes as well as other types of disasters, including fires, floods, power loss, communications failures and similar events. If any disaster, public health crisis or catastrophic event were to occur, our ability to operate our business would be seriously, or potentially completely, impaired. If our facilities or our third-party manufacturer's facilities become unavailable for any reason, we cannot provide assurances that we will be able to secure alternative manufacturing facilities with the necessary capabilities and equipment on acceptable terms, if at all. We may encounter particular difficulties in replacing our San Diego facilities given the specialized equipment housed within it. The inability to manufacture our products, combined with our limited inventory of finished products, may result in the loss of future customers or harm our reputation, and we may be unable to re-establish relationships with those customers in the future.

If our research and development program or commercialization program were disrupted by a disaster or catastrophe, the launch of new products, including our workflow automation and reagent solutions, and the timing of improvements to our products could be significantly delayed and could adversely impact our ability to compete with other available products and solutions. If our or our third-party manufacturer's capabilities are impaired, we may not be able to manufacture and ship our products in a timely manner, which would adversely impact our business. Although we possess insurance for damage to our property and the disruption of our business, this insurance may not be sufficient to cover all of our potential losses and may not continue to be available to us on acceptable terms, or at all.

Risks Related to Doing Business Internationally

Doing business internationally creates operational and financial risks for our business.

We estimate that during the period ended December 31, 2019 and the fiscal year ended December 31, 2020, approximately 14% and 25%, respectively, of our revenue was generated from customers located outside of the United States. In connection with our growth strategy, we intend to further expand in international markets. Conducting and launching operations on an international scale requires close coordination of activities across multiple jurisdictions and time zones and consumes significant management resources. If we fail to coordinate and manage these activities effectively, our business, financial condition or results of operations could be adversely affected. International sales entail a variety of risks, including longer payment cycles and difficulties in collecting accounts receivable outside of the United States, currency exchange fluctuations, challenges in staffing and managing foreign operations, tariffs and other trade barriers, unexpected changes in legislative or regulatory requirements of foreign countries into which we sell our products, difficulties in obtaining export licenses or in overcoming other trade barriers, laws and business practices favoring local companies, political and economic instability, difficulties protecting or procuring intellectual property rights, and restrictions resulting in delivery delays and significant taxes or other burdens of complying with a variety of foreign laws.

Changes in the value of the relevant currencies may affect the cost of certain items required in our operations. Changes in currency exchange rates may also affect the relative prices at which we are able to sell products in the same market. Our revenue from international customers may be negatively impacted as increases in the U.S. dollar relative to our international customers' local currency could make our products more expensive, impacting our ability

to compete. Our costs of materials from international suppliers may increase if in order to continue doing business with us they raise their prices as the value of the U.S. dollar decreases relative to their local currency. Foreign policies and actions regarding currency valuation could result in actions by the United States and other countries to offset the effects of such fluctuations. The recent global financial downturn has led to a high level of volatility in foreign currency exchange rates and that level of volatility may continue, which could adversely affect our business, financial condition or results of operations.

Our international business could expose us to business, regulatory, political, operational, financial, and economic risks associated with doing business outside of the United States.

Engaging in international business inherently involves a number of difficulties and risks, including:

- required compliance with existing and changing foreign regulatory requirements and laws that are or may be applicable to our business in the future, such as the European Union's General Data Protection Regulation (GDPR), and other data privacy requirements, labor and employment regulations, anti-competition regulations, the U.K. Bribery Act of 2010 and other anti-corruption laws;
- required compliance with U.S. laws such as the FCPA, and other U.S. federal laws and regulations, including those established by the Office of Foreign Asset Control;
- export requirements and import or trade restrictions;
- laws and business practices favoring local companies;
- foreign currency exchange fluctuations, longer payment cycles and difficulties in enforcing agreements and collecting accounts receivables through certain foreign legal systems;
- hyperinflation or economic or political instability in foreign countries;
- changes in social, economic, and political conditions or in laws, regulations and policies governing foreign trade, manufacturing, research and development, and investment, including as a result of the separation of the United Kingdom from the European Union, commonly referred to as Brexit;
- the imposition of inconsistent laws or regulations;
- changes in or interpretations of foreign law that may adversely affect our ability to sell our products, perform services or repatriate profits to the United States;
- potentially adverse tax consequences, tariffs, customs charges, bureaucratic requirements and other trade barriers;
- difficulties and costs of staffing and managing foreign operations; and
- difficulties protecting, maintaining, enforcing or procuring intellectual property rights.

If one or more of these risks occurs, it could require us to dedicate significant resources to remedy such occurrence, and if we are unsuccessful in finding a solution, our financial results will suffer.

We could inadvertently engage in exporting or related activity that contravenes international trade restraints, or regulatory authorities could promulgate more far-reaching international trade restraints, which could give rise to one or more of substantial legal liability, impediments to our business and reputational damage.

Our international business activities must comport with U.S. export controls and other international trade restraints, including the U.S. Department of Commerce's Export Administration Regulations and economic sanctions regulations administered by the U.S. Treasury Department's Office of Foreign Assets Control.

To date our exports have not been licensable under export controls; however, we could still fail to observe export controls or sanctions requirements in a manner that leaves us in noncompliance with export controls or other international trade restraints. In addition, authorities could promulgate international trade restraints that impinge on our ability to engage in our business operations as planned. One or more of resulting legal penalties, restraints on our business or reputational damage could have material adverse effects on our business and financial condition.

We are subject to various U.S. and international anti-corruption laws and other anti-bribery and anti-money laundering laws and regulations.

We are subject to the FCPA, the U.S. domestic bribery statute contained in 18 U.S.C. § 201, the U.S. Travel Act, and other anti-corruption, anti-bribery, and anti-money laundering laws in the jurisdictions where we do business,

both domestic and abroad. Anti-corruption and anti-bribery laws have been enforced aggressively in recent years and are interpreted broadly. These laws generally prohibit companies, their employees, business partners, third-party intermediaries, representatives, and agents from authorizing, offering, or providing, directly or indirectly, improper payments or benefits to government officials or commercial parties to obtain or retain business, direct business to any person, or gain any improper advantage. We sometimes leverage third parties to conduct our business abroad. We and our employees, business partners, third-party intermediaries, representatives, and agents may have direct or indirect interactions with officials and employees of government agencies or state-owned or affiliated entities and we may be held liable for their corrupt or other illegal activities even if we do not explicitly authorize those activities. We cannot assure you that our employees and agents will not take actions that violate applicable law, for which we may be ultimately held responsible. These laws also require that we keep accurate books and records and maintain internal accounting controls and compliance procedures designed to prevent any such actions. While we have policies and procedures to address compliance with these laws, we cannot assure you that our employees, business partners, third-party intermediaries, representatives, and agents will not take actions that violate our policies or applicable law, for which we may be ultimately held responsible. Our exposure for violating these laws increases as our international presence expands and as we increase sales and operations in foreign jurisdictions.

Any violation of the FCPA or other applicable anti-bribery, anti-corruption, and anti-money laundering laws could result in whistleblower complaints, adverse media coverage, investigations, loss of export privileges, severe criminal or civil sanctions, settlements, prosecution, enforcement actions, fines, damages, or suspension or debarment from government contracts, all of which may have an adverse effect on our reputation, business, stock price, financial condition, prospects, and results of operations. In addition, responding to any investigation or action will likely result in a materially significant diversion of management's attention and resources and significant defense costs and other professional fees.

Risks Related to Our Regulatory Environment

If we elect to label and promote any of our products as clinical diagnostics tests or medical devices, we would be required to obtain prior approval or clearance by the U.S. Food and Drug Administration (FDA), which would take significant time and expense and could fail to result in FDA clearance or approval for the intended uses we believe are commercially attractive.

Our products are currently labeled and promoted, and are, and in the near-future will be, sold primarily to academic and research institutions and research companies as research use only (RUO) products. They are not currently designed, or intended to be used, for clinical diagnostic tests or as medical devices. If we elect to label and market our products for use as, or in the performance of, clinical diagnostics in the United States, thereby subjecting them to FDA regulations as medical devices, we would be required to obtain premarket 510(k) clearance or premarket approval from the FDA, unless an exception applies.

We may in the future register with the FDA as a medical device manufacturer and list some of our products with the FDA pursuant to an FDA Class I listing for general purpose laboratory equipment. While this regulatory classification is exempt from certain FDA requirements, such as the need to submit a premarket notification commonly known as a 510(k), and some of the requirements of the FDA's Quality System Regulations (QSRs), we would be subject to ongoing FDA "general controls," which include compliance with FDA regulations for labeling, inspections by the FDA, complaint evaluation, corrections and removals reporting, promotional restrictions, reporting adverse events or malfunctions for our products, and general prohibitions against misbranding and adulteration.

In addition, we may in the future submit 510(k) premarket notifications to the FDA to obtain FDA clearance of certain of our products. It is possible, in the event we elect to submit 510(k) applications for any of our products, that the FDA would take the position that a more burdensome premarket application, such as a premarket approval application or a de novo application, is required for those same products. If such applications were required, greater time and investment would be required to obtain FDA approval. Even if the FDA agreed that a 510(k) was appropriate, FDA clearance can be expensive and time consuming. Notwithstanding the effort and expense, FDA clearance or approval could be denied for some or all of our products for which we choose to market as a medical device or a clinical diagnostic device. There can be no assurance that future products for which we may seek premarket clearance or approval will be approved or cleared by FDA or a comparable foreign regulatory authority on a timely basis, if at all, nor can there be assurance that labeling claims will be consistent with our anticipated claims or adequate to support continued adoption of such products. Compliance with FDA or comparable foreign regulatory

authority regulations would require substantial costs, and subject us to heightened scrutiny by regulators and substantial penalties for failure to comply with such requirements or the inability to market our products. The lengthy and unpredictable premarket clearance or approval process, as well as the unpredictability of the results of any required clinical studies, may result in our failing to obtain regulatory clearance or approval to market such products, which would significantly harm our business, results of operations, reputation, and prospects.

If we sought and received regulatory clearance or approval for any of our products, we would be subject to ongoing FDA obligations and continued regulatory oversight and review, including the general controls listed above and the FDA's QSRs for our development and manufacturing operations. We could also be subject to additional FDA post-marketing obligations for such products, any or all of which would increase our costs and divert resources away from other projects. If we sought and received regulatory clearance or approval and are not able to maintain regulatory compliance with applicable laws, we could be prohibited from marketing our products for use as, or in the performance of, clinical diagnostics and be subject to enforcement actions, including warning letters and adverse publicity, fines, injunctions, and civil penalties, recalls or seizure of products, operating restrictions and criminal prosecution.

In addition, we could decide to seek regulatory clearance or approval for certain of our products in countries outside of the United States. Sales of such products outside the United States will likely be subject to foreign regulatory requirements, which can vary greatly from country to country. As a result, the time required to obtain clearances or approvals outside the United States may differ from that required to obtain FDA clearance or approval and we may not be able to obtain foreign regulatory approvals on a timely basis or at all. In Europe, we would need to comply with the new Medical Device Regulation 2017/745 and In Vitro Diagnostic Regulation 2017/746, which became effective May 26, 2017, with application dates of May 26, 2021 (postponed from 2020) and May 26, 2022 respectively. This will increase the difficulty of regulatory approvals in Europe in the future. In addition, the FDA regulates exports of medical devices. Failure to comply with these regulatory requirements or obtain and maintain required approvals, clearances and certifications could impair our ability to commercialize our products for diagnostic use outside of the United States.

Our products could become subject to government regulation as medical devices by the FDA and other regulatory agencies even if we do not elect to seek regulatory clearance or approval to market our products for diagnostic purposes, which would adversely impact our ability to market and sell our products and harm our business. If our products become subject to FDA regulation, the regulatory clearance or approval and the maintenance of continued and post-market regulatory compliance for such products will be expensive, time-consuming and uncertain both in timing and in outcome.

We do not currently expect our workflow automation and reagent solutions to be subject to the clearance or approval of the FDA, as it is not intended to be used for the diagnosis, treatment or prevention of disease. However, as we expand our product line and the applications and uses of our current or products into new fields, certain of our future products could become subject to regulation by the FDA, or comparable international agencies, including requirements for regulatory clearance or approval of such products before they can be marketed. Also, even if our products are labeled, promoted and intended as RUO, the FDA or comparable agencies of other countries could disagree with our conclusion that our products are intended for research use only or deem our sales, marketing and promotional efforts as being inconsistent with RUO products. For example, our customers may independently elect to use our RUO labeled products in their own laboratory developed tests (LDTs) for clinical diagnostic use, which could subject our products to government regulation, and the regulatory clearance or approval and maintenance process for such products may be uncertain, expensive, and time-consuming. Regulatory requirements related to marketing, selling and distribution of RUO products could change or be uncertain, even if clinical uses of our RUO products by our customers were done without our consent. If the FDA or other regulatory authorities assert that any of our RUO products are subject to regulatory clearance or approval, our business, financial condition, or results of operations could be adversely affected.

The FDA has historically exercised enforcement discretion in not enforcing the medical device regulations against laboratories offering LDTs. However, on October 3, 2014, the FDA issued two draft guidance documents that set forth the FDA's proposed risk-based framework for regulating LDTs, which are designed, manufactured and used within a single laboratory. The draft guidance documents provide the anticipated details through which the FDA would propose to establish an LDT oversight framework, including premarket review for higher-risk LDTs, such as those that have the same intended use as FDA-approved or cleared companion diagnostic tests currently on the

market. In January 2017, the FDA announced that it would not issue final guidance on the oversight of LDTs and manufacturers of products used for LDTs, but would seek further public discussion on an appropriate oversight approach, and give Congress an opportunity to develop a legislative solution.

As manufacturers develop more complex diagnostic tests and diagnostic software, the FDA may increase its regulation of LDTs. Any future legislative or administrative rule making or oversight of LDTs, if and when finalized, may impact the sales of our products and how customers use our products, and may require us to change our business model in order to maintain compliance with these laws. We cannot predict how these various efforts will be resolved, how Congress or the FDA will regulate LDTs in the future, or how that regulatory system will impact our business. Changes to the current regulatory framework, including the imposition of additional or new regulations, including regulation of our products, could arise at any time during the development or marketing of our products, which may negatively affect our ability to obtain or maintain FDA or comparable regulatory approval of our products, if required. Further, sales of devices for diagnostic purposes may subject us to additional healthcare regulation and enforcement by the applicable government agencies. Such laws include, without limitation, state and federal anti-kickback or anti-referral laws, healthcare fraud and abuse laws, false claims laws, privacy and security laws, Physician Payments Sunshine Act and related transparency and manufacturer reporting laws, and other laws and regulations applicable to medical device manufacturers.

Additionally, on November 25, 2013, the FDA issued Final Guidance “Distribution of In Vitro Diagnostic Products Labeled for Research Use Only.” The guidance emphasizes that the FDA will review the totality of the circumstances when it comes to evaluating whether equipment and testing components are properly labeled as RUO. The final guidance states that merely including a labeling statement that the product is for research purposes only will not necessarily render the device exempt from the FDA’s clearance, approval, and other regulatory requirements if the circumstances surrounding the distribution, marketing and promotional practices indicate that the manufacturer knows its products are, or intends for its products to be, used for clinical diagnostic purposes. These circumstances may include written or verbal sales and marketing claims or links to articles regarding a product’s performance in clinical applications and a manufacturer’s provision of technical support for clinical applications.

As part of the United States’ efforts to combat COVID-19 and consistent with Executive Orders 13771 and 13924, the Department of Health and Human Services (HHS) announced rescission of guidance and other informal issuances of the FDA regarding premarket review of LDT absent notice-and-comment rulemaking, stating that, absent notice-and-comment rulemaking, those seeking approval or clearance of, or an emergency use authorization, for an LDT may nonetheless voluntarily submit a premarket approval application, premarket notification or an Emergency Use Authorization request, respectively, but are not required to do so. However, laboratories opting to use LDTs without FDA premarket review or authorization would not be eligible for liability protection under the Public Readiness and Emergency Preparedness Act. While this action by HHS is expected to reduce the regulatory burden on clinical laboratories certified under the Clinical Laboratory Improvement Amendments of 1988 that develop LDTs, it is unclear how this action as well as future legislation by federal and state governments and the FDA will impact the industry, including our business and that of our customers. Such HHS measure may compel the FDA to formalize earlier enforcement discretionary policies and informal guidance through notice-and-comment rulemaking and impose further restrictions on LDTs. HHS’ rescission policy may change over time. Congress could also enact legislation restricting LDTs. Any restrictions on LDTs by the FDA, HHS, Congress or state regulatory authorities may decrease the demand for our products. The adoption of new restrictions on RUO products, whether by the FDA or Congress, could adversely affect demand for our products. Further, we could be required to obtain premarket clearance or approval before we can sell our products to certain customers.

Ethical, legal and social concerns surrounding the use of genetic information could reduce demand for our technology.

Our products may be used to create DNA sequences of humans, agricultural crops and other living organisms. Our products could be used in a variety of applications, which may have underlying ethical, legal and social concerns. Governmental authorities could, for safety, social or other purposes, impose limits on or implement regulation of the use of gene synthesis. Such concerns or governmental restrictions could limit the use of our DNA synthesis products, which could have a material adverse effect on our business, financial condition and results of operations. In addition, public perception about the safety and environmental hazards of, and ethical concerns over, genetically engineered products and processes could influence public acceptance of our technologies, products and processes. These concerns could result in increased expenses, regulatory scrutiny, delays or other impediments to our programs.

We use biological and hazardous materials that require considerable expertise and expense for handling, storage and disposal and may result in claims against us.

We work with materials, including chemicals, biological agents, and compounds and DNA samples that could be hazardous to human health and safety or the environment. Our operations and research and development processes also produce hazardous and biological waste products. Federal, state and local laws and regulations govern the use, generation, manufacture, storage, handling and disposal of these materials and wastes. Compliance with applicable environmental laws and regulations is expensive, and current or future environmental laws and regulations may restrict or have a material effect on our operations and research and development programs. If we do not comply with applicable regulations, we may be subject to fines and penalties.

In addition, accidental injury or contamination from these materials or wastes could interrupt our commercialization efforts, research and development programs and business operations, as well as cause environmental damage resulting in costly clean-up and liabilities under applicable laws and regulations. Furthermore, environmental laws and regulations are complex, change frequently and have tended to become more stringent. We cannot predict the impact of such changes and cannot be certain of our future compliance.

While our property insurance policy provides limited coverage in the event of contamination from hazardous and biological products and the resulting cleanup costs, we do not currently have any additional insurance coverage for legal liability for claims arising from the handling, storage or disposal of hazardous materials. Accordingly, in the event of contamination or injury, we could be liable for damages or penalized with fines in an amount exceeding our resources, and our operations could be suspended or otherwise adversely affected. We may not be able to maintain insurance on acceptable terms, if at all.

We could inadvertently develop DNA sequences or engage in other activity that contravenes biosecurity requirements, or regulatory authorities could promulgate more far reaching biosecurity requirements that our standard business practices cannot accommodate, which could give rise to substantial legal liability, impediments to our business and reputational damage.

The Federal Select Agent Program (FSAP) involves rules administered by the Centers for Disease Control and Prevention and the Animal and Plant Health Inspection Service that regulate possession, use and transfer of biological select agents and toxins that have the potential to pose a severe threat to public, animal or plant health or to animal or plant products.

We have established a biosecurity program under which we follow biosafety and biosecurity best practices and avoid DNA synthesis activities that implicate FSAP rules; however, we could inadvertently fail to comply with FSAP or other biosecurity rules. In addition, authorities could promulgate new biosecurity requirements that restrict our operations. One or more resulting legal penalties, restraints on our business or reputational damage could have material adverse effects on our business and financial condition.

We are currently subject to, and may in the future become subject to additional, U.S. federal and state laws and regulations imposing obligations on how we collect, store and process personal information. Our actual or perceived failure to comply with such obligations could harm our business. Ensuring compliance with such laws could also impair our efforts to maintain and expand our future customer base, and thereby decrease our revenue.

In the ordinary course of our business, we currently, and in the future will, collect, store, transfer, use or process sensitive data, including personally identifiable information of employees, and intellectual property and proprietary business information owned or controlled by ourselves and other parties. The secure processing, storage, maintenance, and transmission of this critical information are vital to our operations and business strategy. We are, and may increasingly become, subject to various laws and regulations, as well as contractual obligations, relating to data privacy and security in the jurisdictions in which we operate. The regulatory environment related to data privacy and security is increasingly rigorous, with new and constantly changing requirements applicable to our business, and enforcement practices are likely to remain uncertain for the foreseeable future. These laws and regulations may be interpreted and applied differently over time and from jurisdiction to jurisdiction, and it is possible that they will be interpreted and applied in ways that may have a material adverse effect on our business, financial condition, results of operations and prospects.

We are in the process of evaluating compliance needs, but we do not currently have in place formal policies and procedures related to the storage, collection and processing of information, and have not conducted any internal or external data privacy audits, to ensure our compliance with all applicable data protection laws and regulations. Additionally, we do not currently have policies and procedures in place for assessing our third-party vendors' compliance with applicable data protection laws and regulations. All of these evolving compliance and operational requirements impose significant costs, such as costs related to organizational changes, implementing additional protection technologies, training employees and engaging consultants, which are likely to increase over time. In addition, such requirements may require us to modify our data processing practices and policies, distract management or divert resources from other initiatives and projects, all of which could have a material adverse effect on our business, financial condition, results of operations and prospects. Any failure or perceived failure by us or our third-party vendors, collaborators, contractors and consultants to comply with any applicable federal, state or similar foreign laws and regulations relating to data privacy and security, or could result in damage to our reputation, as well as proceedings or litigation by governmental agencies or other third parties, including class action privacy litigation in certain jurisdictions, which would subject us to significant fines, sanctions, awards, penalties or judgments, all of which could have a material adverse effect on our business, financial condition, results of operations and prospects.

Risks Related to Our Intellectual Property

If we are unable to obtain and maintain sufficient intellectual property protection for our products and technology, or if the scope of the intellectual property protection obtained is not sufficiently broad, our competitors could develop and commercialize products similar or identical to ours, and our ability to successfully commercialize our products and build a strong brand identity may be impaired.

We rely on patent protection as well as trademark, copyright, trade secret and other intellectual property rights protection and contractual restrictions to protect our proprietary products and technologies. Each of these types of measures provides limited protection and may not adequately protect our rights or permit us to gain or keep any competitive advantage. If we fail to obtain, maintain and protect our intellectual property, third parties may be able to compete more effectively against us. In addition, we may incur substantial litigation costs in our attempts to enforce our right in, defend against challenges to, or recover or restrict use of our intellectual property.

To the extent our intellectual property offers inadequate protection, or is found to be invalid or unenforceable, we would be exposed to a greater risk of direct competition. If our intellectual property does not adequately cover competitors' products, our competitive position could be adversely affected, as could our business, financial condition, results of operations and prospects. Both the patent application process and the process of managing patent and other intellectual property disputes can be time-consuming and expensive.

Our success depends in large part on our ability to obtain and maintain protection of the intellectual property, particularly patents we may own solely or jointly with, or license from, third parties, in the United States and in other countries of interest, with respect to our products and technologies. However, obtaining and enforcing patents is costly, time-consuming and complex. We may not be able to file and prosecute all necessary or desirable patent applications, or maintain, enforce and license any patents that may issue from such patent applications, at a reasonable cost or in a timely manner or in all jurisdictions. It is also possible that we will fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection. Moreover, we may not develop additional proprietary products, methods and technologies that are patentable. We may not have the right to control the preparation, filing and prosecution of patent applications, or to maintain the rights to patents licensed from or to third parties; such patents and applications may not be prosecuted and enforced by such third parties in our best interests.

The patent position of synthetic biology technology companies is highly uncertain, involves complex legal and factual questions, and has been the subject of much litigation in recent years. Changes in either the patent laws or in interpretations of patent laws in the United States or other jurisdictions may diminish the value of our intellectual property. As a result, the issuance, scope, validity, enforceability, and commercial value of our patent rights are highly uncertain. It is possible that none of our pending patent applications will result in issued patents in a timely fashion or at all, and even if patents are granted, they may not provide a basis for intellectual property protection of commercially viable products or services, may not provide us with any competitive advantages. We cannot predict the breadth of claims that may be granted or enforced in our patents or in third-party patents. It is possible that third parties will design around our current or future patents such that we cannot prevent such third parties from using similar technologies and commercializing similar products to compete with us. Some of our owned or licensed

patents or patent applications may be challenged, and we may not be successful in defending any such challenge. Any successful third-party challenge to our patents could result in the narrowing, unenforceability or invalidity of such patents and increased competition with our business. The outcome of patent litigation or other proceeding can be uncertain, and any attempt by us to enforce our patent rights against others or to challenge the patent rights of others may not be successful, or, regardless of success, may take substantial time and result in substantial cost, and may divert our efforts and attention from other aspects of our business. Any of the foregoing events could have a material adverse effect on our business, financial condition and results of operations.

The U.S. law relating to the patentability of certain inventions in the synthetic biology technology industry is uncertain and rapidly changing, which may adversely impact our existing patents or our ability to obtain patents in the future.

Changes in either the patent laws or interpretation of the patent laws in the United States or in other jurisdictions could increase the uncertainties and costs surrounding the prosecution of patent applications and the enforcement or defense of issued patents. The U.S. Congress has recently passed legislation implementing significant changes to U.S. patent law.

Various courts including the U.S. Supreme Court have rendered decisions that impact the patentability and patent eligibility of inventions or discoveries relating to synthetic biology technology, including by narrowing the scope and strength of patent protection in some instances. In light of these developments and depending on actions by the U.S. Congress, the federal courts and the United States Patent and Trademark office (the USPTO), the laws and regulations governing patents could be interpreted and applied, or could change, in unpredictable ways that may have a material adverse effect on our ability to obtain new patents and to defend and enforce our existing patents and patents that we might obtain in the future.

We cannot assure you that our patent portfolio will not be negatively impacted by the current uncertain state of the law, new court rulings or changes in guidance or procedures issued by the USPTO or other patent offices around the world. From time to time, the U.S. Supreme Court, other federal courts, the U.S. Congress or the USPTO may change the standards of patentability, scope and validity of patents in areas including synthetic biology technology and any such changes, or any similar adverse changes in the patent laws and procedures of other jurisdictions, could have a negative impact on our business, financial condition, prospects and results of operations.

We may not be able to protect our intellectual property rights throughout the world.

Filing, prosecuting and defending patents on our products in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States can be less extensive than those in the United States.

The laws of some foreign countries do not protect intellectual property rights to the same extent as the laws of the United States. We may encounter difficulties in protecting and defending such rights in foreign jurisdictions. Consequently, we may not be able to prevent third parties from practicing our inventions in competition with us in some or all countries outside the United States, or from selling or importing products made using our inventions in and into the United States or other jurisdictions. Competitors and other third parties may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and technologies and may also export infringing products to territories where we do have patent protection but where enforcement may not be as strong as in the United States. Our patents or other intellectual property rights may not be effective or sufficient to prevent such third-party products from competing with our products. In addition, certain countries have compulsory licensing laws under which a patent owner may be compelled to grant licenses to other parties. Furthermore, many countries limit the enforceability of patents against certain kinds of third parties, including government agencies or government contractors. In these countries, the patent owner may have limited remedies, which could materially diminish the value of any patents.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of many other countries do not favor the enforcement of patents and other intellectual property protection, which could make it difficult for us to gain any meaningful competitive advantage from our patents or other intellectual property rights. The legal systems in certain countries may also favor state-sponsored or domestic companies over foreign companies, even though we may have patents and other intellectual property protection in these countries. The absence of harmonized intellectual property protection laws makes it difficult to ensure consistent treatment and enforcement of patent, trade secret, and other intellectual property rights

on a worldwide basis. As a result, it is possible that we will not be able to enforce our rights against third parties that misappropriate our proprietary technology or otherwise violate our intellectual property rights in any given country around the world.

Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial cost and divert our efforts and attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly and our patent applications at risk of not issuing, and could provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate, or that are initiated against us, and any damages or other remedies awarded to us may not be commercially meaningful. In addition, changes in the law and legal decisions by courts in foreign countries may affect our ability to obtain adequate protection for our products, services and other technologies and the enforcement of intellectual property. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license. Any of the foregoing events could have a material adverse effect on our business, financial condition, results of operations and prospects.

Issued patents covering our products could be found invalid or unenforceable if challenged.

Our owned and licensed patents and patent applications may be subject to validity, enforceability and priority disputes. The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability. Some of our patents or patent applications (including licensed patents and patent applications) may be challenged in opposition, interference or derivation, ex parte re-examination, inter partes review, post-grant review or other similar proceedings. Any successful third-party challenge to our patents in this or any other proceeding could result in the unenforceability or invalidity of such patents, which may lead to increased competition to our business, which could have a material adverse effect on our business, financial condition, results of operations and prospects. In addition, if we initiate legal proceedings against a third party to enforce a patent covering our products, the defendant could counterclaim that the patent we are asserting in the proceeding is invalid or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity or unenforceability are commonplace. There are numerous grounds upon which a third party can assert invalidity or unenforceability of a patent. Third parties may also raise similar claims before administrative bodies in the United States or abroad, outside the context of litigation per se. Such proceedings could result in revocation of or amendment to our patents in such a way that they no longer protect our products. The outcome following legal assertions of invalidity and unenforceability during patent litigation is unpredictable. If a defendant or other third party were to prevail on a legal assertion of invalidity or unenforceability, we would lose at least part, and perhaps all, of the patent protection on certain aspects of our products and technologies, which could have a material adverse effect on our business, financial condition, results of operations and prospects. In addition, if the breadth or strength of protection provided by our patents and patent applications is threatened, regardless of the outcome, it could dissuade companies from collaborating with us to license intellectual property or to develop or commercialize current or future products.

We may not be aware of all third-party intellectual property rights potentially relevant to our products, technology and services. Publications of discoveries in the scientific literature lag behind the discoveries, and patent applications in the United States and other jurisdictions are typically not published until approximately 18 months after the earliest effective filing date or, in some cases, not until such patent applications issue as patents. We might not have been the first to make the inventions claimed in each of our pending patent applications and we might not have been the first to file patent applications for these inventions. To determine the priority of these inventions, we may have to participate in interference or derivation proceedings in the U.S. or analogous proceedings in non-U.S. jurisdictions, which could result in substantial cost to us and the loss of valuable patent protection. No assurance can be given that other patent applications will not have priority over our patent applications. In addition, changes to the patent laws of the United States allow for various post-grant proceedings that have not been extensively tested, and their outcome is therefore uncertain. Furthermore, if third parties bring these proceedings against our patents, regardless of the merit of such proceedings and regardless of whether we are successful, we could experience significant costs and our management may be distracted. Any of the foregoing events could have a material adverse effect on our business, financial condition, results of operations and prospects.

If we are unable to protect the confidentiality of our trade secrets, the value of our technology could be materially adversely affected and our business could be harmed.

We rely heavily on trade secrets and confidentiality agreements to protect our unpatented know-how, technology and other proprietary information and to maintain our competitive position. However, trade secrets and know-how can be difficult to protect. In particular, we expect that with respect to our technologies, certain know how will over time be disseminated within the industry through independent development, the publication of journal articles describing the methodology, and the movement of personnel from academic to industry scientific positions.

In addition to pursuing patents on our technology, we take steps to protect our intellectual property and proprietary technology by entering into agreements, including confidentiality agreements, non-disclosure agreements and intellectual property assignment agreements, with our employees, consultants, academic institutions, corporate partners and, when needed, our advisers. However, we cannot be certain that such agreements have been entered into with all relevant parties, and we cannot be certain that our trade secrets and other confidential proprietary information will not be disclosed or that competitors or other third parties will not otherwise gain access to our trade secrets or independently develop substantially equivalent information and techniques. For example, any of the foregoing parties may breach the agreements and disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for such breaches. Such agreements may not be enforceable or may not provide meaningful protection for our trade secrets or other proprietary information in the event of unauthorized use or disclosure or other breaches of the agreements, and we may not be able to prevent such unauthorized disclosure, which could adversely impact our ability to establish or maintain a competitive advantage in the market, business, financial condition, results of operations and prospects.

Monitoring unauthorized disclosure is difficult, and we cannot guarantee that the steps we have taken to prevent such disclosure are adequate. If we were to enforce a claim that a third party had wrongfully obtained and was using our trade secrets, it could be expensive and time-consuming, it could distract our personnel, and the outcome would be unpredictable. In addition, courts outside the United States may be less effective in protecting trade secrets.

We also seek to preserve the integrity and confidentiality of our confidential proprietary information by maintaining physical security of our premises and physical and electronic security of our information technology systems, but it is possible that these security measures could be breached. If any of our confidential proprietary information were to be lawfully obtained or independently developed by a competitor or other third party, absent patent protection, we would have no right to prevent such competitor from using that technology or information to compete with us, which could harm our competitive position. Competitors or third parties could purchase our products and attempt to replicate the competitive advantages we derive from our development efforts with their own competitive technologies that fall outside the scope of our intellectual property rights. They might also independently develop our technologies without reference to our trade secrets. If any of our trade secrets were to be disclosed to or independently discovered by a competitor or other third party, it could materially and adversely affect our business, financial condition, results of operations and prospects.

We may be subject to claims challenging the inventorship or ownership of our patents and other intellectual property.

We may be subject to claims that former employees, collaborators or other third parties have an interest in our owned or in-licensed patents, trade secrets or other intellectual property as an inventor or co-inventor. For example, we may have inventorship or ownership disputes arising from conflicting obligations of employees, consultants or others who are involved in developing our products. In addition, counterparties to our consulting, sponsored research, software development and other agreements may assert that they have an ownership interest in intellectual property developed under such arrangements. In particular, certain software development agreements pursuant to which third parties have developed parts of our proprietary software may not include provisions that expressly assign to us ownership of all intellectual property developed for us by such third parties. Furthermore, certain of our sponsored research agreements pursuant to which we provide research services for third parties do not assign to us all intellectual property developed under such agreements. As such, we may not have the right to use all such developed intellectual property under such agreements, we may be required to obtain licenses from third parties and such licenses may not be available on commercially reasonable terms or at all, or they may be non-exclusive. If we are unable to obtain such licenses and such licenses are necessary for the development, manufacture and commercialization of our products and technologies, we may need to cease the development, manufacture and commercialization of our products and technologies. Litigation may be necessary to defend against these and other

claims challenging inventorship or ownership of our owned or in-licensed patents, trade secrets or other intellectual property. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights. In such an event, we may be required to obtain licenses from third parties and such licenses may not be available on commercially reasonable terms or at all, or they may be non-exclusive. If we are unable to obtain and maintain such licenses, we may need to cease the development, manufacture and commercialization of the relevant products and technologies. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees, and certain customers or partners may defer engaging with us until the particular dispute is resolved. Any of the foregoing could have a material adverse effect on our business, financial condition, results of operations and prospects.

We may not be able to protect and enforce our trademarks and trade names, or build name recognition in our markets of interest, thereby harming our competitive position.

The registered or unregistered trademarks or trade names that we use may be challenged, infringed, circumvented, declared generic, opposed, invalidated, cancelled or determined to be infringing on or dilutive of other marks. As a consequence, we may not be able to protect, register or maintain our rights in these trademarks and trade names.

Third parties may have prior rights in, or have filed, and may in the future file, for registration of, trademarks similar or identical to our trademarks in certain markets of interest that may block our ability to use or to register, or that may limit the scope of protection afforded to, our trademarks and trade names in such markets, thereby impeding our ability to protect, register, maintain or enforce our trademarks and trade names in all markets of interest and to build brand identity and possibly leading to litigation risks and market confusion.

If a third party succeeds in registering or developing common law rights in trademarks similar or identical to our trademarks that predate our rights, and if we are not successful in overcoming any objection from the USPTO or such third party based on or in challenging such rights and defending against challenges to our trademarks, we may not be able to use such trademarks to develop brand recognition of our technologies, products or services.

A third party with prior rights in a similar or identical trademark could challenge our use and registration of our trademarks and trade names by filing a trademark infringement court action or by seeking to block or cancel any registration for our trademarks through an opposition, cancellation, invalidity or other administrative proceeding. For example, we are currently engaged in litigation with Codexis, Inc., which is in the early stages, over the CODEX trademark and trade name. Codexis, Inc. initiated the litigation in the U.S. Federal Court for the Northern District of California asserting claims of federal and common law trademark infringement and unfair competition/false designation of origin regarding our use of the CODEX trademark and trade name based on Codexis, Inc.'s rights in the "CODEX" and "CODEXIS" trademarks, which are federally registered.

The outcome of any such trademark litigation or other proceeding can be uncertain. If we are unable to successfully defend against any such challenge, in addition to not being able to secure or maintain a registration for our trademark, we may be required, including by court order, to cease all further use of such trademark. Moreover, in the case of a trademark infringement action, a court may require us to issue corrective advertising or to take other steps as the court may deem necessary to remove or reduce the risk of consumer confusion, including changing our company name and rebranding our products. This would be expensive and could lead to a loss of brand recognition or customer confusion as a result. The court may also order us to pay damages (actual damages demonstrated at trial and a disgorgement of our profits), including treble damages and attorneys' fees if the court finds that we willfully infringed such third party trademark. Regardless of success, any such litigation or other proceeding may take substantial time and effort and result in substantial cost, and may divert our efforts and attention from other aspects of our business and could have a material adverse effect on our business, financial condition and results of operations.

Further, we have and may in the future enter into agreements with owners of such third party trade names or trademarks to avoid potential trademark litigation, which may limit our ability to use, register or enforce our trade names or trademarks in certain fields of business or in certain markets or which may place certain other restrictions on the use of our trademarks and trade names that could limit our ability to build a strong brand identity. If we are unable to establish name recognition based on our trademarks and trade names, then we may not be able to compete effectively, and our business, financial condition, results of operations and prospects may be adversely affected.

Patent terms may be inadequate to protect our competitive position on our workflow automation and reagent solutions for an adequate amount of time.

Patents have a limited lifespan. In the United States, if all maintenance fees are timely paid, the basic term of a utility patent is 20 years from its earliest effective non-provisional filing date. In the United States, the basic term of a patent may be lengthened by patent term adjustment, which compensates the patentee for certain administrative delays by the USPTO in examining and granting a patent, and it may be shortened by filing a terminal disclaimer over an earlier expiring patent. Even if a patent covering our products is obtained, once the patent life has expired, we would no longer be able to use the patent to exclude others from making or selling competitive products. If one of our products requires extended development, testing or regulatory review, patent protection for the product might expire soon after or even before the product is commercialized. As a result, our owned and licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours, which could have a material adverse effect on our business, financial condition and results of operations.

We may become involved in lawsuits to defend against third-party claims of infringement, misappropriation or other violations of intellectual property or to protect or enforce our intellectual property, any of which could be expensive, time consuming and unsuccessful, and may prevent or delay our development and commercialization efforts.

Our commercial success depends in part on our ability and the ability of future collaborators to develop, manufacture, market and sell our product and use our products and technologies without infringing, misappropriating or otherwise violating the intellectual property rights of third parties. There is a substantial amount of litigation involving patents and other intellectual property rights in the synthetic biology technology sector, as well as other proceedings for challenging patents, including interference, derivation, inter partes review, post grant review, reexamination proceedings, and pre- and post-grant oppositions. We may be exposed to, or threatened with, future litigation by third parties having patent or other intellectual property rights alleging that our products, manufacturing methods, software or technologies infringe, misappropriate or otherwise violate their intellectual property rights. Numerous issued patents and pending patent applications that are owned by third parties exist in the fields in which we are developing our products and technologies. It is not always clear to industry participants, including us, the claim scope that may issue from pending patent applications owned by third parties or which patents cover various types of products, technologies or their methods of use or manufacture. Because of the large number of patents issued and patent applications filed in our fields, there may be a risk that third parties, including our competitors, may allege that they have patent rights encompassing our products, technologies or methods and that we are employing their proprietary technology without authorization.

If third parties, including our competitors, believe that our products or technologies infringe, misappropriate or otherwise violate their intellectual property, such third parties may seek to enforce their intellectual property, including patents against us by filing an intellectual property-related lawsuit, including a patent infringement lawsuit, against us. Even if we believe third-party intellectual property claims are without merit, there is no assurance that a court would find in our favor on questions of misappropriation, infringement, validity, enforceability, or priority. If any third parties were to assert patents against us and we are unable to successfully defend against any such assertion, we may be required, including by court order, to cease the development and commercialization of the infringing products or technology and we may be required to redesign such products and technologies so they do not infringe such patents, which may not be possible or may require substantial monetary expenditures and time. We could also be required to pay damages, which could be significant, including treble damages and attorneys' fees if we are found to have willfully infringed such patents. We could also be required to obtain a license to such patents in order to continue the development and commercialization of the infringing product or technology; however such a license may not be available on commercially reasonable terms or at all, including because certain of these patents are held by or may be licensed to our competitors. Even if such license were available, it may require substantial payments or cross-licenses under our intellectual property rights, and it may only be available on a nonexclusive basis, in which case third parties, including our competitors, could use the same licensed intellectual property to compete with us. Any of the foregoing could have a material adverse effect on our business, financial condition, results of operation or prospects.

We may choose to challenge, including in connection with any allegation of patent infringement by a third party, the validity or enforceability of any third-party patent that we believe may have applicability in our field, and any other third-party patent that may be asserted against us. Such challenges may be brought either in court or by requesting that the USPTO, European Patent Office (EPO), or other patent offices review the patent claims, such as in an ex-

parte reexamination, inter partes review, post-grant review proceeding or opposition proceeding. However, there can be no assurance that any such challenge by us will be successful. Even if such proceedings are successful, these proceedings are expensive and may consume our time or other resources, distract our management and technical personnel, and the costs of the proceedings could be substantial.

Third parties, including our competitors, could be infringing, misappropriating or otherwise violating our owned and in-licensed intellectual property rights. Monitoring unauthorized use of our intellectual property is difficult and costly. We may not be able to detect unauthorized use of, or take effective steps to enforce, our intellectual property rights. From time to time, we seek to analyze our competitors' products and services, and may in the future seek to enforce our rights against potential infringement, misappropriation or violation of our intellectual property. However, the steps we have taken to protect our intellectual property rights may not be effective to enforce our rights as against such infringement, misappropriation or violation of our intellectual property. Any inability to meaningfully enforce our intellectual property rights could harm our ability to compete and reduce demand for our products and technologies.

Litigation proceedings may be necessary for us to enforce our patent and other intellectual property rights. In any such proceedings, a court may refuse to stop the other party from using the technology at issue on the grounds that our owned and in-licensed patents do not cover the technology in question. Further, in such proceedings, the defendant could counterclaim that our intellectual property is invalid or unenforceable and the court may agree, in which case we could lose valuable intellectual property rights, which could allow third parties to commercialize technology or products similar to ours and compete directly with us, without payment to us, or could require us to obtain license rights from the prevailing party in order to be able to manufacture or commercialize our products without infringing such party's intellectual property rights, and if we unable to obtain such a license, we may be required to cease commercialization of our products and technologies, any of which could have a material adverse effect on our business, financial condition, results of operations and prospects. The outcome in any such proceedings is unpredictable.

Regardless of whether we are the defending party or the party seeking to enforce rights in any intellectual property-related proceeding, and regardless of outcome, such proceedings that may be necessary in the future could result in substantial costs and diversion of resources and could have a material adverse effect on our business, financial condition, results of operations and prospects. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. In addition, there could be public announcements of the results of hearings, motions, or other interim proceedings or developments, and if securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock. Some of our competitors and other third parties may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their greater financial resources and more mature and developed intellectual property portfolios. We may not have sufficient financial or other resources to adequately conduct these types of litigation or proceedings. Any of the foregoing, or any uncertainties resulting from the initiation and continuation of any litigation, could have a material adverse effect on our ability to raise the funds necessary to continue our operations or could otherwise have a material adverse effect on our business, financial condition, results of operations and prospects. Claims that we have misappropriated the confidential information or trade secrets of third parties could have a similar adverse effect on our business, financial condition, results of operations and prospects.

Obtaining and maintaining our patent protection depends on compliance with various required procedures, document submissions, fee payments and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

Various official fees, including renewal fees, must be paid to the respective patent authorities to apply for, prosecute, and maintain patents and patent applications. The USPTO and other patent authorities also variously require compliance with a number of procedural and substantive provisions under local law and practice during and sometimes after the patent application process. In many cases, an inadvertent lapse in paying a fee or fulfilling another requirement can be cured by payment of a late fee or by other means in accordance with the applicable rules. However, there are situations in which non-compliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. In such an event, our competitors may be able to enter the market without infringing our patents and this circumstance would have a material adverse effect on our business, financial condition, results of operations and prospects.

We may be subject to claims that our employees, consultants or independent contractors have wrongfully used or disclosed confidential information of third parties or that our employees have wrongfully used or disclosed alleged trade secrets of their former employers.

We have employed and expect to employ individuals who were previously employed at universities or at other companies, including our competitors or potential competitors. Although we try to ensure that our employees, consultants, advisors and independent contractors do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that our employees, advisors, consultants or independent contractors have inadvertently or otherwise used or disclosed intellectual property, including trade secrets or other proprietary information, of their former employers or other third parties, or to claims that we have improperly used or obtained such trade secrets. Litigation may be necessary to defend against these claims. If we fail in defending such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights and face increased competition to our business. Any such litigation or the threat thereof may adversely affect our ability to hire employees or contract with advisors, contractors and consultants. A loss of key research personnel work product could hamper or prevent our ability to commercialize potential products, which could harm our business. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to management. This type of litigation or proceeding could substantially increase our operating losses and reduce our resources available for development activities. Some of our competitors may be able to sustain the costs of this type of litigation or proceedings more effectively than we can because of their substantially greater financial resources.

In addition, while it is our policy to require our employees and contractors who may be involved in the conception or development of intellectual property to execute agreements assigning such intellectual property to us, we may be unsuccessful in executing such an agreement with each party who, in fact, conceives or develops intellectual property that we regard as our own. The assignment of intellectual property rights may not be self-executing, or the assignment agreements may be breached, and we may be forced to bring claims against third parties, or defend claims that they may bring against us, to determine the ownership of what we regard as our intellectual property. Furthermore, individuals executing agreements with us may have pre-existing or competing obligations to a third party, such as an academic institution, and thus an agreement with us may be disputed or ineffective in perfecting ownership of inventions developed by that individual, which could have a material adverse effect on our business, financial condition, results of operations, and prospects.

Furthermore, we may in the future be subject to claims by former employees, consultants or other third parties asserting an ownership right in our owned or licensed patents or patent applications. An adverse determination in any such proceeding may result in loss of exclusivity or freedom to operate or in patent claims being narrowed, invalidated or held unenforceable, in whole or in part, which could limit our ability to stop others from using or commercializing similar technology, without payment to us, or could limit the duration of the overall patent protection covering our technology and products. Such challenges may also result in our inability to develop, manufacture or commercialize our products without infringing third-party patent rights. Any of the foregoing could harm our business, financial condition, results of operations and prospects.

If we cannot license rights to use technologies on reasonable terms, we may not be able to commercialize new products in the future.

We may identify third-party technology that we may need to license or acquire in order to develop or commercialize our products or technologies, including our workflow automation and reagent solutions. However, we may be unable to secure such licenses or acquisitions. The licensing or acquisition of third-party intellectual property rights is a competitive area, and several more established companies may pursue strategies to license or acquire third-party intellectual property rights that we may consider attractive or necessary. These established companies may have a competitive advantage over us due to their size, capital resources and greater commercialization capabilities. In addition, companies that perceive us to be a competitor may be unwilling to assign or license rights to us.

We also may be unable to license or acquire third-party intellectual property rights on terms that would allow us to make an appropriate return on our investment or at all. In return for the use of a third party's technology, we may agree to pay the licensor royalties based on sales of our products or services. Royalties are a component of cost of products or technologies and affect the margins on our products. We may also need to negotiate licenses to patents or patent applications before or after introducing a commercial product. We may not be able to obtain necessary licenses to patents or patent applications, and our business may suffer if we are unable to enter into the necessary

licenses on acceptable terms or at all, if any necessary licenses are subsequently terminated, if the licensor fails to abide by the terms of the license or fails to prevent infringement by third parties, or if the licensed intellectual property rights are found to be invalid or unenforceable.

Intellectual property rights do not necessarily address all potential threats.

The degree of future protection afforded by our intellectual property rights is uncertain because intellectual property rights have limitations, and may not adequately protect our business or permit us to maintain our competitive advantage. For example:

- others may be able to make products that are similar to products and technologies we may develop or utilize similar technology that are not covered by the claims of the patents that we own or license now or in the future;
- we might not have been the first to make the inventions covered by the issued patent or pending patent application that we license or may own in the future;
- we might not have been the first to file patent applications covering certain of our or their inventions;
- others may independently develop similar or alternative technologies or duplicate any of our technologies without infringing, misappropriating or otherwise violating our owned or licensed intellectual property rights;
- it is possible that our pending licensed patent applications or those that we may own in the future will not lead to issued patents;
- issued patents that we hold rights to may be held invalid or unenforceable as a result of legal challenges by our competitors;
- our competitors might conduct research and development activities in countries where we do not have patent rights and then use the information learned from such activities to develop competitive products for sale in our major commercial markets;
- we may not develop additional proprietary technologies that are patentable;
- the patents of others may harm our business; and
- we may choose not to file a patent for certain trade secrets or know-how, and a third party may subsequently file a patent covering such intellectual property.

Should any of these events occur, they could materially adversely affect our business, financial condition, results of operations and prospects.

Risks Related to this Offering and Ownership of Our Common Stock

Prior to this offering, there has been no public market for shares of our common stock and an active trading market for our common stock may never develop or be sustained.

Prior to this offering, there has been no public market for shares of our common stock. We intend to apply to list our common stock on the Nasdaq Global Market under the symbol “DNAY.” We cannot assure you that an active trading market for our common stock will develop on that exchange or elsewhere. If an active trading market does not develop, or develops but is not maintained, you may have difficulty selling any of our common stock that you purchase due to the limited public float. Accordingly, we cannot assure you of your ability to sell your shares of common stock when desired or the prices that you may obtain for your shares.

The market price of our common stock may be volatile, which could result in substantial losses for investors purchasing shares in this offering.

The initial public offering price for our common stock will be determined through negotiations with the underwriters. This initial public offering price may differ from the market price of our common stock after the offering. As a result, you may not be able to sell your common stock at or above the initial public offering price. Some of the factors that may cause the market price of our common stock to fluctuate include, but are not limited to:

- actual or anticipated fluctuations in our operating results, including fluctuations in our quarterly and annual results;
- operating expenses being more than anticipated;

- supply chain and production disruption due to our moving primary manufacturing facilities to a new location;
- the failure or discontinuation of any of our product development and research programs;
- changes in the structure or funding of research at academic and research laboratories and institutions, including changes that would affect their ability to purchase our products;
- the success of existing or new competitive businesses or technologies;
- announcements about new research programs or products of our competitors;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- the recruitment or departure of key personnel;
- litigation and governmental investigations involving us, our industry or both;
- regulatory or legal developments in the United States and other countries;
- variations in market conditions in the synthetic biology technology sector;
- investor perceptions of us or our industry;
- changes in estimates or recommendations by securities analysts, if any, that cover our common stock or companies that are perceived to be similar to us;
- whether our financial results meet the expectations of securities analysts or investors;
- the level of expenses related to any of our research and development programs or products;
- actual or anticipated changes in our estimates as to our financial results or development timelines;
- variations in our financial results or those of companies that are perceived to be similar to us;
- the announcement or expectation of additional financing efforts;
- sales of our common stock by us or sales of our common stock by our insiders or other stockholders;
- the expiration of market standoff or lock-up agreements;
- general economic, industry and market conditions; and
- the COVID-19 pandemic, natural disasters or major catastrophic events.

Recently, stock markets in general, and the market for life sciences technology companies in particular, have experienced significant price and volume fluctuations that have often been unrelated or disproportionate to changes in the operating performance of the companies whose stock is experiencing those price and volume fluctuations, particularly in light of the current COVID-19 pandemic. Broad market and industry factors may seriously affect the market price of our common stock, regardless of our actual operating performance. These fluctuations may be even more pronounced in the trading market for our stock shortly following this offering. Following periods of such volatility in the market price of a company's securities, securities class action litigation has often been brought against that company. Because of the potential volatility of our stock price, we may become the target of securities litigation in the future. Securities litigation could result in substantial costs and divert management's attention and resources from our business.

If securities analysts do not publish research or reports about our business or if they publish negative evaluations of our common stock, the price of our common stock could decline.

The trading market for our common stock will rely in part on the research and reports that industry or securities analysts publish about us or our business. We do not currently have and may never obtain research coverage by industry or securities analysts. If no or few analysts commence coverage of us, the trading price of our common stock could decrease. Even if we do obtain analyst coverage, if one or more of the analysts covering our business downgrade their evaluations of our common stock, the price of our common stock could decline. If one or more of these analysts cease to cover our common stock, we could lose visibility in the market for our common stock, which in turn could cause the price of our common stock to decline.

Our directors, officers and principal stockholders have significant voting power and may take actions that may not be in the best interests of our other stockholders.

As of December 31, 2020, our directors, officers and stockholders holding 5% or more of our outstanding common stock and their affiliates beneficially owned over 99% of our outstanding common stock in the aggregate, assuming the exercise of all options and warrants held by such persons and without giving effect to the purchase of shares by any such persons in this offering. As a result, these stockholders, if they act together, will be able to exert significant

influence over the management and affairs of our company and most matters requiring stockholder approval, including the election of directors and approval of significant corporate transactions. This concentration of ownership may have the effect of delaying or preventing a change in control, might adversely affect the market price of our common stock and may not be in the best interests of our other stockholders.

Sales of a substantial number of shares of our common stock by our existing stockholders following this offering could cause the price of our common stock to decline.

Sales of a substantial number of shares of our common stock in the public market could occur at any time following the expiration of the market standoff and lock-up agreements or the early release of these agreements or the perception in the market that the holders of a large number of shares of common stock intend to sell shares and could reduce the market price of our common stock. After giving effect to (i) the filing and effectiveness of our amended and restated certificate of incorporation, (ii) the automatic conversion of all shares of our convertible preferred stock outstanding as of December 31, 2020 into shares of common stock, (iii) the automatic exercise of all outstanding warrants issued to SGI as of December 31, 2020 into shares of our common stock and (iv) the issuance and sale of shares of common stock by us in this offering, we will have shares of common stock outstanding. Of these shares, the shares of common stock we are selling in this offering may be resold in the public market immediately, unless purchased by our affiliates. The remaining shares of common stock, or % of our outstanding shares of common stock after this offering are currently prohibited or otherwise restricted from being sold in the public market under securities laws, market standoff agreements entered into by our stockholders with us, or lock-up agreements entered into by our stockholders with the underwriters; however, subject to applicable securities law restrictions and excluding shares of common stock issued pursuant to the early exercise of unvested stock options that will remain unvested, the shares of our common stock outstanding after this offering will be able to be sold in the public market beginning on , 2021. The representatives may, in their sole discretion, release all or some portion of the shares subject to lock-up agreements at any time and for any reason. Shares issued upon the exercise of stock options outstanding under our equity incentive plans or pursuant to future awards granted under those plans will become available for sale in the public market to the extent permitted by the provisions of applicable vesting schedules, any applicable market standoff and lock-up agreements, and Rule 144 and Rule 701 under the Securities Act.

Moreover, after this offering, holders of an aggregate of shares of our common stock will have rights, subject to conditions, to require us to file registration statements with the SEC covering their shares or to include their shares in registration statements that we may file for ourselves or other stockholders as described under “Description of Capital Stock—Registration Rights.” We also plan to register all shares of common stock that we may issue under our equity compensation and employee stock purchase plans. Once we register these shares, they can be freely sold in the public market upon issuance and, if applicable, vesting, subject to volume limitations applicable to affiliates and the lock-up agreements described in the section titled “Underwriting” in this prospectus. Sales of common stock in the public market as restrictions end or pursuant to registration rights may make it more difficult for us to sell equity securities in the future at a time and at a price that we deem appropriate. These sales also could cause the trading price of our common stock to fall and make it more difficult for you to sell shares of our common stock. See the section titled “Shares Eligible for Future Sale” for more information regarding shares of common stock that may be sold in the public market after this offering.

We have broad discretion in the use of the net proceeds from this offering and may not use them effectively.

We cannot specify with certainty the particular uses of the net proceeds we will receive from this offering. Our management will have broad discretion in the application of the net proceeds, including for any of the purposes described in the section titled “Use of Proceeds” in this prospectus. Our management may spend a portion or all of the net proceeds from this offering in ways that our stockholders may not desire or that may not yield a favorable return. The failure by our management to apply these funds effectively could harm our business, financial condition, results of operations and prospects. Pending their use, we may invest the net proceeds from this offering in a manner that does not produce income or that loses value.

We do not expect to pay any dividends for the foreseeable future. Investors in this offering may never obtain a return on their investment.

You should not rely on an investment in our common stock to provide dividend income. We do not anticipate that we will pay any dividends to holders of our common stock in the foreseeable future. Instead, we plan to retain any

earnings to maintain and expand our existing operations, fund our research and development programs and continue to invest in our commercial infrastructure. In addition, our current credit facility with SVB contains, and any future credit facility or financing we obtain may contain, terms prohibiting or limiting the amount of dividends that may be declared or paid on our common stock. Accordingly, investors must rely on sales of their common stock after price appreciation, which may never occur, as the only way to realize any return on their investment. As a result, investors seeking cash dividends should not purchase our common stock.

Our amended and restated bylaws designate a state or federal court located within the State of Delaware as the exclusive forum for substantially all disputes between us and our stockholders, and also provide that the federal district courts will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act, each of which could limit our stockholders' ability to choose the judicial forum for disputes with us or our directors, officers, stockholders, or employees.

Our amended and restated certificate of incorporation that will become effective upon the closing of this offering specifies that, unless we consent in writing to the selection of an alternative forum, the sole and exclusive forum for (a) any derivative action or proceeding brought on our behalf, (b) any action asserting a claim of breach of a fiduciary duty owed by any of our current or former directors, stockholders, officers, or other employees to us or our stockholders, (c) any action or proceeding asserting a claim arising pursuant to, or seeking to enforce any right, obligation or remedy under, any provision of the Delaware General Corporation Law, our amended and restated certificate of incorporation, or our amended and restated bylaws, (d) any action or proceeding as to which the Delaware General Corporation Law confers jurisdiction on the Court of Chancery of the State of Delaware, or (e) any action or proceeding asserting a claim that is governed by the internal affairs doctrine shall be the Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, another state court in Delaware or, if no state court in Delaware has jurisdiction, the federal district court for the District of Delaware) and any appellate court therefrom, in all cases subject to the court having jurisdiction over the claims at issue and the indispensable parties; provided that the exclusive forum provision will not apply to suits brought to enforce any liability or duty created by the Exchange Act.

Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all such Securities Act actions. Accordingly, both state and federal courts have jurisdiction to entertain such claims. To prevent having to litigate claims in multiple jurisdictions and the threat of inconsistent or contrary rulings by different courts, among other considerations, our amended and restated bylaws also provide that the federal district courts of the United States of America will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act.

Any person or entity purchasing or otherwise acquiring or holding or owning (or continuing to hold or own) any interest in any of our securities shall be deemed to have notice of and consented to the foregoing bylaw provisions. Although we believe these exclusive forum provisions benefit us by providing increased consistency in the application of Delaware law and federal securities laws in the types of lawsuits to which each applies, the exclusive forum provisions may limit a stockholder's ability to bring a claim in a judicial forum of its choosing for disputes with us or any of our directors, officers, stockholders, or other employees, which may discourage lawsuits with respect to such claims against us and our current and former directors, officers, stockholders, or other employees. Our stockholders will not be deemed to have waived our compliance with the federal securities laws and the rules and regulations thereunder as a result of our exclusive forum provisions. Further, in the event a court finds either exclusive forum provision contained in our amended and restated bylaws to be unenforceable or inapplicable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could harm our results of operations.

Delaware law and provisions in our amended and restated certificate of incorporation and amended and restated bylaws that will be in effect prior to the closing of this offering might discourage, delay or prevent a change in control of our company or changes in our management and, therefore, depress the trading price of our common stock.

Our status as a Delaware corporation and the anti-takeover provisions of the Delaware General Corporation Law may discourage, delay or prevent a change in control by prohibiting us from engaging in a business combination with an interested stockholder for a period of three years after the person becomes an interested stockholder, even if a change of control would be beneficial to our existing stockholders. In addition, our restated certificate of

incorporation and restated bylaws contain provisions that may make the acquisition of our company more difficult, including the following:

- our board of directors will be classified into three classes of directors with staggered three-year terms and directors will only be able to be removed from office for cause by the affirmative vote of holders of at least two-thirds of the voting power of our then outstanding capital stock;
- certain amendments to our amended and restated certificate of incorporation will require the approval of stockholders holding two-thirds of the voting power of our then outstanding capital stock;
- any stockholder-proposed amendment to our amended and restated bylaws will require the approval of stockholders holding two-thirds of the voting power of our then outstanding capital stock;
- our stockholders will only be able to take action at a meeting of stockholders and will not be able to take action by written consent for any matter;
- our stockholders will be able to act by written consent only if the action is first recommended or approved by the board of directors;
- vacancies on our board of directors will be able to be filled only by our board of directors and not by stockholders;
- only the chair of the board of directors, chief executive officer, president or a majority of the board of directors are authorized to call a special meeting of stockholders;
- certain litigation against us can only be brought in Delaware;
- our restated certificate of incorporation authorizes undesignated preferred stock, the terms of which may be established and shares of which may be issued, without the approval of the holders of our capital stock; and
- advance notice procedures apply for stockholders to nominate candidates for election as directors or to bring matters before an annual meeting of stockholders.

These anti-takeover defenses could discourage, delay, or prevent a transaction involving a change in control of our company. These provisions could also discourage proxy contests and make it more difficult for stockholders to elect directors of their choosing and to cause us to take other corporate actions they desire, any of which, under certain circumstances, could limit the opportunity for our stockholders to receive a premium for their shares of our capital stock and could also affect the price that some investors are willing to pay for our common stock.

Our ability to use net operating losses to offset future taxable income may be subject to certain limitations.

As of December 31, 2020, we had U.S. federal and state net operating loss carryforwards (NOLs) of $28.4 million and $15.9 million, respectively. The federal NOLs of $1.3 million, generated before January 1, 2018, will begin to expire in 2034, but can be used to offset up to 100% of taxable income. Amounts generated after December 31, 2017 will carryforward indefinitely, but will be subject to a 80% taxable income limitation beginning in tax years after December 31, 2020, as provided by the Coronavirus Aid, Relief, and Economic Security Act (CARES Act). State NOLs, if not utilized, will begin to expire in 2036. We may use these NOLs to offset against taxable income for U.S. federal and state income tax purposes. Additionally, Section 382 of the Internal Revenue Code of 1986, as amended (the Code), may limit the NOLs we may use in any year for U.S. federal income tax purposes in the event of certain changes in ownership of our company. A Section 382 “ownership change” generally occurs if one or more stockholders or groups of stockholders who own at least 5% of a company’s stock increase their ownership by more than 50 percentage points over their lowest ownership percentage within a rolling three-year period. Similar rules may apply under state tax laws. We have not conducted a 382 study to determine whether the use of our NOLs is impaired. We may have previously undergone an “ownership change.” In addition, this offering or future issuances or sales of our stock, including certain transactions involving our stock that are outside of our control, could result in future “ownership changes.” “Ownership changes” that have occurred in the past or that may occur in the future, including in connection with this offering could result in the imposition of an annual limit on the amount of pre-ownership change NOLs and other tax attributes we can use to reduce our taxable income, potentially increasing and accelerating our liability for income taxes, and also potentially causing those tax attributes to expire unused. States may impose other limitations on the use of our NOLs. Any limitation on using NOLs could, depending on the extent of such limitation and the NOLs previously used, result in our retaining less cash after payment of U.S. federal and state income taxes during any year in which we have taxable income, rather than losses, than we would be entitled to retain if such NOLs were available as an offset against such income for U.S. federal and state income tax reporting purposes, which could adversely impact our operating results.

We are an "emerging growth company" and a "smaller reporting company" and the reduced disclosure requirements applicable to emerging growth companies and smaller reporting companies may make our common stock less attractive to investors.

We are an "emerging growth company," as defined in the JOBS Act. For so long as we remain an emerging growth company, we are permitted by SEC rules and plan to rely on exemptions from certain disclosure requirements that are applicable to other SEC registered public companies that are not emerging growth companies. These exemptions include not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes Oxley Act, not being required to comply with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the financial statements, reduced disclosure obligations regarding executive compensation and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved. As a result, the information we provide stockholders will be different than the information that is available with respect to other public companies. In this prospectus, we have not included all of the executive compensation related information that would be required if we were not an emerging growth company. To the extent that we continue to qualify as a "smaller reporting company," as such term is defined in Rule 12b-2 under the Exchange Act, after we cease to qualify as an emerging growth company, we will continue to be permitted to make certain reduced disclosures in our periodic reports and other documents that we file with the SEC. We cannot predict whether investors will find our common stock less attractive if we rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile.

In addition, the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. This allows an emerging growth company to delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have elected to avail ourselves of this exemption from new or revised accounting standards and, therefore, we will not be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies. As a result, our financial statements may not be comparable to companies that comply with new or revised accounting pronouncements as of public company effective dates.

We will incur significant increased costs and management resources as a result of operating as a public company, and our management will be required to devote substantial time to new compliance initiatives.

As a public company, we will incur significant legal, accounting, compliance and other expenses that we did not incur as a private company and these expenses may increase even more after we are no longer an "emerging growth company." Our management and other personnel will need to devote a substantial amount of time and incur significant expense in connection with compliance initiatives. For example, in anticipation of becoming a public company, we will need to adopt additional internal controls and disclosure controls and procedures, retain a transfer agent and adopt an insider trading policy. As a public company, we will bear all of the internal and external costs of preparing and distributing periodic public reports in compliance with our obligations under the securities laws.

In addition, regulations and standards relating to corporate governance and public disclosure, including the Sarbanes Oxley Act, and the related rules and regulations implemented by the SEC and Nasdaq, have increased legal and financial compliance costs and will make some compliance activities more time-consuming. We intend to invest resources to comply with evolving laws, regulations and standards, and this investment will result in increased general and administrative expenses and may divert management's time and attention from our other business activities. If our efforts to comply with new laws, regulations and standards differ from the activities intended by regulatory or governing bodies due to ambiguities related to practice, regulatory authorities may initiate legal proceedings against us, and our business may be harmed. In connection with this offering, we intend to increase our directors' and officers' insurance coverage, which will increase our insurance cost. In the future, it may be more expensive or more difficult for us to obtain director and officer liability insurance, and we may be required to accept reduced coverage or incur substantially higher costs to obtain coverage. These factors could also make it more difficult for us to attract and retain qualified members of our board of directors, particularly to serve on our audit committee and compensation committee, and qualified executive officers.

If you purchase our common stock in this offering, you will incur immediate and substantial dilution as a result of this offering.

If you purchase our common stock in this offering, you will incur immediate and substantial dilution of $ per share, representing the difference between the assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us, and our pro forma net tangible book value per share after giving effect to (i) the filing and effectiveness of our amended and restated certificate of incorporation, (ii) the automatic conversion of all shares of our convertible preferred stock outstanding as of December 31, 2020 into shares of common stock, (iii) the automatic exercise of all outstanding warrants issued to SGI as of December 31, 2020 into shares of our common stock and (iv) the issuance and sale of shares of common stock by us in this offering. As of December 31, 2020, there were shares of our common stock subject to outstanding stock options with a weighted-average exercise price of $ per share. To the extent that these outstanding stock options and warrants are ultimately exercised or the underwriters exercise their option to purchase additional shares of our common stock, you will incur further dilution. See the section titled “Dilution” for more information.

We may be subject to securities litigation, which is expensive and could divert management attention.

The market price of our common stock may be volatile. The stock market in general, and the Nasdaq Stock Market and life sciences technology companies in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of these companies. In the past, companies that have experienced volatility in the market price of their stock have been subject to securities class action litigation. We may be the target of this type of litigation in the future. Securities litigation against us could result in substantial costs and divert our management’s attention from other business concerns, which could seriously harm our business.

Our actual operating results may differ significantly from any guidance that we provide.

From time to time, we may provide guidance in our quarterly earnings conference calls, quarterly earnings releases, or otherwise, regarding our future performance that represents our management’s estimates as of the date of release. This guidance, which would include forward-looking statements, would be based on projections prepared by our management. Neither our registered public accountants nor any other independent expert or outside party would compile or examine the projections. Accordingly, no such person would express any opinion or any other form of assurance with respect to the projections. Projections are based upon a number of assumptions and estimates that, while presented with numerical specificity, are inherently subject to significant business, economic, and competitive uncertainties and contingencies, many of which are beyond our control and are based upon specific assumptions with respect to future business decisions, some of which will change. The principal reason that we would release guidance is to provide a basis for our management to discuss our business outlook with analysts and investors. We do not accept any responsibility for any projections or reports published by any such third parties. Guidance is necessarily speculative in nature, and it can be expected that some or all of the assumptions underlying any guidance furnished by us will not materialize or will vary significantly from actual results. Accordingly, our guidance would be only an estimate of what management believes is realizable as of the date of release. Actual results may vary from our guidance and the variations may be material.

If we fail to maintain an effective system of internal control over financial reporting, we may not be able to accurately report our financial results in a timely manner or prevent fraud, which would adversely affect investor confidence in our company and harm our business.

Effective internal controls over financial reporting are necessary for us to provide reliable financial reports and, together with adequate disclosure controls and procedures, are designed to prevent fraud. Any failure to implement required new or improved controls, or difficulties encountered in their implementation, could cause us to fail to meet our reporting obligations in a timely manner, or at all. In addition, any testing by us conducted in connection with Section 404(a) of the Sarbanes Oxley Act or any subsequent testing by our independent registered public accounting firm in connection with Section 404(b) of the Sarbanes Oxley Act, may reveal deficiencies in our internal controls over financial reporting that are deemed to be significant deficiencies or material weaknesses or that may require prospective or retroactive changes to our financial statements or identify other areas for further attention or

improvement. Ineffective internal controls could also cause investors to lose confidence in our reported financial information, which could have a negative effect on the trading price of our common stock.

In addition, as of December 31, 2020, we identified a significant deficiency in our internal controls over financial reporting that exists as a result of the technical categorization of transactions with a supplier. A significant deficiency is a deficiency, or a combination of deficiencies, in internal controls over financial reporting that is less severe than a material weakness, yet important enough to merit attention by those responsible for oversight of the company's financial reporting. We undertook steps to remedy this significant deficiency by our engagement of technical accounting consultants to assist management in determining the accounting treatment of unusual transactions and in evaluating new accounting positions and remediated this significant deficiency prior to the issuance date of our 2020 consolidated financial statements.

We will be required to disclose material changes made in our internal controls over financing reporting and procedures on a quarterly basis and our management will be required to assess the effectiveness of these controls annually. Beginning with our second Annual Report on Form 10-K after we become a public company, we will be required to make a formal assessment of the effectiveness of our internal control over financial reporting, and once we cease to be an emerging growth company, we will be required to include an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. However, for as long as we are an “emerging growth company” under the JOBS Act, our independent registered public accounting firm will not be required to attest to the effectiveness of our internal controls over financial reporting pursuant to Section 404(b).

To achieve compliance with Section 404(a) within the prescribed period, we will be engaging in a process to document and evaluate our internal control over financial reporting, which is both costly and challenging. In this regard, we will need to continue to dedicate internal resources, potentially engage outside consultants and adopt a plan to assess and document the adequacy of our internal control over financial reporting, continue steps to improve control processes as appropriate, validate through testing that controls are designed and operating effectively and implement a continuous reporting and improvement process for internal control over financial reporting.

We could be an “emerging growth company” for up to five years. An independent assessment of the effectiveness of our internal controls could detect problems that our management’s assessment might not identify. Undetected material weaknesses in our internal controls could lead to financial statement restatements and require us to incur the expense of remediation.

If our estimates or judgments relating to our critical accounting policies are based on assumptions that change or prove to be incorrect, our results of operation could fall below our publicly announced guidance or the expectations of securities analysts and investors, resulting in a decline in the market price of our common stock.

The preparation of financial statements in conformity with U.S. generally accepted accounting principles, or GAAP, requires management to make estimates and assumptions that affect the amounts reported in our financial statements and accompanying notes. We base our estimates on historical experience and estimates and on various other assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets, liabilities, equity, revenue and expenses that are not readily apparent from other sources. For example, in connection with the implementation of the new revenue accounting standard related to product sales, management makes judgments and assumptions based on our interpretation of the new standard. The new revenue standard is principle-based and interpretation of those principles may vary from company to company based on their unique circumstances. It is possible that interpretation, industry practice and guidance may evolve as we apply the new standard. If our assumptions underlying our estimates and judgements relating to our critical accounting policies change or if actual circumstances differ from our assumptions, estimates or judgements, our operating results may be adversely affected and could fall below our publicly announced guidance or the expectations of securities analysts and investors, resulting in a decline in the market price of our common stock.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements that are based on our management's beliefs and assumptions and on information currently available to our management. All statements other than statements of historical facts contained in this prospectus, including statements regarding our future results of operations and financial position, business strategy, development plans, expected research and development costs, regulatory strategy, timing, and likelihood of success, as well as plans and objectives of management for future operations, are forward-looking statements. In some cases, you can identify forward-looking statements by terms such as "aim," "anticipate," "assume," "believe," "contemplate," "continue," "could," "due," "estimate," "expect," "goal" "intend," "may," "objective" "plan," "predict," "potential," "project," "seek," "should," "target," "will," "would," and other similar expressions that are predictions of or indicate future events and future trends, or the negative of these terms or other comparable terminology. Forward-looking statements contained in this prospectus include, but are not limited to, statements about:

- estimates of the synthetic biology market, market growth, and new market expansion;
- our future revenue, expenses, capital requirements and our needs for additional financing;
- our expectations regarding the rate and degree of market acceptance of our BioXp system, BioXp kits and benchtop reagents;
- the ability of our products to facilitate the *design-build-test* paradigm of synthetic biology;
- the size and growth of the synthetic biology market and competitive companies and technologies and our industry;
- our ability to manage and grow our business;
- our ability to develop and commercialize new products;
- our ability to establish and maintain intellectual property protection for our products or avoid or defend claims of infringement;
- the performance of third-party manufacturers and suppliers and our ability to qualify second-source suppliers;
- the potential effects of government regulation;
- our ability to hire and retain key personnel and to manage our future growth effectively;
- our ability to obtain additional financing in this or future offerings;
- the volatility of the trading price of our common stock;
- the impact of local, regional, and national and international economic conditions and events;
- the impact of COVID-19 on our business;
- our expectations about market trends;
- our anticipated use of our existing resources and the net proceeds from this offering; and
- other risks and uncertainties, including those listed in the section titled "Risk Factors."

We have based these forward-looking statements largely on our current expectations and projections about our business, the industry in which we operate and financial trends that we believe may affect our business, financial condition, results of operations and prospects, and these forward-looking statements are not guarantees of future performance or development. These forward-looking statements speak only as of the date of this prospectus and are subject to a number of risks, uncertainties and assumptions described in the section titled "Risk Factors" and elsewhere in this prospectus. Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified, you should not rely on these forward-looking statements as predictions of future events. The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained herein until after we distribute this prospectus, whether as a result of any new information, future events or otherwise.

In addition, statements that "we believe" and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date of this prospectus, and while we believe such information forms a reasonable basis for such statements, such information may be limited or

incomplete, and our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain and you are cautioned not to unduly rely upon these statements.

MARKET, INDUSTRY AND OTHER DATA

This prospectus contains estimates, projections and other information concerning our industry, our business and the markets for our current and future products, including data regarding the estimated size of such markets and the incidence of certain medical conditions. We obtained the industry, market and similar data set forth in this prospectus from our internal estimates and research, including surveys and studies we have sponsored or conducted, and from academic and industry research, publications, surveys and studies conducted by third parties, including governmental agencies. In some cases, we do not expressly refer to the sources from which this data is derived. Information that is based on estimates, forecasts, projections, market research or similar methodologies is inherently subject to uncertainties and actual events or circumstances may differ materially from events and circumstances that are assumed in this information. While we believe that the data we use from third parties are reliable, we have not separately verified this data. Any industry forecasts are based on data (including third-party data), models, and experience of various professionals and are based on various assumptions, all of which are subject to change without notice. Further, while we believe our internal research is reliable, such research has not been verified by any third party. While we are not aware of any misstatements regarding the market data presented herein, industry forecasts and projections involve risks and uncertainties and are subject to change based on various factors, including those discussed in the section titled “Risk Factors.”

USE OF PROCEEDS

We estimate that the net proceeds to us from the sale of the shares of our common stock in this offering will be approximately $ million, or approximately $ million if the underwriters exercise their option to purchase additional shares in full, based upon the assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

Each $1.00 increase or decrease in the assumed initial public offering price of $ per share would increase or decrease, as applicable, the net proceeds to us from this offering by approximately $ million, assuming the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. Similarly, each increase or decrease of 1.0 million shares in the number of shares offered by us would increase or decrease, as applicable, the net proceeds to us from this offering by approximately $ million, assuming that the assumed initial public offering price remains the same, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

We currently expect to use our net proceeds from this offering, together with our existing cash and available borrowings, for general corporate purposes, including working capital, and funding our research and development and sales and marketing activities. We may use a portion of the net proceeds to repay debt or expand our current business through strategic acquisitions or in-licenses of complimentary companies or technologies; however, we currently do not have any agreements or commitments to complete any such transactions and are not involved in negotiations regarding such transactions.

Based on our current operating plan, we believe that the net proceeds from this offering, together with our existing cash, available borrowings and short-term investments as of the date of this prospectus, will be sufficient to fund our operating expenses and capital expenditures for at least the next twelve months.

Our expected use of the net proceeds from this offering represents our intentions based upon our current plans and business conditions. We cannot predict with certainty all of the particular uses for the net proceeds to be received upon the completion of this offering or the amounts that we will actually spend on the uses set forth above and we may require additional funds in order to fully accomplish the specified uses listed above. As a result, our management will have broad discretion over the use of the net proceeds from this offering.

The amounts and timing of our actual expenditures will depend upon numerous factors including cash flows from operations, the extent and success of our commercial expansion, the extent and results of our research and development efforts, the anticipated growth of our business and any unforeseen cash needs.

Pending their uses, we plan to invest the net proceeds of this offering in short-term, interest-bearing, investment-grade instruments, including certificates of deposit or direct or guaranteed obligations of the U.S. government. We cannot predict whether the proceeds invested will yield a favorable return.

DIVIDEND POLICY

We have never declared or paid any cash dividends on our capital stock. We currently intend to retain any future earnings and do not expect to pay any dividends in the foreseeable future. In addition, the terms of our Loan and Security Agreement with Silicon Valley Bank restrict our ability to pay dividends. Any future determination to declare cash dividends will be made at the discretion of our board of directors, subject to applicable laws, and will depend on a number of factors, including our financial condition, results of operations, capital requirements, contractual restrictions, general business conditions and other factors that our board of directors may deem relevant, including restrictions in our current and future debt instruments, our future earnings, capital requirements, financial condition, prospects and applicable Delaware law, which provides that dividends are only payable out of surplus or current net profits.

CAPITALIZATION

The following table sets forth our cash and capitalization as of December 31, 2020:

- on an actual basis;
- on a pro forma basis, giving effect to (i) the automatic conversion of all outstanding shares of our convertible preferred stock into an aggregate of shares of common stock immediately prior to the completion of this offering, (ii) the automatic exercise of all outstanding warrants issued to SGI into an aggregate of shares of our common stock immediately prior to the completion of this offering, and (iii) the filing and effectiveness of our amended and restated certificate of incorporation immediately prior to the completion of this offering; and
- on a pro forma as adjusted basis to reflect (i) the pro forma adjustments set forth above and (ii) our issuance and sale of shares of common stock in this offering at the assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

The pro forma as adjusted information set forth below is illustrative only and will depend on the actual initial public offering price and other terms of this offering determined at pricing. You should read this information in conjunction with our consolidated financial statements and the related notes appearing elsewhere in this prospectus, as well as the sections titled “Selected Consolidated Financial Data” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations.”

	As of December 31, 2020		
	Actual	Pro Forma	Pro Forma As Adjusted
	(in thousands, except per share data)		
Cash	$	$	$
Derivative liabilities	$	$	$
Long-term debt, net of discount, including current portion			
Stockholders’ equity (deficit):			
Convertible preferred stock, $0.0001 par value; shares authorized, actual; shares issued and outstanding, actual; no shares authorized, issued or outstanding, pro forma and pro forma as adjusted			
Preferred stock, $0.0001 par value; shares authorized, actual; shares issued and outstanding, actual; shares authorized, issued or outstanding, pro forma and pro forma as adjusted			
Common stock, $0.0001 par value; shares authorized, actual; shares issued and outstanding, actual; shares authorized, pro forma; shares issued and outstanding, pro forma; shares authorized, pro forma as adjusted; shares issued and shares outstanding, pro forma as adjusted			
Additional paid-in capital			
Accumulated deficit			
Total stockholders' equity (deficit)			
Total capitalization	$	$	$

Each $1.00 increase or decrease in the assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, would increase or decrease, as applicable, each of our pro forma as adjusted cash, additional paid-in capital, total stockholders' equity (deficit) and total capitalization by $ million, assuming that the number of shares of common stock offered by us, as set forth on the cover page of this prospectus, remains the same, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. Similarly, each increase or decrease of 1.0 million shares in the number of shares of common stock offered by us would increase or decrease, as applicable each of our pro forma as adjusted cash, additional paid-in capital, total stockholders' equity (deficit) and total capitalization by $ million, assuming the assumed initial public offering price of $ per share, remains the same, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

If the underwriters' option to purchase additional shares is exercised in full, our pro forma as adjusted cash, additional paid-in capital, total stockholders' equity (deficit), and total capitalization as of December 31, 2020, would be $ million, $ million, $ million, and $ million, respectively.

The number of shares of our common stock to be issued and outstanding, pro forma and pro forma as adjusted in the table above is based on shares of our common stock outstanding as of December 31, 2020 (after giving pro forma effect to the automatic conversion of all of our outstanding convertible preferred stock and the automatic exercise of all of our outstanding warrants issued to SGI into an aggregate of shares of common stock immediately prior to the completion of this offering), and excludes:

- shares of common stock issuable upon the exercise of options granted under the 2019 Plan, outstanding as of December 31, 2020 with a weighted-average exercise price of $ per share;
- shares of common stock issuable upon the exercise of options granted under the 2021 Plan, after December 31, 2020 with a weighted-average exercise price of $ per share;
- shares of common stock issuable upon the exercise of warrants to purchase shares issued after December 31, 2020 with an exercise price of $ per share; and
- shares of common stock reserved for future issuance under our equity compensation plans, consisting of:
  - shares of common stock reserved for future issuance under our 2021 Plan, as of , 2021, which shares will be added to the shares to be reserved for future issuance under the 2021 SIP;
  - shares of common stock reserved for future issuance under our 2021 SIP, which will become effective in connection with this offering, as well as any automatic increases in the number of shares of common stock reserved for future issuance under this plan; and
  - shares of common stock reserved for future issuance under our ESPP, which will become effective in connection with this offering, as well as any automatic increases in the number of shares of common stock reserved for future issuance under this plan.

DILUTION

Investors purchasing our common stock in this offering will experience immediate and substantial dilution in the pro forma as adjusted net tangible book value of their shares of common stock. Dilution in pro forma as adjusted net tangible book value represents the difference between the initial public offering price of our common stock and the pro forma as adjusted net tangible book value per share of our common stock immediately after the offering.

Our historical net tangible book value as of December 31, 2020 was $(34.4) million, or $(2.28) per share of our common stock. Our historical net tangible book value is the amount of our total tangible assets less our total liabilities and convertible preferred stock, which is not included within our stockholders' equity (deficit). Historical net tangible book value per share represents historical net tangible book value divided by the number of shares of our common stock outstanding as of December 31, 2020.

Our pro forma net tangible book value as of December 31, 2020 was $ million, or $ per share of our common stock. Pro forma net tangible book value represents the amount of our total tangible assets less our total liabilities. Pro forma net tangible book value per share represents pro forma net tangible book value divided by the total number of shares outstanding as of December 31, 2020, after giving pro forma effect to the automatic conversion of all of our outstanding convertible preferred stock and the automatic exercise of all of our outstanding warrants issued to SGI into an aggregate of shares of common stock immediately prior to the completion of this offering, as if such conversion and exercise had occurred on December 31, 2020.

After giving further effect to our sale of shares of common stock in this offering at the assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us, our pro forma as adjusted net tangible book value as of December 31, 2020, would have been $ million, or $ per share. This represents an immediate increase in pro forma net tangible book value per share of $ to our existing stockholders and an immediate dilution in pro forma net tangible book value per share of $ to investors purchasing shares of common stock in this offering.

The following table illustrates this dilution on a per share basis to new investors (without giving effect to any exercise by the underwriters of their option to purchase additional shares):

Assumed initial public offering price per share		$
Historical net tangible book value per share of common stock as of December 31, 2020	$ (2.28)	
Increase per share in net tangible book value per share of common stock attributable to pro forma adjustments		
Pro forma net tangible book value per share of common stock as of December 31, 2020		
Increase in net tangible book value per share of common stock attributable to this offering		
Pro forma as adjusted net tangible book value per share of common stock after this offering		
Dilution per share of common stock to new investors participating in this offering		$

Each $1.00 increase or decrease in the assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, would increase or decrease, as applicable, the pro forma as adjusted net tangible book value per share after this offering by $ per share and the dilution to investors purchasing shares of common stock in this offering by $ per share, assuming the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. Similarly, each increase of 1.0 million shares in the number of shares offered by us would increase the pro forma as adjusted net

tangible book value per share after this offering by $ and decrease the dilution per share to investors purchasing shares of common stock in this offering by $, assuming no change in the assumed initial public offering price and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. Each decrease of 1.0 million shares in the number of shares offered by us would decrease the pro forma as adjusted net tangible book value per share after this offering by $ and increase the dilution per share to investors purchasing shares of common stock in this offering by $, assuming no change in the assumed initial public offering price and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

If the underwriters exercise their option to purchase additional shares of common stock in this offering in full at the assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus and assuming the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us, the pro forma as adjusted net tangible book value per share after this offering would be $ per share, and the dilution per share to investors purchasing shares of common stock in this offering would be $ per share.

The following table summarizes, on the pro forma as adjusted basis described above, as of December 31, 2020, the number of shares of common stock purchased from us, the total consideration paid, or to be paid, and the weighted-average price per share paid, or to be paid, by existing stockholders and by investors purchasing shares in this offering at the assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, before deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

	Shares Purchased		Total Consideration		Weighted-Average Price Per Share
(dollar amounts in thousands, expect per share amounts)	Number	Percent	Amount	Percent	
Existing stockholders before this offering		%	$	%	$
Investors purchasing shares in this offering					
Total		100 %	$	100 %	

The table above assumes no exercise of the underwriters' option to purchase additional shares in this offering. If the underwriters' option to purchase additional shares is exercised in full, the number of shares of our common stock held by existing stockholders would be reduced to % of the total number of shares of our common stock outstanding after this offering, and the number of shares of common stock held by investors purchasing shares of common stock in the offering would be increased to % of the total number of shares outstanding after this offering.

Each $1.00 increase or decrease in the assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, would increase or decrease, as applicable, the total consideration paid by investors purchasing shares in this offering by $ million, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same. Similarly, each increase or decrease of 1.0 million shares in the number of shares offered by us would increase or decrease, as applicable, the total consideration paid by investors purchasing shares in this offering by $ million, assuming no change in the assumed initial public offering price.

The foregoing tables and calculations (other than the historical net tangible book value calculation) are based on shares of our common stock outstanding as of December 31, 2020 (after giving pro forma effect to the automatic conversion of all of our outstanding convertible preferred stock and the automatic exercise of all of our outstanding warrants issued to SGI into an aggregate of shares of common stock immediately prior to the completion of this offering), and excludes:

- shares of common stock issuable upon the exercise of options granted under the 2019 Plan, outstanding as of December 31, 2020 with a weighted-average exercise price of $ per share;

- shares of common stock issuable upon the exercise of options granted under the 2021 Plan, after December 31, 2020 with a weighted-average exercise price of $ per share;
- shares of common stock issuable upon the exercise of warrants to purchase shares issued after December 31, 2020 with an exercise price of $ per share; and
- shares of common stock reserved for future issuance under our equity compensation plans, consisting of:
  - shares of common stock reserved for future issuance under our 2021 Plan, as of , 2021, which shares will be added to the shares to be reserved for future issuance under the 2021 SIP;
  - shares of common stock reserved for future issuance under our 2021 SIP, which will become effective in connection with this offering, as well as any automatic increases in the number of shares of common stock reserved for future issuance under this plan; and
  - shares of common stock reserved for future issuance under our ESPP, which will become effective in connection with this offering, as well as any automatic increases in the number of shares of common stock reserved for future issuance under this plan.

To the extent that any outstanding options are exercised or new options are issued under our equity benefit plans, or we issue additional shares of common stock or other securities convertible into or exercisable or exchangeable for shares of our capital stock in the future, there will be further dilution to investors purchasing shares of common stock in this offering.

SELECTED CONSOLIDATED FINANCIAL DATA

The following tables summarize our selected consolidated financial data for the periods and as of the dates indicated. Pursuant to the authority of the SEC under Rules 3-06 and 3-13 of Regulation S-X under the Securities Act, we have substituted audited consolidated financial statements for the period from March 8, 2019 through December 31, 2019 in place of audited consolidated financial statements for the fiscal year ended December 31, 2019. Because of the different length of time for which financial information is presented in the period from March 8 , 2019 through December 31, 2019 compared to that presented for the year ended December 31, 2020, our financial results for those periods are not comparable. We have derived the selected consolidated statement of operations data for the period from March 8, 2019 through December 31, 2019 and the year ended December 31, 2020, and the consolidated balance sheet data as of December 31, 2019 and 2020, from our audited consolidated financial statements appearing elsewhere in this prospectus. You should read the following selected consolidated financial data together with our consolidated financial statements and the related notes appearing elsewhere in this prospectus and the information in the section titled “Management’s Discussion and Analysis of Financial Condition and Results of Operations.”

	Period from March 8, 2019 (Inception) to December 31, 2019	Year Ended December 31, 2020
Statement of Operations and Comprehensive Loss Data (in thousands):		
Revenue:		
Product sales	$ 3,555	$ 5,131
Royalties	1,250	1,445
Total revenue	4,805	6,576
Cost of revenue	2,677	2,951
Gross profit	2,128	3,625
Operating expenses:		
Research and development	3,318	8,925
Sales and marketing	1,878	6,931
General and administrative	3,908	4,130
Total operating expenses	9,104	19,986
Loss from operations	(6,976)	(16,361)
Other income (expense):		
Interest expense	(1,490)	(690)
Change in fair value of derivative liabilities	62	(880)
Other income (expense), net	102	(74)
Loss before provision for income taxes	(8,302)	(18,005)
Provision for income taxes	—	(5)
Net loss and comprehensive loss	(8,302)	(18,010)
Net loss attributable to common stockholders	$ (8,302)	$ (18,010)
Net loss per share attributable to common stockholders—basic and diluted	$ (0.55)	$ (1.20)
Weighted average common stock outstanding—basic and diluted	15,000,000	15,004,616
Pro forma net loss per share attributable to common stockholders—basic and diluted (unaudited)[1]		$ (0.29)
Pro forma weighted average common stock outstanding—basic and diluted (unaudited)[1]		60,242,616

	December 31,	
	2019	2020
Balance Sheet Data (in thousands):		
Cash	$ 29,144	$ 13,463
Working capital[(2)]	29,712	11,556
Total assets	38,761	26,863
Long-term debt, net of discount, including current portion	4,472	4,686
Derivative liabilities	654	1,533
Convertible preferred stock	38,914	38,914
Total stockholders' equity (deficit)	(7,503)	(25,459)

(1) The unaudited pro forma basic and diluted weighted-average shares of common stock outstanding used in the calculation of unaudited pro forma basic and diluted net loss per share attributable to common stockholders for the year ended December 31, 2020 have been prepared to give effect to (i) the automatic conversion of all outstanding shares of our convertible preferred stock into common stock immediately prior to the closing of this offering and (ii) the automatic exercise of all outstanding warrants issued to SGI into an aggregate of shares of our common stock immediately prior to the closing of this offering, as if this offering had occurred on the later of the beginning of each period or the issuance date of the convertible preferred stock or warrants issued to SGI.

(2) We define working capital as current assets less current liabilities. See our financial statements included elsewhere in this prospectus for further details regarding our current assets and current liabilities.

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Unless the context otherwise requires, all references in this section to the "Company," "we," "us, or "our" refer to the business of Codex DNA, Inc. and its subsidiaries.

You should read the following discussion and analysis of our financial condition and results of operations together with the "Selected Consolidated Financial Data" section of this prospectus and our consolidated financial statements and the related notes appearing elsewhere in this prospectus. This discussion contains forward-looking statements that reflect our plans, estimates, and beliefs that involve risks and uncertainties. As a result of many factors, such as those set forth under the "Risk Factors" and "Special Note Regarding Forward-Looking Statements" sections and elsewhere in this proxy statement/prospectus, our actual results may differ materially from those anticipated in these forward-looking statements.

Overview

We are a leading synthetic biology company focused on enabling researchers to rapidly, accurately and reproducibly build or "write" high-quality synthetic DNA and mRNA that is ready to use in many downstream synthetic biology enabled markets. Our synthetic biology solution addresses the bottlenecks across the multi-step process of building DNA and mRNA, as well as the significant limitations of existing solutions that prevent the rapid building of virtually error-free DNA and mRNA at a useable scale. A key part of our solution is our BioXp system, an end-to-end automated workstation that fits on the benchtop and is broadly accessible due to its ease-of-use and hands-free automation. We believe our BioXp system can democratize synthetic biology by simplifying the process of building DNA and mRNA, thereby accelerating the discovery, development and production of novel high-value products, including antibody-based biologics, mRNA-based vaccines and therapeutics and precision medicines.

Our solution is comprised of our:

- *BioXp system*: the first and only commercially available push-button, walkaway, end-to-end automated workstation that empowers researchers to go from a digital DNA sequence to endpoint-ready synthetic DNA and mRNA in 8 to 24 hours;
- *BioXp portal*: a user-friendly online portal that offers an intuitive guided workflow and design tools for building new DNA sequences and assembling them into vector(s) of choice;
- *BioXp kits*: contain all the necessary building blocks and reagents, including our proprietary Gibson Assembly branded reagents, for specific synthetic biology workflow applications;
- *Cloud-based scripts*: product-specific and pre-validated scripts that optimize and simplify the use of the BioXp kits on the BioXp system; and
- *Benchtop reagents*: contain all the reagents necessary to proceed with a specific synthetic biology workflow on the benchtop using products generated on the BioXp system.

We have developed and commercialized products that include BioXp systems, including our current BioXp 3250 system, BioXp kits for generating a wide array of synthetic DNA and mRNA, and benchtop reagents that complement the automated synthetic biology workflow applications and workflow solutions. We believe that our integrated BioXp systems and BioXp kits represent the industry's leading synthetic biology workflow automation solution and provide us with a first mover advantage in the rapidly growing synthetic biology market. As part of our continuing effort to improve the processes of synthetic biology, we are currently developing next-generation BioXp systems and BioXp kits with the goal of transforming rapid demand-response workflows in synthetic biology and consolidating supply chains and enabling global distributed manufacturing for discovery, pre-clinical and clinical applications. We also use our BioXp 3250 system, BioXp kits and benchtop reagents to perform services for customers.

We were incorporated in the state of Delaware in March 2011, as Synthetic Genomics Solution, Inc., a wholly owned subsidiary of Synthetic Genomics, Inc. (SGI). We changed our name to SGI-DNA, Inc. (SGI-DNA) in February 2013. On March 8, 2019, SGI sold SGI-DNA to GATTACA Mining, LLC (GATTACA) by entering into a stock purchase agreement to sell all of our outstanding common and preferred stock in exchange for a $10 million non-recourse promissory note (the Purchase Note). We were a co-borrower with GATTACA on the Purchase Note. Subsequently,

we focused our efforts on launching new synthetic biology products and expanding our distribution and marketing efforts on our existing, research using only products. We also changed our name to Codex DNA, Inc. in March 2020.

We commercially launched our current synthetic biology solution in September 2019, which now includes the BioXp 3250 system, BioXp kits with associated cloud-based application scripts, and benchtop reagent kits. Since the introduction of our solution through March 1, 2021, we have launched seven BioXp kits, three benchtop reagent kits, and several other synthetic biology products, including 10 SARS-CoV-2 full-length genomes and RNA controls as well as our Vmax X2 cells. We have placed approximately 150 BioXp systems globally. We target customers in the fields of personalized medicine, biologics drug discovery, vaccine development, genome editing and cell and gene therapy. As of March 1, 2021, our customer base was composed of over 300 customers and included 17 of the 25 largest biopharmaceutical companies in the world ranked by 2020 revenue. Our customer base also includes leading academic research institutions, government institutions, CROs and synthetic biology companies.

Since our inception as a stand-alone company on March 8, 2019, we have devoted substantially all of our efforts to raising capital, organizing, and staffing our company, commercializing existing products and developing new products. To date, we have funded our operations with proceeds from the issuance of convertible notes and convertible preferred stock, payments received from royalties and product sales, and proceeds from borrowings under our credit facilities. Through December 31, 2020, we had received gross proceeds of $32.8 million from sales of our convertible preferred stock, $6.8 million from the issuance of our convertible notes and $5.0 million from borrowings under a loan and security agreement.

We have incurred significant operating losses since our inception. During the period from March 8, 2019 to December 31, 2019 and the year ended December 31, 2020, our revenue was $4.8 million and $6.6 million, respectively. As of December 31, 2020, we had cash of $13.5 million. Our ability to generate product revenue sufficient to achieve profitability will depend on the successful development and commercialization of our products. We reported net losses of $8.3 million and $18.0 million for the period from March 8, 2019 to December 31, 2019 and for the year ended December 31, 2020, respectively. As of December 31, 2020, we had an accumulated deficit of $26.3 million.

Impact of COVID-19

In December 2019, a novel strain of coronavirus, which causes the disease known as COVID-19, was reported to have surfaced in Wuhan, China. Since then, COVID-19 coronavirus has spread globally. In March 2020, the World Health Organization declared the COVID-19 outbreak a pandemic. The ongoing COVID-19 global and national health emergency has caused significant disruption in the international and United States economies and financial markets. The spread of COVID-19 has caused illness, quarantines, cancellation of events and travel, business and school shutdowns, reduction in business activity and financial transactions, labor shortages, supply chain interruptions and overall economic and financial market instability.

In response to public health directives and orders and to help minimize the risk of the virus to employees, we have taken precautionary measures, including implementing work-from home policies for certain employees. The COVID-19 pandemic has the potential to significantly impact our manufacturing supply chain, distribution or logistics and other services. Additionally, our service providers and their operations may be disrupted, temporarily closed or experience worker or supply shortages, which could result in additional disruptions or delays in shipments of purchased equipment, materials or the development of new products. To date, we have not suffered material supply chain disruptions.

The COVID-19 pandemic has had a mixed impact on our revenues. We sell our products to pharmaceutical and academic laboratories. Many such laboratories temporarily closed or reduced work hours due to the pandemic which reduced sales to existing customers. Furthermore, many business and academic conferences were cancelled and travel restrictions were imposed world-wide, which impacted customer acquisition and reduced sales. However, we were able to quickly develop new COVID-19 specific products and sell these and our existing products to entities working on COVID-19 products and vaccine development, which contributed to revenue growth.

We are not able to estimate the duration of the pandemic and potential impact on the business if disruptions or delays in shipments of product occur. In addition, a severe prolonged economic downturn could result in a variety of risks to the business, including weakened demand for product and a decreased ability to raise additional capital

when needed on acceptable terms, if at all. As the situation continues to evolve, we will continue to closely monitor market conditions and respond accordingly.

Components of Results of Operations

Revenue

Revenue consists of product sales and royalties. Net product sales primarily consist of sales of our BioXp systems, BioXp kits, benchtop reagents and biofoundry services. In providing biofoundry services, we use our own instruments and reagents to create DNA products for our customers. Royalties consist of fees charged for the grant of non-exclusive rights of our patents to third parties.

Historically, revenue growth has come from BioXp systems, BioXp kits and biofoundry services. Growth in BioXp systems sales has come from investments in direct and indirect distribution channels and new product introductions. Growth in BioXp kit sales has come from the growth of the installed base of BioXp systems and new application kits. Biofoundry services were launched late in 2019. Growth in biofoundry services has been driven by new product introductions and prospective customers using biofoundry services to validate our BioXp systems. We have also seen an increase in demand for our biofoundry services driven by COVID-19-related access problems to researchers' labs.

Cost of Revenue

Cost of revenue primarily consists of material and labor costs, freight and indirect overhead costs associated with sales of our BioXp instruments, BioXp reagents, benchtop reagents and biofoundry services. Cost of revenue also includes period costs related to certain inventory adjustment charges, and unabsorbed manufacturing and overhead costs, as well as any write-offs of inventory that fail to meet specification or are otherwise no longer suitable for commercial manufacture. Cost of revenue is expected to increase as revenue increases.

Research and Development Expenses

Research and development expenses include pre-production costs related to the design, development and improvement of our products and technologies, including employee compensation, benefits and related costs of sustaining our engineering teams, project material costs, third party fees paid to consultants, prototype development expenses, legal costs related to intellectual property, patent fees, and other costs incurred in the product design and development process. We expense research and development costs as incurred. Non-refundable advance payments that we make for goods or services to be received in the future are recorded as prepaid expenses. The prepaid amounts are expensed as the related goods are delivered or the services are performed, or when it is no longer expected that the goods will be delivered or the services rendered.

We expect that our research and development expenses will increase significantly, both in the near term and subsequently, in connection with our planned product development activities. At this time, we cannot accurately estimate or know the nature, timing and costs of the efforts that will be necessary to complete the development of any of our future products. The successful development and commercialization of our future products is highly uncertain. This is due to the numerous risks and uncertainties associated with product development and commercialization, including but not limited to the following:

- we can never be certain that we can solve any technical challenge;
- if such solution can be found, we can never be certain of the timing of such a solution;
- once we find a technical solution, we cannot be certain that the solution will be commercially feasible; and
- any solution may not be desired by our customers.

These uncertainties with respect to the development of any of our future products could significantly impact the costs and timing associated with the development of these products.

Sales and Marketing Expenses

Sales and marketing expenses include employee compensation, including compensation and benefits for sales, marketing, customer service, corporate development personnel and related administrative expenses. In addition, sales and marketing expenses also include costs for international employees and facility overhead based on headcount. We anticipate that our sales and marketing expenses will increase in the future as we increase our

headcount to support increasing sales and expanding our international operations. Sales and marketing costs are expensed as incurred.

General and Administrative Expenses

General and administrative expenses consist primarily of salaries and related costs for personnel in executive, finance, and administrative functions. General and administrative expenses also include legal fees relating to corporate matters; professional fees for accounting, auditing, tax and administrative consulting services; insurance costs, administrative travel expenses, other operating costs; and facility costs not otherwise included in research and development or sales and marketing expenses.

We anticipate that our general and administrative expenses will increase in the future as we increase our administrative headcount to support our continued research, development and commercialization activities. We also anticipate that we will incur significantly increased accounting, audit, legal, regulatory, compliance and director and officer insurance costs as well as investor and public relations expenses associated with operating as a public company. General and administrative expenses are expensed as incurred.

Other Income (Expense)

Interest Expense

Interest expense primarily consists of cash and non-cash interest on our term loan facilities, convertible notes, the Purchase Note, and our finance leases.

Change in Fair Value of Derivative Liabilities

In connection with the divestiture of our capital stock by SGI in March of 2019, SGI retained a participation right whereby SGI could receive property with a value equal to the net proceeds a person would receive as a holder of 6% of our common stock in a change of control transaction. SGI was also issued a warrant to purchase common stock, equal to 6% of the shares of common stock issued and outstanding as of the time of exercise, which will automatically be exercised immediately prior to the consummation of an initial public offering. This warrant and participation right were later amended in August 2019 to provide a warrant on 3,245,235 shares of common stock, a participation right to receive property with a value equal to the net proceeds a person would receive as a holder of 3,245,235 shares in a change of control transaction, and additional warrants equal to 3% of the shares sold in future equity financings prior to an initial public offering or certain change of control transactions. We classify this participation right as a liability on our consolidated balance sheet that we remeasure to fair value at each reporting date. We recognize changes in the fair value of this participation right as a component of other income (expense) in our consolidated statement of operations and comprehensive loss.

In connection with our Series A-1 convertible preferred stock financing in December 2019, we issued SGI warrants in connection with the participation right described above to purchase Series A-1 convertible preferred stock. We classify these warrants as a liability on our consolidated balance sheet that we remeasure to fair value at each reporting date. We recognize changes in the fair value of the warrant liability as a component of other income (expense) in our consolidated statement of operations and comprehensive loss. We will continue to recognize changes in the fair value of the warrant liability until the warrants are exercised, expire or qualify for equity classification. Immediately prior to the closing of this offering, the Series A-1 convertible preferred stock warrants will be net exercised into shares of common stock, and the fair value of the warrant liability at that time will be reclassified to stockholders equity.

In connection with the Loan and Security Agreement we entered into in September 2019 with Oxford Finance LLC (the 2019 Loan Agreement), we identified a contingent liability to pay a success fee to the lender as well as a contingent put option liability related to a contingent interest feature and acceleration clause. Under the 2019 Loan Agreement we issued a total of $5.0 million in secured promissory notes. The success fee contingent liability and the contingent put option liability are valued and separately accounted for in the accompanying consolidated financial statements. The fair value of the success fee was recorded as a discount to the notes and included within derivative liabilities on our consolidated balance sheet. We also include the contingent put option liability within derivative liabilities on our consolidated balance sheet as a long-term liability. We remeasure both derivatives to fair value at each reporting date, and recognize changes in the fair value as a component of other income (expense) in our consolidated statement of operations and comprehensive loss. We will continue to recognize changes in the fair

value of the success fee contingent liability until the success fee is paid. The contingent put option liability was extinguished when the 2019 Loan Agreement was terminated in March 2021.

Other Income (Expense),Net

Other income (expense), net consists primarily of gains on the disposal of fixed assets and losses on the disposal of intangible assets.

Income Taxes

Since our inception, we have not recorded any income tax benefits for the NOLs we have incurred in each year or for our earned research and development tax credits generated in each period, as we believe, based upon the weight of available evidence, that it is more likely than not that all of our NOLs and tax credit carryforwards will not be realized. As of December 31, 2019 and 2020, we had federal NOL carryforwards of $12.2 million and $28.4 million, respectively and state NOL carryforwards of $6.7 million and $15.9 million, respectively. The federal NOL carryforwards of $1.3 million generated before January 1, 2018 will begin to expire in 2034, but can be used to offset up to 100% of taxable income. Amounts generated after December 31, 2017 will carryforward indefinitely, but will be subject to 80% taxable income limitation beginning in tax years after December 31, 2020, as provided by the CARES Act. We have recorded a full valuation allowance against our net deferred tax assets at each balance sheet date.

On March 27, 2020, the CARES Act was passed by the U.S. Congress and signed into United States law. The CARES Act, among other things, includes certain provisions for individuals and corporations; however, these benefits did not impact our income tax provisions in the period or year presented given the existence of the full valuation allowance.

Results of Operations

Comparison of the period March 8, 2019 (inception) through December 31, 2019 and Year Ended December 31, 2020

The following table summarizes our results of operations for the period ended December 31, 2019 and for the year ended December 31, 2020:

	Period from March 8, 2019 (Inception) to December 31, 2019	Year Ended December 31, 2020	Change
	(in thousands)		
Revenue			
Product sales	$ 3,555	$ 5,131	$ 1,576
Royalties	1,250	1,445	195
Total revenue	4,805	6,576	1,771
Cost of revenue	2,677	2,951	274
Gross profit	2,128	3,625	1,497
Operating expenses:			
Research and development	3,318	8,925	5,607
Sales and marketing	1,878	6,931	5,053
General and administrative	3,908	4,130	222
Total operating expenses	9,104	19,986	10,882
Loss from operations	(6,976)	(16,361)	(9,385)
Other income (expense):			
Interest (expense) income	(1,490)	(690)	800
Change in fair value of derivative liabilities	62	(880)	(942)
Other income (expense), net	102	(74)	(176)
Total other income (expense), net	(1,326)	(1,644)	(318)
Loss before provision for income taxes	(8,302)	(18,005)	(9,703)
Provision for income taxes	—	(5)	(5)
Net loss	$ (8,302)	$ (18,010)	$ (9,708)

Revenue

The following table summarizes our revenue for the period ended December 31, 2019 and for the year ended December 31, 2020:

	Period from March 8, 2019 (Inception) to December 31, 2019	Year Ended December 31, 2020	Change
	(in thousands)		
Product sales	$ 3,555	$ 5,131	$ 1,576
Royalties	1,250	1,445	195
Total revenue	$ 4,805	$ 6,576	$ 1,771

Revenue for the period ended December 31, 2019 was $4.8 million, compared to $6.6 million for the year ended December 31, 2020. The increase of $1.8 million was primarily driven by a $1.6 million increase in product sales of BioXp instruments, a $0.8 million increase in biofoundry services due to the launch of a new product line in late 2019, a $0.3 million increase in reagent product sales, and a $0.2 million increase in royalties partially offset by a $1.1 million reduction due to the termination of a significant supply and service agreement with one of our customers, Gritstone Oncology, Inc. The revenues from this agreement, which are not expected to recur, accounted for 23% of revenue for the period ended December 31, 2019 and 0% for the period ended December 31, 2020.

Royalty revenue was largely attributable to one customer, New England Biolabs, which accounted for 26% of revenue for the period ended December 31, 2019 and 21% for the period ended December 31, 2020.

In 2020, the company developed several COVID-19 specific products in the biofoundry services and benchtop reagent product lines. Combined, these products accounted for 11% of revenue in the year ended December 31, 2020. In the future, we expect sales of COVID-19 specific products to decline.

Cost of Revenue

The following table summarizes our cost of revenue for the period ended December 31, 2019 and for the year ended December 31, 2020:

	Period from March 8, 2019 (Inception) to December 31, 2019	Year Ended December 31, 2020	Change
	(in thousands)		
Standard costs	$ 1,192	$ 1,970	$ 778
Shipping charges	134	265	131
Other costs	1,351	716	(635)
Total cost of revenue	$ 2,677	$ 2,951	$ 274

Cost of revenue for the period ended December 31, 2019 was $2.7 million, compared to $3.0 million for the year ended December 31, 2020. The increase of $0.3 million was primarily driven by a $0.8 million increase related to standard costs and a $0.1 million increase related to shipping charges driven by increasing units sold. These increases were offset by $0.6 million decrease in other costs. Other costs are composed of overhead, indirect costs, and manufacturing variances. The decrease in other costs was primarily driven by reduced manufacturing variances.

Research and Development Expenses

The following table summarizes our research and development expenses for the period ended December 31, 2019 and for the year ended December 31, 2020:

	Period from March 8, 2019 (Inception) to December 31, 2019	Year Ended December 31, 2020	Change
	(in thousands)		
Personnel expenses (including stock-based compensation)	$ 2,150	$ 5,300	$ 3,150
Professional services	107	1,911	1,804
Facility related and other	1,061	1,714	653
Total research and development expenses	$ 3,318	$ 8,925	$ 5,607

Research and development expenses for the period ended December 31, 2019 were $3.3 million, compared to $8.9 million for the year ended December 31, 2020. The increase of $3.2 million in personnel expenses was due to our increase in headcount related to our product development efforts. The increase of $1.8 million in professional

services is primarily due to increases in third-party consulting and temporary labor related to our product development efforts. The increase of $0.7 million in facility related and other expenses is directly attributable to the increases in personnel. Additionally, during 2020, we expanded our San Diego office, which increased our overall facility costs.

Sales and Marketing Expenses

The following table summarizes our sales and marketing expenses for the period ended December 31, 2019 and for the year ended December 31, 2020:

	Period from March 8, 2019 (Inception) to December 31, 2019	Year Ended December 31, 2020	Change
	(in thousands)		
Personnel expenses (including stock-based compensation)	$ 1,205	$ 5,055	$ 3,850
Professional services	363	1,207	844
Facility related and other	310	669	359
Total sales and marketing expense	$ 1,878	$ 6,931	$ 5,053

Sales and marketing expenses for the period ended December 31, 2019 were $1.9 million compared to $6.9 million for the year ended December 31, 2020. The increase of $3.9 million in personnel expenses was due to our increase in headcount related to our sales and marketing efforts. The increase of $0.8 million in outside professional services is primarily due to increases in our marketing activities in 2020. The increase of $0.4 million in facility related and other expenses is directly attributable to the increases in headcount of sales and marketing personnel.

General and Administrative Expenses

The following table summarizes our general and administrative expenses for the period ended December 31, 2019 and for the year ended December 31, 2020:

	Period from March 8, 2019 (Inception) to December 31, 2019	Year Ended December 31, 2020	Change
	(in thousands)		
Personnel expenses (including stock-based compensation)	$ 2,000	$ 2,411	$ 411
Professional services	1,156	937	(219)
Facility related and other	752	782	30
Total general and administrative expenses	$ 3,908	$ 4,130	$ 222

General and administrative expenses for the period ended December 31, 2019 were $3.9 million, compared to $4.1 million for the year ended December 31, 2020. The increase of $0.4 million in personnel expenses was due to our increase in headcount related to preparation for an initial public offering in 2021. The decrease of $0.2 million in professional services is primarily due to reduced costs of consulting and legal services, partially offset by increases to audit and accounting costs.

Other Income (Expense), Net

Other Income (expense), net for the period ended December 31, 2019 was $1.3 million, compared to $1.6 million for the year ended December 31, 2020. The change was primarily due to the change in fair value of derivative liabilities offset by a reduction in interest expense. The fair value change was due to the increase in the value of the underlying preferred stock, the likelihood of an initial public offering and reduced time to maturity of the term loan. The reduction in interest resulted primarily from the repayment in full of the Purchase Note.

Liquidity and Capital Resources

Sources of Liquidity

Since our inception, we have incurred significant operating losses. To date, we have funded our operations with proceeds from the sales of convertible notes, convertible preferred stock, payments received for royalties and product sales, and proceeds from borrowings. Through December 31, 2020, we have received gross proceeds of $32.8 million from sales of our convertible preferred stock, $6.8 million from the issuance of convertible notes and $5.0 million from borrowings under the 2019 Loan Agreement. As of December 31, 2020, we had cash of $13.5 million. Without giving effect to the anticipated net proceeds from this offering, we expect that our existing cash as of December 31, 2020, together with the proceeds from our 2021 Loan Agreement, will be sufficient to fund our operating expenses and capital expenditures through the end of 2021. We believe liquidity provided from our existing cash and available borrowings raise substantial doubt about our ability to fund our operating expenses and capital expenditures for the twelve months following the issuance date of our 2020 consolidated financial statements. We will need to raise additional capital to finance our operations, which cannot be assured.

We will continue to incur significant expenses and expect to incur increasing operating losses for the foreseeable future. We also expect that our expenses and capital expenditures will increase substantially in connection with our ongoing activities, particularly as we:

- seek to develop new products and services and hire additional research, development and engineering personnel;
- expand our distribution and marketing infrastructure to further commercialize current and future products and support our growing customer base;
- add operational, financial, and administrative systems and personnel to support growing sales;
- maintain, expand, enforce, defend and protect our intellectual property portfolio and provide reimbursement of third-party expenses related to our patent portfolio; and
- operate as a public company.

As a result, we will need substantial additional funding to support our continuing operations and pursue our growth strategy. Until such time as we can generate significant revenue from product sales, if ever, we expect to finance our operations through a combination of equity offerings, debt financings, or other capital sources, including collaborations with other companies, and other strategic transactions. We may be unable to raise additional funds or enter into such other agreements or arrangements when needed on favorable terms, or at all. If we fail to raise capital or enter into such agreements as, and when, needed, we may have to significantly delay, scale back, or discontinue the development and commercialization of one or more of our products.

The field of synthetic biology is rapidly developing and subject to numerous risks and uncertainties associated with new technologies and novel products. Consequently, we are unable to accurately predict the timing or amount of increased product sales or expenses or when, or if, we will be able to achieve or maintain profitability. Even if we are able to continue to generate significant product sales, we may not become profitable. If we fail to become profitable or are unable to sustain profitability on a continuing basis, then we may be unable to continue our operations at planned levels and be forced to reduce or terminate our operations.

Cash Flows

The following table summarizes our consolidated cash flows for the period ended December 31, 2019 and for the year ended December 31, 2020:

	Period from March 8, 2019 (Inception) to December 31, 2019	Year Ended December 31, 2020
	(in thousands)	
Net cash used in operating activities	$ (6,390)	$ (15,381)
Net cash used in investing activities	(79)	(204)
Net cash provided by (used in) financing activities	35,106	(96)
Net increase (decrease) in cash and restricted cash	$ 28,637	$ (15,681)

Operating Activities

During the period ended December 31, 2019, we used $6.4 million of cash in operations, primarily resulting from our net loss of $8.3 million, partially offset by net cash provided by changes in our operating assets and liabilities of $0.2 million and non-cash charges of $1.7 million. Net changes in our operating assets and liabilities for the period ended December 31, 2019 consisted primarily of a $0.7 million decrease in inventories, a $0.2 million increase in accounts payable, accrued payroll and accrued liabilities, and a $0.2 million increase in deferred rent, partially offset by a $0.9 million increase in accounts receivable. Non-cash charges consisted primarily of depreciation and amortization expense of $0.9 million, the change in fair value of derivative liabilities of $0.5 million, loss on disposal of assets of $0.2 million and non-cash interest on convertible notes of $0.1 million.

During the year ended December 31, 2020, operating activities used $15.4 million of cash, primarily resulting from our net loss of $18.0 million, partially offset by non-cash charges of $2.6 million. Non-cash charges consisted primarily of depreciation and amortization expense of $0.9 million as well as amortization of our right-of-use operating lease asset of $0.6 million and change in fair value of derivative liabilities of $0.9 million.

Investing Activities

During the period ended December 31, 2019 and the year ended December 31, 2020, net cash used in investing activities was $0.1 million and $0.2 million, respectively, consisting of purchases of property and equipment.

Financing Activities

During the period ended December 31, 2019, net cash provided by financing activities was $35.1 million, consisting primarily of net proceeds from the issuance of Series A convertible preferred stock and Series A-1 convertible preferred stock of $32.8 million. We also had borrowings of $11.3 million from the issuance of debt from convertible notes and a term loan, partially offset by the $8.9 million repayment of debt from the Purchase Note.

During the year ended December 31, 2020, net cash used in financing activities was $0.1 million, consisting primarily of principal payments on leased equipment.

2019 Loan and Security Agreement

On September 5, 2019, we entered into a Loan and Security Agreement with Oxford Finance LLC as the lender (the 2019 Loan Agreement). Under the 2019 Loan Agreement we borrowed a total of $5.0 million in secured loans. These loans were repaid in full in March 2021. These loans bore interest at the greater of (i) 8.79% per annum and (ii) the sum of (a) the thirty (30) day U.S. LIBOR rate reported in The Wall Street Journal on the last Business Day of the month that immediately precedes the month in which the interest will accrue, plus (b) 6.38%. They would have matured on October 1, 2023 and were secured by substantially all of our assets, other than our intellectual property, which was subject to a negative pledge. In connection with the 2019 Loan Agreement, we have a contingent obligation to pay Oxford a success fee of $0.8 million upon the completion of this offering. Upon the loan's inception and on December 31, 2019, the fair value of this success fee contingent liability was estimated to be $0.4 million and was recorded as a derivative liability on our consolidated balance sheet with the corresponding discount applied

against the notes. Issuance costs related to the loans, inclusive of the success fee contingent liability, were $0.5 million.

Payments on the loans were interest-only until May 1, 2021, followed by equal monthly principal payments and accrued interest through the scheduled maturity date of October 1, 2023.

We have identified a contingent liability to pay a success fee to the lender as well as a bifurcated compound derivative liability related to a contingent interest feature and acceleration clause (contingent put option). The success fee contingent liability and the bifurcated embedded derivative were valued and separately accounted for in the accompanying consolidated financial statements. The fair value of the success fee was recorded as a contingent liability within derivative liabilities on our consolidated balance sheet and corresponding discount to the loans under the 2019 Loan Agreement. We classify the contingent put option liability within derivative liabilities on our consolidated balance sheet. We remeasure both liabilities to fair value at each reporting date, and we recognize changes in the fair value as a component of other income (expense) in our consolidated statement of operations and comprehensive loss. We will continue to recognize changes in the fair value of the success fee contingent liability until the success fee is paid. The contingent put option liability was extinguished when the 2019 Loan Agreement was terminated in March 2021.

2021 Loan Agreement

On March 4, 2021, we entered into a Loan and Security Agreement with Silicon Valley Bank (SVB) as the lender (the 2021 Loan Agreement). Under the 2021 Loan Agreement, on March 5, 2021, we borrowed a $15.0 million senior secured term loan, the proceeds of which were used to repay all of our existing obligations under the 2019 Loan Agreement, with the remaining proceeds available for our working capital and general corporate purposes.

Under the 2021 Loan Agreement, SVB may elect to make a second term loan to us in a principal amount up to but not exceeding $5.0 million, as the lender may determine in the lender’s sole discretion.

In connection with the 2021 Loan Agreement, we issued to SVB a warrant to purchase a number of shares of preferred stock (the Preferred Warrant). The Preferred Warrant is exercisable into the number of preferred shares equal to $225,000 divided by the applicable warrant price. The Preferred Warrant also provides for the grant of additional shares upon the disbursement of an advance under the 2021 Loan Agreement. Such additional shares will be equal to 1.5% of the principal amount of the advance divided by the warrant price. The Preferred Warrant is exercisable at either the original purchase price of the Series A-1 convertible preferred stock or the next convertible preferred stock financing if such round is closed on or before August 1, 2021. If the class of convertible preferred stock which the warrant would be exercisable into is converted into common stock, the warrant holder would have the right to exercise the warrant for such number of common shares into which the preferred shares would have converted into had they been exercised prior to the conversion. Unless previously exercised, the Preferred Warrant will expire on March 4, 2031. No portion of the Preferred Warrant has been exercised.

The term loans bear interest at a per annum rate equal to the greater of (a) 4.0% above the prime rate and (b) 7.25%. The interest rate as of March 5, 2021 was 7.25% per annum. The loans are secured by substantially all of our assets, other than our intellectual property. We have also agreed not to encumber our intellectual property assets, except as permitted by the 2021 Loan Agreement.

The term loans mature on January 1, 2024; provided, the loan maturity date will be extended by one year to January 1, 2025, if SVB is satisfied that we have achieved at least $4.0 million in trailing three-month instruments and reagents revenue for any three-month period occurring after March 4, 2021 but ending on or before December 31, 2021, subject to confirmatory lender calls.

Payments on the term loans are interest-only until February 1, 2022, followed by equal principal payments and monthly accrued interest payments through the scheduled maturity date; provided, the interest-only period may be extended to August 1, 2022 if, on or before December 31, 2021, SVB is satisfied that we have achieved at least $4.0 million in trailing three-month product revenue for any three-month period occurring after March 4, 2021, but ending on or before December 31, 2021, subject to confirmatory lender calls.

We may elect to prepay the term loans, in whole but not in part, at any time. If we elect to voluntarily prepay the term loans before the scheduled maturity date, we are required to pay the lender a prepayment fee, equal to 3.0% of the then outstanding principal balance if the prepayment occurs on or before March 4, 2022, 2.0% of the outstanding

principal balance if the prepayment occurs after March 4, 2022, but on or before March 4, 2023, or 1.0% of the outstanding principal balance if the prepayment occurs after March 4, 2023, but on or before the scheduled maturity date. No prepayment fee is applicable to a mandatory prepayment of the loans upon an acceleration of the loans. Upon a voluntary or mandatory prepayment of the loans, we are also required to pay SVB's expenses and all accrued but unpaid interest on the loans through the prepayment date.

A final payment (the Final Payment) equal to $0.4 million will be due at the earlier of the maturity date, acceleration of the loans, or a voluntary or mandatory prepayment of the loans. The Final Payment is being accrued through interest expense using the effective interest method.

Under the 2021 Loan Agreement, we covenant to maintain as of the last day of each month, certain consolidated trailing three-month minimum revenue levels as set forth in the 2021 Loan Agreement.

The 2021 Loan Agreement includes customary representations and covenants that, subject to exceptions and qualifications, restrict our ability to do the following things: engage in mergers, acquisitions, and asset sales; transact with affiliates; undergo a change in control; engage in businesses that are not related to our existing business; add or change business locations; incur additional indebtedness; incur additional liens; make loans and investments; declare dividends or redeem or repurchase equity interests; and make certain amendments or payments in respect of any subordinated debt. In addition, the 2021 Loan Agreement contains customary affirmative covenants, including covenants regarding the payment of taxes and other obligations, maintenance of insurance, maintenance of our bank accounts, protection of our intellectual property, reporting requirements, compliance with applicable laws and regulations, and formation or acquisition of new subsidiaries.

The 2021 Loan Agreement also includes customary indemnification obligations and customary events of default, including, among other things, payment defaults, breaches of covenants following any applicable cure period, material misrepresentations, a failure of the loans or the lender's security interest in the collateral to have the priority as required under the 2021 Loan Agreement, a material adverse change as defined in the 2021 Loan Agreement (including without limitation as a result of a government approval having been revoked, rescinded, suspended, modified or not renewed), certain material judgments and attachments, and events relating to bankruptcy or insolvency. The 2021 Loan Agreement also contains a cross default provision under which, if a third party (under any agreement) has a right to accelerate indebtedness greater than $0.5 million, we would be in default of the 2021 Loan Agreement. During the continuance of an event of default, SVB may apply a default interest rate of an additional 5% to the outstanding loan balances, and SVB may declare all outstanding obligations immediately due and payable and may exercise other rights and remedies as set forth in the 2021 Loan Agreement and related loan documents. Acceleration would result in the payment of all outstanding loans, any default interest charged by the lender, all expenses of the lender and the Final Payment.

Funding Requirements

We expect our expenses to increase significantly in connection with our ongoing activities, particularly with respect to research and development efforts related to our future products and our efforts to expand sales of current products and to commercialize future products. In addition, upon the closing of this offering, we expect to incur additional costs associated with operating as a public company. The timing and amount of our operating and capital expenditures will depend largely on:

- the cost of developing new products that are commercially viable;
- the costs of marketing and selling our products globally; and
- the potential additional expenses attributable to adjusting our development plans (including any supply-related matters) due to the COVID-19 pandemic.

We believe that the net proceeds from this offering, together with our existing cash and available borrowings, will enable us to fund our operating expenses and capital expenditure requirements for the next twelve months.

Until such time, if ever, as we can generate substantial product revenue, we expect to finance our operations through a combination of equity offerings, debt financings, collaborations, strategic alliances and marketing, distribution or licensing arrangements. If we are unable to raise additional funds through equity or debt financings or other arrangements when needed, we may be required to delay, limit, reduce or terminate our research, product

development or future commercialization efforts, or grant rights to develop and market products that we would otherwise prefer to develop and market ourselves.

Contractual Obligations and Commitments

The following table summarizes our commitments to settle contractual obligations at December 31, 2020:

	Payments Due by Period				
	Total	Less than 1 Year	1 to 3 Years	4 to 5 Years	More than 5 Years
	(in thousands)				
Operating lease commitments [1]	$ 4,136	$ 967	$ 2,023	$ 1,146	$ —
Finance lease commitments [2]	184	99	85	—	—
Debt obligations [3]	6,011	1,744	2,245	2,022	—
					—
Total	$ 10,331	$ 2,810	$ 4,353	$ 3,168	$ —

(1) Consists of payments due for our lease of office space in San Diego, California that expires in January 2025.
(2) Consists of payments due for our leases of three pieces of equipment that expire between April 2021 and December 2022.
(3) Consists of the contractually required principal and interest payable under the 2019 Loan Agreement. For purposes of this table, the interest due under the 2019 Loan Agreement was calculated using an assumed interest rate of 8.79% per annum, which was the interest rate in effect as of December 31, 2020.

Off-Balance Sheet Arrangements

We did not have during the periods presented, and we do not currently have any, off-balance sheet arrangements, as defined in the rules and regulations of the SEC.

Critical Accounting Policies and Significant Judgments and Estimates

Our consolidated financial statements are prepared in accordance with GAAP. The preparation of our consolidated financial statements and related disclosures requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, costs and expenses, and the disclosure of contingent assets and liabilities in our consolidated financial statements. We base our estimates on historical experience, known trends and events, and various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. We evaluate our estimates and assumptions on an ongoing basis. Our actual results may differ from these estimates under different assumptions or conditions. While our significant accounting policies are described in more detail in Note 2 to our consolidated financial statements included elsewhere in this prospectus, we believe that the following accounting policies are those most critical to the judgments and estimates used in the preparation of our consolidated financial statements.

Revenue Recognition

To date, our revenues have consisted primarily of payments received related to product sales and royalty agreements. We adopted the provisions of ASU 2014-09, Revenue from Contracts with Customers (Topic 606), (ASC 606), at inception. Under ASC 606, we recognize revenue when our customers obtain control of the goods, warranty services are delivered or royalties are earned.

Revenue for our product sales is recognized upon delivery to the customer. Revenue related to product warranty arrangements is deferred and recognized over time, as services are delivered. To determine the appropriate amount of revenue to be recognized for arrangements determined to be within the scope of ASC 606, we perform the following five steps: (i) identification of the promised goods or services in the contract; (ii) determination of whether the promised goods or services are performance obligations including whether they are distinct in the context of the contract; (iii) measurement of the transaction price, including the assessment of the constraint on variable consideration; (iv) allocation of the transaction price to the performance obligations; and (v) recognition of revenue

when, or as we satisfy each performance obligation. As part of the accounting for arrangements under ASC 606, we must use significant judgment to determine: (a) the performance obligations based on the determination under step (ii) above; (b) the transaction price under step (iii) above; and (c) the standalone selling price for each performance obligation identified in the contract for the allocation of transaction price in step (iv) above. We also use judgment to determine whether milestones or other variable consideration, except for royalties and sales-based milestones, should be included in the transaction price as described below. The transaction price is allocated to each performance obligation based on the relative stand-alone selling price of each performance obligation in the contract, and we recognize revenue based on those amounts when, or as, the performance obligations under the contract are satisfied.

The standalone selling price is the price at which an entity would sell a promised good or service separately to a customer. Management estimates the standalone selling price of each of the identified performance obligations in our customer contracts, maximizing the use of observable inputs. Because we have not sold the same goods or services in our contracts separately to any customers on a standalone basis and there are no similar observable transactions in the marketplace, we estimate the standalone selling price of each performance obligation in our customer arrangements based on our estimate of costs to be incurred to fulfil our obligations associated with the performance, plus a reasonable margin.

We determined that our only contract liability under ASC 606 is deferred revenue. Amounts received prior to revenue recognition are recorded as deferred revenue in the consolidated balance sheet. Amounts expected to be recognized as revenue within the 12 months following the consolidated balance sheet date are classified as deferred revenue, current in the consolidated balance sheet. Amounts not expected to be recognized as revenue within the 12 months following the consolidated balance sheet date are classified as deferred revenue, net of current portion in the consolidated balance sheet. Amounts are recorded as accounts receivable when our right to consideration is unconditional.

Product Revenue, Net

We recognize revenue on product sales when the customer obtains control of our product, which occurs at a point in time (upon delivery to the customer). We recognize revenue on installation and training when the service has been rendered and warranty revenue over the warranty term. Product revenues are recorded net of variable consideration, including discounts.

Product Returns

We generally do not accept product returns and have received an insignificant amount of returns to date.

Royalty Revenue

We recognize royalty revenue based on historical customer submissions and payments resulting from license agreements we have with customers. The license agreements require our customers to pay us a fixed tiered percentage of sales based on the technology that we have licensed to them. Our customers submit their usage and payments on a quarterly or semiannual basis.

Inventories

Inventories are stated at the lower of cost or net realizable value. Cost is computed using standard cost, which approximates actual cost on a first-in, first-out basis. Net realizable value is evaluated by considering obsolescence, excess levels of inventory, deterioration and other factors. Adjustments to reduce the cost of inventory to its net realizable value, if required, are made for estimated excess, obsolescence or impaired inventory. Excess and obsolete inventory is charged to cost of revenue and a new, lower-cost basis for that inventory is established and subsequent changes in facts and circumstances do not result in the restoration or increase in that newly established cost basis.

Goodwill

We test goodwill for impairment on an annual basis, or more frequently if events or changes in circumstances indicate that the asset might be impaired. Our goodwill impairment tests are performed at the enterprise level as we have concluded that we have one reporting unit and that our chief operating decision maker is our chief executive officer and the executive management team. The fair value of the reporting unit was substantially in excess of the

carrying value of the reporting unit at each date impairment was tested and consequently we have not recorded any impairment of goodwill.

Acquired Intangible Assets

Acquired intangible assets consist of rights to technologies and trade names. We engaged third party valuation specialists to assist us with the initial measurement of the fair value of acquired intangible assets. Acquired intangible assets, other than goodwill, are amortized over their estimated useful lives based upon the estimated economic value derived from the related intangible assets.

Stock-Based Compensation

We measure all stock-based awards granted to employees and directors based on their fair value on the date of the grant using the Black-Scholes option-pricing model for options. Compensation expense for those awards is recognized over the requisite service period, which is generally the vesting period of the respective award for the employees and directors.

For stock-based awards granted to non-employees, the measurement date for non-employee awards is the date of the grant. The compensation expense for non-employees is recognized in the same manner as if we had paid cash in exchange for the goods or services, which is generally the vesting period of the award.

We use the straight-line method to record the expense of awards with service-based vesting conditions. As inputs, the Black-Scholes option-pricing model uses the fair value of our common stock and assumptions we make for the volatility of our common stock, the expected term of our common stock options, the risk-free interest rate for a period that approximates the expected term of our common stock options, our expected dividend yield, and an expected forfeiture rate.

Determination of Fair Value of Common Stock

As there has been no public market for our common stock to date, the estimated fair value of our common stock has been determined by our board of directors as of the date of each option grant, with input from management, considering our most recently available third-party valuations of common stock and our board of directors' assessment of additional objective and subjective factors that it believed were relevant and which may have changed from the date of the most recent valuation through the date of the grant. These third-party valuations were performed in accordance with the guidance outlined in the American Institute of Certified Public Accountants' Accounting and Valuation Guide, Valuation of Privately-Held-Company Equity Securities Issued as Compensation. Our common stock valuations were prepared using either an option pricing method (OPM), or a hybrid method, both of which used market approaches to estimate our enterprise value. The hybrid method also used an income approach to estimate our enterprise value. The hybrid method is a probability-weighted expected return method (PWERM), where the equity value is calculated based on income and market approaches, and that resulting equity value is allocated to the company’s classes of stock in one or more scenarios using an OPM. The PWERM is a scenario-based methodology that estimates the fair value of common stock based upon an analysis of future values for the company, assuming various outcomes. The common stock value is based on the probability-weighted present value of expected future investment returns considering each of the possible outcomes available as well as the rights of each class of stock. The future value of the common stock under each outcome is discounted back to the valuation date at an appropriate risk-adjusted discount rate and probability weighted to arrive at an indication of value for the common stock. A discount for lack of marketability of the common stock is then applied to arrive at an indication of value for the common stock. The OPM treats common stock and preferred stock as call options on the total equity value of a company, with exercise prices based on the value thresholds at which the allocation among the various holders of a company's securities changes. Under this method, the common stock has value only if the funds available for distribution to stockholders exceeded the value of the preferred stock liquidation preferences at the time of the liquidity event, such as a strategic sale or a merger. In addition to considering the results of these third-party valuations, our board of directors considered various objective and subjective factors to determine the fair value of our common stock as of each grant date, including:

- the prices at which we sold shares of preferred stock and the superior rights and preferences of the preferred stock relative to our common stock at the time of each grant;
- the progress of our research and development programs;
- our stage of development and our business strategy;

- external market conditions affecting the biopharmaceutical and synthetic biology industries and trends within those industries;
- our financial position, including cash on hand, and our historical and forecasted performance and operating results;
- the lack of an active public market for our common stock and our preferred stock;
- the likelihood of achieving a liquidity event, such as an initial public offering, or sale of our company in light of prevailing market conditions; and
- the analysis of initial public offerings and the market performance of similar companies in the biopharmaceutical industry.

The assumptions underlying these valuations represented management's best estimate, which involved inherent uncertainties and the application of management's judgment. As a result, if we had used significantly different assumptions or estimates, the fair value of our common stock and our stock-based compensation expense could have been materially different.

Once a public trading market for our common stock has been established in connection with the completion of this offering, it will no longer be necessary for our board of directors to estimate the fair value of our common stock in connection with our accounting for granted stock options and other such awards we may grant, as the fair value of our common stock will be determined based on the quoted market price of our common stock.

Options Granted

The following table summarizes by grant date the number of shares subject to options granted from January 1, 2020 through the date of this prospectus, the per share exercise price of the options, the per share fair value of our common stock on each grant date, and the per share estimated fair value of the options:

Grant Date	Number of Common Shares Subject to Options Granted	Exercise Price per Share	Estimated Per-Share Fair Value of Options[(1)]	Estimated Fair Value Per Share of Common Stock at Grant Date
January 29, 2020	538,500	$ 0.24	$ 0.09	$ 0.24
July 23, 2020	223,000	$ 0.24	$ 0.09	$ 0.24
October 22, 2020	147,750	$ 0.24	$ 0.09	$ 0.24
March 3, 2021	1,986,394	$ 1.46	$ 0.58	$ 1.46

(1) The estimated per share fair value of options reflects the weighted average fair value of options granted on each grant date, determined using the Black-Scholes option-pricing model.

The intrinsic value of options outstanding at December 31, 2020 is $2.9 million.

Recently Issued Accounting Pronouncements

A description of recently issued accounting pronouncements that may potentially impact our financial position and results of operations is disclosed in Note 2 to our consolidated financial statements appearing at the end of this prospectus.

Emerging Growth Company Status

In April 2012, the JOBS Act was enacted. Section 107 of the JOBS Act provides that an “emerging growth company,” or an EGC, can take advantage of the extended transition period provided in Section 7(a)(2)(B) of the Securities Act for complying with new or revised accounting standards. Thus, an EGC can delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have elected to use the extended transition period for new or revised accounting standards during the period in which we remain an emerging growth company; however, we may adopt certain new or revised accounting standards early.

We will remain an emerging growth company until the earliest to occur of: (i) the last day of the fiscal year in which we have more than $1.07 billion in annual revenue; (ii) the date we qualify as a “large accelerated filer,” with at least

$700.0 million of equity securities held by non-affiliates; (iii) the date on which we have issued more than $1.0 billion in non-convertible debt securities during the prior three-year period; and (iv) the last day of the fiscal year ending after the fifth anniversary of our initial public offering.

Quantitative and Qualitative Disclosures about Market Risks

As of December 31, 2019, and 2020, we had cash of $29.1 million and $13.5 million, respectively. Interest income is sensitive to changes in the general level of interest rates; however, due to the nature of these investments, an immediate 10% change in market interest rates would not have a material effect on the fair market value of our cash balance.

As of March 5, 2021, we had $15.0 million of borrowings outstanding under the 2021 Loan Agreement. Borrowings under the 2021 Loan Agreement bear interest at a rate equal to the greater of (a) 4.0% above the prime rate and (b) 7.25%. The prime interest rate as of March 5, 2021 was 3.25% per annum. An immediate 10% change in the 30-day prime rate would not have a material impact on our debt-related obligations, financial position or results of operations.

We are not currently exposed to significant market risk related to changes in foreign currency exchange rates. Our operations may be subject to fluctuations in foreign currency exchange rates in the future. We do not believe that inflation has had a material effect on our business, financial condition, or results of operations during the period ended December 31, 2019 and the year ended December 31, 2020. Our operations may be subject to inflation in the future.

BUSINESS

Overview

We are a leading synthetic biology company focused on enabling researchers to rapidly, accurately and reproducibly build or “write” high-quality synthetic DNA and mRNA that is ready to use in many downstream synthetic biology enabled markets. Our synthetic biology solution addresses the bottlenecks across the multi-step process of building DNA and mRNA, as well as the significant limitations of existing solutions that prevent the rapid building of virtually error-free DNA and mRNA at a useable scale. A key part of our solution is our BioXp system, an end-to-end automated workstation that fits on the benchtop and is broadly accessible due to its ease-of-use and hands-free automation. We believe our BioXp system can democratize synthetic biology by simplifying the process of building DNA and mRNA, thereby accelerating the discovery, development and production of novel high-value products, including antibody-based biologics, mRNA-based vaccines and therapeutics and precision medicines.

Synthetic biology involves the engineering of biological components from a digital DNA sequence, enabling the construction of macromolecules and organisms with new and improved biological functions. It is being used across multiple markets, including:

- healthcare, to discover, develop and produce novel therapeutics and vaccines;
- agriculture, to improve crop yields and create novel food sources;
- technology, to potentially store and retrieve digital data using DNA; and
- various consumer markets.

In its January 2020 report, BCC Research estimated that the global synthetic biology market was $5.3 billion in 2019 and projected that market to grow at a compound annual growth rate (CAGR) of 29%, reaching an estimated market size of $18.9 billion by 2024.

Synthetic biology is enabled by numerous technologies that facilitate the *design-build-test* paradigm of new or modified biological components. Any inefficiency across these three phases can create a bottleneck hindering the rapid iteration within product development. In the build phase, the process of writing synthetic DNA or mRNA for an improved biological function is characterized by multiple, complex processes that involve numerous time-consuming and technical steps, including DNA synthesis, DNA assembly, DNA cloning, and DNA scale-up in *E. coli* with multiple DNA purification steps in between. If the final product is mRNA, the process continues with additional technical steps including mRNA synthesis, mRNA modifications at each end and multiple mRNA purification steps. Currently, these processes are carried out in laboratories by highly skilled researchers using multiple kits, each designed to perform one or more of the technical steps. Depending on the length and complexity of the desired synthetic DNA or mRNA product, the build process may involve hundreds of manual steps, require numerous different kits and take days, weeks or months to complete. As an alternative solution, many, but not all, of these steps can be outsourced to a molecular biology contract research organization (CRO) for completion, shifting those challenges from the end user to the CRO. However, outsourcing poses additional limitations including lack of workflow control, unpredictable timelines and data security issues. Whether in-house or through a CRO, existing solutions for building synthetic DNA and mRNA have deficiencies, for instance:

- low fidelity of DNA and mRNA fragments reducing overall yields of usable material;
- inability to construct stretches of DNA and mRNA sequence that have particular features;
- inability to construct DNA and mRNA sequences above a certain size; and
- inability to produce the end product in sufficient quantities for downstream applications.

All of these limitations produce bottlenecks across the build phase, which have significantly hindered the ability of synthetic biology to deliver on its full potential.

We developed our synthetic biology solution to address the significant unmet need in the market for an approach that can automate, integrate, optimize and standardize the process for building synthetic DNA and mRNA. Our solution is comprised of our:

- *BioXp system*: the first and only commercially available push-button, walkaway, end-to-end automated workstation that empowers researchers to go from a digital DNA sequence to endpoint-ready synthetic DNA and mRNA in 8 to 24 hours;
- *BioXp portal*: a user-friendly online portal that offers an intuitive guided workflow and design tools for building new DNA sequences and assembling them into vector(s) of choice;
- *BioXp kits*: contain all the necessary building blocks and reagents, including our proprietary Gibson Assembly branded reagents, for specific synthetic biology workflow applications;
- *Cloud-based scripts*: product-specific and pre-validated scripts that optimize and simplify the use of the BioXp kits on the BioXp system; and
- *Benchtop reagents*: contain all the reagents necessary to proceed with a specific synthetic biology workflow on the benchtop using products generated on the BioXp system.

Our solution is designed to offer the following benefits:

- consolidation of the build phase within a single end-to-end automated system;
- flexibility across a variety of DNA and mRNA applications;
- fast and scalable results;
- ability to construct genes, mRNA, and clones across a wide range of sizes and complexity;
- industry-leading quality and performance;
- enhanced productivity; and
- customer protection of proprietary vectors.

We have developed and commercialized products that include BioXp systems, including our current BioXp 3250 system, BioXp kits for generating a wide array of synthetic DNA and mRNA, and benchtop reagents that complement the automated synthetic biology workflow applications and workflow solutions. We believe that our integrated BioXp systems and BioXp kits represent the industry's leading synthetic biology workflow automation solution and provide us with a first mover advantage in the rapidly growing synthetic biology market. As part of our continuing effort to improve the processes of synthetic biology, we are currently developing next-generation BioXp systems and BioXp kits with the goal of transforming rapid demand-response workflows in synthetic biology and consolidating supply chains and enabling global distributed manufacturing for discovery, pre-clinical and clinical applications. We also use our BioXp 3250 system, BioXp kits and benchtop reagents to perform services for customers.

Our BioXp systems are intended to address the needs of the synthetic biology customer by providing an unmatched capability to rapidly synthesize high-quality DNA and mRNA. With future system releases and extensions, we plan to address the continuum of research needs across the central dogma of molecular biology by enabling cell-free production of high-quality synthetic DNA, mRNA and protein for the discovery, development and manufacturing of enabled products across a wide range of markets. We are strategically focused on providing workflow solutions for markets with high-value enabled products such as those in healthcare and technology.

We currently provide workflow solutions for the following areas:

- synthetic DNA for antibody and protein engineering of biologic drugs;
- synthetic DNA for genome editing;
- synthetic DNA for metabolic pathway engineering;
- immune monitoring;
- synthetic mRNA for infectious disease vaccine discovery and development;
- mRNA-based vaccines for precision medicine; and
- mRNA-based therapeutics.

We are currently developing workflow solutions for the following areas:

- global distributed manufacturing of vaccines;
- synthetic protein for biologics discovery; and
- synthetic DNA for digital data storage.

We commercially launched our current synthetic biology solution in September 2019, which now includes the BioXp 3250 system, BioXp kits with associated cloud-based application scripts, and benchtop reagent kits. Since the introduction of our solution through March 1, 2021, we have launched seven BioXp kits, three benchtop reagent kits, and several other synthetic biology products, including 10 SARS-CoV-2 full-length genomes and RNA controls as well as our Vmax X2 cells. We have placed approximately 150 BioXp systems globally. We target customers in the fields of personalized medicine, biologics drug discovery, vaccine development, genome editing and cell and gene therapy. As of March 1, 2021, our customer base was composed of over 300 customers and included 17 of the 25 largest biopharmaceutical companies in the world ranked by 2020 revenue. Our customer base also includes leading academic research institutions, government institutions, CROs and synthetic biology companies.

Industry Overview

Background on Synthetic Biology

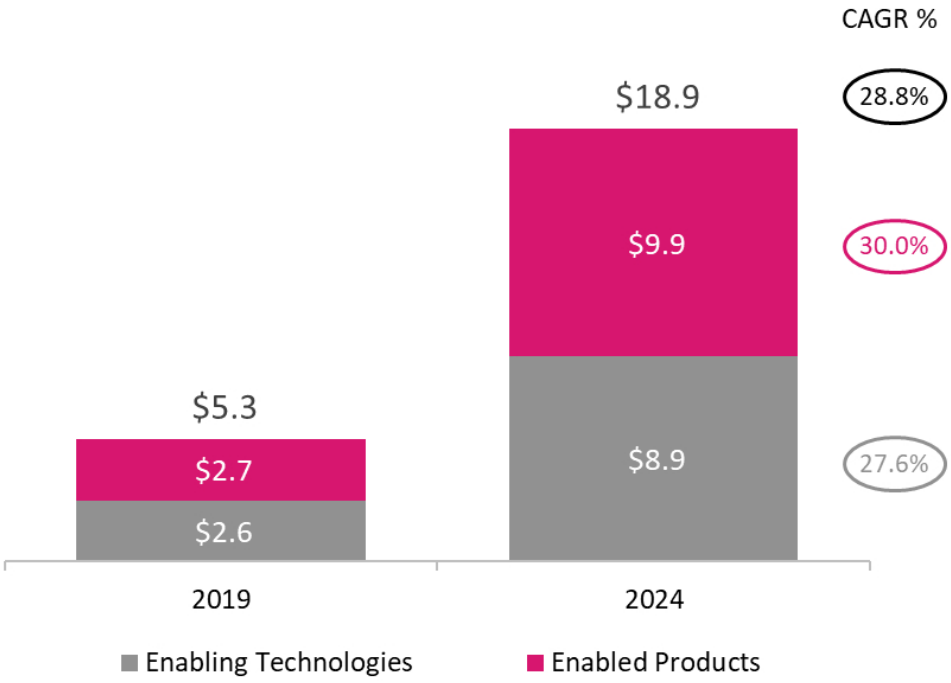
Synthetic biology is a well-established and rapidly expanding field of science that involves the engineering of biological components such as genes, mRNA, proteins, viruses and living cells starting from a digital DNA sequence, enabling the construction of those macromolecules and organisms with new and improved biological functions. The application of synthetic biology is constantly expanding, and new end markets are emerging, driven by continued innovation, a growing understanding of biology and access to novel research tools. For example, in healthcare, synthetic biology is being used to discover, develop and produce novel DNA-, mRNA-, and protein-based therapeutics and vaccines (e.g., antibody-based biologics, mRNA-based COVID-19 vaccines and personalized cancer therapeutics). In agriculture, synthetic biology is being utilized to improve crop yields and create novel food sources (e.g., plant-based meat products). Similarly, in technology, synthetic biology may lead to the ability to store and retrieve digital data using DNA. Finally, in consumer markets, synthetic biology is being employed in a variety of applications. For example, synthetic biology is used to construct clothes from renewable, bio-based sources, to develop biofuels and renewable energy from engineered microbes, and to produce plastics from biodegradable polymers.

In its January 2020 report, BCC Research estimated that the global synthetic biology market was $5.3 billion in 2019 and projected that market to grow at a CAGR of 29%, reaching an estimated market size of $18.9 billion by 2024.

The synthetic biology market falls into two broad sectors:

- *Enabling technologies*: The molecular biology methods (e.g., DNA sequencing, DNA synthesis, DNA assembly, molecular cloning, mRNA production, protein synthesis and expression, genome editing, and bioinformatics software for DNA sequence design and analysis) that employ molecular biology components (e.g., oligonucleotides, enzymes, buffers, vectors, and competent cells) to engineer higher value products that have new or improved utility from a DNA sequence “blueprint”.
- *Enabled products*: These are the end products and include, but are not limited to, therapeutics based on principles of antibody and protein engineering of biologic drugs, mRNA-based vaccines, genetic medicines (e.g. DNA and mRNA therapeutics), and sustainable foods and biofuels resulting from the use of synthetic biology, as well as DNA data storage solutions.

Figure 1: Estimated Global Synthetic Biology Market ($ Billions)



According to the BCC Research report, a driver of the rapid growth of the synthetic biology market is the advances in enabling technologies and the downstream benefits being realized in key enabled product markets like healthcare. These advances in enabling technologies have increased market demand for high-value products that can be produced by synthetic biology methods. This in turn has resulted in a rapid growth of synthetic biology CROs and molecular biology reagent kits, which have been created to serve the higher demand requirements of an evolving synthetic biology market, particularly for drug discovery, agriculture, consumer and industrial products. Scientists increasingly want to build DNA and introduce those molecules into organisms to create cell-based discovery and production systems for new biologics and small-molecule drugs. Research clinicians are recognizing the importance of synthetic biology and beginning to apply the construction of synthetic DNA and mRNA to the development of precision medicines, in the form of mRNA-based cancer vaccines, particularly for immuno-oncology. Pharmaceutical companies have begun integrating synthetic biology approaches in their facilities to develop state-of-the-art vaccines and biologics that are DNA-, mRNA-, and protein-centric. All of these approaches require the ability to make high-quality synthetic DNA comprising entire gene sequences and, in some instances, expressing those genes to make synthetic mRNA and synthetic proteins. With the success of FDA-approved mRNA-based COVID-19 vaccines, it is expected that interest in mRNA-based therapeutics and vaccines utilizing synthetic biology technology will remain strong.

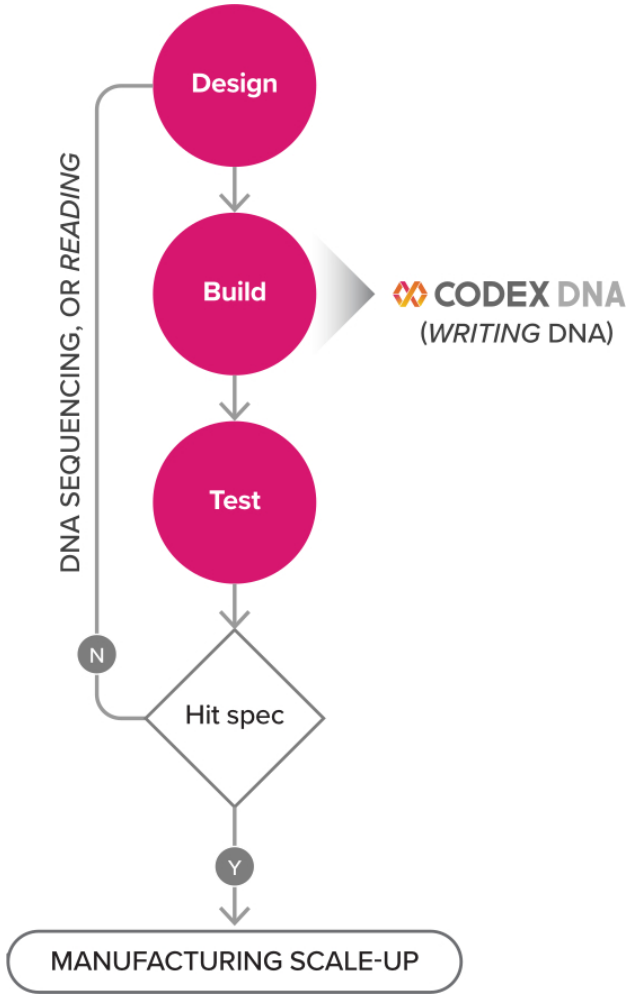
Synthetic biology is enabled by numerous technologies that facilitate highly-iterative experimental design. These technologies permit “reading” of the DNA code of a desired gene, engineering and synthetic construction of biological products using those blueprints, and testing of the constructed products to determine whether they perform in the desired manner. Once a DNA sequence is read, the gene of interest can be built or written from a pool of building blocks using molecular synthesis techniques. In addition, once a gene is read, researchers can redesign the gene to produce new and improved biological functionality, and then build the redesigned gene and analyze its activity in a fully biological system during a test phase. Reading is then used once again to confirm the DNA sequence that provides the desired function of the biological sample that was designed, built and tested. Reading and writing genes opens the door to a new synthetic biology paradigm for iterating on the *design-build-test* phases and creates a powerful and flexible approach to developing a wide variety of enabled products, including

mRNA-based vaccines and protein-based drugs. Decades of gene sequencing work and functional genetic studies to understand what genes do have produced a huge cache of content that researchers can use to design new or modified genetic material.

Over the last 20 years, synthetic biology has experienced a transformation, driven by numerous innovations in enabling technologies. The initial breakthrough was DNA sequencing for reading the DNA and beginning to understand DNA coding. However, early sequencing instruments were slow and expensive, creating a bottleneck in the use of genetic sequence data and its application to both additional research and commercial applications. More recently, the advent of high-performance, low-cost next-generation sequencing (NGS) systems has enabled wide adoption, with over 15,000 such systems installed in research labs globally, resulting in an increase in genetic discoveries in humans and a wide range of organisms, including bacteria, plants and insects and animals. These sequencing systems are generating large amounts of information about genetic composition and have led to the creation of private and public databases around the world containing DNA sequences. Recently, advances in computing power, machine learning and computational modeling have enabled biologists to better analyze this increasing amount of genomic information and inform experimental design or engineering of genes, genetic pathways and even complete chromosomes to achieve the desired biological improvement. Given the volume and understanding of DNA sequence content, the bottleneck in synthetic biology has shifted from reading to writing DNA in an effort to facilitate the rapid design of DNA and mRNA for use in the downstream synthetic biology enabled markets.

The next critical advancement in the field of synthetic biology was the ability to construct genetic sequences *de novo* from their chemical components via DNA synthesis. This enabled researchers to capitalize on the genetic discoveries and improvements in computational design to build or write engineered DNA. The advancements in enabling technologies for both reading and writing DNA have allowed synthetic biologists to engineer changes in genes, metabolic pathways and organisms with greater ease, precision and scale, resulting in a new paradigm with rapid iteration of product cycles and greater predictability of results. The following graphic illustrates this paradigm.

Figure 2: The Synthetic Biology Paradigm



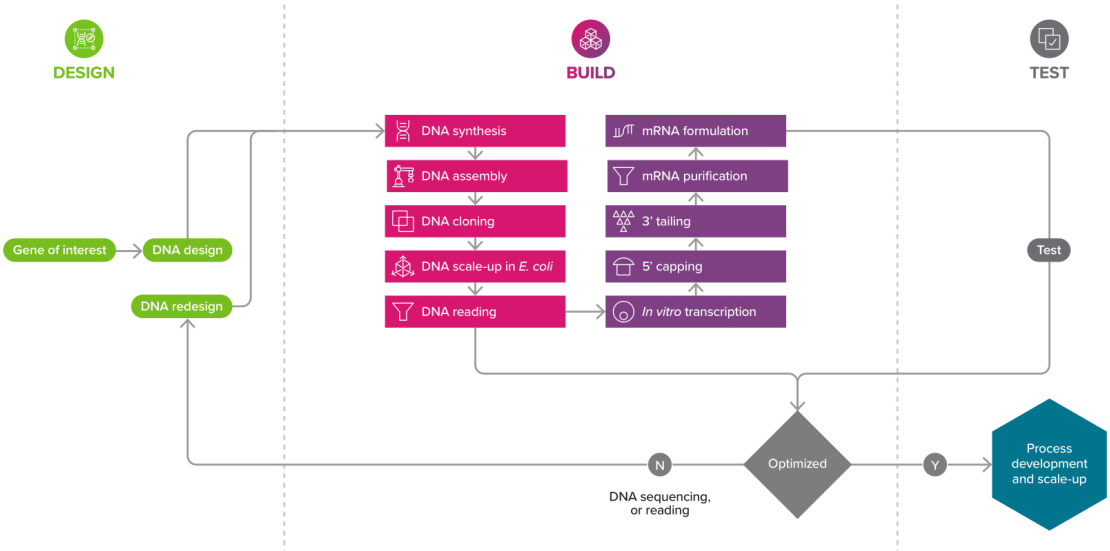
This new paradigm is characterized by three key steps—*design, build, test*—which are continuously iterated to drive feedback into the design phase for the following iteration until the desired biological result is achieved. With DNA as the software of life, biologists can now write code like software engineers and write genes to perform as desired. The *design-build-test* synthetic biology paradigm begins with the DNA sequencing or reading of a biological sample, providing a “blueprint” for the design phase. The outcome of the design phase is a DNA sequence that is chemically synthesized in the build phase and, as necessary, converted to mRNA or protein. The outcome of the build phase is synthetic DNA or mRNA, which can then be readily assayed for desired function in the test phase.

Under the current paradigm, DNA readers are integrated within the build and test phases to confirm the blueprints are being generated as expected in the build phase for quality control and to identify the DNA sequence of the optimal blueprint discovered in the test phase. If the outcome of the test phase is that further optimization is desired, the process is iterated again, starting at the design phase. This *design-build-test* paradigm highlights the importance and opportunity for products and technologies focused on enhancing the speed and scale of the design phase. This efficiency can be accomplished by placing scalable platform technologies for reading and writing in close proximity.

The Build Phase for Synthetic DNA and mRNA

Any inefficiencies across the design, build, or test phase can create a bottleneck in the highly-iterative *design-build-test* paradigm. This especially holds true for the build phase as the process of "writing" synthetic DNA for an improved biological function is characterized by multiple, complex processes that involve numerous time-consuming and technical steps, including (1) DNA synthesis; (2) DNA assembly; (3) DNA cloning; and (4) DNA scale-up in *E. coli*.

Figure 3: The Build-Phase



Writing synthetic DNA

1. *DNA synthesis*: DNA is made from four molecular building blocks called nucleotides: adenine (A), cytosine (C), guanine (G) and thymine (T). These closely related molecules form long linear chains consisting of thousands or more nucleotides. In the same way that the "zeroes" and "ones" in digital code can instruct a machine or other computer code to act, the specific order of nucleotides in a strand of DNA imparts the information for an organism to make proteins, which ultimately control the chemical reactions that enable cellular function.
   - The first step towards building synthetic DNA begins with determining the precise sequence of nucleotides of the gene to be synthesized. Computational tools are typically employed to modify, *in silico*, the sequence of the gene to achieve the desired improvement in biological function.
   - Next, due to challenges in synthetically manufacturing long sequences of DNA, various bioinformatics tools are used to break the desired *in silico* DNA sequence into short, overlapping pieces of approximately 60 nucleotides in length.
   - The *in silico* "blueprints" for the desired DNA fragment or gene are then converted into the physical pieces of DNA. To do so, each nucleotide of the desired short gene fragment specified in the blueprints is chemically synthesized and linked together to form oligonucleotides.
2. *DNA assembly*: During this process, overlapping oligonucleotides are "stitched" together using a complex series of chemical reactions, using enzymes, salts and buffers. These reactions are performed at various temperatures for a large number of cycles until the desired synthetic gene fragment or gene has been assembled.
3. *DNA cloning*: The resulting synthetic DNA product is typically combined with a DNA vector, which is a circular piece of DNA that acts as a vehicle to transport synthetic DNA fragments or genes, to create a recombinant DNA product for introduction into a host organism. Most commonly this host organism is

E. coli, and it will easily grow into a large population for purposes of producing more of the desired synthetic DNA fragment or gene product.

4. *DNA scale-up in E. coli: E. coli* cells containing new DNA are plated on Petri dishes, and after a period of growth will result in individual colonies. The colonies of *E. coli* are placed in growth medium and incubated to produce a culture of cells containing the cloned vector. The synthetic DNA is isolated from the cultured cells, and is purified and further processed for DNA sequencing and then analyzed with DNA design tools. Introducing the recombinant DNA product into *E. coli* serves two purposes: first, the methodology filters out intended DNA sequences from unintended DNA sequences that arise from chemical synthesis of oligonucleotides, which is an imperfect process; and second, it permits exponential scaling up of the amount of synthetic DNA to meaningful quantities for use in downstream applications.

Writing synthetic mRNA

Recently, the building of mRNA has emerged as a highly attractive system for the development of both therapeutics and vaccines, with hundreds of such projects currently in various stages of development. The Moderna and Pfizer COVID-19 vaccines are both mRNA products and each has received Emergency Use Authorization from the FDA. Like DNA, mRNA takes the form of long chains of nucleotides. mRNA transports the instructions encoded in DNA to downstream molecules for molecular “fulfillment” of protein synthesis, in essence acting as DNA’s messenger.

Similar to building synthetic DNA, the steps required to build mRNA are numerous, time-consuming and often fraught with difficulties, further, RNA is generally more unstable than DNA, increasing the challenge of synthesis and handling. The steps involved in synthesizing mRNA include all the steps necessary to make synthetic DNA in addition to those outlined below. DNA is used as a template to create mRNA, and this is completed as follows:

1. *In vitro transcription:* The cloned, circular synthetic DNA template is linearized and incubated in an enzymatic reaction containing all the components necessary to turn the synthesized DNA template into the desired mRNA that is then purified.
2. *5’ capping:* The mRNA is then further processed to include a “cap” at its 5’ end to improve its efficiency as a driver of protein production within cells. The mRNA is then purified once more.
3. *3’ tailing:* The capped mRNA then has a poly A tail added at the 3’ end to stabilize it and prevent its degradation and is then purified once more.
4. *mRNA purification:* The synthetic mRNA is treated with a DNase enzyme to remove any residual DNA template that may interfere with downstream applications and is then purified one final time.
5. *mRNA formulation:* The mRNA is then formulated by adding carrier molecules (e.g., lipid nanoparticles) to permit its delivery into cells.

Following these steps, the synthetic mRNA is ready to be used in downstream synthetic biology-enabled markets including, in the case of new drug development, biologics (antibody- and protein-based drugs), mRNA-based vaccines for infectious disease and precision medicine, genome and pathway engineering and many other markets.

Key limitations in writing synthetic DNA and mRNA

Despite these substantial advancements, including the accumulation of a large number of functional discoveries resulting from the wide-spread adoption of DNA sequencing instruments, the profound potential of synthetic biology has been hampered by the complexity within, and among, the multi-step process of writing synthetic DNA and mRNA, as well as significant limitations of existing solutions that prevent the rapid building of virtually error-free DNA and mRNA at a useable scale. Both limitations ultimately affect speed and quality of product delivery.

Currently, the process of writing synthetic DNA or mRNA for an improved biological function is carried out in laboratories by highly skilled researchers using multiple kits, each designed to perform one or more of the technical steps. Depending on the length and complexity of the desired synthetic DNA or mRNA product, the process may involve hundreds of manual steps, require numerous different kits and take days, weeks or months to complete. As an alternative solution, many, but not all, of these steps can be outsourced to a molecular biology CRO for completion, shifting those challenges from the end user to the CRO. However, outsourcing poses additional limitations, including lack of workflow control, unpredictable timelines and security issues. Ultimately, this reduces the amount of rapid iteration and refinement by the researcher since multiple *design-build-test* cycles are often needed to optimize the synthesized DNA or mRNA.

Key limitations within the build phase of the synthetic biology paradigm lengthen time to market for a wide array of innovative products within the healthcare, consumer, agriculture and technology markets. Build iterations can take days, weeks or months, depending on project type, using conventional methods with either in-house manual kit-based processes or by outsourcing portions of the project to a CRO. In either case, the key limitations of the build phase include the following:

- long project timelines resulting from non-scalable, manual processes, or the need to use multiple suppliers or CROs. The turn-around-times from CROs differ widely, and the process, depending on the complexity of the product ordered, ranges from days to months. Some CROs will not accept certain projects due to their inherent difficulty. In addition, there are fewer CROs that produce mRNA at scale and no single in-house kit solution for generating synthetic mRNA starting from DNA sequences;
- inconsistent quality and performance resulting from supply chain constraints or the use of different kits if performed in-house, or resulting from using different CROs with inconsistent protocols;
- lack of data standardization across a project or organization which limits predictability and reproducibility;
- partial order fulfillment due to variations in project acceptance criteria, such as DNA sequence complexity;
- lack of workflow control and timing of project integration into parallel programs; and
- difficulty in controlling intellectual property and security concerns around sensitive DNA designs potentially becoming exposed to security vulnerabilities during transfer. Researchers would prefer to control their intellectual property, particularly within biopharmaceutical companies where hundreds of millions of dollars are spent on the development of proprietary DNA sequences.

***Existing solutions for writing synthetic DNA and mRNA are insufficient*.**

The current processes for building synthetic DNA have several significant limitations including:

- low fidelity of DNA fragments resulting from DNA synthesis errors, thereby reducing overall yields of usable material;
- inability to construct some stretches of DNA sequence that have particular features, such as extreme imbalances in nucleotide content (%G+C vs. %A+T) and repetitive sequences;
- inability to construct DNA sequences above a certain size; and
- inability to scale the material to a suitable yield such that it is usable in downstream applications.

The current processes for building synthetic mRNA have the same inherent limitations as building DNA since the construction of synthetic DNA is a prerequisite for making mRNA. In addition, there are several other key challenges including:

- the handling requirements of the mRNA products, which are highly unstable and susceptible to rapid degradation;
- the multi-step processes involved in producing purified, biologically active mRNA; and
- scaling the mRNA to high yields from DNA templates.

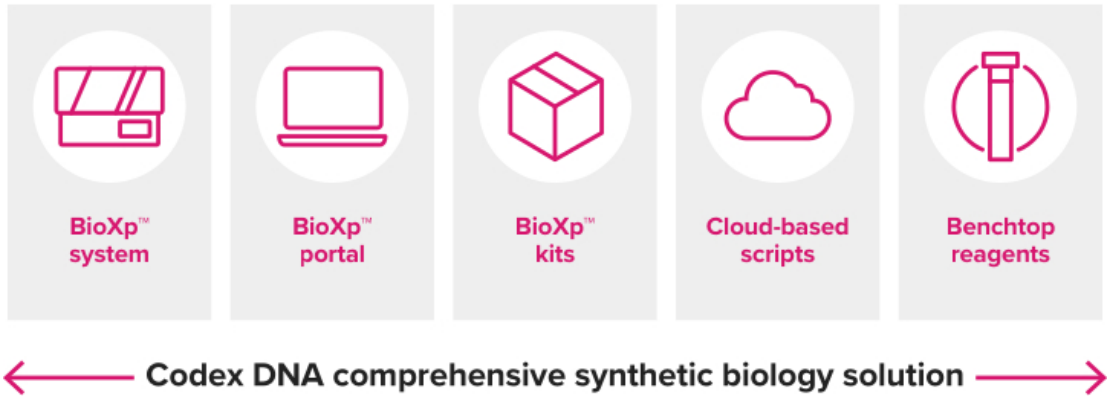
These limitations produce bottlenecks across the build phase, which have significantly hindered the ability of the synthetic biology paradigm to deliver on its full potential. This inefficiency has created a significant unmet need in the market for an approach that can automate, integrate, optimize and standardize the process, and thereby enhance the speed, predictability and reproducibility of the *design-build-test* paradigm.

The Codex DNA Solution

Our synthetic biology solution, which leverages our industry-standard Gibson Assembly method, is aimed at addressing the bottlenecks across the build phase in order to accelerate the *design-build-test* paradigm. Key to our solution is our BioXp system, an end-to-end automated system for synthetic biology that fits on the benchtop and is broadly accessible due to its ease-of-use and hands-free automation. We have developed and commercialized the current version of the BioXp system, the BioXp 3250 system. We believe our BioXp system can democratize synthetic biology by making the build phase broadly accessible in terms of simplicity, accelerating applications and workflows, and greatly facilitating development of novel high-value products across a wide range of synthetic biology

enabled markets. Our BioXp system empowers users to rapidly, accurately and reproducibly create high quality synthetic DNA and mRNA that is ready for use in many downstream synthetic biology workflows.

Figure 4: Our Comprehensive Synthetic Biology Solution



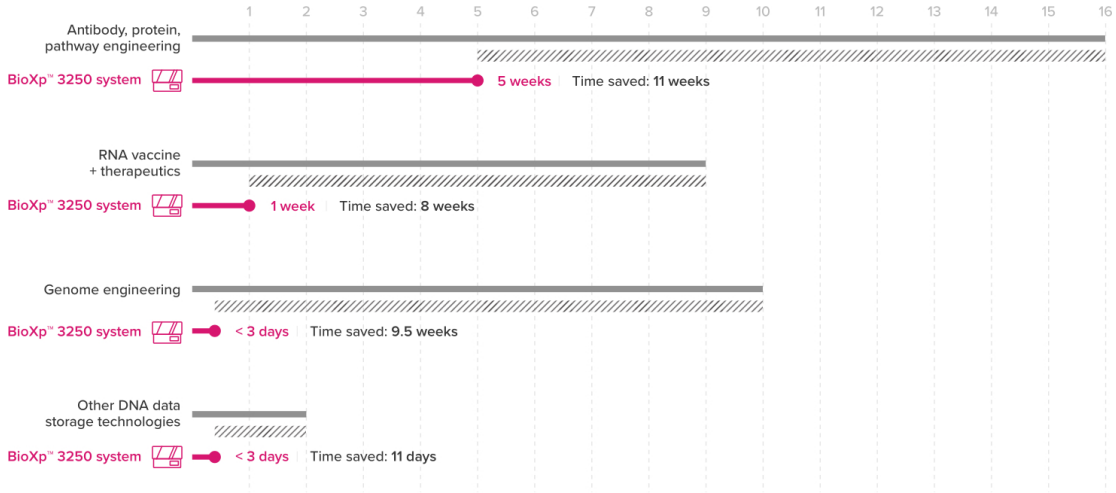
Our synthetic biology solution is comprised of:

- *The BioXp system*: the first and only commercially available push-button, walkaway, end-to-end automated workstation, which requires only a few minutes of set up time, that empowers researchers to translate a digital DNA sequence to endpoint-ready synthetic DNA and mRNA in 8 to 24 hours using a benchtop instrument that is run by sophisticated onboard software;
- *The BioXp portal*: a user-friendly online portal that offers an intuitive guided workflow and design tools for building new DNA sequences and assembling them into vector(s) of choice using Gibson Assembly on the BioXp system;
- *The BioXp kits*: contain all the necessary building blocks and reagents, including our proprietary Gibson Assembly branded reagents, for specific synthetic biology workflow applications;
- *Cloud-based scripts*: product-specific and pre-validated scripts that optimize and simplify the use of the BioXp kits on the BioXp system (e.g., the BioXp system automatically scans barcodes from reagent plates to download scripts, enabling hands-free operation); and
- *Benchtop reagents*: contain all the reagents necessary to proceed with a specific synthetic biology workflow on the benchtop using products generated on the BioXp system, providing additional flexibility to the customer and furthering our end-to-end solution.

Our solution is designed to offer the following benefits:

- *Consolidation of the build phase within a single end-to-end automated system*: We provide researchers all the hardware, software, materials and methodologies required to rapidly and accurately design and build large quantities of synthetic DNA and mRNA, with BioXp kits for synthetically produced protein under development. Our BioXp system reduces the turnaround time for such workflows to days or hours. Moreover, researchers no longer require multiple vendors to complete such workflows, eliminating related bottlenecks and security concerns. The time savings for various workflows using synthetic DNA or mRNA is depicted in the following graphic.

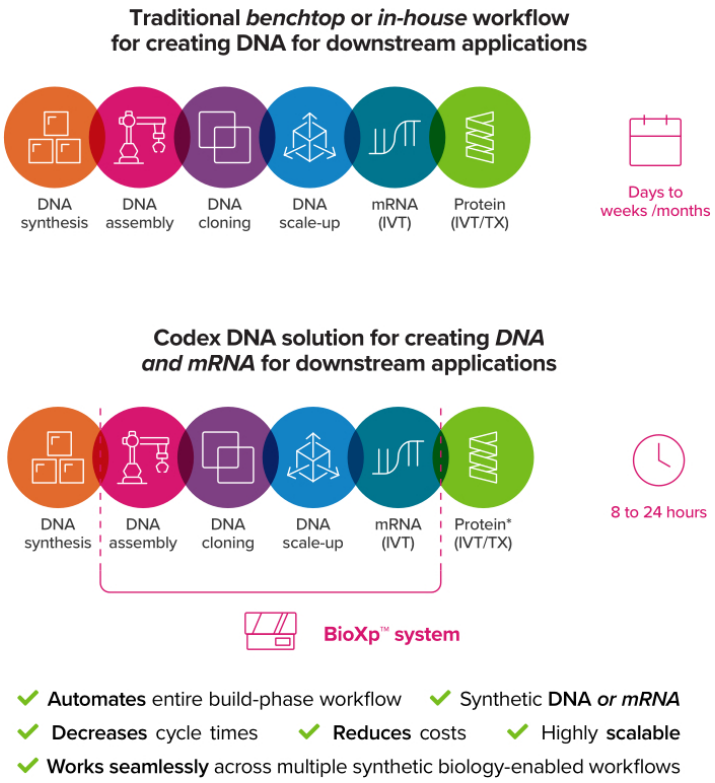
Figure 5: Using the BioXp system saves significant time and potentially accelerates time to market for critical products.



- *Increased speed and scale*: Our BioXp system has the capacity to parallel process as many as 32 samples at once within an 8 to 24 hour period, depending on the BioXp kit being used. It also has the capacity to generate high quality and diverse libraries with short lead times, allowing innovation to be maintained in-house.
- *Capacity to construct a wide array of product formats*: Our BioXp system was designed such that future applications would not require hardware upgrades but only software upgrades that could be installed remotely. This has facilitated new product development efforts to enhance current product specifications and to develop new kits that extend beyond the production of synthetic DNA. For example, since the BioXp system was launched, new scripts have been developed to produce larger gene products, cell-free amplification of cloned DNA, and production of synthetic mRNA. Likewise, new scripts are currently being developed to enhance the mRNA product offering and develop protein synthesis BioXp kits. This capability provides substantial time-to-product and workflow control advantages for customers and gives them the flexibility to select the workflows that meet their unique needs.
- *Ability to construct larger and more complex DNA and mRNA sequences*: Our BioXp system uses proprietary protocols developed for robust DNA synthesis, assembly, and cloning enabling the construction of genes, mRNA, and clones across a wide range of sizes and complexity.
- *Industry-leading quality and performance*: Our BioXp system uses a proprietary two-step error correction process to generate virtually error-free synthetic genes every time.
- *Enhanced productivity*: Our BioXp system creates finished, biologically-active products in as few as eight hours. In addition, it includes protocols for the cell-free amplification of cloned DNA, obviating the need to use *E. coli*, reducing the time to product by days or even weeks. Altogether, this could represent at least a 20-fold productivity increase through accelerated iterations of the *design-build-test* paradigm. Ultimately, product development cycles are accelerated because the desired biological results are identified more quickly.
- *Protection of proprietary vectors*: Our BioXp system permits our customers to maintain their proprietary vectors on site, protecting their intellectual property throughout their entire development lifecycle.

In summary, our solution addresses key limitations of the build phase by offering many benefits as highlighted in the graphic below.

Figure 6: Benefits of our BioXp system.



Our Growth Strategy

Our goal is to establish our solution, including our BioXp family of systems, as the industry standard for building synthetic DNA, mRNA and protein, and to democratize synthetic biology, thus accelerating its applications and workflows across a wide range of industries. To achieve this objective, we intend to:

- *Drive new customer adoption of our BioXp systems*. As of March 1, 2021, we have placed 150 BioXp systems. We intend to drive customer adoption globally within our targeted synthetic biology enabled workflows for antibody and protein engineering of biologic drugs, mRNA-based therapeutics and vaccines for infectious disease and precision medicine, genetic medicines, sustainable foods, biofuels and. resulting from the use of synthetic biology DNA data storage solutions. We intend to accomplish this through business development efforts, establishing and nurturing relationships with KOLs, a direct sales model in North America and four major European markets (United Kingdom, Germany, France, Benelux), as well as through more than 30 channel partners across Europe, the Middle East, Africa and Asia Pacific. We intend to sell our suite of products and services to academic research organizations and universities, CROs, and pharmaceutical, biotechnology, agricultural, consumer and technology companies. We believe that initially focusing on the pharmaceutical and biotechnology companies currently using readers as a part of the *design-build-test* cycle will facilitate the adoption of our products and synthetic biology enabled workflows for biologics and mRNA-based therapeutics and vaccines due to the benefits of having readers and writers within close proximity to each other.
- *Maximize the utilization of BioXp system by developing additional BioXp kits for our customers' workflows*. As of March 1, 2021, we have launched a total of seven BioXp kits that are used at the most iterative, costly and time-consuming steps across our customers' workflows. Our BioXp kits contain all the reagents necessary for a specific synthetic biology workflow applications, including gene fragment synthesis, DNA cloning, cell-free DNA scale-up and small-scale mRNA synthesis. To expand system utilization even further, we plan to commercially launch three BioXp kits in the first half of 2022. These include a rapid-scale mRNA synthesis kit, a large-scale mRNA synthesis kit and a protein synthesis kit. Additional BioXp kits are currently in development.
- *Continue to expand into other attractive markets for synthetic biology that are currently under-served*. We believe our solution is universal and can support DNA, mRNA and protein synthesis for almost any synthetic biology application. We plan to continue to invest in the development of high-value BioXp kits for core workflows in our target markets including biologics drug discovery, vaccine development, and genome engineering and in additional emerging markets such as DNA data storage and cell and gene therapy.
- *Develop and commercialize new, disruptive BioXp systems to further increase utilization, expand breadth of applications, and accelerate product development cycles*. These include:
  - The BioXp 9600 system. A higher throughput system permitting more DNA, mRNA and protein samples to be processed per run.
  - The BioXp Oligo Printer system. An oligonucleotide printing system to construct short DNA fragments.
  - The BioXp DBC system. A complete made-to-stock automated system that combines the two innovations above, permitting digital DNA sequences as input.
  - The BioXp Needle Ready Vaccine Printer system. An automated system that enables the globally distributed manufacturing of vaccines from digital sequence data, combining a BioXp kit for DNA, mRNA, or protein scale-up with modules for quality control, lot release testing and fill and finish.
- *Continue to innovate across our synthetic biology product portfolio*. We intend to continue developing enabling technologies across our portfolio, including continued research and development on existing and emerging workflows and applications leveraging synthetic DNA, mRNA and protein.
- *Establish strategic partnerships leveraging our core competencies and validating our technology*. The discovery, development and launch of synthetic biology advances can be time-consuming and expensive. Through our existing partnerships, we are accelerating time-to-market for our technologies and products. We intend to continue adding new strategic relationships across both existing and new markets. In doing so, we can accelerate the development of various markets for our solution, potentially generate royalties and other forms of economic benefits and leverage third-party insights to help us design new solutions.

- *Continue to attract leading scientists to work at our company*. Our ability to continue discovering new synthetic biology applications and developing new technologies and products depends on our ability to attract top talent from industry and academia. We believe that our strong existing team and groundbreaking accomplishments to date will continue to attract leading scientists.

Our Products

We have developed and commercialized products that include BioXp systems, BioXp kits for generating a wide array of synthetic DNA and mRNA formats, and benchtop reagents that complement the automated synthetic biology workflow applications and workflow solutions. The BioXp kits that we incorporate into our integrated system create the industry's leading synthetic biology workflow automation solution. We believe our fully automated workflow solutions, coupled with our expanding menu of BioXp kits, will enable us to establish a first mover advantage in the rapidly growing synthetic biology market.

Our BioXp 3250 system

Our BioXp 3250 system was launched in September 2020, replacing a legacy BioXp 3200 system. We believe that it is the world's only fully automated benchtop instrument that enables numerous synthetic biology workflows by providing a turn-key, end-to-end solution for generating synthetic DNA and mRNA starting from DNA sequence. Through a combination of increased throughput and scale and reduced hands-on time, we estimate that the BioXp 3250 system offers the potential to significantly enhance productivity several fold, accelerating the development of critical new products in enabled markets. The BioXp 3250 system accelerates the *design-build-test* phases of the customer's product development cycle by enabling rapid, automated synthesis of genes, clones, variant libraries and mRNA. Unlike traditional approaches that can take days, weeks or months, the BioXp 3250 system achieves these workflows in a single run, which can be completed in 8 to 24 hours.

Figure 7: BioXp 3250 system

The BioXp 3250 system has the capacity to build gene-fragments of up to 7,000 base pairs in length and has an extensive selection of off-the-shelf vectors, as well as the ability to bypass plasmid preps. It allows users to scale production through the ability to build up to 32 genes, clone single or multiple genes into our, or customer-provided, vectors. In addition, it permits the synthesis of transfection-ready DNA quantities of more than 10 micrograms, variant libraries up to 1.8 kilobase pairs (kb) in length, and biologically active synthetic mRNA with quantities up to 10 micrograms in 8 to 24 hours.

Additionally, the BioXp 3250 system's ability to provide on-deck custom cloning obviates the need for subcloning or out-sourcing development of proprietary vectors to CROs allowing laboratories to maintain complete control of intellectual property relating to their proprietary vectors.

As of March 1, 2021, we have sold approximately 25 BioXp 3250 systems, including to many leading global pharmaceutical and biotechnology companies.

Our portfolio of commercialized kits for the BioXp 3250 system

BioXp kits contain all the requisite Gibson Assembly branded reagents and allow our BioXp system to perform the steps required to produce various DNA and mRNA products designed for a range of synthetic biology applications. BioXp kits are designed to be backwards compatible with legacy systems and forward compatible with systems under development.

- BioXp gene synthesis kit. Contains all the Gibson Assembly reagents necessary to make error-corrected, de novo synthetic genes of up to 1.8 kb in length.
- BioXp DNA cloning kit. Contains all the Gibson Assembly reagents necessary to make error-corrected, *de novo* synthetic genes of up to 7 kb in length using a standard made-to-stock vector.
- BioXp DNA custom cloning kit. Contains all the Gibson Assembly reagents necessary to make error-corrected, *de novo* synthetic genes of up to 7 kb in length using a customer's specific vector.
- BioXp RapidAMP cell-free DNA amplification kit. Contains all the Gibson Assembly reagents necessary to amplify error-corrected genes cloned into either a made-to-stock or customer vector, to make up to 10 micrograms of DNA.
- BioXp site saturation scanning libraries kit. Libraries with varied single, contiguous amino acid sites.
- BioXp alanine scanning libraries kit. Libraries with varied single, contiguous alanine sites.
- BioXp combinatorial libraries kit. Libraries with varied, multiple non-contiguous amino acids sites using degenerate bases to optimize protein binding and function.
- BioXp small-scale mRNA synthesis kit. Contains all the Gibson Assembly reagents necessary to make 10 micrograms of biologically active synthetic mRNA using *de novo* synthesized, error-corrected gene fragments (mRNA template) of up to 1.8 kb in length.

By incorporating these application-specific BioXp kits into our BioXp 3250 system, we are able to provide simple, push-button, walkaway, end-to-end automation of important synthetic biology workflows. We believe our products enable unrivalled time-to-product, quality, and workflow control advantages for our customers.

Figure 8: Our BioXp system provides a simple, hands-free, end-to-end experience for our customers.

Our benchtop reagents

We offer benchtop reagents that are synergistic with our BioXp system and BioXp kits to accelerate the build phase of the *design-build-test* synthetic biology paradigm.

- Gibson Assembly HiFi and Ultra kit. Contains all the reagents necessary to simultaneously assemble as many as 10 DNA fragments into a vector to produce a final product that is several hundred kilobase pairs in length.

- Gibson Assembly RapidAMP kit. Contains all the reagents necessary to simultaneously assemble and clone DNA using Gibson Assembly, and then amplify the resultant product to produce up to approximately 10 micrograms of DNA.
- Vmax X2 cells. Transformation-ready competent cells for introducing plasmids for protein expression applications.
- SARS-CoV-2 synthetic genomes. One of ten different “off the shelf” SARS-CoV-2 synthetic genomes for use in the development of vaccines, therapeutics, and diagnostics for COVID-19 research.
- SARS-CoV-2 RNA controls. SARS-CoV-2 RNA controls are useful as quality control measures for the verification and validation of both NGS and reverse transcriptase-polymerase chain reaction (RT-PCR) diagnostic assays.

Our products in development

As part of our continuing effort to improve the processes of synthetic biology, we are currently developing next-generation BioXp systems and BioXp kits with an aim to radically transform rapid demand-response workflows in synthetic biology by consolidating supply chains and enabling global distributed manufacturing for both discovery and clinical applications. Our ultimate goal is to build what we describe as the Digital-to-Biological Converter (DBC). The DBC’s approach would begin not with oligonucleotides, which can take days to procure, but with DNA sequence data. The system we envision would take data and produce synthetic genes, or even convert those automatically into mRNA or protein. This would enable the “sequence-in, vaccines-out” concept that could replace the months-long manufacturing processes required today with a process that can be carried out in 24 to 48 hours. Each of the systems described below builds from the fundamental technology that serves as the basis of our BioXp 3250 system.

BioXp systems in development

BioXp 9600 system. This higher-throughput BioXp system leverages the foundational technology underlying the current BioXp 3250 system and has an advanced motion control system allowing for higher processing speed and greater reliability. It is designed to include additional reagent capacity and consumables that enable approximately three times as many DNA, mRNA and protein samples to be processed for each run while retaining all the functionalities of the BioXp 3250 system. In addition, we envision the BioXp 9600 system will be linked to our BioXp Oligo Printer system, which is also in development, enabling global distributed manufacturing through the launch of the BioXp DBC system. This system is currently in development with beta launch anticipated by the end of 2021 and full commercial launch anticipated in 2022.

Figure 9: Our BioXp 9600 high throughput system for synthetic DNA, mRNA and protein

BioXp Oligo Printer system. The BioXp Oligo Printer system is enabled by our proprietary enzymatic DNA synthesis reagent solution that has been successfully demonstrated in manual workflows. Unlike traditional oligonucleotide synthesizers using hazardous chemicals (phosphoramidites) and newer oligonucleotide synthesis technologies using enzymatic chemistry (TdT), the BioXp Oligo Printer system uses a DNA ligation and amplification process to generate oligonucleotides from a made-to-stock universal library of short DNA building blocks. The BioXp Oligo Printer system will physically connect to the BioXp 9600 system as the front-end system for on-demand enzymatic DNA synthesis manufacturing of oligonucleotides of up to 100 nucleotides in length to complete the BioXp DBC system. In addition, we anticipate using this system in our facility to reduce cost of goods and to improve BioXp kit turnaround times for BioXp 3250 and BioXp 9600 customers. The BioXp Oligo Printer system may also be

commercialized as a standalone instrument to serve the polymerase chain reaction (PCR) primer and oligonucleotide markets. The system is currently in development with commercial launch anticipated after 2022.

Figure 10: Our BioXp Oligo Printer system based on our proprietary enzymatic DNA synthesis technology

BioXp DBC system. This system is assembled through the integration of our BioXp Oligo Printer system and BioXp 9600 system, which we expect will have been individually developed. This system provides the ability to take digitized DNA code sent over the internet and automatically print DNA, mRNA and protein in a field-deployable system. We believe that by starting with a DNA sequence and made-to-stock biological components, the BioXp DBC system will disrupt the normal development cycles for precision medicine and infectious disease by providing a path towards an on-demand printer that can produce needle-ready vaccines with the push of a button. This system is currently in development with commercial launch anticipated after 2022.

Figure 11: Our BioXp DBC system for fully-integrated on-demand writing of synthetic DNA, mRNA and protein

BioXp Needle-Ready Vaccine Printer system. This system is enabled by the technology used to build the BioXp DBC system and is dependent on its completion. It builds off the BioXp DBC system and includes a module for DNA, mRNA, or protein scale-up with modules for quality control, lot release testing and fill and finish. The BioXp Needle-Ready Vaccine Printer system will enable the globally distributed manufacturing of vaccines from digital sequence data, producing hundreds of doses of a DNA or mRNA vaccine per run with each run estimated to take a matter of days. This system is currently in development with commercial launch anticipated after 2022.

New BioXp kits in development

- BioXp rapid-scale mRNA synthesis kit. This kit will contain all the reagents necessary to rapidly produce up to 100 micrograms of biologically active mRNA from previously cloned DNA of up to 20 kb in length. Full commercial launch is anticipated in the first half of 2022.
- BioXp large-scale mRNA synthesis kit. This kit will contain all the reagents necessary to make 100 micrograms of biologically active synthetic mRNA using *de novo* synthesized, error-corrected gene fragments (i.e., an mRNA template) of up to 7 kb in length and will also include custom-cloning vector capabilities. Full commercial launch is anticipated in the first half of 2022.

- BioXp protein synthesis kit. This kit will contain all the reagents necessary to rapidly produce microgram-scale quantities of biologically active protein, with or without post-translational modifications, using *de novo* synthesized, error-corrected gene fragments (i.e., a protein template) of up to 7 kb in length and will include custom-cloning vector capabilities. We anticipate that this kit will enable broad adoption for the small-scale production of research grade protein for several workflows especially for biologics discovery and development. Full commercial launch is anticipated in the first half of 2022.

New benchtop reagents in development

- Vmax C1 cells. Transformation-ready competent cells for introducing plasmids for molecular cloning applications.

Our Biofoundry Services

We use our BioXp 3250 system, BioXp kits and benchtop reagents to perform biofoundry services for customers. Typically, these customers have not yet purchased our BioXp system or they have custom requirements. We apply sophisticated security protocols to these services designed to protect our customers' intellectual property rights, which is a key concern for customers.

The scale of our services is currently relatively small and is intended to facilitate new customer development. Our biofoundry services are performed in-house at our San Diego facility.

Our biofoundry services were established in 2020 as a value-added service intended to support customers both in their efforts to accelerate the discovery and development of therapeutics and vaccines to combat COVID-19, and to overcome challenges in their value chain created by the COVID-19 health crisis. These services enable a customer to order and receive any of the BioXp system endpoint-ready products, such as genes, clones, cell-free amplified DNA and variant libraries. As all offerings are built on the industry leading BioXp technology, customers experience the value of high quality products, with expedited turnaround times compared to similar offerings in the industry.

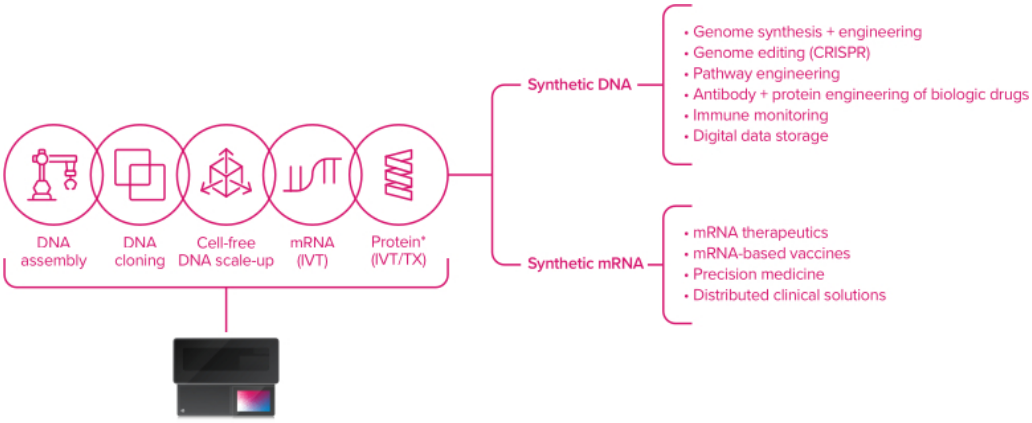
Importantly, our biofoundry services are strategically used in a consultative partner approach through our pilot program, allowing customers to see specific proof points prior to purchasing a BioXp system. This is intended only for customers meeting a specific profile, for a short period of time, and with the intended purpose of providing necessary proof to justify purchase of our BioXp system and demonstrate our proposed paradigm shift for the customers' process. Additionally, our biofoundry services are employed to assist current BioXp system users with overflow peak volume needs or to create highly complex products, providing additional value to our BioXp installed base and creating deeper engagement with such customers. Finally, our service offerings represent a solution for those customers whose volume needs do not currently support a BioXp system purchase. In such situations, our service offerings further enable our consultative partner approach so as to engage more deeply with such customers and help demonstrate the value of the BioXp system to their ongoing research and development activities.

We are a world leader in genome synthesis and assembly technologies and are leveraging this capability to construct complete viral and bacterial genomes as a service for our customers. Over the past year, our custom genome synthesis service has primarily focused on producing variations of the SARS-CoV-2 genome, including new variants as they emerge. As many customers have similar interests, once constructed, many of these custom genomes become an off-the-shelf offering in our product catalog.

Workflow Solutions for Synthetic Biology Enabled Markets

Our current and future BioXp systems are intended to address the needs of the synthetic biology customer across discovery and pre-clinical development by providing an unmatched capability to synthesize high-quality DNA and mRNA in 8 to 24 hours. With future system releases and extensions, we plan to address the continuum of research needs across the central dogma of molecular biology by enabling cell-free production of high-quality synthetic DNA, mRNA and protein for the discovery, development and manufacturing of enabled products across a wide range of markets.

Figure 12: Our automated DNA and mRNA solutions for synthetic biology enabled workflows



*Future product offering

We are strategically focused on providing workflow solutions for markets with high-value enabled products such as those in healthcare and technology. These solutions are all based on our core portfolio of BioXp kits. Specific design software and BioXp kits (e.g., oligonucleotides) are employed depending on the desired enabled product. The appropriate application-specific BioXp kits are inserted into the BioXp system to perform the workflow solution tailored to meet the needs of the customer.

We target high-value application workflows within the synthetic biology-enabled markets. Key workflow examples are described below.

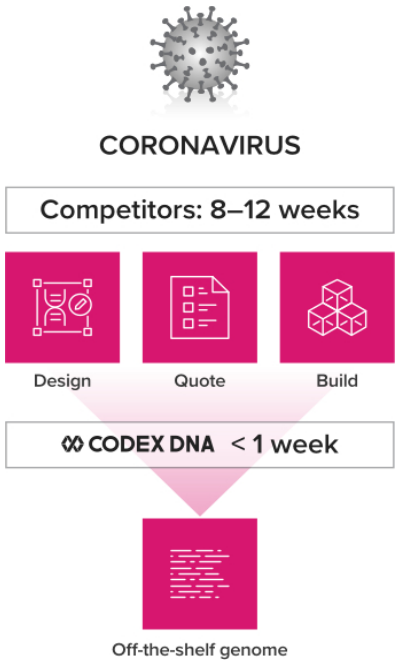
Synthetic DNA Application Workflows

With the BioXp system, scientists can perform rapid, high-throughput gene synthesis, regardless of vector size and complexity in a hands-free, automated fashion in 8 to 24 hours. Our BioXp system offers a comprehensive value proposition that includes reduced turnaround time, increased throughput and scale, enhanced quality, complete workflow control and both synthetic DNA and mRNA formats. Our solutions allow customers to save time, improve scale and throughput and improve productivity for many synthetic biology enabled research and development workflows across multiple market segments, including the following:

1. *Synthetic DNA for genome synthesis and engineering*. DNA synthesis has become a fundamental tool throughout genetic research with increasing demand from scientists who are continuously looking to incorporate synthetic DNA into new cell-based discovery and production workflows. Addressing this growing demand requires the ability to quickly make large virtually error-free DNA molecules comprising entire gene sequences. Traditional molecular cloning and gene editing steps are tedious, manual in nature and require cellular transformation, which can take three to four weeks. Moreover, in addition to being time-consuming, classic genome engineering and DNA assembly techniques are limited in the size and complexity of constructs that can be engineered.

   BioXp system benefits: Overall, our automated workflow solution allows users to: (1) engineer genomes and vaccine scaffolds that were previously inaccessible due to size, complexity and resource limitations; (2) engineer fully-synthetic genomes lacking pathogenicity through rational redesign; and (3) rapidly pursue research and development of emerging strains or modify existing genomic constructs based on experimental results. Our BioXp system overcomes these barriers and enables rapid synthesis within days to weeks, as well as the ability to modify large constructs and full-length genomes.

Figure 13: Example of how using the BioXp in combination with our Gibson Assembly benchtop reagents can save significant time when engineering genomes



SARS-CoV-2 genome construction case study. By using several molecular biology tools that we developed over the last decade, we built all the parts of the full-length (30 kb) SARS-CoV-2 genome using Gibson Assembly reagents and the BioXp system in a single run, which can be completed in 8 to 24 hours, and then rapidly generated a completely synthetic version of the SARS-CoV-2 genome in just seven days, where comparable approaches could take as long as twelve weeks.

To support researchers worldwide in their fight against COVID-19, we have taken advantage of the rapid-iteration capabilities offered through our BioXp library kits to produce additional variants of the SARS-CoV-2 genome within just a few days. Our full-length SARS-CoV-2 synthetic genomes have been widely adopted for the development of various preventive and treatment measures. Synthetic genomes enable researchers to safely study the pandemic-causing virus and develop therapies and diagnostics without the highly regulated biosecurity facilities required for studying a dangerous pathogen.

2. *Synthetic DNA for genome editing*. CRISPR-powered genome editing has enabled significant improvements in the ability to fine-tune genomes. Originally discovered as an mRNA-based adaptive immune response in *E. coli*, the CRISPR/Cas9 system contains both guide mRNA for sequence-specific targeting and a Cas9 endonuclease that removes foreign DNA and allows integration of synthetic DNA into the host genome. That synthetic DNA is designed to specifically target a region in the host genome and make alterations (e.g. add genes, remove genes, correct mutations).

   BioXp system benefits: The system enhances productivity during the design phase of the customer's product development cycle by enabling rapid, automated synthesis of gene fragments, clones, and variant libraries. With the BioXp system, scientists can perform rapid, high-throughput gene synthesis and cloning of mRNA expression cassettes, regardless of vector size and complexity. In addition, our Gibson Assembly RapidAMP technology, which permits cell-free amplification of microgram quantities of DNA, means plasmid design no longer has to be tethered to an *E. coli* cloning system. In addition, our Gibson Assembly RapidAMP technology combines cloning and vector amplification in smaller mini-circle plasmids absent *E. coli*-based genes, thus improving overall transfection efficiency.

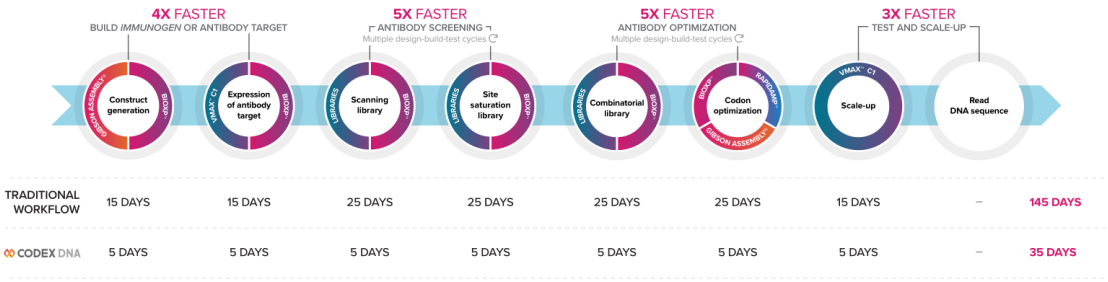
3. *Synthetic DNA for metabolic pathway engineering*. Metabolic engineering involves reconstructing and optimizing biosynthetic pathways in model organisms, creating robust "cellular factories" designed to carry out a specific task. Pathway modifications typically rely on recombinant or novel genes or gene circuits. Using recombinant or novel genes or gene circuits, metabolic pathways are modified or introduced into genomes of microbe hosts like *E. coli* or yeast. These genetically engineered hosts are routinely employed to more effectively produce valuable biomolecules for a variety of biomedical, industrial and research applications.

   BioXp system benefits: With the gene synthesis capabilities of our BioXp system and the complex genetic circuitry made possible with Gibson Assembly technology, we are able to improve the speed and accuracy of metabolic engineering for even the most complex genetic circuitry.

4. *Synthetic DNA for antibody and protein engineering of biologic drugs*. Biologics-based (e.g., antibody or protein) discovery of novel therapeutics is one of the most important areas of research for improving medical advances through engineering of antibodies or other proteins for cancer treatment, infectious diseases and inflammatory or autoimmune disorders. Monoclonal antibodies, antibody-drug conjugates, single-domain antibody variants, chimeric antigen receptor T cells (CAR-Ts) and T cell receptors (TCRs) have become invaluable therapies due to their robust recognition of targets and relatively lower side effects compared to traditional small molecule therapies.

   Desirable properties for therapeutic antibody products include high antigen-binding affinity, specificity, low immunogenicity, solubility, stability, manufacturability and adequate pharmacokinetics. Researchers involved in biologics discovery and antibody and protein engineering often leverage DNA variant library screening as an essential step in the discovery workflow. A major constraint in antibody discovery has been long lead times associated with sourcing custom-built DNA libraries used to screen new antibody variants.

Figure 14: Our solution accelerates development of antibody- and protein-based drug candidate workflows.



Customers are increasingly using our BioXp kits for variant libraries to accelerate the *design-build-test* phases for their antibody screening and optimizations stages. Specifically, utilizing libraries on the BioXp system across library synthesis, affinity maturation and codon optimization workflows accelerates research by improving productivity and reducing the time and costs associated with certain drug discovery and development programs. Additionally, we believe, with our broad menu and wide selection of library types, including combinatorial, scanning and custom libraries, we provide flexibility in antibody screening and optimization analysis to serve different needs (e.g., stability, epitope optimization) at various points in the workflow. Furthermore, these libraries are synthesized with our proprietary error-correction technology, with what we believe to be the lowest error rate in the industry, as low as one per 80,000 base pairs, resulting in high fidelity genes.

Protein engineering is another synthetic biology enabled workflow of significant importance and caters to the growing need for improved enzymes and bioproducts for industrial production. Enzyme engineering typically begins with research to find a candidate with the best starting properties to use as a template followed by engineering cycles to find enzymes with enhanced properties.

After enzyme discovery, the build phase involves iterative rounds of library synthesis with an improved variant from the previous round selected as the template for the subsequent round. Subsequent build phase construction is rate limiting because of its sequential nature: design iterations cannot be conducted in parallel because the output from the previous phase is required as input for the next phase. Finding ways to shorten the time in this phase is key to reducing the overall project timeline. A second consideration is the burden of screening. Library synthesis can generate thousands or even hundreds of thousands of variants that must be screened to identify beneficial ones. Limiting the number of variants with a rational approach to library design combined with an automation system that amplifies and assembles constructs with high fidelity is a key strategy to minimizing project timelines while also maximizing the probability of identifying the most beneficial variants in an unbiased manner.

BioXp system benefits: Our BioXp system provides an accelerated path for generating combinatorial libraries, variant gene fragments and clones across all steps, including screening, optimization and expression, which increases the quantity and quality of suitable candidates to advance into additional downstream applications and reduces build phase time by over 80%. As a result, the BioXp system can deliver up to 32 libraries in 8 to 24 hours once the reagents are received, compared to the traditional method, which, depending on the method used, can take weeks to months. We believe adopting the BioXp system into the antibody or protein engineering workflow often results in the increased generation of validated leads.

5. *Immune monitoring*. Immune monitoring for patients receiving cancer immunotherapy is vital for understanding the process and efficacy throughout the course of the treatment. Characterizing the immune status for insights into the therapy's potential is essential, particularly in patients who are receiving novel immune-modulating therapies. Speed and efficiency of immune assays allow for real-time feedback and the ability to be agile in a patient's treatment regimen.

   BioXp system benefits: The BioXp system's high-throughput gene synthesis and flexible cloning modalities allow for quick screening and design of novel chimeric antigen receptors (CARs), engineered TCRs, and artificial transcription factors. Different CAR designs can therefore be investigated to enhance their tumor specificity or to fine-tune T cell activity. Further, the development of novel gene circuits or CARs to increase effectiveness of CAR-T therapy by engineering T cell mobility or mitigating immunosuppressive cues in the cancer microenvironment can help drive improved efficacy.

Synthetic mRNA Application Workflows

With the BioXp system, scientists can perform rapid, high-throughput synthesis of biologically active mRNA in a hands-off, automated fashion in 8 to 24 hours. Our BioXp system is able to fully automate mRNA synthesis for the research market and offers a comprehensive value proposition that includes reduced turnaround time from weeks to days, enhanced quality and complete workflow control. Our solutions allow customers to address many target applications across multiple market segments.

1. *Synthetic mRNA for infectious disease vaccine discovery and development*. The need for rapid vaccine development in response to emerging pathogens has become increasingly clear during the COVID-19 pandemic. However, vaccine manufacturing is consistently complicated for manufacturers, regulators and public health officials, especially for endemic viruses (e.g., influenza), where manufacturers must adjust the vaccine to counter the virus' constant antigenic variation. To start a new influenza vaccine manufacturing campaign, a key material, the vaccine seed virus, must be changed frequently to match circulating strains in order to track the virus' antigenic evolution. The existing systems for accomplishing vaccine strain changes have required the shipment of viruses and other biological materials around the globe, which have caused delays in vaccine availability. Existing systems have also used legacy techniques such as egg-based virus cultivation, resulting in vaccine mismatches.

   In comparison, mRNA vaccine production is simple, cost-effective and can be easily adapted to accommodate new candidates within an established manufacturing pipeline. Given this, vaccinology has recently seen a shift toward synthetic mRNA approaches, which allow for rapid, scalable and cell-free manufacturing of prophylactic and therapeutic vaccines. For development of mRNA vaccines, *de novo* gene synthesis allows for increased specificity of antigen proteins, more efficient vaccine adjuvants, and safer specialized vectors. Through codon-optimization of these genes and vectors,

targeted and safe vaccines can be created rapidly to treat newly emerging viral threats, such as influenza, coronaviruses and Ebola.

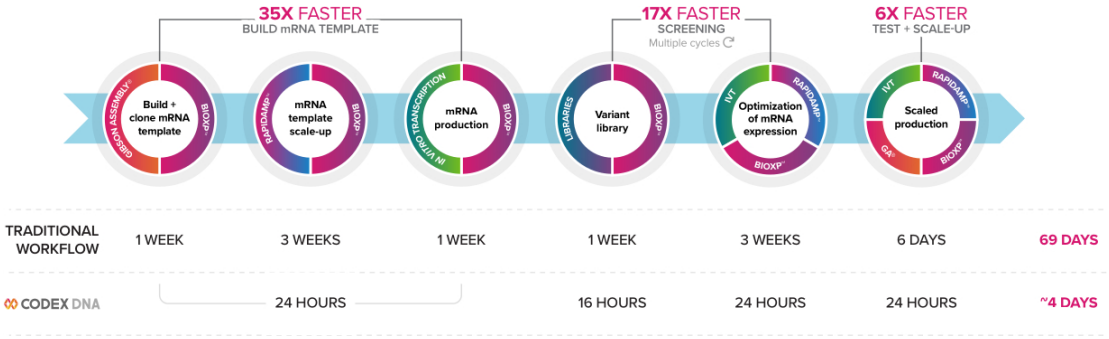
Gene synthesis with codon-optimization and mutant libraries using the BioXp system can accelerate the speed of vaccine development by improving the efficacy and safety of the resulting recombinant genes, adjuvants and vectors. Also, pairing antigen epitope mapping technology with the BioXp system's ability to rapidly iterate is accelerating rational design strategies for vaccine development.

BioXp system benefits: We believe our end-to-end solution for the rapid and accurate production of cell free synthetic DNA and mRNA, when combined with our BioXp protein kit that is currently in development, positions the BioXp system for rapid adoption within high-growth vaccine and therapeutic markets, as it allows for the acceleration of product development cycles by addressing critical bottlenecks. This is especially important for infectious disease vaccine development, such as for influenza, where the key bottleneck is the lack of quick strain *design-build-test* cycles close to flu season that makes vaccine response unpredictable.

2. *mRNA-based vaccines for precision medicine*. Neoantigens, or tumor mutated specific antigens, are major tumor rejection antigens, allowing tumors to activate the immune system and induce an efficient anti-tumor response. As personalized medicine for cancer therapeutics ramps up and becomes more feasible and affordable, individual patient neoantigen development is increasingly important. Identification of these neoantigens has greatly improved with recent advancements in deep sequencing and bioinformatics technologies. Gene synthesis and mRNA production then allow for these predicted neoantigens to be synthesized and tested for T cell reactivity, differentiating true immunogenic neoepitopes from putative ones. Since patients' mutated antigens are largely unique to the individual, speed is one of the most important goals in identifying and verifying true neoantigens for induction of the T cell-mediated immune response.

   BioXp system benefits: The BioXp system's on demand high-throughput gene and mRNA synthesis and flexible cloning into a variety of vectors allow for quick screening and development of the best personalized cancer treatments. In addition, our Gibson Assembly RapidAMP cloning and amplification process avoids the use of *E. coli*, thus eliminating endotoxin contamination and unwanted immunogenicity.

Figure 15: Our solution can deliver up to 10 micrograms of biologically active mRNA in 8 to 24 hours for mRNA-based vaccine and therapeutics workflows



3. *mRNA-based therapeutics*. With COVID-19 vaccines leading the way, mRNA has become one of the more promising classes of therapeutics and is being validated by key industry players (e.g., Avantor, Inc., Moderna, Inc., and Maravai LifeSciences Holdings, Inc.) and emerging mRNA delivery companies (Precision NanoSystems Inc., Nutcracker Therapeutics, Inc.). Monoclonal antibody-based drugs require complex production and purification processes and aberrant post-translational modifications of the antibody are a problem. An mRNA-based approach is a possible solution, whereby the genetic information of the antibody, not the antibody itself, is delivered. Transient gene transfer aims at

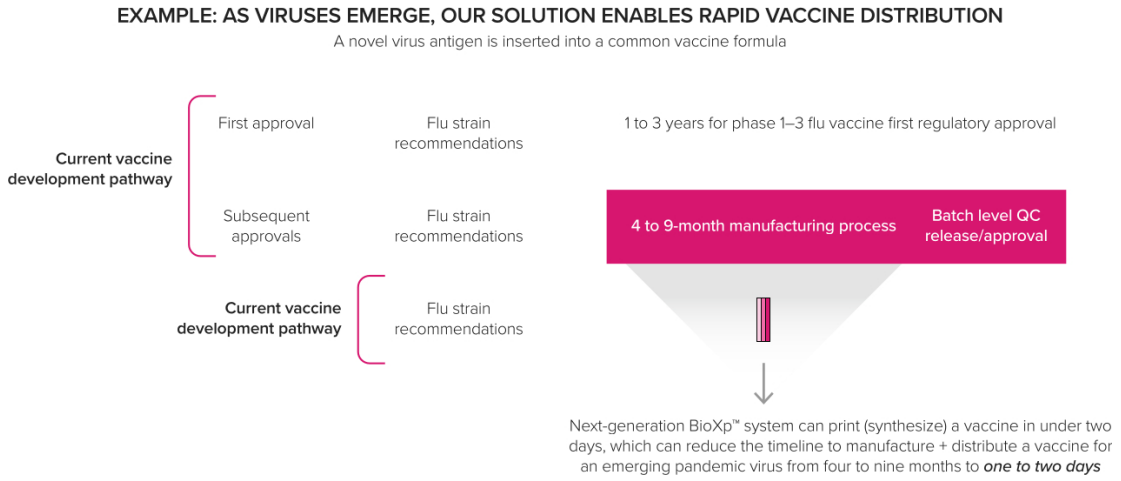
administering the mAb-encoding nucleotide sequences in DNA or mRNA form, rather than the mAb protein itself, directly to patients. This allows for the *in situ* production of biologicals in a cost- and labor-effective manner, potentially for a prolonged period of time. Although past research has been mainly focused on the development of plasmid DNA, the limitations associated with these “classical” approaches and the recent improvements in stability and translatability of *in vitro* transcribed (IVT) mRNA have recently led to an increased interest in mRNA as a delivery vector. In addition to safer pharmaceutical properties, such as no risk of genome integration, the transient expression of mRNA-encoded antibodies enables a more controlled exposure, with more protein production during peak expression compared to plasmid DNA.

4. BioXp system benefits: Our BioXp system can be used to rapidly produce small-scale, biologically active mRNA for accelerated iteration of the design-build-test paradigm for the identification of therapeutic candidates. In addition, a wide menu of on demand automated library synthesis enables the customer to further speed up iterative design-build-test paradigm during the drug discovery and development continuum. When library synthesis is used in combination with mRNA production, we estimate that a customer can reduce turnaround times by weeks or months when using the BioXp system for screening and optimizing the mRNA products that have the most desirable pharmaceutical properties.

Workflow solutions in development

1. *Global distributed manufacturing of vaccines*: We aim to transform public health by enabling a new approach to producing vaccines, therapeutics and diagnostics. Based on our proprietary automated synthesis technology, we are building a self-contained system that can print life-saving treatments, starting only from information delivered digitally on our DBC system.

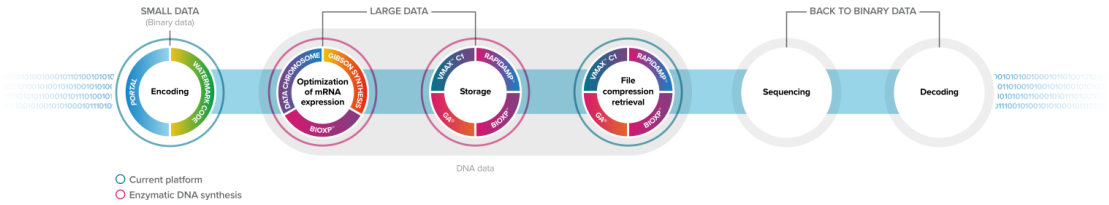
Figure 16: We envision our BioXp vaccine-printer could significantly impact manufacturing times and supply chains in the future.



By activating a global network of DBC systems, we believe it will be possible to accelerate the development and delivery of “on-demand” vaccines anywhere in the world, ultimately allowing rapid responses to disease outbreaks. We believe that the instantaneous electronic exchange of sequence data, followed by local gene synthesis and vaccine production, may replace the cumbersome isolation and shipment of viruses and nucleic acids between geographically dispersed sites where vaccines are manufactured. Also, by stocking systems with all of the materials needed for vaccine synthesis, the DBC network is designed to overcome many of the supply chain challenges that have emerged during the COVID-19 pandemic. Thus, we believe our technology will be able to replace antiquated centralized manufacturing systems with a modern distributed manufacturing systems.

2. *Synthetic DNA for digital data storage*: DNA data storage has been a growing area of interest due to its encoding power with a capacity to store more than 200 petabytes (each one million gigabytes) of data per gram of DNA. Our technology can be mapped to nearly all of the critical steps in the DNA data storage workflow, including (1) encoding a binary digital file into a DNA sequence data file, (2) synthesizing the DNA data file, (3) storing millions of DNA data files in one tube of DNA and (4) retrieving the DNA data file from the tube. Using our BioXp system, which is designed to have the capacity to store 108 kilobytes of data (e.g., single web pages and small images) per instrument per day, the entire DNA data storage workflow can be collapsed into a single automated system.

Figure 17: We envision our BioXp digital data storage solutions will be critical to enabling the broad-based use of distributed applications.



Our Technology

Our system is powered by many key innovations that provide unparalleled capabilities, notably:

Gene synthesis

Our robust gene synthesis process is proprietary and enables the simultaneous assembly of hundreds of oligonucleotide pools of up to several thousand kilobase pairs in length, including a wide range of complexity (e.g., 20-70% GC content, repetitive DNA sequence). Our proprietary error-correction process produces synthetic DNA sequences, virtually error-free, from beginning to end. BioXp Gene synthesis kits leverage this proprietary gene synthesis technology, which involves:

- the design of single-stranded oligonucleotide sequences comprising a DNA sequence, and novel chemistry and thermal cycling parameters for the robust assembly of those chemically synthesized oligonucleotides into long double-stranded DNA products; and
- a two-step error-correction process where error-containing DNA products are removed through a combination of a mismatch-specific endonuclease working in concert with an exonuclease.

In the final step, only error-free genes are amplified by PCR resulting in high yields of error-free DNA. Because all applications currently rely on gene synthesis, this technology is used within every BioXp kit. We have also developed a second proprietary gene synthesis process that uses ultra-short oligonucleotides that assemble into high-fidelity synthetic genes without enzymatic error correction procedures.

Library synthesis

Our robust gene synthesis technology enables the construction of several DNA variant library types including:

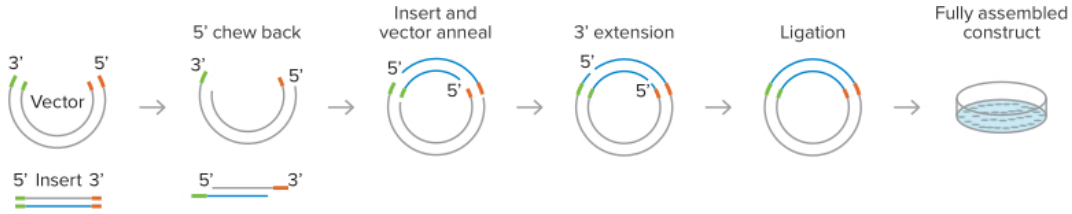
- scanning libraries with varied single, contiguous amino acid sites, including site-saturation and alanine scanning libraries;
- combinatorial libraries with varied, multiple non-contiguous amino acids sites using degenerate bases to optimize protein binding and function; and
- targeted libraries, with specific mutations distributed over the sequence space to achieve the desired diversity.

Our library synthesis technologies are powerful tools for manipulating protein structures for optimization studies in biologics discovery, protein engineering and several other disciplines. This technology is included in our BioXp library kits and enables the BioXp system to generate as many as 96 libraries per instrument in 8 to 24 hours, with each library containing an amino acid diversity as high as 10^{22}.

DNA cloning

Our robust molecular cloning method is proprietary and commonly referred to as Gibson Assembly across the industry. The method can simultaneously combine as many as 10 DNA fragments based on sequence identity. It requires that the DNA fragments contain approximately 20 to 40 base pair overlaps with adjacent DNA fragments. These DNA fragments are mixed with a cocktail of three enzymes, along with buffer components. The three required enzyme activities are: exonuclease, DNA polymerase, and DNA ligase. The exonuclease splits DNA from one of its ends resulting in single-stranded regions on adjacent DNA fragments, which can anneal to each other. The DNA polymerase incorporates nucleotides to fill in any gaps. The DNA ligase covalently joins the DNA of adjacent segments, thereby removing any imperfections in the DNA. The resulting product is different DNA fragments joined into one. Either linear or closed circular molecules can be assembled. With over 6,000 citations in scientific literature, Gibson Assembly is one of the most widely-used molecular cloning methods used to create recombinant DNA. It is named after its creator, Dr. Daniel Gibson, who is our Chief Technology Officer and co-founder. The Gibson Assembly method can be used to rapidly clone multiple DNA fragments into any vector in one hour or less without the use of restriction enzymes.

Figure 18: Gibson Assembly technologies for DNA assembly



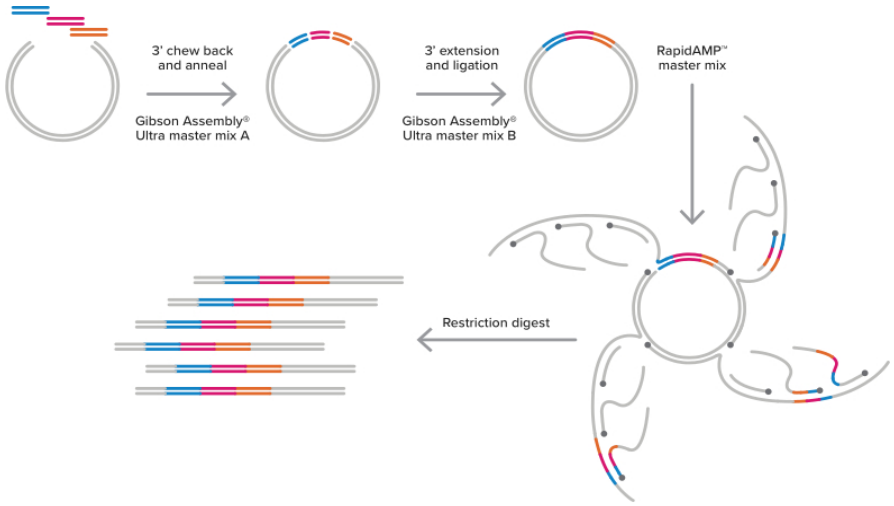
The BioXp cloning kits leverage Gibson Assembly in a proprietary fashion to bring together up to four gene fragments in up to four vectors, permitting larger DNA to be constructed and providing increased flexibility in cloning strategies. Multi-fragment assembly and cloning on the BioXp system gives customers the power to design, build, test and iterate genes more rapidly.

Cell-free amplification of cloned DNA

The Gibson Assembly process generates circular products that are permanently sealed by DNA ligase. We have taken advantage of these two essential features to develop a proprietary cell-free amplification process that combines our Gibson Assembly technology with components of the well-established rolling circle amplification (RCA) technology. Once the Gibson Assembly reactions are complete, reaction products are incubated for several hours in a mixture containing a DNA polymerase and random hexamers. The BioXp RapidAMP cell-free DNA amplification kit and the benchtop Gibson Assembly RapidAMP kit leverages this technology to allow users to assemble and amplify constructs to achieve transfection-ready DNA in a single day. With this technology, high-quality, high-fidelity DNA can be rapidly produced, all while eliminating tedious tasks associated with transformation, cell culture and *E. coli* harvest. Gibson Assembly RapidAMP reagents are available as a benchtop reagent kit or an automated cell-free amplification solution for the BioXp system. Benefits include:

- accelerated *design-build-test* cycles;
- endotoxin-free DNA products;
- an alternative to amplification strategies that fail due to biological reasons within host organisms; and
- propagation of DNA without unwanted vector elements.

Figure 19: Gibson method for cell-free DNA production



System engineering and automation

The BioXp system contains fluid processing and precise thermal control to run all applications, including the synthesis and scale-up of DNA and mRNA. The proprietary and highly reliable automation components of the BioXp system include patented thermalcycler technology and sample handling and sealing devices. Significant software development has resulted in an easy-to-use interface with robust diagnostics and error detection as well as remote access capability to quickly address any issues. Job processing commands are highly tuned, resulting in consistent performance and reliability. Key features of the BioXp 3250 system include:

- a high precision patented thermalcycler for precise control of thermal cycling parameters;
- a high-precision fluid handling system for accurate transfer and mixing of reagents;
- a high-reliability 5-axis motion control system for accurate positioning;
- an integrated camera system for confirmation of proper loading and reading barcodes on the components of BioXp kits;
- a touchscreen interface and integrated computer processor, which allows for simple, intuitive operation;
- internet connectivity enabling custom scripts to be loaded for each customer's needs, post-run data to be retrieved and remote service/updates to be performed;
- a proprietary sample handling system that allows movement of samples throughout the process; and
- a flexible system design that anticipates development of new protocols to continue collapsing customer workflows.

Cloud-based design and analytics

The BioXp portal includes design tools used to break down desired DNA sequences into building blocks sent to the user, ultimately to be synthesized and assembled on the BioXp system. Predictive modeling of the complexity and level of difficulty ensures that the probability of success in building a DNA sequence is greater than 98%. The co-development process by our biologists and engineers has resulted in a proprietary combination of synthetic biology and automation. The BioXp system is highly flexible and is controlled by processing information from the cloud, tailored for a user's specific application. There is no need for the user to develop custom processing scripts or modify parameters because our ordering software and associated BioXp barcodes ensure that the desired application is processed.

Large and complex DNA synthesis up to complete genomes

Our gene synthesis technology in combination with the Gibson Assembly cloning process is what enables us to excel in the automated synthesis and engineering of large and complex DNA constructs. Our proprietary tools combine

novel DNA design, synthesis and assembly techniques to manufacture long DNA constructs, including the synthesis of a complete genome or chromosome. Using these technologies, our team has chemically synthesized several bacterial and viral genomes, including some of the largest chemically-defined structures ever synthesized in a laboratory.

The final genetic constructs required to develop many commercial applications are longer than those that can be readily synthesized using standard industry techniques. While a simple sequence of genes may be several thousand base pairs long, the genomes of many bacteria may be up to several million base pairs long, while the genomes of some viruses can exceed one million base pairs in length. Traditional DNA synthesis and assembly approaches are not practical for synthesizing genomes of that length.

Vmax host cell engineering

Vmax is an engineered form of *Vibrio natriegens*, which, under optimal conditions, has the fastest known growth rate of any non-pathogenic organism. Vmax has high-value applications in research and commercial production. Many high-value pharmaceuticals, industrial enzymes and chemicals are currently made in bacteria such as *E. coli.* We aim to improve the manufacturing of these products with Vmax, especially the high-value biologics. We have developed advantaged Vmax strains and reagents for molecular cloning (Vmax C1) and protein expression (Vmax X2) applications. We have commercialized Vmax X2 and intend to commercialize the Vmax C1 as benchtop reagents. We believe that, in one to two years, Vmax could be capable of challenging the dominance of the prevailing *E. coli* cell-based production systems that are used to produce many high-value pharmaceuticals, industrial enzymes and chemicals. We plan to monetize Vmax cell lines through arrangements with biopharmaceutical companies.

Research and Development

Our research and development team has been at the forefront of discovery and development of synthetic biology workflows for over 15 years, including more than 10 years of experience automating many of those processes. We believe that this experience gives us industry-leading know-how, intellectual property and time-to-market advantages with respect to new products. We have specific and valuable experience and knowledge related to problem solving and have a deep knowledge of applicable synthetic biology research and development methodologies. We have particularly strong technical core competencies related to constructing large and complex strands of DNA and automating synthetic biology applications across multiple end-to-end workflows.

The overarching goals of our research and development programs are to continue to bring new technologies to market that address the most pressing questions in synthetic biology solutions. Our research and development department hosts the key proprietary synthetic biology tools and technologies, with applications across a wide variety of industries, sponsors research and development efforts to apply those tools and develops new opportunities. To this end, we plan to focus our research and development efforts on the following areas:

- *Strategic partnerships*: We focus partnering efforts in the areas of mRNA vaccines, biologics discovery, cell engineering and DNA data storage validating our technology systems.
- *New capabilities and solutions for our current BioXp system*: Our development efforts include new reagent modules such as a protein synthesis kit and a large-scale mRNA synthesis kit. The BioXp protein synthesis kits will be designed to enable broad adoption for the small-scale production of research-grade protein for several workflows, especially for biologics discovery and development. The BioXp large-scale mRNA synthesis kit will contain all the reagents necessary to make 100 micrograms of biologically active synthetic mRNA and will include custom-cloning vector capabilities. In addition, we are developing a product line extension for our BioXp system in the form of a higher throughput BioXp 9600 automated workstation, which has approximately three times the processing capability of our current system.
- *New workflow solution-focused products*: In the near-to-medium term, our primary focus is on perfecting our enzymatic DNA synthesis reagent solution which will enhance our margins by allowing us to in-source the production of key reagent components. Once developed, this technology will be integrated into the BioXp Oligo Printer system, which will physically connect to the BioXp 9600 system as the front-end system for the on-demand enzymatic DNA synthesis manufacturing of oligonucleotides.
- *A distributed drug manufacturing system*: Longer term, we aim to develop reagent and instrumentation solutions that will enable the distributed manufacturing of biological materials on the BioXp DBC

system. Following this, we aim to develop the BioXp Needle-Ready Vaccine Printer system, a fully automated, push-button and walkaway printer that is designed to enable the distributed manufacturing of vaccines. This system is intended to produce several hundred doses of a DNA or mRNA vaccine per run in less than 48 hours.

As of March 1, 2021, we employed 22 employees in R&D, primarily located in San Diego, California. The R&D team consists of two teams, a scientific and an engineering team.

- ***Scientific Team:*** Twelve experienced scientists, approximately two-thirds of whom hold a Master's degree and one-third of whom hold a Ph.D. The majority of the scientists are molecular biologists with vast experience in building new technologies related to benchtop and automation procedures for DNA sequencing and synthetic biology workflows. The team is led by Dr. Daniel Gibson, who is responsible for some of the foundational discoveries in synthetic biology, including the Gibson Assembly method.
- ***Engineering Team***: Ten personnel with expertise in software, fluidics, mechanical, electrical and embedded firmware development in both RUO and good manufacturing practice (GMP) environments. The team has decades of experience in applications of state-of-the-art engineering designs and solving complex systems for laboratory and medical devices. They are experts in translating the latest molecular biology workflows into reliable, repeatable robotic fluid handling steps processed under precise temperature controls.

Manufacturing

Our product portfolio includes the BioXp 3250 system, Gibson Assembly, Vmax X2 cells and biofoundry services. Our operational infrastructure ensures that the entire production line, including supply chain, reagent kit manufacturing, biofoundry services, quality control, process development, filling and packaging, quality assurance and logistics, is fully integrated and coordinated.

We utilize single-source third parties for assembly of key components of our BioXp instrument and other suppliers to provide key reagents. We have identified a list of our single-source suppliers for key reagents and have started to identify and validate new second-source suppliers for those key reagents. Having dual sources for certain of our raw materials will reduce the risk of a potential production delay caused by a disruption in the supply of a critical raw material or component. Our mitigation plans for these single-source key reagents is to have six to twelve months of safety stock inventory on hand as we qualify new second-source suppliers. For the key reagents where we cannot find a suitable second-source supplier, we plan to continue to maintain our six to twelve month safety stock inventory.

We create validation protocols for each potential new second-source supplier and only add those new second-source suppliers once they have met the validation requirements. We require testing on three separate lots of the new key reagent and we validate key reagent performance and expiration dating compared to the current key reagent performance and dating criteria. Each validation protocol is different as each key reagent will have different characteristics and testing protocols as well as acceptance criteria and expiration dating.

BioXp 3250 system manufacturing is contracted out to D&K Engineering, Inc. (D&K), a third-party ISO 13485 Certified and FDA registered contract manufacturer located in San Diego, California. D&K services several of the largest life science instrument companies. It has proven capabilities related to design optimization, new product launches and product line extensions, as well as an ability to facilitate a substantial scale-up of unit volumes, thereby supporting our growth for the foreseeable future. Its capabilities include GMP-compliant manufacturing, which may be relevant to our future product launches. We do not have a long term supply agreement with D&K, and rely on it to provide quotes and accept purchase orders that we issue from time-to-time. Our outsourced production strategy is intended to drive cost leverage and scale and avoid the high capital outlays and fixed costs related to constructing and operating a manufacturing facility. Under the terms of our relationship with D&K, we have historically benefited from volume-based pricing on our purchase orders. We perform final quality control testing of the BioXp 3250 system in-house at our facility in San Diego. Turnaround time for BioXp 3250 production is typically two to three weeks. We keep the contract manufacturer aware of our future supply needs based on a rolling three-quarter forecast and typically maintain less than thirty days of inventory.

In October 2015, we entered into a Supply Agreement with Integrated DNA Technologies, Inc. (IDT), a division of Danaher Corporation, which was amended in March 2020 (the Supply Agreement), pursuant to which IDT agreed to

supply us with oligonucleotides, which we use as reagents in our research and commercial operations. The prices of the oligonucleotides purchased pursuant to the Supply Agreement are fixed during the term of the Supply Agreement, subject to minimum ordering requirements. The Supply Agreement contains certain dedicated capacity representations, but does not commit IDT to supply any minimum amount of oligonucleotides outside of accepted purchase orders. The initial term of the Supply Agreement was for a period of five years, which expired in October 2020, but automatically renews for consecutive one-year terms, unless a cancellation notice is given by either party ninety days prior to the end of the then current term.

Figure 20: Manufacturing process for the BioXp 3250 system

Reagent manufacturing and storage is completed within our headquarters in San Diego, California. All reagents are manufactured, quality-control tested and released to inventory by our quality assurance department certifying that our reagents meet our quality standards. We maintain safety stocks of key reagents in quantities that we believe mitigate the effects of any supply disruptions. As a result, customer orders for reagents can typically be completed for next-day delivery. Key components of the reagents are sourced from well-established third parties, most notably, IDT and Eurofins Scientific SE.

Figure 21: Manufacturing of BioXp kits and benchtop kits

As of March 1, 2021, we had 15 employees dedicated to operations, with nine focused on manufacturing, three focused on quality control and three focused on logistics.

Commercial Operations

We commercially launched our current solution in September 2019, which now includes the BioXp 3250 system, BioXp kits with associated cloud-based application scripts, and benchtop reagent kits. From the initial launch of our solution through March 1, 2021, we have launched a total of seven BioXp kits, three benchtop reagent kits, and several other synthetic biology products, including 10 SARS-CoV-2 full-length genomes as well as our Vmax X2 cells. We have placed approximately 25 BioXp 3250 systems globally. We target customers in the fields of personalized medicine, biologics drug discovery, vaccine development, genome editing and cell and gene therapy. As March 1, 2021, our customer base was composed of over 300 customers and included 17 of the 25 largest biopharmaceutical companies in the world ranked by 2020 revenue. Our customer base also includes leading academic research institutions, government institutions, CROs and synthetic biology companies.

As of March 1, 2021, we employed a commercial team of 38 employees, many with significant industry experience. Of the 38 commercial employees, 30 were in sales, marketing and corporate development. As of March 1, 2021, our commercial team included 15 quota carrying sales professionals spanning business development managers, inside sales and field application scientists. We employ a direct sales model in North America and four major European markets (United Kingdom, Germany, France and Benelux), while selling through 30 channel partners across Europe, the Middle East, Africa and Asia Pacific.

Our commercial team is focused on driving active placements of BioXp systems and maximizing their utilization at the most iterative, costly and time-consuming steps across our customers' workflows. Potential customers can gain access to our system via direct purchases, services offerings or through strategic partnerships.

To maximize our commercial reach, we have over 30 distribution agreements with international channel partners for our products. These agreements allow us to reach approximately 60 countries globally, with key focus on networks in Europe, the Middle East, Africa and Asia Pacific. We have a key European logistics hub in Italy in partnership with Bright Bioworks S.r.l and a relationship with a European software engineering company, Solvd, Inc., to support our customer portal and to provide European customer and technical support. We sell our products directly in the U.S., providing instrument field services through a hybrid of in-house and third party-contracted engineering support.

As of March 1, 2021, we employed a service and support team of eight employees focused on delivering an outstanding customer experience.

Competition

Our market is characterized by highly competitive and dynamic products, rapid technological advancements and continually evolving customer demands. We face competition from core synthetic biology systems, such as Thermo Fisher Scientific Inc.; Danaher Corporation; CureVac N.V.; GENEWIZ Group, which was acquired by Brooks Automation, Inc.; GenScript Biotech Corporation; DNA Script SAS; Integrated DNA Technologies, Inc.; Molecular Assemblies, Inc.; Nuclera Nucleics Ltd; Nutcracker Therapeutics, Inc.; Twist Bioscience Corporation and others. Our competitors and their products and services are focused on discrete steps across various synthetic biology applications including gene synthesis, protein engineering, cell engineering, tools and automation, software, food and agriculture, materials, aquaculture, biopharmaceutical, health and others.

While our industry is composed of many companies offering services or discrete products, we believe there is a lack of an existing, comprehensive solution enabling end-to-end control of biologics and vaccine discovery and development workflows in-house.

Arrangements with Commercial and Governmental Entities

We believe that our technology is applicable to discovery and development in the following fields: vaccines, biologics, diagnostics, agriculture, animal health and food science. In the ordinary course of business, we enter into arrangements with commercial channel partners and others to maximize our commercial reach. For example:

- We have completed an evaluation and scientific services partnership relating to engineered variants of SARS-CoV-2 with a major pharmaceutical company.
- We are in the process of establishing evaluation and service agreements with several smaller vaccine and therapeutically focused biotechnology companies.
- We have completed multiple outlicense and service/supply agreements with diagnostic product providers, enabling engineered synthetic controls for laboratory proficiency and diagnostic kits or drug screening services.
- We have licensed our DNA technology to a food sciences company for cellular engineering in plant-based meat products.
- For product development and commercialization, we have entered into early access and beta test agreements with target customers to obtain their feedback on near-launch products prior to global product launch. Recent examples include Vmax C1 beta test material transfer agreements and BioXp script development agreements.
- We have also granted non-exclusive research product outlicenses to three research reagent providers under our Gibson Assembly patents and receive ongoing royalties on their sales of licensed products.

We are a sub-awardee of a multimillion-dollar, multiyear grant from the United States Department of Agriculture relating to screening and prevention of citrus greening diseases. We also work with several U.S. government laboratories and large state health laboratories to ensure prompt access to synthetic genomes useful for monitoring pandemic response.

We enter into these arrangements in the ordinary course of business and do not consider any one of them to be material to our business.

Intellectual Property

Protection of our intellectual property is fundamental to the long-term success of our business and is an important commercial strategy. Like other companies in the life sciences industry, we seek to protect our significant technologies by pursuing and maintaining patent protection. We also seek to protect aspects of our business as confidential know-how and as trade secrets. Our commercial success depends in part upon our ability to obtain and maintain protection afforded by laws directed toward intellectual property rights, to defend and enforce these rights and to operate without infringing the intellectual property rights of others.

The patent positions for high-technology, life sciences companies like ours are generally uncertain and can involve complex legal, scientific and factual issues. Issued patents are subject to interpretation as to their scope and

applicability, and that uncertainty is typically not resolved in whole or in party except in litigation. Patent applications involve even more uncertainty because the scope of claims pending in a patent application may be significantly reduced or otherwise changed in order to obtain the grant of a patent. Moreover, even if granted, the scope, validity and enforceability of granted claims can be challenged in a variety of proceedings. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, including lack of novelty, obviousness or non-enablement. Grounds for an unenforceability assertion could be an allegation that someone connected with prosecution of the patent withheld relevant information from the relevant patent office, or made a misleading statement, during prosecution. Third parties may also raise similar claims before administrative bodies in the United States or abroad, outside of the context of litigation *per se*. Such mechanisms include *ex parte* re-examination, *inter partes* review, post-grant review, derivation and pre- and post-grant opposition proceedings.

As a result, we cannot guarantee that any of our products or technologies will be protected or remain protectable by enforceable patents. We cannot predict whether any particular patent application that we are currently pursuing in any particular jurisdiction will be granted as a patent or whether the claims of any patents we obtain will sufficiently exclude others from making, using or selling products or services in competition to us. Nor can we guarantee that third parties will not circumvent our patent claims by designing around them.

Changes in the patent laws or interpretation of the patent laws in the United States or in other jurisdictions could increase these uncertainties and the costs surrounding prosecution of patent applications and enforcement or defense of issued patents. For instance, under the Leahy-Smith America Invents Act (the America Invents Act), enacted in September 2011, the United States transitioned to a first inventor to file system in which, assuming that other requirements for patentability are met, the first inventor to file a patent application on a given invention is entitled to a patent on the invention regardless of whether a third party was the first to invent the claimed invention. The America Invents Act also provides for third-party submission of prior art to the USPTO during patent prosecution and additional procedures to challenge the validity of a patent after grant, including post-grant review and *inter partes* review. The America Invents Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents, all of which could have a material adverse effect on our business, financial condition, results of operations and prospects.

Furthermore, the courts have held that patent claims that recite laws of nature are not patent eligible, but patent claims that recite sufficient additional features that provide practical assurance that claimed processes are genuine inventive applications of those laws may be patent eligible. But what constitutes a “sufficient” additional feature is the subject of uncertainty. The USPTO has published and continues to revise and publish guidelines for patent examiners to apply when examining claims for patent eligibility as the case law continues to evolve. Patent eligibility is also an area of the law under continual development in other jurisdictions around the world.

In addition, U.S. Supreme Court rulings have narrowed the scope of patent protection available in certain circumstances and weakened the rights of patent owners in certain situations. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents, once obtained.

Our patent portfolio includes more than 300 pending or issued cases worldwide. The portfolio focuses on instruments, devices and methods for synthesizing and assembling high-fidelity DNA, while also including genome engineering and editing technologies. The instrument portfolio includes domestic (U.S.) and foreign patents for the BioXp and the DBC instruments, which allow users to synthesize DNA molecules of specific sequence from pre-synthesized oligonucleotides or directly from digital DNA sequence using nucleotides, thus allowing users to rapidly synthesize DNA molecules on demand in their own laboratory. Further protection is provided by method patents relating to molecular biology processes performed on the instruments, patents protecting a key instrument component and a bio-security component useable with the instruments to counter misuse. The DNA synthesis portfolio features the widely used Gibson Assembly method, a staple method in DNA laboratories around the world that allows users to join multiple DNA fragments in a single reaction.

Other highlights of the portfolio include a genome editing technology that provides an alternative technique to CRISPR/Cas9, a technology for generating synthetic genomes that permits the user to “pop in” novel genome segments containing pre-programmed functions, and a “watermarking” DNA data storage method for encoding human readable text conveying a non-genetic message into nucleic acid sequences. The portfolio also includes issued patents directed to “endotoxin free” *Vibrio* organisms that provide researchers with the ability to use the ultra-

fast-growing *Vibrio natriegens* (Vmax) organism in research and production applications with reduced risks of endotoxin in the product. More recently filed patent applications relate to a technology focused on building DNA molecules of ultra-high fidelity suitable for synthetic biology applications, and a technology permitting users to synthesize any possible DNA sequence at high fidelity from a library having a limited number of oligonucleotide members.

The portfolio contains U.S. patents or allowed U.S. applications relating to the BioXp and DBC instruments, and our Gibson Assembly methods and several foreign patents relating to the BioXp systems and Gibson Assembly. The portfolio also contains U.S. patents or allowed U.S. applications relating to our fast-growing *Vibrio natriegens* host cell organisms and numerous granted foreign patents for our various DNA synthesis methods.

The portfolio includes patents and pending patent applications in three main technology areas of instrumentation, DNA synthesis and assembly and genome engineering, as follows:

Instrumentation

As of March 1, 2021, this section of the portfolio contains one allowed U.S. patent application relating to the BioXp and an issued U.S. patent for the DBC. In Australia, we have patents for both BioXp and DBC; and in Japan we have a patent for BioXp and a pending application for DBC. Other patent applications are pending in the EPO, Canada, China, Israel, and India. The nominal terms of the foregoing patents (including any patents granted on the pending applications) will expire in 2033. In addition, the portfolio contains patents to a key instrument component, a lid engineered to enclose a sample retention area within the very small confines of a laboratory instrument, issued in the U.S., Australia, and China, with a corresponding application pending in the EPO. The nominal terms of the foregoing patents (including any patent granted on the pending application) will expire in 2035. This section of the portfolio also features two U.S. patents relating to a bio-security component to counter misuse of the BioXp and DBC instruments; the nominal term of these patents will expire in 2035.

DNA Synthesis and Assembly

This section of the portfolio features the Gibson Assembly patents, and contains patents in the U.S., Europe (validated in seven European Patent Convention (EPC) member countries), Japan, India, Israel, and Canada, with pending applications in China and Singapore. The nominal terms of the foregoing patents (including any patents granted on the pending applications) will expire in 2029. In addition, this section includes a recently filed U.S. application and PCT application, and a second recently filed U.S. application, each relating to advanced methods of enzymatic DNA synthesis from a pre-manufactured library of components. These applications are still unpublished and remain confidential. Additionally, as of March 1, 2021, this section of the portfolio features:

- patents for our advanced error correction technology in the U.S., Europe (validated in seven EPC member countries), Japan, Australia, and China, expiring in 2033; corresponding applications are pending in Israel, India, Singapore. The portfolio also contains patents to an earlier error correction technology issued in the U.S., Europe (validated in six EPC member countries), Japan, Canada, and Australia, expiring in 2026;
- a pending U.S. application to a “PCR variant” method for assembling DNA molecules. The nominal term of any patent granted on this application would expire in 2037;
- patents covering our earlier (pre-Gibson Assembly) DNA assembly methods issued in the U.S. (two patents), Canada (one patent), Malaysia (one patent), and Europe (two patents, each validated in six EPC member countries), expiring in 2026;
- patents relating to a method of sequencing and retrieving individualized or monoclonized nucleic acids from a solid support, issued in the U.S. (four patents) and Europe (three patents, each validated in eight EPC member countries), expiring in 2027;
- issued patents to a PEG-mediated DNA assembly method in Europe (validated in seven EPC member countries), Australia, and Singapore, expiring in 2033, with corresponding applications pending in the U.S., Japan, Israel, India, Canada, and China;
- patents relating to a method of building large DNA molecules, issued in the U.S., Europe (validated in six EPC member countries), Japan, India, China, Australia, Singapore, and Malaysia, expiring in 2028; and
- issued patents to our Rolling Circle Amplification method in the U.S., Europe (validated in six EPC member countries), China, India, Australia, Israel, Brazil, and Hong Kong, expiring in 2026.

Genome engineering

This portfolio family contains one U.S. patent covering a vector useful in Vibrio organisms, expiring in 2036. This family also contains applications for a low endotoxin *Vibrio natriegens* host cell in the U.S. (allowed), Europe and Canada, which if granted as patents would expire in 2037. Additionally, this portfolio contains pending U.S. and European applications relating to a Vibrio organism that remains culturable after storage at low temperatures, which if granted would expire in 2038. Additionally, as of March 1, 2021, this section of the portfolio features:

- a recently allowed U.S. patent application covering our genome editing “pop in cassette” technology, as well as pending foreign applications in Canada and Australia;
- one recently allowed U.S. patent application relating to a method of editing a gene (an alternate method to CRISPR-Cas9). This family also includes patents relating to methods of cloning donor genomes and making synthetic cells issued in the U.S. (two patents), Europe (one patent validated in five EPC member countries), Japan (three patents), China (two patents), India (one patent), Australia (one patent) and Israel (two patents), expiring in 2030;
- patents relating to methods of creating synthetic cells and nucleic acid constructs issued in the U.S. (two patents), Europe (two patents, each validated in six EPC member countries), Japan (two patents), Canada (two patents), Australia (two patents) and Taiwan (one patent), expiring in 2026;
- patents relating to transplantation of a Mycoplasma genome issued in the U.S., Europe (validated in five EPC member countries), Japan, China, India, Australia, Israel and Singapore, expiring in 2028;
- patents relating to encoding identifying watermark sequences into genomes issued in the U.S., Europe (validated in six EPC member countries), Canada, Australia and South Africa, expiring in 2030; and
- patents relating to a method of transferring a genome from a bacteria into a yeast host cell issued in the U.S. and Europe (validated in the UK, Germany, and France), expiring in 2033.

We protect other valuable aspects of our business as confidential know-how, and, if eligible, as trade secrets. For example, we protect certain aspects of our manufacturing processes as trade secrets. Although trade secret protection does not expire as long as the protected information is kept secret from the public, it can be challenging to maintain such efforts. We implement measures designed to protect our trade secrets and other confidential proprietary information, including by physically restricting access to our premises and physically or electronically securing our confidential information, as well as by requiring our employees, consultants, scientific advisors, contractors and commercial partners to execute non-disclosure agreements. However, third parties may independently develop the subject matter of trade secrets that we hold, in which case we have no remedy if such parties should use such subject matter in furtherance of their own commercial interests. Further, while the law may provide remedies against third-party misappropriation or other unlawful access to our trade secrets and other proprietary information, such remedies may be difficult to obtain in practice and may not make our business whole even if successfully obtained. As a result, we may be unable to obtain meaningful benefits from laws intended to protect trade secrets or similar intellectual property rights.

In addition, third parties may initiate litigation against us alleging infringement, misappropriation or other violation of their proprietary rights or seeking a declaration of their noninfringement of our intellectual property rights. An adverse result in any such proceeding could include enjoining of the commercialization of our products, result in significant damages and have a material adverse effect on our business. Even if we are successful in any such litigation, we may be required to incur significant costs and dedicate significant personnel time in defending such litigation.

Government Regulation

FDA Medical Device Regulation

The development, testing, manufacturing, marketing, post-market surveillance, distribution, promotion, advertising and labeling of certain of medical devices are subject to regulation in the United States by the FDA under the Federal Food, Drug, and Cosmetic Act (FDC Act) and comparable state and international agencies. FDA defines a medical device as an instrument, apparatus, implement, machine, contrivance, implant, in vitro reagent or other similar or related article, including any component part or accessory, which is (i) intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of disease, in man or other animals, or (ii) intended to affect the structure or any function of the body of man or other animals and which does not achieve any of its primary intended purposes through chemical action within or on the body of man or other animals

and which is not dependent upon being metabolized for the achievement of any of its primary intended purposes. Medical devices to be commercially distributed in the United States must receive from the FDA either clearance of a premarket notification, known as 510(k), or premarket approval pursuant to the FDC Act prior to marketing, unless subject to an exemption.

The FDA classifies medical devices into one of three classes. Devices deemed to pose lower risk to the patient are placed in either class I or II, which, unless an exemption applies, requires the manufacturer to submit a pre-market notification requesting FDA clearance for commercial distribution pursuant to Section 510(k) of the FDC Act. This process, known as 510(k) clearance, requires that the manufacturer demonstrate that the device is substantially equivalent to a previously cleared and legally marketed 510(k) device or a "pre-amendment" class III device for which pre-market approval applications (PMAs) have not been required by the FDA. This FDA review process typically takes from four to twelve months, although it can take longer. Most class I devices are exempted from this 510(k) premarket submission requirement. If no legally marketed predicate device can be identified for a new device to enable the use of the 510(k) pathway, the new device is automatically classified under the FDC Act as class III, which generally requires PMA approval. However, FDA can reclassify or use *de novo* classification for a device that meets the FDC Act standards for a class II device, permitting the device to be marketed without PMA approval. To grant such a reclassification, FDA must determine that the FDC Act's general controls alone, or general controls and special controls together, are sufficient to provide a reasonable assurance of the device's safety and effectiveness. The *de novo* classification route is generally less burdensome than the PMA approval process.

Devices deemed by the FDA to pose the greatest risk, such as life-sustaining, life-supporting, or implantable devices, or those deemed not substantially equivalent to a legally marketed predicate device, are placed in class III. Class III devices typically require PMA approval. To obtain PMA approval, an applicant must demonstrate the reasonable safety and effectiveness of the device based, in part, on data obtained in clinical studies. All clinical studies of investigational medical devices to determine safety and effectiveness must be conducted in accordance with FDA's investigational device exemption (IDE) regulations, including the requirement for the study sponsor to submit an IDE application to FDA, unless exempt, which must become effective prior to commencing human clinical studies. PMA reviews generally last between one and two years, although they can take longer.

Additionally, modifications that could significantly affect the safety and effectiveness of any FDA cleared or approved products, such as changes to the intended use or technological characteristics of the products, will require new 510(k) clearances or PMAs for those distributed in the U.S., or similar foreign marketing authorizations for those distributed outside of the U.S., or require the manufacturer to recall or cease marketing the modified devices until these clearances or approvals are obtained. In particular, even after approval of a PMA, a new PMA or PMA supplement may be required in the event of a modification to the device, its labeling or its manufacturing process. Supplements to a PMA may require the submission of the same type of information required for an original PMA, except that the supplement is generally limited to that information needed to support the proposed change from the product covered by the original PMA.

If we decide to expand our products in the future to include clinical or diagnostic products that are regulated by FDA as medical devices, we will be required to delay marketing and commercialization while we obtain premarket clearance or approval from the FDA. There would be no assurance that we could ever obtain such clearance or approval. Obtaining the requisite regulatory approvals, including the FDA quality system inspections that are required for PMA approval, can be expensive and time consuming. The regulatory approval process for such products may be significantly delayed, may be significantly more expensive than anticipated, and may conclude without such products being approved by the FDA. Without timely regulatory clearance or approval, we will not be able to launch or successfully commercialize any diagnostic or clinical medical devices that we may develop in the future.

If regulated as a medical device, after a medical device is placed on the market, numerous regulatory requirements apply, including but not limited to the quality manufacturing requirements set forth in the QSRs, labeling regulations, the FDA's general prohibition against promoting products for unapproved or "off label" uses, registration and listing, the Medical Device Reporting regulation, and the Reports of Corrections and Removals regulation. The FDA can enforce pre- and post-market requirements by unannounced inspection, market surveillance and other means. If the FDA finds a violation, it can institute a wide variety of enforcement actions, ranging from an untitled regulatory letter or a warning letter, to more severe sanctions such as fines, injunctions and civil penalties; recall or seizure of products; operating restrictions, partial suspension or total shutdown of production; refusing requests for 510(k)

clearance or PMA approval of new products; withdrawing 510(k) clearance or PMA approvals already granted; and criminal prosecution.

Products Labeled and Marketed for Research Use Only (RUO)

We label and sell our products for RUO and expect to sell them to academic institutions, life sciences and research laboratories that conduct research, and pharmaceutical and biotechnology companies for non-diagnostic and non-clinical purposes. Our RUO products are not intended or promoted for use in clinical practice in the diagnosis of disease or other conditions, and they are labeled for research use only. Accordingly, we believe our products, as we currently intend to market them, are not subject to regulation by FDA. Rather, while FDA regulations require that research use only products be labeled with – "For Research Use Only. Not for use in diagnostic procedures." – the regulations do not subject such products to the FDA's jurisdiction or the broader pre- and post-market controls for medical devices.

In November 2013, the FDA issued a final guidance on products labeled RUO, which, among other things, reaffirmed that a company may not make any clinical or diagnostic claims about an RUO product, stating that merely including a labeling statement that the product is for research purposes only will not necessarily render the device exempt from the FDA's clearance, approval, or other regulatory requirements if the totality of circumstances surrounding the distribution of the product indicates that the manufacturer knows its product is being used by customers for diagnostic uses or the manufacturer intends such a use. These circumstances may include, among other things, written or verbal marketing claims regarding a product's performance in clinical or diagnostic applications and a manufacturer's provision of technical support for such activities. If FDA were to determine, based on the totality of circumstances, that our products labeled and marketed for RUO are intended for diagnostic purposes, they would be considered medical devices that will require clearance or approval prior to commercialization. Further, sales of devices for diagnostic or clinical purposes may subject us to additional healthcare regulation. We continue to monitor the changing legal and regulatory landscape to ensure our compliance with any applicable rules, laws and regulations.

As discussed above, although our products are currently labeled and sold for research purposes only, the regulatory requirements related to marketing, selling, and supporting such products could be uncertain and depend on the totality of circumstances. This uncertainty exists even if such use by our customers occurs without our consent. If the FDA or other regulatory authorities assert that any of our RUO products are subject to regulatory clearance or approval, our business, financial condition, or results of operations could be adversely affected.

In the future, certain of our products or related applications could become subject to regulation as medical devices by the FDA. For example, if we wish to label and expand product lines to address the diagnosis of disease or for use for a clinical purpose, regulation by governmental authorities in the United States and other countries will become an increasingly significant factor in development, testing, production, labeling, promotion, and marketing. Products that we may develop in the diagnostic, clinical, and healthcare markets, depending on their intended use, may be regulated as medical devices or in vitro diagnostic products (IVDs) by the FDA and comparable agencies in other countries. In the United States, distribution or marketing of medical devices will require us to comply with pre-market and post-market controls imposed by the FDA, unless an exemption applies, and we would be required to obtain either prior 510(k) clearance or prior premarket approval from the FDA before commercializing such medical device.

Laboratory Developed Tests (LDTs)

In some cases, our customers may use our RUO products in their own LDTs or in other FDA-regulated products for clinical diagnostic use, which can also increase our liability. LDTs are developed, validated and used within a single laboratory. In the past, the FDA generally exercised enforcement discretion for LDTs and did not require clearance or approval prior to marketing. On October 3, 2014, FDA issued two draft guidances that proposed to actively regulate LDTs using a risk-based approach, which would have required 510(k)s or PMAs for certain "moderate" or "high" risk devices. However, in late November 2016, FDA announced that it would not finalize the 2014 draft LDT guidance. More recently, the FDA has issued warning letters to genomics labs for illegally marketing certain genetic tests without prior FDA clearance or approval, noting that the FDA has not created a legal "carve-out" for LDTs and retains discretion to take action when appropriate, such as when certain genomic tests raise significant public health concerns. As manufacturers develop more complex genetic tests and diagnostic software, the FDA may increase its regulation of LDTs.

In August 2020, the HHS announced rescission of guidance and other informal issuances of the FDA regarding premarket review of LDT absent notice-and-comment rulemaking, stating that, absent notice-and-comment rulemaking, those seeking approval or clearance of, or an emergency use authorization, for an LDT may nonetheless voluntarily submit a premarket approval application, premarket notification or an Emergency Use Authorization request, respectively, but are not required to do so. The impact of this HHS rescission policy, including whether or how this policy will be implemented under the current administration, as well as other legislative, executive, and agency actions of the current administration remains unclear. The Biden administration has also issued a "regulatory freeze" memorandum that directs department and agency heads to review any new or pending rules of the prior administration. Any restrictions or heightened regulatory requirements on LDTs, IVDs, or RUO products by the FDA, HHS, Congress, or state regulatory authorities may decrease the demand for our products, increase our compliance costs, and negatively impact our business and profitability. We will continue to monitor and assess the impact of changing regulatory landscape on our business.

International Medical Device Regulation

To the extent we decide to seek regulatory marketing authorization for certain of our products in countries outside of the United States, we or our partners, or collaborators, will need to obtain regulatory marketing authorization for such products for the intended use in the jurisdiction where such products will be marketed. Regulatory clearance or approval in one jurisdiction does not mean that we will be successful in obtaining regulatory marketing authorization in other jurisdictions where we conduct business.

Sales of such medical products outside the United States will likely be subject to foreign regulatory requirements, which can vary greatly from country to country, as well as FDA regulation on export of medical devices. The European Commission has adopted numerous directives and standards that address regulation of the design, manufacture, labeling, clinical studies and post-market vigilance for medical devices. Under the centralized authorization procedure, devices that comply with the requirements of a relevant directive will be entitled to bear the CE conformity marking, indicating that the device conforms to the essential requirements of the applicable directives and, accordingly, can be marketed throughout the European Union and European Economic Area member states. The European Medical Device Regulation (MDR), which will replace Europe's Medical Device Directive (MDD), will be effective on May 26, 2021. Additionally, the In Vitro Diagnostic Regulation (IVDR 2017/746), which addresses several weaknesses of the In Vitro Diagnostic Directive (IVDD 98/79/EC), will apply starting on May 26, 2022. Compliance with these and other regulations outside of the United States will increase our compliance costs and exposure to liability.

Other Government Regulations

In the United States, various federal and state regulators, including governmental agencies like the Consumer Financial Protection Bureau and the Federal Trade Commission, have adopted, or are considering adopting, laws and regulations concerning personal information and data security. Certain state laws may be more stringent or broader in scope, or offer greater individual rights, with respect to personal information than federal, international or other state laws, and such laws may differ from each other, all of which may complicate compliance efforts. For example, the CCPA, which increases privacy rights for California residents and imposes obligations on companies that process their personal information, came into effect on January 1, 2020. Among other things, the CCPA requires covered companies to provide new disclosures to California consumers and provide such consumers new data protection and privacy rights, including the ability to opt-out of certain sales of personal information. The CCPA provides for civil penalties for violations, as well as a private right of action for certain data breaches that result in the loss of personal information. This private right of action may increase the likelihood of, and risks associated with, data breach litigation. In addition, laws in all 50 U.S. states require businesses to provide notice to consumers whose personal information has been disclosed as a result of a data breach. State laws are changing rapidly and there is discussion in the U.S. Congress of a new comprehensive federal data privacy law to which we would become subject if it is enacted.

Although we take measures to protect sensitive data from unauthorized access, use or disclosure, our information technology and infrastructure may be vulnerable to attacks by hackers or viruses or breached due to employee error, malfeasance or other malicious or inadvertent disruptions. Any such breach or interruption could compromise our networks and the information stored there could be accessed by unauthorized parties, manipulated, publicly disclosed, lost or stolen. Any such access, breach or other loss of information could result in legal claims or proceedings, and liability under federal or state laws that protect the privacy of personal information, such as the Health Insurance Portability and Accountability Act of 1996 (HIPAA), the Health Information Technology for

Economic and Clinical Health Act, and regulatory penalties. Notice of breaches must be made to affected individuals, the Secretary of the Department of HHS, and for extensive breaches, notice may need to be made to the media or State Attorneys General. Such a notice could harm our reputation and our ability to compete.

In the future, to the extent we develop any clinical or diagnostic medical devices, our operations in the United States and abroad will be subject to various healthcare laws and enforcement by the applicable government agencies. Such laws include, without limitation, federal and state anti-kickback or anti-referral laws; healthcare fraud and abuse laws; false claims laws; federal and state privacy and security laws, such as HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009 (HITECH), CCPA, and CPRA; Physician Payments Sunshine Act and related state transparency and manufacturer reporting laws; marketing compliance and advertising laws; and other laws and regulations applicable to medical device manufacturers. If we expand our business outside of the United States, we would be subject to additional laws and regulations in countries where we conduct business, including but not limited to the GDPR. These laws may impact our operations directly, or indirectly through our contractors, agents, or customers, and may impact, among other things, our sales and marketing strategy.

If our operations are found to be in violation of any of the federal, state, and foreign laws described above or any other current or future fraud and abuse or other healthcare laws and regulations that apply to us, we may be subject to significant penalties, including significant criminal, civil, and administrative penalties, damages, fines, imprisonment for individuals, exclusion from participation in government programs, such as Medicare and Medicaid, and we could be required to curtail or cease our operations. Any of the foregoing consequences could seriously harm our business and our financial results.

Given the evolving nature of our industry, legislative bodies or regulatory authorities may adopt additional regulation or expand existing regulation to include our products and services. Changes to the current regulatory framework, including the imposition of additional or new regulations, could arise at any time, and we may be unable to obtain or maintain comparable regulatory authorization for our products and services, if required. These regulations and restrictions may materially and adversely affect our business, financial condition, and results of operations.

Facilities

Our principal facility is located at 9535 Waples Street in San Diego, California and functions as our worldwide headquarters. The facility is approximately 28,000 sq. ft. on two stories and was leased from BioMed Realty. The lease expires in January 2025 and has an option to extend for an additional five years at the then current fair market value rental rate for comparable office and laboratory space. The 9535 Waples building contains infrastructure for reagent manufacturing and for research and development of new products, as well as for supporting supply chain, logistics, and office space for administrative and commercial functions. The facility includes wet labs for both reagent manufacturing and research and development on both floors as well as specialized labs for instrument engineering to support the development of new instruments. A designated instrument services lab space supports our current instrument installed base customers.

Employees and Human Capital

As of March 1, 2021, we had 87 full-time employees in the United States and seven full-time employees located internationally. Our team includes: 38 in commercial sales, marketing, and support, 15 in manufacturing and operations, 12 in research and development, 10 in engineering, and 19 in general and administrative functions. None of our employees is represented by a labor union or covered by a collective bargaining agreement. We consider our relationship with our employees to be good.

Our people and culture objectives include, as applicable, identifying, recruiting, retaining, and integrating our existing and new employees, advisors and consultants into our company and culture. The principal purposes of our cash and equity incentive plans are to attract, retain and reward personnel through the granting of cash-based and stock-based compensation awards, in order to increase stockholder value and the success of our company by incentivizing such individuals to perform to the best of their abilities and achieve our short- and long-term business goals.

We offer other elements of compensation to our employees like health and wellness benefits. Our full-time employees are eligible to participate in our health plans, including medical, dental and vision benefits; flexible spending accounts; short-term and long-term disability insurance; and life and accidental death and disability

insurance. We believe that providing a 401(k) savings plan for our employees also promotes financial wellness during retirement.

A great culture attracts great people. We strive to create an environment where our people are always innovating and creating solutions that will change the world. We have a customer first mindset which includes understanding customer needs and delivering value every day. We grow and develop our people, and similarly, we are relentless about growing the impact of synthetic biology. We build trust by conducting our business with honesty, integrity and respect. We also listen and collaborate to promote an inclusive environment.

Legal Proceedings

From time to time, we are involved in claims and legal proceedings or investigations, that arise in the ordinary course of business. Such matters could have an adverse impact on our reputation, business and financial condition and divert the attention of our management from the operation of our business. These matters are subject to many uncertainties and outcomes that are not predictable.

Codexis Trademark Litigation

In May 2020 Codexis, Inc. (Codexis) filed a complaint against us relating to our CODEX DNA name based on its rights in the CODEX and CODEXIS mark in the U.S. District Court, Northern District of California for federal and common law trademark infringement and unfair competition/false designation (the Complaint). Codexis seeks injunctive relief, including that we cease all use of the term CODEX and any other trademark confusingly similar to the marks CODEX and CODEXIS and not apply for registration of or register the CODEX mark or any other mark confusingly similar to the CODEX or CODEXIS marks, transfer to Codexis all domain names and social media accounts/user names that include the term “codex” and pay damages (consisting of Codexis’s actual damages, a disgorgement of our profits and punitive damages as permitted by California common law) as well as attorneys’ fees and costs.

According to the Complaint, Codexis primarily operates in the field of protein engineering and began using the CODEXIS and CODEX marks in or before 2006 and 2007, respectively. Codexis also asserts that it owns U.S. Trademark Registrations 3177355, 3779907, 87706489, 87706494 for the marks CODEXIS, CODEX, CODEXIS & Design, and CODEXIS PROTEIN ENGINEERING EXPERTS & Design for biochemical, chemical and scientific research services and product development and chemicals and biochemicals for research and commercial applications pertaining to chemistry, pharmaceuticals and medicines, among other things.

We do not currently own a U.S. trademark registration or U.S. trademark application for CODEX or Codex DNA but we do not believe there is any material customer confusion as a result of our use of the CODEX DNA name. In April 2020, we began using the name CODEX DNA, a rebrand from our prior name SGI-DNA to empower scientific researchers in academic and commercial setting. We plan to vigorously defend ourselves. This litigation is in the discovery phase and no dispositive motions have been filed. If we cannot resolve this matter with Codexis, then a jury trial is set for March 2022.

Eurofins Pharma Non-Competition/Non-Solicitation Litigation

In October 2018, Eurofins Pharma US Holdings II, Inc. (EPUSH II) and Eurofins DiscoverX Corporation (Eurofins DiscoverX) (collectively, Plaintiffs) filed a complaint against Todd R. Nelson, SGI-DNA, Inc. (SGI-DNA, which is our prior name) and Synthetic Genomics, Inc. (our former parent company, and together with Dr. Nelson and SGI-DNA, the Defendants) to enforce non-competition and non-solicitation provisions of an agreement.

In September 2017, EPUSH II acquired DiscoveRx (now Eurofins DiscoverX), with Dr. Nelson as the acting Chief Executive Officer. As a condition of the closing, in July 2017, Dr. Nelson signed a Confirmation of Sales of Shares of Stock and Goodwill by Merger with Covenant Not to Compete Agreement (the Non-Compete Agreement). The Non-Compete Agreement established that Dr. Nelson would transfer stock and goodwill. In addition, the Non-Compete Agreement stipulated that for a period of three years, Dr. Nelson agreed not to hire, influence or solicit any employee of DiscoveRx or its affiliates. He also agreed to disclose the Non-Compete Agreement and its restrictions to any future employer and to notify EPUSH II of any employment with another entity during the three-year period. According to the complaint, in July 2018, Dr. Nelson became the Chief Executive Officer of SGI-DNA but failed to provide notice of the employment to EPUSH II. Subsequently, Dr. Nelson allegedly also solicited and hired two Eurofins DiscoverX employees. In August 2018, Plaintiffs sent a letter to Dr. Nelson and SGI-DNA claiming that Dr. Nelson breached the Non-Compete Agreement and seeking concessions from Defendants. Defendants denied

liability, challenged the enforceability of the Non-Compete Agreement and rejected Plaintiffs' demands. Dr. Nelson maintains that he is not liable under the Non-Compete Agreement for two main reasons. First, he did not influence or solicit either employee to quit his or her employment with Plaintiffs or join SGI-DNA. Second, Dr. Nelson never held equity in DiscoveRx at the time of the merger, but only stock options. Therefore, Dr. Nelson had no equity or ownership to sell and is thus not bound by the Non-Compete Agreement under California Business and Professions Code Section 16601, which provides an exception to the general unenforceability of restrictive covenants in the context of an individual's sale of "the goodwill of a business".

The complaint, filed in the Superior Court of California, County of San Diego, charges Dr. Nelson with breach of contract, SGI-DNA with tortious interference, and both with unfair competition. The complaint seeks permanent injunctive relief, monetary damages and other equitable relief (including restitution) against the Defendants. The civil jury trial, initially scheduled for April 24, 2020, has been rescheduled to August 27, 2021.

MANAGEMENT

Executive Officers, Key Employees and Directors

The following table sets forth the names, positions and ages of our executive officers, key employees and directors as of December 31, 2020:

Name	Age	Position
Executive Officers:		
Todd R. Nelson	54	President, Chief Executive Officer & Director
Timothy E. Cloutier	47	Senior Vice President, Commercial Operations
Daniel G. Gibson	44	Chief Technology Officer
Key Employees:		
Thomas H. Braden	64	Vice President, Global Operations
Justin O. Emory	42	Vice President, Information Technology
Dimas Jimenez	51	Vice President, Corporate Controller
Laura B. Puga	41	Vice President, People and Culture
Madoo Varma	63	Vice President, Corporate Development
Laurence Warden	57	Vice President, Engineering and Instrumentation
Non-Employee Directors:		
Sharon Kedar	46	Director
William F. Snider	51	Director
Franklin R. Witney	67	Director

_____

(1) Member of the audit committee
(2) Member of the compensation committee
(3) Member of the corporate governance and nominating committee

Executive Officers

Todd R. Nelson. Dr. Nelson has served as our President and Chief Executive Officer and a member of our board of directors since July 2018. Prior to joining our company, Dr. Nelson served as the Chief Executive Officer of several life science companies through expansive phases of financial and commercial growth. From December 2014 to October 2017, Dr. Nelson served as Chief Executive Officer of DiscoverX Corporation, a leading developer and manufacturer of reagents intended for drug discovery. From September 2011 to October 2014, Dr. Nelson served as Chief Executive Officer of MP Biomedicals, LLC a global manufacturer and distributor of products and services for the life science, fine chemicals, diagnostics and dosimetry markets. From June 2007 to January 2011, Dr. Nelson served as Chief Executive Officer of eBioscience, Inc., a manufacturer and distributor of immunology reagents used in pharmaceutical research. Dr. Nelson also previously served as Vice President of Global Corporate Development and Strategy at Life Technologies Corporation (now Thermo Fisher Scientific Inc.), as First Vice President Global Securities and Economics at Merrill Lynch & Co., and as Global Head of Life Sciences at RBC Capital Markets LLC. Dr. Nelson currently serves on the board of directors of Tonbo Biosciences Corporation and TCRx Corporation. Dr. Nelson received a B.A. in Psychology, a Ph.D. in Philosophy from the University of Minnesota and an M.B.A. in Finance from the Carlson School of Management at the University of Minnesota. Dr. Nelson also completed clinical fellowship training at Mayo Clinic in human genetics and laboratory medicine from 1996 to 1998.

We believe that Dr. Nelson is qualified to serve on our board of directors due to his leadership track record, broad experience in the life sciences industry, and his service as our chief executive officer and president.

Timothy E. Cloutier. Dr. Cloutier has served as our Senior Vice President of Commercial Operations since September 2020. From April 2019 to August 2020, Dr. Cloutier served as Vice President of Marketing and Portfolio Strategy at

BioLegend, Inc., global developer and manufacturer of antibodies and reagents used in biomedical research. While at BioLegend, Dr. Cloutier led the development and execution of strategic business, marketing, and commercial plans. From May 2016 to April 2019, Dr. Cloutier served as Director of Strategic Marketing and Portfolio Management at Progenity, Inc. a biotechnology company that provides molecular and diagnostic prenatal tests. From January 2013 to May 2016, Dr. Cloutier served as Director of Commercialization Operations at Illumina, Inc., a developer and manufacturer of integrated systems for the analysis of genetic variation and biological function. Dr. Cloutier received a B.S. in Zoology from Michigan State University and a Ph.D. in Biochemistry from the Albert Einstein College of Medicine.

Daniel G. Gibson. Dr. Gibson has served as our Chief Technology Officer since August 2018. From February 2011 to August 2018, Dr. Gibson served in various roles at Synthetic Genomics, Inc., our former parent company and a biotechnology company focused on synthetic biology, including Principal Scientist and Vice President of DNA Technology. Dr. Gibson was responsible for developing new synthetic biology technology for application in a broad range of industries. Since 2004, Dr. Gibson has also served as a professor in the synthetic biology group at the J. Craig Venter Institute, a non-profit genomics research institute. Dr. Gibson earned a B.S. in Biological Sciences from the State University of New York at Buffalo and a Ph.D. in Molecular Biology from the University of Southern California.

Each of our executive officers serves at the discretion of our board of directors and holds office until his successor is duly elected and qualified or until his earlier resignation or removal.

Key Employees

Thomas H. Braden**.** Mr. Braden has served as our Vice President of Global Operations since July 2018. From March 2016 to July 2018, Mr. Braden served as a Biotech Consultant at Braden Consulting, LLC, a consulting services company. From March 2009 to March 2016, Mr. Braden served as Vice President of Global Operations at eBioscience, Inc., a manufacturer and distributor of reagents and key substances used in pharmaceutical research. Mr. Braden has previously served as Vice President of Operations of several life sciences companies including Pharmingen Inc. and Invitrogen Corporation and as an independent Biotechnology Consultant for DiscoverX Corporation, Tonbo Biosciences Corporation, and Tearfilm Incorporated. Mr. Braden earned a B.S. in Biology/Chemistry from Eastern Kentucky University.

Justin O. Emory. Mr. Emory has served as our Vice President of Information Technology since January 2021. From August 2015 to January 2021, Mr. Emory held various information technology leadership roles at Illumina, Inc., a developer and manufacturer of integrated systems for the analysis of genetic variation and biological function. While at Illumina, Mr. Emory was responsible for leading the commercial digital transformation across marketing, sales and service. Mr. Emory earned a B.S. in Business Administration in Management Information Systems and Production Operations Management from California State University, Chico.

Dimas Jimenez**.** Mr. Jimenez has served as our Vice President and Corporate Controller since March 2020. From January 2018 to March 2020, Mr. Jimenez served as Chief Financial Officer, Consulting at DelNova, Inc., a biopharmaceutical company developing clinically validated molecules linked to advances in drug delivery. Mr. Jimenez also served as a consultant for various other life science start-ups where he advised them on business development and other aspects of corporate strategy. From December 2016 to April 2019, Mr. Jimenez served as Chief Financial Officer at StemoniX, Inc., a biotechnology company focused on stem cell technologies. From October 2015 to December 2016, Mr. Jimenez served as Chief Financial Officer at Orphagen Pharmaceuticals, Inc., a developer of small molecule drugs designed to treat certain orphan nuclear receptors. Mr. Jimenez earned a chartered financial analyst designation. Mr. Jimenez earned a B.S. in Economics and Government from Dartmouth University, and an M.B.A. in Finance and a Global Management certificate from Stanford University.

Laura B. Puga**.** Ms. Puga has served as our Vice President of People and Culture since October 2019. From May 2017 to July 2019, Ms. Puga held various roles in human resources at DexCom, Inc., a company that develops, manufactures, and distributes continuous glucose monitoring systems for diabetes management. From March 2015 to May 2017, Ms. Puga served as Associate Director of Human Resources, Global Operations and Quality at Illumina, Inc., a developer and manufacturer of integrated systems for the analysis of genetic variation and biological function. Ms. Puga earned a B.S. in Industrial and Labor Relations from Cornell University and an M.B.A in Managerial and Organizational Behavior from the University of Chicago Booth School of Business.

***Madoo Varma*.** Dr. Varma has served as our Vice President of Corporate Development since January 2021. From January 2019 to December 2020, Dr. Varma served as Head of External Innovation and Business Development at Danaher Corporation, Molecular Devices, a global life science and technology innovator, which Dr. Varma joined via Danaher's acquisition of Labcyte, Inc. From January 2018 to January 2019, Dr. Varma served in various roles, including as a consultant and as Vice President of Business Development at Labcyte, Inc., a global biotechnology tools company. From April 2017 to December 2017, Dr. Varma served as an advisor to various life science start-ups and for a not-for-profit funding agency. From January 2016 to April 2017, Dr. Varma served as Managing Director, Licensing & Ventures at SRI International, a non-profit scientific research institute, where Dr. Varma was responsible for monetizing SRI International's small molecule and biologic assets to bio pharma companies. From January 2006 to January 2016, Dr. Varma served as General Manager, DNA sequencing incubation effort at Intel Corporation, a semiconductor technology company. Dr. Varma has over 25 years' experience serving in senior leadership roles in business and R&D management functions, including positions held at Applied Biosystems, Inc., Intel Corporation, Agilent Technologies, Inc., Genelabs Technologies, Inc. and Adeza Biomedical Corporation. In addition, Dr. Varma has had the unique experience of straddling both traditional biotech, diagnostics, and life sciences tool companies, as well as high tech focused on bioelectronics/digital health. Dr. Varma earned a B.S. from Delhi University and a Ph.D. in Genetics from Punjab Agricultural University in India. Dr. Varma earned her post-doctorate from Cambridge University on a Common-Wealth Scholarship.

***Laurence Warden*.** Mr. Warden has served as our Vice President of Engineering and Instrumentation since March 2019. From June 2013 to March 2019, Mr. Warden served as Vice President of Engineering and Instrumentation at Synthetic Genomics, Inc., our former parent company and a biotechnology company focused on synthetic biology. Mr. Warden earned a B.A. in Industrial Arts from San Diego State University.

Non-Employee Directors

Sharon Kedar. Ms. Kedar has served as a member of our board of directors since July 2020. Ms. Kedar is a Co-Founder and Partner of Northpond Ventures, a science, medical and technology focused venture capital firm founded in 2018. Prior to founding Northpond, Ms. Kedar spent fifteen years at Sands Capital Management, an investor in leading innovative businesses, where she served as the Chief Financial Officer and was active in all key functions of the company. In addition to Codex DNA, Ms. Kedar is a board director of other emerging companies, including 908 Devices, Inc., Emulate, Inc., Encodia, Inc. and IsoPlexis Corporation. Ms. Kedar has also served on the boards of Ultivue, Inc. and Vizgen, Inc. Ms. Kedar is a Chartered Financial Analyst (CFA) charterholder and has B.A. in Economics from Rice University and an M.B.A. from Harvard Business School.

We believe that Ms. Kedar is qualified to serve on our board of directors because of her financial expertise and her substantial experience as an investor in emerging companies.

William F. Snider. Mr. Snider has served as a member of our board of directors since September 2019. Since 2006, Mr. Snider has served as Partner at BroadOak Capital Partners, LLC, a merchant bank with a focus on the life sciences industry. Prior to joining BroadOak, Mr. Snider was a general partner and co-founder of Emerging Technology Partners, LLC, a life sciences focused venture capital firm. Prior to Emerging Technology Partners, he was a vice president and portfolio manager at T. Rowe Price Group, Inc., a global investment management firm, where his responsibilities included managing mutual funds and institutional client portfolios. Mr. Snider also serves on the board of directors of Halo Labs, Inc., Science and Medicine Group, IXRF Systems, Inc., Cellaria Bio, Tonbo Biotechnologies, Inc., Empire Genomics and MdBio Foundation. Mr. Snider is a CFA charterholder and earned a B.S.E. in Finance and an M.B.A from the Wharton School at the University of Pennsylvania.

We believe Mr. Snider is qualified to serve on our board of directors because of his extensive experience as an investor in the life sciences industry and his service on a number of boards of biotechnology companies.

Frank R. Witney. Dr. Witney has served as a member of our board of directors since December 2020. Since September 2016, Dr. Witney has served as an Operating Partner at Ampersand Capital Partners, a private equity firm. From July 2011 to March 2016, Dr. Witney served as President and Chief Executive Officer of Affymetrix, Inc., a provider of life science products and molecular diagnostic products, until Affymetrix, Inc. was acquired by Thermo Fisher Scientific Inc. From April 2009 to May 2011, Dr. Witney served as President and Chief Executive Officer of Dionex Corporation, a provider of analytical instrumentation and related accessories and chemicals. From December 2008 to April 2009, Dr. Witney served as Affymetrix's Executive Vice President and Chief Commercial Officer. From July 2002 to December 2008, Dr. Witney served as President and Chief Executive Officer of Panomics Inc. Dr.

Witney currently serves on the board of directors of PerkinElmer Inc. and Cerus Corporation and the private companies Nexcelom Biosciences LLC, and Emulate, Inc. He has previously served on the boards of Gyros Protein Technologies, RareCyte Inc., GeneOptx and Canopy Bioscience. Dr. Witney earned a B.S. in microbiology from the University of Illinois and a M.S, in microbiology and Ph.D in molecular and cellular biology from Indiana University.

We believe Dr. Witney is qualified to serve on our board of directors because of his substantial experience in in the life science industry, which he acquired in various roles as officer and director of public and private companies.

Family Relationships

There are no family relationships among any of our directors or executive officers.

Board Composition

Our board of directors currently consists of four members. After the completion of this offering, the number of directors will be fixed from time to time by our board of directors, subject to the terms of our amended and restated certificate of incorporation and amended and restated bylaws. Each of our current directors will continue to serve as a director until the election and qualification of his or her successor, or until his or her earlier death, resignation or removal.

Our amended and restated certificate of incorporation will provide that our board of directors will be divided into three classes with staggered three-year terms. Only one class of directors will be elected at each annual meeting of stockholders, with the other classes continuing for the remainder of their respective three-year terms. Our current directors will be divided among the three classes as follows:

- the Class I directors will be , and their terms will expire at the annual meeting of stockholders to be held in 2022;
- the Class II directors will be , and their terms will expire at the annual meeting of stockholders to be held in 2023; and
- the Class III directors will be , and their terms will expire at the annual meeting of stockholders to be held in 2024.

At each annual meeting of stockholders, upon the expiration of the term of a class of directors, the successor to each such director in the class will be elected to serve from the time of election and qualification until the third annual meeting following his or her election and until his or her successor is duly elected and qualified, in accordance with our amended and restated certificate of incorporation. Any additional directorships resulting from an increase in the number of directors will be distributed among the three classes so that, as nearly as possible, each class will consist of one third of our directors.

This classification of our board of directors may have the effect of delaying or preventing changes in control of our company.

Director Independence

Upon the completion of this offering, we anticipate that our common stock will be listed on the Nasdaq Global Market. Under the rules of Nasdaq, independent directors must comprise a majority of a listed company’s board of directors within one year of the completion of this offering. In addition, the rules of Nasdaq require that, subject to specified exceptions, each member of a listed company’s audit, compensation and corporate governance and nominating committees be independent. Audit committee members and compensation committee members must also satisfy the independence criteria set forth in Rule 10A-3 and Rule 10C-1, respectively, under the Exchange Act. Under the rules of Nasdaq, a director will only qualify as an “independent director” if, in the opinion of that company’s board of directors, that person does not have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director.

To be considered to be independent for purposes of Rule 10A-3 and under the rules of Nasdaq, a member of an audit committee of a listed company may not, other than in his or her capacity as a member of the audit committee, the board of directors or any other board committee: (1) accept, directly or indirectly, any consulting, advisory or other compensatory fee from the listed company or any of its subsidiaries or (2) be an affiliated person of the listed company or any of its subsidiaries.

To be considered independent for purposes of Rule 10C-1 and under the rules of Nasdaq, the board of directors must affirmatively determine that each member of the compensation committee is independent, including a consideration of all factors specifically relevant to determining whether the director has a relationship to the company which is material to that director's ability to be independent from management in connection with the duties of a compensation committee member, including: (i) the source of compensation of such director, including any consulting, advisory or other compensatory fee paid by the company to such director and (ii) whether such director is affiliated with the company, a subsidiary of the company or an affiliate of a subsidiary of the company.

Our board of directors undertook a review of its composition, the composition of its committees and the independence of our directors and considered whether any director has a material relationship with us that could compromise his or her ability to exercise independent judgment in carrying out his or her responsibilities. Based upon information requested from and provided by each director concerning his or her background, employment and affiliations, including family relationships, our board of directors has determined that , representing of our four directors, do not have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director and that each of these directors is "independent" as that term is defined under the rules of Nasdaq.

In making these determinations, our board of directors considered the current and prior relationships that each non-employee director has with our company and all other facts and circumstances our board of directors deemed relevant in determining their independence, including the beneficial ownership of our capital stock by each non-employee director, and the transactions involving them described in the section titled "Certain Relationships and Related Party Transactions."

Board Leadership Structure

Our board of directors is currently chaired by . As a general policy, our board of directors believes that separation of the positions of Chair of our board of directors and Chief Executive Officer reinforces the independence of our board of directors from management, creates an environment that encourages objective oversight of management's performance and enhances the effectiveness of our board of directors as a whole. As such, Todd R. Nelson serves as our Chief Executive Officer while serves as the Chair of our board of directors but is not an officer. We currently expect and intend the positions of Chair of our board of directors and Chief Executive Officer to be held by two different individuals in the future.

Role of the Board in Risk Oversight

Our board of directors has an active role, as a whole and also at the committee level, in overseeing the management of our risks. Our board of directors is responsible for general oversight of risks and regular review of information regarding our risks, including credit risks, liquidity risks and operational risks. The compensation committee is responsible for overseeing the management of risks relating to our executive compensation plans and arrangements. The audit committee is responsible for overseeing the management of risks relating to accounting matters and financial reporting. The corporate governance and nominating committee is responsible for overseeing the management of risks associated with the independence of our board of directors and potential conflicts of interest. Although each committee is responsible for evaluating certain risks and overseeing the management of such risks, our entire board of directors is regularly informed through discussions from committee members about such risks.

Board Committees

Prior to the completion of this offering, our board of directors will have an audit committee, a compensation committee, and a nominating and corporate governance committee, each of which will have the composition and the responsibilities described below.

Audit Committee

Upon the effectiveness of the registration statement of which this prospectus forms a part, the members of our audit committee will be . will be the chair of our audit committee and is an audit committee financial expert, as that term is defined under the SEC rules implementing Section 407 of the Sarbanes-Oxley Act, and possesses financial sophistication, as defined under the rules of Nasdaq. Our audit committee will

oversee our corporate accounting and financial reporting process and assist our board of directors in monitoring our financial systems. Our audit committee will also:

- select, retain, compensate, evaluate, oversee, and where appropriate, terminate the independent registered public accounting firm to audit our consolidated financial statements;
- help to ensure the independence and performance of the independent registered public accounting firm;
- approve audit and non-audit services and fees;
- review consolidated financial statements and discuss with management and the independent registered public accounting firm our annual audited and quarterly consolidated financial statements, the results of the independent audit and the quarterly reviews and the reports and certifications regarding internal controls over financial reporting and disclosure controls;
- prepare the audit committee report that the SEC requires to be included in our annual proxy statement;
- review reports and communications from the independent registered public accounting firm;
- review the adequacy and effectiveness of our internal controls and disclosure controls and procedure;
- review our policies on risk assessment and risk management;
- review the overall adequacy and effectiveness of our legal, regulatory, and ethical compliance programs and reports regarding compliance with applicable laws, regulations, and internal compliance programs;
- review related party transactions; and
- establish and oversee procedures for the receipt, retention and treatment of accounting related complaints and the confidential submission by our employees of concerns regarding questionable accounting or auditing matters.

Our audit committee will operate under a written charter, to be effective upon the effectiveness of the registration statement of which this prospectus forms a part, which will satisfy the applicable rules of the SEC and the listing standards of Nasdaq.

Compensation Committee

Upon the effectiveness of the registration statement of which this prospectus forms a part, the members of our compensation committee will be . will be the chair of our compensation committee. Our compensation committee will oversee our compensation policies, plans and benefits programs. The compensation committee will also:

- oversee our overall compensation philosophy and compensation policies, plans and benefit programs;
- review and recommend for approval to the board of directors compensation for our executive officers and directors;
- prepare the compensation committee report that the SEC will require to be included in our annual proxy statement; and
- administer our equity compensation plans.

Our compensation committee will operate under a written charter, to be effective upon the effectiveness of the registration statement of which this prospectus forms a part, which will satisfy the applicable rules of the SEC and the listing standards of Nasdaq.

Nominating and Corporate Governance Committee

Upon the effectiveness of the registration statement of which this prospectus forms a part, the members of our nominating and corporate governance committee will be . will be the chair of our nominating and corporate governance committee. Our nominating and corporate governance committee will oversee and assist our board of directors in reviewing and recommending nominees for election as directors. Specifically, the nominating and corporate governance committee will:

- identify, evaluate and make recommendations to our board of directors regarding nominees for election to our board of directors and its committees;
- consider and make recommendations to our board of directors regarding the composition of our board of directors and its committees;

- review developments in corporate governance practices;
- evaluate the adequacy of our corporate governance practices and reporting;
- evaluate the performance of our board of directors and of individual directors; and
- review and monitor conflicts of interest situations, and approve or prohibit any involvement in matters that may involve a conflict of interest or taking of a corporate opportunity.

Our nominating and corporate governance committee will operate under a written charter, to be effective upon the effectiveness of the registration statement of which this prospectus forms a part, which will satisfy the applicable rules of the SEC and the listing standards of Nasdaq.

Director Compensation

Prior to this offering, we have not implemented a formal policy with respect to compensation payable to our non-employee directors. From time to time, we have granted equity awards to attract them to join our board of directors and for their continued service on our board of directors. We reimburse our directors for expenses associated with attending meetings of our board of directors and its committees.

In connection with this offering, we intend to adopt and ask our stockholders to approve the initial terms of our non-employee director compensation program. Our board of directors is still in the process of considering the non-employee director compensation policy.

Name	Fees Earned or Paid in Cash($)	Option Awards ($)	All Other Compensation ($)	Total ($)
Sharon Kedar	—	—	—	—
William F. Snider	—	—	—	—
Franklin R.Witney	3,383[1]	—	—	3,383

(1) Consists of a prorated portion of a $70,000 annual retainer that was offered to Mr. Witney beginning in December 2020.

Dr. Nelson was our only employee who served as a director during 2020. See the section titled “Executive Compensation” for information about Dr. Nelson’s compensation, which includes compensation Dr. Nelson received for serving as our Chief Executive Officer during 2020.

Non-Employee Director Compensation Policy

Prior to this offering, we expect our board of directors to adopt and our stockholders approve a new compensation policy for our non-employee directors that will be effective as of the date of the effectiveness of the registration statement of which this prospectus forms a part. It is designed to attract, retain, and reward non-employee directors.

Under this compensation policy, each non-employee director will receive the cash and equity compensation for board services described below. We also will continue to reimburse our non-employee directors for reasonable, customary and documented travel expenses to board of directors or committee meetings.

The compensation policy includes a maximum annual limit of $ of cash compensation and equity awards that may be paid, issued, or granted to a non-employee director in any fiscal year, increased to $ in an individual’s first year of service as a non-employee director. For purposes of this limitation, the value of equity awards is based on the grant date fair value (determined in accordance with GAAP). Any cash compensation paid, or equity awards granted to a person for their services as an employee, or for their services as a consultant (other than as a non-employee director), will not count for purposes of the limitation. The maximum limit does not reflect the intended size of any potential compensation or equity awards to our non-employee directors.

Cash Compensation.

Following the completion of this offering, non-employee directors will be entitled to receive the following cash compensation for their services under the outside director compensation policy:

- $ per year for service as a board member;
- $ per year for service as non-employee chair of the board
- $ per year for service as a lead independent director;
- $ per year for service as chair of the audit committee;
- $ per year for service as member of the audit committee;
- $ per year for service as chair of the compensation committee;
- $ per year additionally for service as a compensation committee member;
- $ per year for service as chair of the nominating and corporate governance committee; and
- $ per year for service as a member of the nominating and corporate governance committee.

Each non-employee director who serves as the chair of a committee will receive only the additional annual cash fee as the chair of the committee, and not the annual fee as a member of the committee, provided that each non-employee director who serves as the non-employee chair or the lead independent director will receive the annual fee for service as a board member and an additional annual fee as the non-employee chair or lead independent director. All cash payments to non-employee directors are paid quarterly in arrears on a pro-rated basis.

Each annual cash retainer and additional annual fee will be paid quarterly in arrears on a prorated basis.

Equity Compensation.

Initial Award: Each person who first becomes a non-employee director after the date of the effective date of the policy will receive, on the first trading date on or after the date on which the person first becomes a non-employee director, an initial award of restricted stock units (RSUs), or the Initial Award, covering a number of shares of our common stock having a grant date fair value (determined in accordance with GAAP) equal to $; provided that any resulting fraction will be rounded down to the nearest whole share. The Initial Award will vest in its entirety on the one year anniversary of the non-employee director's initial start date, subject to the non-employee director continuing to be a non-employee director through the applicable vesting date. If the person was a member of our board of directors and also an employee, becoming a non-employee director due to termination of employment will not entitle them to an Initial Award.

Annual Award: Each non-employee director automatically will receive, on the date of each annual meeting of our stockholders following the effective date of the policy, an annual award of RSUs, or an Annual Award, covering a number of shares of our common stock having a grant date fair value (determined in accordance with GAAP) of $; provided that the first annual award granted to an individual who first becomes a non-employee director following the effective date of the policy will have a grant date fair value equal to the product of (A) $ multiplied by (B) a fraction, (i) the numerator of which is equal to the number of fully completed days between the non-employee director's initial start date and the date of the first annual meeting of our stockholders to occur after such individual first becomes a non-employee director, and (ii) the denominator of which is 365; and provided further that any resulting fraction will be rounded down to the nearest whole share. Each Annual Award will vest in its entirety on the earlier of (x) the one year anniversary of the Annual Award's grant date, or (y) the day immediately before the date of the next annual meeting of our stockholders that follows the grant date of the Annual Award, subject to the non-employee director's continued service through the applicable vesting date.

In the event of a "change in control" (as defined in our 2021 SIP), each non-employee director will fully vest in their outstanding company equity awards issued under the director compensation policy, including any Initial Award or Annual Award, immediately prior to the consummation of the change in control provided that the non-employee director continues to be a non-employee director through such date.

Compensation Committee Interlocks and Inside Participation

None of the members of our board of directors who will serve on our compensation committee upon the effectiveness of the registration statement of which this prospectus forms a part is or has been an officer or

employee of our company. None of our executive officers currently serves, or in the past fiscal year has served, as a member of the board of directors or compensation committee (or other board committee performing equivalent functions or, in the absence of any such committee, the entire board of directors) of any entity that has one or more executive officers serving on our board of directors or compensation committee.

Code of Business Conduct and Ethics

Prior to the effectiveness of the registration statement of which this prospectus forms a part, we intend to adopt a written code of business conduct and ethics that will apply to our directors, officers and employees, including our principal executive officer, principal financial officer, principal accounting officer or controller or persons performing similar functions. Following this offering, the code of business conduct and ethics will be available on our website at www.codexdna.com. We intend to disclose future amendments to such code, or any waivers of its requirements, applicable to any principal executive officer, principal financial officer, principal accounting officer or controller or persons performing similar functions or our directors on our website identified above or in a Current Report on Form 8-K. Information contained on the website is not incorporated by reference into this prospectus and should not be considered to be part of this prospectus. The inclusion of our website address in this prospectus is for reference only, and our website is not incorporated by reference into this prospectus.

EXECUTIVE COMPENSATION

Our named executive officers for 2020, which consist of each person who served as our principal executive officer during 2020 and our next two most highly compensated executive officers during 2020, are:

- Todd R. Nelson, our President and Chief Executive Officer;
- Daniel G. Gibson, our Chief Technology Officer; and
- Timothy E. Cloutier, our Senior Vice President Commercial Operations.

Summary Compensation Table

The following table sets forth information regarding the compensation of our named executive officers for the year ended December 31, 2020.

Name and Principal Position	Year	Salary ($)	Bonus ($)	Option Awards ($)	All Other Compensation ($)[1]	Total ($)
Todd R. Nelson *President and Chief Executive Officer*	2020	583,846	198,000	-	1,932	783,779
Daniel G. Gibson *Chief Technology Officer*	2020	324,923	50,000	-	732	375,655
Timothy E. Cloutier[2][3] *Senior Vice President Commercial Operations*	2020	79,615	-	8,209	267	88,091

(1) The amounts reported reflect insurance premiums paid by, or on behalf of, the Company during 2020 with respect to life insurance for the benefit of such named executive officer.
(2) Dr. Cloutier joined Codex DNA as Senior Vice President of Commercial Operations in September 2020, and therefore the compensation set forth in the table above reflects the amount earned for the portion of 2020 in which he was employed by Codex DNA.
(3) Dr. Cloutier began his employment with Codex DNA in September 2020 and was not eligible for a bonus in 2020.

Outstanding Equity Awards at Fiscal Year-End

The following table sets forth information concerning outstanding equity awards held by each of our named executive officers as of December 31, 2020:

	Option Awards				
Name	Grant Date[1]	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Option Exercise Price ($)[2]	Option Expiration Date
Daniel G. Gibson	3/8/19	103,707	133,339[3]	$0.13	3/8/29
	10/24/19	109,375	140,625[3]	$0.24	10/24/29
Timothy E. Cloutier	10/22/20	-	90,000[4]	$0.24	10/22/30

(1) Each of the equity awards was granted pursuant to our 2019 Plan.
(2) This column represents the fair market value of a share of our common stock on the date of grant, as determined by our board of directors.
(3) Twenty five percent of the shares subject to the award vested on March 8, 2020, and one-forty-eighth of the shares subject to the award shall vest each month thereafter on the same day of the month.

(4) Twenty five percent of the shares subject to the award vest on the one year anniversary of September 15, 2020, and one-forty-eighth of the shares subject to the award shall vest each month thereafter on the same day of the month.

Employment Arrangements With Our Named Executive Officers

Todd R. Nelson

We currently expect that, prior to the completion of this offering, we will enter into a confirmatory employment agreement with Dr. Nelson, our President and Chief Executive Officer. The confirmatory employment agreement currently is expected to have no specific term and will provide for at-will employment. Dr. Nelson's current annual base salary is $, and Dr. Nelson's annual target bonus is % of his annual base salary.

Daniel G. Gibson

We currently expect that, prior to the completion of this offering, we will enter into a confirmatory employment agreement with Dr. Gibson, our Chief Technology Officer. The confirmatory employment agreement currently is expected to have no specific term and will provide for at-will employment. Dr. Gibson's current annual base salary is $, and Dr. Gibson's annual target bonus is % of his annual base salary.

Timothy E. Cloutier

We currently expect that, prior to the completion of this offering, we will enter into a confirmatory employment agreement with Dr. Cloutier, our Senior Vice President, Commercial Operations. The confirmatory employment agreement currently is expected to have no specific term and will provide for at-will employment. Dr. Cloutier's current annual base salary is , and Dr. Cloutier's annual target bonus is % of his annual base salary.

Potential Payments Upon Termination or Change in Control

We currently expect that, prior to the completion of this offering, we will adopt arrangements for our executive officers that provide for payments and benefits on termination or change of control, which arrangements may be included in the anticipated confirmatory employment agreements or separate plans or agreements.

Employee Benefit and Stock Plans

2021 Stock Incentive Plan (2021 SIP)

Prior to the effectiveness of this offering, we expect that our board of directors will adopt, and our stockholders will approve, our 2021 SIP. We expect that our 2021 SIP will become effective on the business day immediately prior to the effective date of the registration statement of which this prospectus forms a part. Our 2021 SIP will provide for the grant of incentive stock options, within the meaning of Section 422 of the Code, to our employees and any parent and subsidiary corporations' employees, and for the grant of nonstatutory stock options, stock appreciation rights, restricted stock, RSUs and performance awards to our employees, directors, and consultants and our parent and subsidiary corporations' employees and consultants. Our 2021 Plan will terminate immediately prior to the effectiveness of the 2021 SIP with respect to the grant of future awards.

Authorized Shares. Subject to the adjustment provisions of and the automatic increase described in our 2021 SIP, a total of shares of our common stock will be reserved for issuance pursuant to our 2021 SIP. In addition, subject to the adjustment provisions of our 2021 SIP, the shares reserved for issuance under our 2021 SIP also will include (i) any shares that, as of the day immediately prior to the effective date of the registration statement of which this prospectus forms a part, have been reserved but not issued pursuant to any awards granted under the 2021 Equity Incentive Plan, and are not subject to any awards thereunder, plus (ii) any shares subject to stock options, RSUs, or similar awards granted under our 2021 Equity Incentive Plan or our 2019 Plan that, on or after the effective date of the registration statement of which this prospectus forms a part, expire or otherwise terminate without having been exercised or issued in full, are tendered to or withheld by us for payment of an exercise price or for tax withholding obligations, or are forfeited to or repurchased by us due to failure to vest (provided that the maximum number of shares that may be added to our 2021 SIP pursuant to the foregoing is shares). Subject to the adjustment provisions of our 2021 SIP, the number of shares available for issuance under our 2021 SIP will also include an annual increase on the first day of each fiscal year beginning with the 2022 fiscal year and ending on the ten year anniversary of the date our board of directors approved the 2021 SIP, in an amount equal to the least of:

- shares of our common stock;

- % of the total number of shares of all classes of our common stock outstanding on the last day our immediately preceding fiscal year; or
- a lesser number of shares determined by the administrator.

If a stock option or stock appreciation right granted under the 2021 SIP expires or becomes unexercisable without having been exercised in full or is surrendered pursuant to an exchange program or, with respect to restricted stock, RSUs or stock-settled performance awards, is forfeited to, or repurchased by, us due to failure to vest, then the unpurchased shares (or for awards other than stock options or stock appreciation rights, the forfeited or repurchased shares) which were subject thereto will become available for future issuance under the 2021 SIP (unless the 2021 SIP has terminated). With respect to stock appreciation rights, only the net shares actually issued will cease to be available under the 2021 SIP and all remaining shares under stock appreciation rights will remain available for future issuance under the 2021 SIP (unless the 2021 SIP has terminated). Shares that have actually been issued under the 2021 SIP under any award will not be returned to the 2021 SIP; provided, however, that if shares issued pursuant to awards of restricted stock, RSUs or performance awards are repurchased or forfeited to us due to failure to vest, such shares will become available for future grant under the 2021 SIP. Shares used to pay the exercise price of an award or to satisfy the tax withholding obligations related to an award will become available for future issuance under the 2021 SIP. To the extent an award is paid out in cash rather than shares, the cash payment will not result in a reduction in the number of shares available for issuance under the 2021 SIP.

Plan Administration. Our compensation committee is expected to administer our 2021 SIP and may further delegate authority to one or more subcommittees or officers to the extent such delegation complies with applicable laws. Subject to the provisions of our 2021 SIP, the administrator will have the power to administer our 2021 SIP and make all determinations deemed necessary or advisable for administering our 2021 SIP, including but not limited to: the power to determine the fair market value of our common stock; select the service providers to whom awards may be granted; determine the number of shares covered by each award; approve forms of award agreements for use under our 2021 SIP; determine the terms and conditions of awards (including, but not limited to, the exercise price, the time or times when the awards may be exercised (which may be based on performance criteria), any vesting acceleration or waiver or forfeiture restrictions, and any restriction or limitation regarding any award or the shares relating thereto); construe and interpret the terms of our 2021 SIP and awards granted under it, including but not limited to determining whether and when a change in control has occurred; establish, amend, and rescind rules and regulations relating to our 2021 SIP, and adopt sub-plans relating to the 2021 SIP; interpret, modify, or amend each award, including but not limited to the discretionary authority to extend the post-termination exercisability period of awards; allow participants to satisfy tax withholding obligations in any manner permitted by the 2021 SIP; delegate ministerial duties to any of our employees; authorize any person to take any steps and execute, on our behalf, any documents required for an award previously granted by the administrator to be effective; temporarily suspend the exercisability of an award if the administrator deems such suspension to be necessary or appropriate for administrative purposes, provided that, unless prohibited by applicable laws, such suspension shall be lifted in all cases not less than ten trading days before the last date that the award may be exercised; allow a participant to defer the receipt of payment of cash or the delivery of shares that would otherwise be due to such participant under an award; and make any determinations necessary or appropriate under the adjustment provisions of the 2021 SIP. The administrator also has the authority to institute and determine the terms of an exchange program under which outstanding awards are surrendered or cancelled in exchange for awards of the same type (which may have higher or lower exercise prices and different terms), awards of a different type, or cash; participants would have the opportunity to transfer any outstanding awards to a financial institution or other person or entity selected by the administrator; or the exercise price of an outstanding award is increased or reduced. The administrator's decisions, interpretations, and other actions will be final and binding on all participants to the full extent permitted by law.

Stock Options. Our 2021 SIP permits the grant of options. The exercise price of options granted under our 2021 SIP must be at least equal to the fair market value of our common stock on the date of grant, except that options may be granted with a lower exercise price to a service provider who is not a U.S. taxpayer, or pursuant to certain transactions. The term of an option is determined by the administrator, provided that the term of an incentive stock option may not exceed ten years. With respect to any employee who owns more than 10% of the voting power of all classes of our outstanding stock or the stock of any parent or subsidiary, the term of an incentive stock option granted to such participant must not exceed five years and the exercise price must equal at least 110% of the fair market value on the grant date. The administrator determines the methods of payment of the exercise price of an option, which may include cash, check or wire transfer, cashless exercise, net exercise, promissory note, shares, or

other consideration or method of payment acceptable to the administrator, to the extent permitted by applicable law. After the termination of service of an employee, director, or consultant, he or she may exercise his or her option for the period of time stated in his or her option agreement. In the absence of a specified time in an award agreement, if termination is due to death or disability, the option will remain exercisable for six months. In all other cases, in the absence of a specified time in an award, the option will remain exercisable for thirty days. These exercise periods may be tolled in certain circumstances, for example if exercise prior to the end of the applicable period is not permitted because of applicable laws. However, in no event may an option be exercised later than the expiration of its term.

Stock Appreciation Rights. Our 2021 SIP permits the grant of stock appreciation rights. Stock appreciation rights allow the recipient to receive the appreciation in the fair market value of our common stock between the exercise date and the date of grant. The term of stock appreciation rights is determined by the administrator. After the termination of service of an employee, director, or consultant, he or she may exercise his or her stock appreciation right for the period of time stated in his or her stock appreciation rights agreement. In the absence of a specified time in an award agreement, if termination is due to death or disability, the stock appreciation rights will remain exercisable for six months. In all other cases, in the absence of a specified time in an award agreement, the stock appreciation rights will remain exercisable for thirty days following the termination of service. These exercise periods may be tolled in certain circumstances, for example if exercise prior to the end of the applicable period is not permitted because of applicable laws. However, in no event may a stock appreciation right be exercised later than the expiration of its term. Subject to the provisions of our 2021 SIP, the administrator determines the other terms of stock appreciation rights, including when such rights become exercisable and whether to pay any increased appreciation in cash or with shares of our common stock, or a combination thereof, except that the per share exercise price for the shares to be issued pursuant to the exercise of a stock appreciation right must be no less than 100% of the fair market value per share on the date of grant.

Restricted Stock. Our 2021 SIP permits the grant of restricted stock. Restricted stock awards are grants of shares of our common stock that vest in accordance with terms and conditions established by the administrator. The administrator determines the number of shares of restricted stock granted to any employee, director, or consultant and, subject to the provisions of our 2021 SIP, determines the terms and conditions of such awards. The administrator has the authority to impose whatever conditions to vesting it determines to be appropriate (for example, the administrator will be able to set restrictions based on the achievement of specific performance goals or continued service to us); provided, however, that the administrator, in its sole discretion, may accelerate the time at which any restrictions will lapse or be removed. Recipients of restricted stock awards generally have voting rights with respect to such shares upon grant without regard to vesting, unless the administrator provides otherwise, but recipients of restricted stock will not be entitled to receive dividends and other distributions with respect to shares while such shares are unvested, unless the administrator provides otherwise. Shares of restricted stock that do not vest will be subject to our right of repurchase or forfeiture.

Restricted Stock Units. Our 2021 SIP permits the grant of RSUs. Each RSU will represent an amount equal to the fair market value of one share of our common stock. Subject to the provisions of our 2021 SIP, the administrator determines the terms and conditions of RSUs, including the vesting criteria and the form and timing of payment. The administrator has the authority to set vesting criteria based upon the achievement of company-wide, divisional, business unit, or individual goals (including, but not limited to, continued employment or service), or any other basis determined by the administrator in its discretion. The administrator, in its sole discretion, may pay earned RSUs in the form of cash, in shares, or in some combination of both. Notwithstanding the foregoing, the administrator, in its sole discretion, may reduce or waive any criteria that must be met to earn the RSUs.

Performance Awards. Our 2021 SIP permits the grant of performance awards. Performance awards are awards that will result in a payment to a participant only if performance goals established by the administrator are achieved or the awards otherwise vest. The administrator will set objectives or vesting provisions, that, depending on the extent to which they are met, will determine the value the payout for the performance awards. The administrator may set vesting criteria based on the achievement of company-wide, divisional, business unit, or individual goals (including, but not limited to, continued employment or service), or any other basis determined by the administrator in its discretion. Each performance award's threshold, target, and maximum payout values are established by the administrator on or before the grant date. After the grant of a performance award, the administrator, in its sole discretion, may reduce or waive any performance objectives or other vesting provisions for such performance award.

The administrator, in its sole discretion, may pay earned performance awards in the form of cash, in shares, or in some combination thereof.

Non-Employee Directors. Our 2021 SIP provides that all outside (non-employee) directors will be eligible to receive all types of awards (except for incentive stock options) under our 2021 SIP. In order to provide a maximum limit on the awards that can be made to our non-employee directors, our 2021 SIP provides that in any given fiscal year, a non-employee director will not be paid, issued, or granted cash retainer fees and equity awards (including awards granted under the 2021 SIP) with an aggregate value greater than $, but this limit is increased to $ in connection with his or her initially joining our board of directors (in each case, excluding awards granted to him or her as a consultant or employee). The value of each equity award will be determined according to GAAP. The maximum limits do not reflect the intended size of any potential grants or a commitment to make grants to our outside directors under our 2021 SIP in the future.

Non-Transferability of Awards. Unless the administrator provides otherwise or as otherwise required by applicable laws, our 2021 SIP generally does not allow for the transfer of awards and only the recipient of an award may exercise an award during his or her lifetime. If the administrator makes an award transferable, such award will contain such additional terms and conditions as the administrator deems appropriate.

Certain Adjustments. If any extraordinary dividend or other extraordinary distribution (whether in cash, shares, other securities, or other property), recapitalization, stock split, reverse stock split, reorganization, merger, consolidation, split-up, spin-off, combination, reclassification, repurchase, or exchange of shares of our common stock or other of our securities, other change in our corporate structure affecting the shares, or any similar equity restructuring transaction affecting our shares occurs (including a change in control), the administrator, to prevent diminution or enlargement of the benefits or potential benefits intended to be provided under the 2021 SIP, will adjust the number and class of shares that may be delivered under the 2021 SIP or the number, class, and price of shares covered by each outstanding award, and the numerical share limits set forth in our 2021 SIP. The conversion of any of our convertible securities and ordinary course repurchases of our shares or other securities will not be treated as an event that will require adjustment under the 2021 SIP.

Dissolution or Liquidation. In the event of our proposed dissolution or liquidation, the administrator will notify each participant, at such time prior to the effective date of such proposed transaction as the administrator determines. To the extent it has not been previously exercised, awards will terminate immediately prior to the consummation of such proposed transaction.

Merger or Change in Control. Our 2021 SIP provides that in the event of a merger or change in control, as defined under our 2021 SIP, each outstanding award will be treated as the administrator determines, without a requirement to obtain a participant's consent, including, without limitation, that such award will be continued by the successor corporation or a parent or subsidiary of the successor corporation or that the vesting of any such awards may accelerate automatically upon consummation of such transaction. An award generally will be considered continued if, following the transaction, (i) the award gives the right to purchase or receive the consideration received in the transaction by holders of our shares or (ii) the award is terminated in exchange for an amount of cash or property, if any, equal to the amount that would have been received upon the exercise or realization of the award at the closing of the transaction, which payment may be subject to any escrow applicable to holders of our common stock in connection with the transaction or subjected to the award's original vesting schedule. The administrator will not be required to treat all awards or portions thereof the vested and unvested portions of an award, or all participants similarly.

In the event that a successor corporation or its parent or subsidiary does not continue an outstanding award (or some portion of such award), then such award will fully vest, all restrictions on such award will lapse, all performance goals or other vesting criteria applicable to such award will be deemed achieved at 100% of target levels, and such award will become fully exercisable, if applicable, for a specified period prior to the transaction, unless specifically provided for otherwise under the applicable award agreement or other written agreement with the participant. The award will then terminate upon the expiration of the specified period of time. Unless specifically provided for otherwise under the applicable award agreement or other written agreement with the participant, if an option or stock appreciation right is not continued, the administrator will notify the participant in writing or electronically that such option or stock appreciation right will be exercisable for a period of time determined by the

administrator in its sole discretion and the option or stock appreciation right will terminate upon the expiration of such period.

With respect to awards granted to an outside director, in the event of a change in control, all of his or her options and stock appreciation rights, if any, will vest fully and become immediately exercisable, all restrictions on his or her restricted stock and RSUs will lapse, and all performance goals or other vesting requirements for his or her performance awards will be deemed achieved at 100% of target levels, and all other terms and conditions met unless specifically provided otherwise under the applicable award agreement, a Company policy related to director compensation, or other written agreement with the participant, that specifically references this default rule.

Clawback. Awards granted under the 2021 SIP will be subject to recoupment under any clawback policy that we are required to adopt pursuant to the listing standards of any national securities exchange or association on which our stock is listed or as otherwise required by applicable laws, and the administrator will also be able to specify in an award agreement that the participant's rights, payments, or benefits with respect to an award will be subject to reduction, cancellation, forfeiture, or recoupment upon the occurrence of certain specified events.

Amendment and Termination. The administrator will have the authority to amend, alter, suspend, or terminate our 2021 Stock Incentive Plan, provided we will obtain stockholder approval of any amendment to the extent necessary or desirable to comply with applicable laws. However, no amendment, alteration, suspension or termination of our 2021 SIP or an award under it may, materially impair the existing rights of any participant without the participant's consent. Our 2021 SIP will continue in effect until it is terminated, provided that incentive stock options may not be granted after the ten year anniversary of the date our board of directors approved the 2021 Stock Incentive Plan, and the automatic annual share increase will end on the ten year anniversary of the date our board of directors approved the 2021 Stock Incentive Plan.

2021 Employee Stock Purchase Plan (ESPP)

Prior to the effectiveness of this offering, we expect that our board of directors will adopt, and our stockholders will approve, our ESPP. Our ESPP will be effective upon the earlier to occur of its adoption by our board of directors or approval by our stockholders.

Authorized Shares. Subject to the adjustment provisions of our ESPP, a total of shares of our common stock will be available for sale under our ESPP. In addition, subject to the adjustment provisions of our ESPP, our ESPP will also provide for annual increases in the number of shares of our common stock that will be available for sale under our ESPP on the first day of each fiscal year beginning with the 2022 fiscal year, equal to the least of:

- shares of our common stock;
- % of the outstanding shares of all classes of our common stock as of the last day of the immediately preceding fiscal year; or
- a lesser number of shares determined by the administrator.

Plan Administration. Our compensation committee is expected to administer our ESPP. The administrator will have full and exclusive discretionary authority to: construe, interpret and apply the terms of the ESPP; delegate ministerial duties to any of our employees; designate separate offerings under the ESPP; designate our subsidiaries and affiliates as participating in the ESPP; determine eligibility; adjudicate all disputed claims filed under the ESPP; and to establish such procedures that it deems necessary or advisable for the administration of the ESPP, including, but not limited to, adopting such procedures, sub-plans, and appendices to the enrollment agreement as are necessary or appropriate to permit participation in the ESPP by employees who are foreign nationals or employed outside the U.S. The administrator's findings, decisions, and determinations are final and binding on all participants to the full extent permitted by law.

Eligibility. Generally, all of our employees will be eligible to participate if they are a common law employee providing services to us, or any participating subsidiary, and are customarily employed for at least twenty hours per week and more than five months in any calendar year.

However, an employee may not be granted rights to purchase shares of our common stock under our ESPP if such employee:

- immediately after the grant would own capital stock or hold outstanding options to purchase such stock possessing 5% or more of the total combined voting power or value of all classes of our capital stock; or
- holds rights to purchase shares of our common stock under all of our employee stock purchase plans that accrue at a rate that exceeds $25,000 worth of shares of our common stock for each calendar year in which such option is outstanding at any time.

Offering Periods and Purchase Periods. Our ESPP will include a component that allows us to make offerings intended to qualify under Section 423 of the Code and a component that allows us to make offerings not intended to qualify under Section 423 of the Code to designated companies, as described in our ESPP. Our ESPP will provide for consecutive, overlapping -month offering periods. The offering periods will be scheduled to start on the first trading day on or after and of each year, except for the first offering period which will commence on the first trading day on or after the effective date of the registration statement of which this prospectus forms a part and will end on the first trading day on or after , and the second offering period will commence on the first trading day on or after . Each offering period will include purchase periods, which, unless the administrator provides otherwise, will be a period of approximately six months commencing with one exercise date and ending with the next exercise date.

Contributions. Our ESPP will permit participants to purchase shares of our common stock through contributions (in the form of payroll deductions or otherwise to the extent permitted by the administrator) of up to % of their eligible compensation. A participant may purchase a maximum of shares of our common stock during a purchase period.

Exercise of Purchase Right. Amounts contributed and accumulated by the participant will be used to purchase shares of our common stock at the end of each six month purchase period. The purchase price of the shares will be 85% of the lower of the fair market value of our common stock on the first trading day of each offering period or on the exercise date. If the fair market value of our common stock on the exercise date is less than the fair market value on the first trading day of the offering period, participants will be withdrawn from the current offering period following their purchase of shares of our common stock on the purchase date and will be automatically re-enrolled in a new offering period. Participants may end their participation at any time during an offering period and will be paid their accrued contributions that have not yet been used to purchase shares of our common stock. Participation ends automatically upon termination of employment with us.

Non-Transferability. A participant may not transfer rights granted under our ESPP. If the compensation committee permits the transfer of rights, it may only be done by will, the laws of descent and distribution or as otherwise provided under our ESPP.

Dissolution or Liquidation. Our ESPP will provide that in the event of our proposed dissolution or liquidation, any offering period then in progress will be shortened by setting a new exercise date, and will terminate immediately prior to the consummation of such proposed dissolution or liquidation, unless otherwise provided by the administrator. The administrator will notify each participant that the exercise date has been changed and that the participant's option will be exercised automatically on the new exercise date unless prior to such date the participant has withdrawn from the offering period.

Merger or Change in Control. Our ESPP will provide that in the event of a merger or change in control, as defined under our ESPP, a successor corporation may assume or substitute each outstanding purchase right. If the successor corporation refuses to assume or substitute for the outstanding purchase right, the offering period then in progress will be shortened, and a new exercise date will be set that will be before the date of the proposed merger or change in control. The administrator will notify each participant that the exercise date has been changed and that the participant's option will be exercised automatically on the new exercise date unless prior to such date the participant has withdrawn from the offering period.

Amendment; Termination. The administrator will have the authority to amend, suspend, or terminate our ESPP, except that, subject to certain exceptions described in our ESPP, no such action may adversely affect any

outstanding rights to purchase shares of our common stock under our ESPP. Our ESPP automatically will terminate in 2041, unless we terminate it sooner.

2021 Equity Incentive Plan (2021 Plan)

In March 2021, our board of directors adopted, and our stockholders approved, our 2021 Plan. Our 2021 Plan permits the grant of incentive stock options, within the meaning of Section 422 of the Code, to our employees and any parent and subsidiary corporations' employees, and for the grant of nonstatutory stock options, stock appreciation rights, restricted stock, and RSUs to our employees, directors and consultants and our parent and subsidiary corporations' employees and consultants.

Authorized Shares. Subject to the adjustment provisions contained in the 2021 Plan, the maximum aggregate number of shares of our common stock that may be subject to awards and sold under the 2021 Plan is 4,300,000 shares. Our 2021 Plan will be terminated in connection with this offering, and accordingly, no shares will be available for issuance under the 2021 Plan following the completion of this offering. Our 2021 Plan will continue to govern outstanding awards granted thereunder. As of , 2021, options to purchase shares of our common stock remained outstanding under our 2021 Plan.

Plan Administration. Our board of directors or one or more committees appointed by our board of directors administers our 2021 Plan. Subject to the provisions of our 2021 Plan, our administrator has the power to administer the plan, including but not limited to: the power to interpret the terms of our 2021 Plan and awards granted under it; prescribe, amend, and rescind rules relating to our 2021 Plan, including creating sub-plans; and determine the terms of the awards, including the exercise price, the number of shares of our common stock subject to each such award, the exercisability of the awards and the form of consideration, if any, payable upon exercise. Our administrator also has the authority to modify or amend existing awards, including the power to extend the post-termination exercisability period of awards and to extend the maximum term of an option and to allow participants to defer the receipt of the payment of cash or the delivery of shares that otherwise would be due to such participant under an award. The administrator also has the authority to institute and determine the terms and conditions of an exchange program under which outstanding awards may be surrendered or cancelled in exchange for awards of the same type which may have a higher or lower exercise price or different terms, awards of a different type or cash; participants would have the opportunity to transfer any outstanding awards to a financial institution or other person or entity selected by the administrator; or the exercise price of an outstanding award is reduced or increased. The administrator may make all other determinations our administrator deems necessary or advisable for administering the 2021 Plan.

Options. Stock options may be granted under our 2021 Plan. The exercise price of options granted under our 2021 Plan must at least be equal to the fair market value of our common stock on the date of grant. The term of an option may not exceed ten years, except that with respect to incentive stock options and any participant who owns stock representing more than 10% of the voting power of all classes of our outstanding stock, the term must not exceed five years and the exercise price must equal at least 110% of the fair market value on the grant date. The administrator will determine the methods of payment of the exercise price of an option, which may include cash, shares or other property acceptable to the administrator, as well as other types of consideration permitted by applicable law. After termination of an employee, director, or consultant, he or she may exercise his or her option for the period of time as specified in the applicable option agreement. If termination is due to death or disability, the option generally will remain exercisable for at least six months. In all other cases, the option will generally remain exercisable for at least thirty days. However, in no event may an option be exercised later than the expiration of its term. Subject to the provisions of our 2021 Plan, the administrator determines the other terms of options.

Stock Appreciation Rights. Stock appreciation rights may be granted under our 2021 Plan. Stock appreciation rights allow the recipient to receive the appreciation in the fair market value of our common stock between the exercise date and the date of grant. Stock appreciation rights may not have a term exceeding ten years. After the termination of service of an employee, director, or consultant, he or she may exercise his or her stock appreciation right for the period of time stated in his or her award agreement. However, in no event may a stock appreciation right be exercised later than the expiration of its term. Subject to the provisions of our 2021 Plan, the administrator determines the other terms of stock appreciation rights, including when such rights become exercisable and whether to pay any increased appreciation in cash or with shares of our common stock, or a combination thereof, except that the per share exercise price for the shares of our common stock to be issued pursuant to the exercise of a stock appreciation right will be no less than 100% of the fair market value per share on the date of grant.

Restricted Stock. Restricted stock may be granted under our 2021 Plan. Restricted stock awards are grants of shares of our common stock that vest in accordance with terms and conditions established by the administrator. The administrator will determine the number of shares of restricted stock granted to any employee, director, or consultant and, subject to the provisions of our 2021 Plan, will determine the terms and conditions of such awards. The administrator may impose whatever conditions for lapse of the restriction on the shares it determines to be appropriate (for example, the administrator may set restrictions based on the achievement of specific performance goals or continued service to us); provided, however, that the administrator, in its sole discretion, may accelerate the time at which any restrictions will lapse or be removed. Recipients of restricted stock awards generally will have voting and dividend rights with respect to such shares upon grant without regard to the restriction, unless the administrator provides otherwise. Shares of restricted stock as to which the restrictions have not lapsed are subject to our right of repurchase or forfeiture.

Restricted Stock Units. RSUs may be granted under our 2021 Plan. RSUs are bookkeeping entries representing an amount equal to the fair market value of one share of our common stock. Subject to the provisions of our 2021 Plan, the administrator will determine the terms and conditions of RSUs, including the vesting criteria (which may include achievement of company-wide, business unit, or individual goals, including continued employment or service to us) and the form and timing of payment. Notwithstanding the foregoing, the administrator, in its sole discretion, may reduce or waive any vesting criteria that must be met to receive a payout.

Non-Transferability of Awards. Unless the administrator provides otherwise, our 2021 Plan generally does not allow for the transfer of awards and only the recipient of an award may exercise an award during his or her lifetime.

Certain Adjustments. In the event of certain changes in our capitalization, to prevent diminution or enlargement of the benefits or potential benefits available under our 2021 Plan, the administrator will adjust the number and class of shares that may be delivered under our 2021 Plan or the number, class, and price of shares covered by each outstanding award.

Dissolution or liquidation. In the event of our proposed liquidation or dissolution, the administrator will notify participants as soon as practicable prior to the date of the proposed transaction. To the extent it has not been previously exercised, an award will terminate immediately prior to the consummation of such proposed transaction.

Merger or Change in Control. Our 2021 Plan provides that in the event of a merger or change in control, as defined under the 2021 Plan, each outstanding award will be treated as the administrator determines, including, without limitation, that (i) awards will be assumed, or substantially equivalent awards will be substituted, by the acquiring or succeeding corporation with appropriate adjustments as to the number and kind of shares and prices; (ii) upon written notice, awards will be terminated upon or immediately prior to the consummation of such merger or change in control; (iii) outstanding awards will vest and become exercisable, realizable, or payable, or restrictions applicable to an award will lapse, in whole or in part prior to or upon consummation of such merger or change in control, and, to the extent the administrator determines, terminate upon or immediately prior to the effectiveness of such merger or change in control; (iv) awards will be terminated in exchange for an amount of cash or property or awards will be replaced with other rights or property selected by the administrator in its sole discretion; or (v) any combination of the foregoing. If a successor corporation or its parent or subsidiary does not assume or substitute for the award, then the participant will fully vest in and have the right to exercise all of his or her outstanding options and stock appreciation rights, all restrictions on restricted stock and RSUs will lapse, and, with respect to awards with performance-based vesting, all performance goals or other vesting criteria will be deemed achieved at 100% of target levels and all other terms and conditions met. If an option or stock appreciation right is not assumed or substituted in the event of a merger or change in control, the administrator will notify the applicable participant in writing or electronically that the award will be exercisable for a period of time determined by the administrator, and the option or stock appreciation right will terminate upon the expiration of such period.

An award that vests, is earned or paid-out upon the satisfaction of one or more performance goals will not be considered assumed if we or our successor modifies any of such performance goals without the participant's consent; provided, however, a modification to such performance goals only to reflect the successor corporation's post-change in control corporate structure will not be deemed to invalidate an otherwise valid award assumption.

Amendment; Termination. Our board of directors has the authority to amend, alter, suspend, or terminate the 2021 Plan, provided such action will not impair the existing rights of any participant, unless mutually agreed to in writing between the participant and the administrator. As noted above, upon completion of this offering, our 2021 Plan will

be terminated and no further awards will be granted thereunder. All outstanding awards will continue to be governed by their existing terms.

2019 Stock Plan (2019 Plan)

Our board of directors adopted, and our stockholders approved, our 2019 Plan in March 2019. Our 2019 Plan was terminated in connection with the adoption of our 2021 Plan. Prior to its termination, our 2019 Plan allowed for the grant of incentive stock options, within the meaning of Section 422 of the Code, to our employees and our parent and subsidiary companies' employees, and for the grant of nonstatutory stock options, RSUs, and the direct award or sale of our common stock, to our employees, outside directors, and consultants and our parent and subsidiary companies' employees and consultants. Prior to its termination, only stock options were issued under the 2019 Plan.

Authorized Shares. Our 2019 Plan was terminated in connection with the adoption of our 2021 Plan, and accordingly, no shares are available for issuance under the 2019 Plan. Our 2019 Plan will continue to govern outstanding awards granted thereunder. As of , 2021, options to purchase shares of our common stock remained outstanding under our 2019 Plan.

Plan Administration. Our board of directors or one or more committees of our board of directors, or the administrator, administers our 2019 Plan. Subject to the provisions of the 2019 Plan, the administrator has the full authority and discretion to take any actions it deems necessary or advisable for the administration of the 2019 Plan. All decisions, interpretations, and other actions of the administrator are final and binding on all participants and all persons deriving their rights from a participant in the 2019 Plan.

Options. Prior to its termination, stock options could have been granted under our 2019 Plan. Except as specifically set forth in the 2019 Plan, the exercise price per share of all options must have equaled at least 100% of the fair market value per share of our common stock on the date of grant, as determined by the administrator. The term of a stock option may not exceed ten years. With respect to any participant who owned more than 10% of the total combined voting power of all classes of our outstanding stock as of the grant date, the term of an incentive stock option granted to such participant could not exceed five years and the exercise price per share must have equaled at least 110% of the fair market value per share of our common stock on the date of grant, as determined by the administrator. The administrator determined the terms and conditions of options, including the permissible methods of exercise. Our board of directors may modify, reprice, extend, or assume outstanding options or may accept the cancellation of outstanding options (whether granted by us or another issuer) in return for the grant of new options or a different type of award for the same or a different number of shares and at the same or a different exercise price (if applicable).

After termination of an employee, director, or consultant, he or she may exercise his or her option for the period of time as specified in the applicable option agreement. If termination is due to disability, the option generally will remain exercisable for at least six months, and if the termination is due to death, the option generally will remain exercisable for at least twelve months. In all other cases, the option will generally remain exercisable for at least three months. However, an option generally may not be exercised later than the expiration of its term.

Non-Transferability of Awards. Our 2019 Plan generally does not allow for the transfer or assignment of awards. Options may be transferred only by a beneficiary designation or by will or by the laws of descent and distribution. If so provided by the administrator, nonstatutory options may be transferred to certain family members by gift or domestic relations orders.

Certain Adjustments. In the event of a subdivision of our outstanding stock, a declaration of a dividend payable in shares, a combination or consolidation of our outstanding stock into a lesser number of shares, a reclassification, or any other increase or decrease in the number of issued shares of stock effected without receipt of consideration by us, the 2019 Plan will be appropriately adjusted by the administrator as to the number and kind of securities subject to the 2019 Plan, the exercise price of each outstanding option, and the number and kind of securities subject to outstanding awards under the 2019 Plan, provided that our administrator will make any adjustments as may be required by Section 25102(o) of the California Corporations Code.

Corporate Transactions. Our 2019 Plan provides that, in the event that we are a party to a merger or consolidation, or in the event of a sale of all or substantially all of our stock or assets, all shares acquired under our 2019 Plan and all options and other awards outstanding on the effective date of the transaction will be treated in the manner

described in the definitive transaction agreement (or, in the event the transaction does not entail a definitive agreement to which we are a party, in the manner determined by the administrator, with such determination having final and binding effect on all parties), which agreement or determination need not treat all options and awards (or all portions of an option or an award) in an identical manner.

Amendment; Termination. As noted above, the 2019 Plan was terminated in connection with the adoption of the 2021 Plan and no further awards will be granted thereunder. All outstanding awards will continue to be governed by their existing terms.

401(k) plan

We maintain a 401(k) retirement savings plan for the benefit of our employees, including our named executive officers who remain employed with us, and who satisfy certain eligibility requirements. Under the 401(k) plan, eligible employees may elect to defer a portion of their compensation, within the limits prescribed by the Code, on a pre-tax or after-tax (Roth) basis, through contributions to the 401(k) plan. The 401(k) plan authorizes employer matching and discretionary contributions. The 401(k) plan is intended to qualify under Sections 401(a) and 501(a) of the Code. As a tax-qualified retirement plan, pre-tax contributions to the 401(k) plan and earnings on those pre-tax contributions are not taxable to the employees until distributed from the 401(k) plan, and earnings on Roth contributions are not taxable when distributed from the 401(k) plan.

Limitation of Liability and Indemnification

Our amended and restated certificate of incorporation and amended and restated bylaws, each to be effective upon the completion of this offering, will provide that we will indemnify our directors and officers, and may indemnify our employees and other agents, to the fullest extent permitted by Delaware law. Delaware law prohibits our amended and restated certificate of incorporation from limiting the liability of our directors for the following:

- any breach of the director's duty of loyalty to us or to our stockholders;
- acts or omissions not in good faith or that involve intentional misconduct or a knowing violation of law;
- unlawful payment of dividends or unlawful stock repurchases or redemptions; and
- any transaction from which the director derived an improper personal benefit.

If Delaware law is amended to authorize corporate action further eliminating or limiting the personal liability of a director, then the liability of our directors will be eliminated or limited to the fullest extent permitted by Delaware law, as so amended. Our amended and restated certificate of incorporation does not eliminate a director's duty of care and, in appropriate circumstances, equitable remedies, such as injunctive or other forms of non-monetary relief, remain available under Delaware law. This provision also does not affect a director's responsibilities under any other laws, such as the federal securities laws or other state or federal laws. Under our amended and restated bylaws, we will also be empowered to purchase insurance on behalf of any person whom we are required or permitted to indemnify.

In addition to the indemnification required in our amended and restated certificate of incorporation and amended and restated bylaws, we intend to enter into an indemnification agreement with each member of our board of directors and each of our officers prior to the completion of the offering. These agreements provide for the indemnification of our directors and officers for certain expenses and liabilities incurred in connection with any action, suit, proceeding or alternative dispute resolution mechanism or hearing, inquiry or investigation that may lead to the foregoing, to which they are a party, or are threatened to be made a party, by reason of the fact that they are or were a director, officer, employee, agent or fiduciary of our company, or any of our subsidiaries, by reason of any action or inaction by them while serving as an officer, director, agent or fiduciary, or by reason of the fact that they were serving at our request as a director, officer, employee, agent or fiduciary of another entity. In the case of an action or proceeding by or in the right of our company or any of our subsidiaries, no indemnification will be provided for any claim where a court determines that the indemnified party is prohibited from receiving indemnification. We believe that these charter and bylaw provisions and indemnification agreements are necessary to attract and retain qualified persons as directors and officers.

The limitation of liability and indemnification provisions in our amended and restated certificate of incorporation and amended and restated bylaws may discourage stockholders from bringing a lawsuit against directors for breach of their fiduciary duties. They may also reduce the likelihood of derivative litigation against directors and officers, even

though an action, if successful, might benefit us and our stockholders. Moreover, a stockholder's investment may be harmed to the extent we pay the costs of settlement and damage awards against directors and officers pursuant to these indemnification provisions. Insofar as indemnification for liabilities arising under the Securities Act, may be permitted to our directors, officers and controlling persons pursuant to the foregoing provisions, or otherwise, we have been advised that, in the opinion of the SEC, such indemnification is against public policy as expressed in the Securities Act, and is, therefore, unenforceable. There is no pending litigation or proceeding naming any of our directors or officers as to which indemnification is being sought, nor are we aware of any pending or threatened litigation that may result in claims for indemnification by any director or officer.

CERTAIN RELATIONSHIPS AND RELATED PARTY TRANSACTIONS

Other than compensation arrangements, including employment, termination of employment and change in control arrangements, with our directors and executive officers, including those discussed in the sections titled “Management” and “Executive Compensation,” and the registration rights described in the section titled “Description of Capital Stock—Registration Rights,” the following is a description of each transaction since January 1, 2019 and each currently proposed transaction in which:

- we have been or are to be a participant;
- the amount involved exceeded or exceeds $120,000; and
- any of our directors, executive officers or holders of more than 5% of our outstanding capital stock, or any immediate family member of, or person sharing the household with, any of these individuals or entities, had or will have a direct or indirect material interest.

Sales of Securities

Acquisition of SGI-DNA, Inc. by GATTACA Mining, LLC

In March 2019, GATTACA Mining, LLC (GATTACA), an entity owned and controlled by Todd R. Nelson, our Chief Executive Officer, purchased 100% of the issued and outstanding shares of SGI-DNA, Inc. (which subsequently changed its name to Codex DNA, Inc.) from SGI for (i) $10.0 million in cash, paid through the issuance of a secured promissory note by GATTACA, (ii) a participation right equal to the proceeds a holder of 6% of our fully diluted ownership would receive upon a change of control of the company, and (iii) the issuance of a warrant to purchase common stock equal to 6% of our fully diluted ownership. In connection with our Series A convertible preferred stock financing, both the participation right and warrant were amended (x) to replace the 6% participation right with (i) a participation right upon a change in control of the company equal to the value of net proceeds the holder of 3,245,235 shares of common stock of the company (which was equal to 6% of our fully diluted ownership at the time of the Series A convertible preferred stock financing) would receive in such transaction, and (ii) the right to receive future warrants equal to 3% of the amount of equity securities of the company sold in any future equity financing primarily for capital raising purposes (subject to certain exceptions), and with the exercise price equal to the lowest purchase price paid in such equity round, and (y) to change the terms of the existing warrant such that the warrant would automatically net exercise upon an initial public offering to purchase (a) 3,245,235 shares of common stock of the company less (b) such number of shares equal to the aggregate exercise price of $1.00 divided by the per share offering price in an initial public offering.

Assumption and Cancellation of certain Secured Promissory Notes

In August 2019, the Company assumed certain secured promissory notes, in the aggregate amount of $1.5 million, issued to BroadOak Fund IV, LLC and Dr. Nelson, by GATTACA (the Secured Promissory Notes). GATTACA used the proceeds of these secured promissory notes to make unsecured working capital advances to Codex DNA, Inc. The Secured Promissory Notes were cancelled in connection with the issuance of 1,897,276 shares of Series A Preferred Stock to BroadOak Fund IV, LLC and Dr. Nelson.

Convertible Preferred Stock Issuances

In December 2019, we issued and sold an aggregate of 14,940,170 shares of our Series A-1 convertible preferred stock at a purchase price of $1.20177 per share for an aggregate purchase price of $18.0 million. These shares of Series A-1 convertible preferred stock will convert into an aggregate of shares of common stock immediately prior to the completion of this offering.

The table below sets forth the number of shares of Series A-1 convertible preferred stock sold to our directors, executive officers and holders of more than 5% of our capital stock:

Investor	Shares of Series A-1 Preferred Stock		Total Purchase Price
BroadOak Fund IV, LLC	832,105	$	999,998.83
DH Life Science LLC	1,626,476	$	1,954,650.07
Northpond Ventures, LP	12,481,589	$	14,999,999.22

In August 2019, we issued and sold an aggregate of 22,797,830 shares of our Series A convertible preferred stock at a purchase price of $0.9588 per share for an aggregate purchase price of $21.9 million. These shares of Series A convertible preferred stock will convert into an aggregate of shares of common stock upon the completion of this offering.

The table below sets forth the number of shares of Series A convertible preferred stock sold to our directors, executive officers and holders of more than 5% of our capital stock:

Investor	Shares of Series A Preferred Stock	Total Purchase Price
BroadOak Fund IV, LLC	1,625,033	$ 1,558,082.20
DH Life Science LLC	5,255,999	$ 5,039,452.06
Northpond Ventures, LP	15,644,555	$ 14,999,999.34
Todd R. Nelson	272,243	$ 261,027.40

Investors' Rights Agreement

We are party to an Amended and Restated Investors' Rights Agreement with certain holders of our capital stock, including BroadOak Fund IV LLC, DH Life Science LLC, Northpond Ventures, LP, GATTACA, and Dr. Nelson. Under our investors' rights agreement, certain holders of our capital stock have the right to demand that we file a registration statement or request that their shares of our capital stock be covered by a registration statement that we are otherwise filing. See the section titled "Description of Capital Stock—Registration Rights" for additional information regarding these registration rights.

Voting Agreement

We are party to an Amended and Restated Voting Agreement with certain holders of our capital stock, including BroadOak Fund IV LLC, DH Life Science LLC, Northpond Ventures LP, GATTACA, and Dr. Nelson. Upon the consummation of this offering, the obligations of the parties to the voting agreement to vote their shares so as to elect certain nominees, as well as the other rights and obligations under the agreement, will terminate and none of our stockholders will have any special rights regarding the nomination, election or designation of members of our board of directors. Our existing certificate of incorporation contains provisions regarding election of members of the board of directors that correspond to the voting agreement; however, such provisions will be removed in the amended and restated certificate of incorporation that will be effective at the closing of this offering.

Indemnification Agreements

We have entered into separate indemnification agreements with each of our directors and executive officers, in addition to the indemnification provided for in our amended and restated certificate of incorporation and bylaws. The indemnification agreements and our amended restated certificate of incorporation and bylaws that will be in effect upon the closing of this offering require us to indemnify our directors, executive officers and certain controlling persons to the fullest extent permitted by Delaware law. See the section titled "Executive Compensation—Limitation of Liability and Indemnification" for additional information.

Equity Grants to Executive Officers and Directors

We have granted options to our named executive officers and certain of our non-employee directors as more fully described in the sections titled "Director Compensation" and "Executive Compensation."

Synthetic Genomics

As of December 31, 2020, we had incurred fees from SGI of approximately $227,000 for services relating to intellectual property matters, including patent filings and patent prosecution.

Related Party Transaction Policy

Our audit committee will have the primary responsibility for reviewing and approving or disapproving "related party transactions," which are transactions between us and related persons in which the aggregate amount involved exceeds or may be expected to exceed $120,000 and in which a related person has or will have a direct or indirect

material interest. The charter of our audit committee will provide that our audit committee shall review and approve or ratify any related party transaction.

Prior to the effectiveness of the registration statement of which this prospectus forms a part, we intend to adopt a formal written policy providing that we are not permitted to enter into any transaction that exceeds $120,000 and in which any related person has a direct or indirect material interest without the consent of our audit committee. In approving or rejecting any such transaction, our audit committee is to consider the relevant facts and circumstances available and deemed relevant to our audit committee, including whether the transaction is on terms no less favorable than terms generally available to an unaffiliated third party under the same or similar circumstances and the extent of the related person's interest in the transaction.

PRINCIPAL STOCKHOLDERS

The following table sets forth the beneficial ownership of our common stock as of December 31, 2020 by:

- each person, or group of affiliated persons, who is known by us to beneficially own more than 5% of our common stock;
- each of the named executive officers;
- each of our directors; and
- all of our current executive officers and directors as a group.

We have determined beneficial ownership in accordance with the rules of the SEC, and thus it represents sole or shared voting or investment power with respect to our securities. Unless otherwise indicated below, to our knowledge, the persons and entities named in the table have sole voting and sole investment power with respect to all shares that they beneficially owned, subject to community property laws where applicable. The information does not necessarily indicate beneficial ownership for any other purpose, including for purposes of Sections 13(d) and 13(g) of the Exchange Act.

We have based our calculation of the percentage of beneficial ownership prior to this offering on 60,309,878 shares of our common stock outstanding as of December 31, 2020, after giving pro forma effect to the automatic conversion of all of our outstanding convertible preferred stock and the automatic exercise of all of our outstanding warrants issued to SGI into an aggregate of shares of common stock immediately prior to the completion of this offering. We have based our calculation of the percentage of beneficial ownership after this offering on shares of our common stock outstanding immediately after the completion of this offering, assuming no exercise by the underwriters of their option to purchase additional shares. We have deemed shares of our common stock subject to stock options that are currently exercisable or exercisable within 60 days of December 31, 2020, to be outstanding and to be beneficially owned by the person holding the stock option for the purpose of computing the percentage ownership of that person. We did not deem these shares outstanding, however, for the purpose of computing the percentage ownership of any other person.

Unless otherwise indicated, the address of each beneficial owner listed in the table below is c/o Codex DNA, Inc., 9535 Waples Street, Suite 100, San Diego, CA 92121-2993.

	Shares Beneficially Owned Prior to this Offering		Shares Beneficially Owned After this Offering	
Name of Beneficial Owner	**Shares**	**Percentage**	**Shares**	**Percentage**
5% and Greater Stockholders:				
Northpond Ventures, LP[1]	28,126,144	46.6 %	28,126,144	
GATTACA Mining LLC[2]	18,000,000	29.8 %	18,000,000	
BroadOak Fund IV, LLC[3]	6,957,138	11.5 %	6,957,138	
DH Life Sciences LLC[4]	6,882,475	11.4 %	6,882,475	
Synthetic Genomics, Inc.[5]	3,707,302	5.8 %	3,707,302	
Named Executive Officers and Directors:				
Todd R. Nelson[6]	18,272,243	30.3 %	18,272,243	
Daniel G. Gibson[7]	233,375	0.4 %	233,375	
Timothy E. Cloutier	—	— %	—	
William F. Snider[8]	6,957,138	11.5 %	6,957,138	
Sharon Kedar[9]	—	— %	—	
Franklin R. Witney	—	— %	—	
All executive officers and directors as a group (6 persons)[10]	25,462,756	42.2 %	25,462,756	

(1) Consists of 28,126,144 shares held of record by Northpond Ventures, LP. Northpond Ventures, LP is managed by Northpond Ventures GP, LLC (Northpond LLC) and Michael Rubin is the managing member of Northpond LLC. Each of Northpond LLC and Mr. Rubin may also be deemed to beneficially own the shares held by Northpond Ventures. Sharon Kedar, a member of our board of directors, is a Partner of Northpond Ventures, LLC, an investment firm affiliated with Northpond Ventures and Northpond LLC. Ms. Kedar disclaims beneficial ownership of such shares except to the extent of her pecuniary interest therein, if any. The address of Northpond Ventures, LP is 7500 Old Georgetown Rd, Suite 850, Bethesda, MD 20814.

(2) Consists of 18,000,000 shares held of record by GATTACA. Todd R. Nelson is the managing member of GATTACA and may be deemed to have voting and dispositive power over the shares held by GATTACA. The address of GATTACA is P.O. Box 676273, Rancho Santa Fe, CA 92067.

(3) Consists of 6,957,138 shares held of record by BroadOak Fund IV, LLC. BroadOak Asset Management, LLC is the manager and general partner of BroadOak Fund IV, LLC, and BroadOak Capital Partners, LLC is the managing member of BroadOak Asset Management, LLC. William F. Snider is a partner and manager of BroadOak Capital Partners, LLC. Each of Mr. Snider and BroadOak Capital Partners, LLC may be deemed to have voting and dispositive power over the shares held by BroadOak Fund IV, LLC, and each disclaims beneficial ownership of such shares except to the extent of his/its indirect pecuniary interest therein, if any. The address for BroadOak Fund IV, LLC is 4800 Montgomery Lane Suite 230, Bethesda, MD 20814.

(4) Consists of 6,882,475 shares held of record by DH Life Sciences LLC. DH Life Sciences LLC is an indirect, wholly owned subsidiary of Danaher Corporation. The address of DH Life Sciences LLC is 2200 Pennsylvania Avenue, N.W., Suite 800W, Washington, DC 20037.

(5) Consists of 3,707,302 shares subject to outstanding warrants which are exercisable within 60 days of December 30, 2020 held by Synthetic Genomics, Inc. The address for Synthetic Genomics, Inc. is 11149 North Torrey Pines Road, La Jolla, CA 92037.

(6) Consists of 272,243 shares held of record by Todd R. Nelson and the shares referenced in footnote 2.

(7) Consists of 233,375 shares issuable pursuant to stock options exercisable with 60 days of December 31, 2020.

(8) Consists of the shares referenced in footnote 3. Mr. Snider disclaims beneficial ownership of such shares except to the extent of his pecuniary interest therein, if any.

(9) Ms. Kedar disclaims beneficial ownership of the shares referenced in footnote 1, except to the extent of her pecuniary interest therein, if any.

(10) Consists of (i) 53,355,525 shares beneficially owned by our current executive officers and directors, and (ii) 233,375 shares issuable pursuant to stock options held by such directors and officers and exercisable within 60 days of December 31, 2020.

DESCRIPTION OF CAPITAL STOCK

The following descriptions of our capital stock and certain provisions of our amended and restated certificate of incorporation and amended and restated bylaws are summaries and are qualified by reference to the amended and restated certificate of incorporation and the amended and restated bylaws that will be in effect upon completion of this offering. Copies of these documents will be filed with the SEC as exhibits to our registration statement, of which this prospectus forms a part. The descriptions of the common stock and preferred stock reflect changes to our capital structure that will occur upon the completion of this offering.

Immediately prior to the completion of this offering and the filing of our amended and restated certificate of incorporation to be effective upon completion of this offering, our authorized capital stock will consist of shares of common stock, par value $0.0001 per share, and shares of preferred stock, par value $0.0001 per share.

Immediately prior to the completion of this offering, all the outstanding shares of our convertible preferred stock will automatically convert into an aggregate of shares of our common stock.

Unless previously exercised, immediately prior to the completion of this offering, that certain Warrant to Purchase Common Stock, dated March 8, 2019, issued to SGI will automatically net exercise into shares of our common stock and that certain Warrant to Purchase Stock of the Company, dated December 19, 2019, issued to SGI, will automatically net exercise into shares of our common stock.

In connection with the 2021 Loan Agreement, the Company issued to SVB a warrant to purchase a number of shares of preferred stock (the Preferred Warrant). Unless previously exercised, following this offering, the Preferred Warrant will be exercisable for shares of common stock. If the Company chooses to draw any more funds under the Loan Agreement, the number of shares into which the Preferred Warrant is exercisable shall be increased by a number of shares equal to 1.5% of such draw divided by $. Unless previously exercised, the Preferred Warrant will expire on March 4, 2031.

Based on shares of common stock outstanding as of December 31, 2020, and after giving pro forma effect to the automatic conversion of all of our outstanding convertible preferred stock and the automatic exercise of all of our outstanding warrants issued to SGI into an aggregate of shares of common stock immediately prior to the completion of this offering and the issuance of shares of common stock in this offering, there will be shares of common stock outstanding upon the completion of this offering. As of December 31, 2020, we had stockholders of record.

Common Stock

Voting Rights

Each holder of common stock is entitled to one vote for each share on all matters submitted to a vote of the stockholders, including the election of directors. Our amended and restated certificate of incorporation and amended and restated bylaws to be in effect upon the completion of this offering do not provide for cumulative voting rights. Because of this, the holders of a plurality of the shares of common stock entitled to vote in any election of directors can elect all of the directors standing for election, if they should so choose. With respect to matters other than the election of directors, at any meeting of the stockholders at which a quorum is present or represented, the affirmative vote of a majority of the voting power of the shares present in person or represented by proxy at such meeting and entitled to vote on the subject matter shall be the act of the stockholders, except as otherwise required by law. The holders of a majority of the stock issued and outstanding and entitled to vote, present in person or represented by proxy, shall constitute a quorum for the transaction of business at all meetings of the stockholders.

Dividends

Subject to preferences that may be applicable to any then-outstanding preferred stock, holders of our common stock are entitled to receive dividends, if any, as may be declared from time to time by our board of directors out of legally available funds.

Liquidation

In the event of our liquidation, dissolution or winding up, holders of our common stock will be entitled to share ratably in the net assets legally available for distribution to stockholders after the payment of all of our debts and other liabilities and the satisfaction of any liquidation preference granted to the holders of any then-outstanding shares of preferred stock.

Rights and Preferences

Holders of our common stock have no preemptive, conversion, subscription or other rights, and there are no redemption or sinking fund provisions applicable to our common stock. The rights, preferences and privileges of the holders of our common stock are subject to and may be adversely affected by the rights of the holders of shares of any series of our preferred stock that we may designate in the future.

Fully Paid and Nonassessable

All of our outstanding shares of common stock are, and the shares of common stock to be issued in this offering, upon payment and delivery in accordance with the underwriting agreement, will be fully paid and nonassessable.

Preferred Stock

Upon the completion of this offering, our board of directors will have the authority, without further action by the stockholders, to issue up to shares of preferred stock in one or more series and to fix the rights, preferences, privileges and restrictions thereof. These rights, preferences and privileges could include dividend rights, conversion rights, voting rights, redemption rights, liquidation preferences, sinking fund terms and the number of shares constituting any series or the designation of such series, any or all of which may be greater than the rights of common stock. The issuance of preferred stock could adversely affect the voting power of holders of common stock and the likelihood that such holders will receive dividend payments and payments upon liquidation. In addition, the issuance of preferred stock could have the effect of delaying, deferring or preventing a change in our control or other corporate action. Upon the completion of this offering, no shares of preferred stock will be outstanding, and we have no present plan to issue any shares of preferred stock.

Common Stock Options

As of December 31, 2020, we had outstanding options to purchase an aggregate of shares of our common stock, with a weighted-average exercise price of $ per share, under our 2019 Plan.

As of , 2021, we had outstanding options to purchase an aggregate of shares of our common stock, with a weighted-average exercise price of $ per share, under our 2021 Plan.

Registration Rights

After the completion of this offering, under our investors' rights agreement, as amended, certain holders of shares of common stock or their transferees, will have the right to require us to register the offer and sale of their shares, or to include their shares in any registration statement we file, in each case as described below.

Demand Registration Rights

After the completion of this offering, certain holders of our common stock will be entitled to certain demand registration rights. Prior to the earlier of December 19, 2024 and 180 days following the date of effectiveness of the registration statement of which this prospectus forms a part, the holders of at least a majority of the shares having registration rights then outstanding can request that we file a registration statement to register the offer and sale of their shares. We are only obligated to effect up to two such registrations. Each such request for registration must cover securities the anticipated aggregate gross proceeds of which, before deducting underwriting discounts and expenses, is at least $10 million. These demand registration rights are subject to specified conditions and limitations, including the right of the underwriters to limit the number of shares included in any such registration under certain circumstances. If we determine that it would be materially detrimental to us and our stockholders to effect such a demand registration, we have the right to defer such registration, not more than once in any twelve month period, for a period of up to 90 days.

Form S-3 Registration Rights

After the completion of this offering, the holders of up to shares of our common stock will be entitled to certain Form S-3 registration rights. At any time after the completion of this offering when we are eligible to file a registration statement on Form S-3, the holders of the shares having these rights then outstanding can request that we register the offer and sale of their shares of our common stock on a registration statement on Form S-3 so long as the request covers securities the anticipated aggregate public offering price of which is at least $3 million. These stockholders may make an unlimited number of requests for registration on a registration statement on Form S-3. However, we will not be required to effect a registration on Form S-3 if we have effected two such registrations within the twelve month period preceding the date of the request. These Form S-3 registration rights are subject to specified conditions and limitations, including the right of the underwriters to limit the number of shares included in any such registration under certain circumstances. Additionally, if we determine that it would be seriously detrimental to us and our stockholders to effect such a demand registration, we have the right to defer such registration, not more than once in any 12 month period, for a period of up to 90 days.

Piggyback Registration Rights

After the completion of this offering, the holders of up to shares of our common stock will be entitled to certain "piggyback" registration rights. If we propose to register the offer and sale of shares of our common stock or the common stock of certain other holders under the Securities Act, the holders of these shares can request that we include their shares in such registration, subject to certain marketing and other limitations, including the right of the underwriters to limit the number of shares included in any such registration statement under certain circumstances. As a result, whenever we propose to file a registration statement under the Securities Act, other than with respect to (i) a registration relating solely to employee benefit plans, (ii) a registration relating to common stock issuable upon conversion of debt securities that are also being registered, (iii) a registration relating to a corporate reorganization or other transaction covered by Rule 145 promulgated under the Securities Act, (iv) a registration on any form that does not include substantially the same information as would be required to be included in a registration statement covering the sale the registrable securities or (v) a registration pursuant to the demand or Form S-3 registration rights described in the preceding two paragraphs above, the holders of these shares are entitled to notice of the registration and have the right, subject to certain limitations, to include their shares in the registration.

Expenses of Registration

We will pay all expenses relating to any demand registrations, Form S-3 registrations and piggyback registrations, subject to specified exceptions.

Termination

The registration rights terminate upon the earliest of (i) the date that is five years after the closing of this offering, (ii) immediately prior to the closing of certain liquidation events and (iii) as to a given holder of registration rights, the date after the closing of this offering when such holder of registration rights can sell all of such holder's registrable securities during any 90-day period pursuant to Rule 144 promulgated under the Securities Act.

Anti-takeover Effects of Certain Provisions of Delaware Law, Our Amended and Restated Certificate of Incorporation and Our Amended and Restated Bylaws

Certain provisions of Delaware law and certain provisions that will be included in our amended and restated certificate of incorporation and amended and restated bylaws summarized below may be deemed to have an anti-takeover effect and may delay, deter or prevent a tender offer or takeover attempt that a stockholder might consider to be in its best interests, including attempts that might result in a premium being paid over the market price for the shares held by stockholders.

Preferred Stock

Our amended and restated certificate of incorporation will contain provisions that permit our board of directors to issue, without any further vote or action by the stockholders, shares of preferred stock in one or more series and, with respect to each such series, to fix the number of shares constituting the series and the designation of the series, the voting rights (if any) of the shares of the series and the powers, preferences or relative, participation, optional and other special rights, if any, and any qualifications, limitations or restrictions, of the shares of such series.

Classified Board

Our amended and restated certificate of incorporation will provide that our board of directors is divided into three classes, designated Class I, Class II and Class III. Each class will be an equal number of directors, as nearly as possible, consisting of one third of the total number of directors constituting the entire board of directors. The term of initial Class I directors shall terminate on the date of the 2022 annual meeting, the term of the initial Class II directors shall terminate on the date of the 2023 annual meeting, and the term of the initial Class III directors shall terminate on the date of the 2024 annual meeting. At each annual meeting of stockholders beginning in 2022, the class of directors whose term expires at that annual meeting will be subject to reelection for a three-year term.

Removal of Directors

Our amended and restated certificate of incorporation will provide that stockholders may only remove a director for cause by a vote of no less than a majority of the voting power of the issued and outstanding capital stock of the Company entitled to vote in the election of directors.

Director Vacancies

Our amended and restated certificate of incorporation will authorize only our board of directors to fill vacant directorships.

No Cumulative Voting

Our amended and restated certificate of incorporation will provide that stockholders do not have the right to cumulate votes in the election of directors.

Special Meetings of Stockholders

Our amended and restated certificate of incorporation and amended and restated bylaws will provide that, except as otherwise required by law, special meetings of the stockholders may be called only by an officer at the request of a majority of our board of directors, by the chair of our board of directors, by our chief executive officer or president, or by the board of directors acting pursuant to a resolution adopted by a majority of the board.

Advance Notice Procedures for Director Nominations

Our amended and restated bylaws will provide that stockholders seeking to nominate candidates for election as directors at an annual or special meeting of stockholders must provide timely notice thereof in writing. To be timely, a stockholder's notice generally will have to be delivered to and received at our principal executive offices before notice of the meeting is issued by the secretary of the Company, with such notice being served not less than 90 nor more than 120 days before the meeting. Although the amended and restated bylaws will not give the board of directors the power to approve or disapprove stockholder nominations of candidates to be elected at an annual meeting, the amended and restated bylaws may have the effect of precluding the conduct of certain business at a meeting if the proper procedures are not followed or may discourage or deter a potential acquirer from conducting a solicitation of proxies to elect its own slate of directors or otherwise attempting to obtain control of the company.

Action by Written Consent

Our amended and restated certificate of incorporation and amended and restated bylaws will provide that any action to be taken by the stockholders must be effected at a duly called annual or special meeting of stockholders and may not be effected by written consent.

Amending our Certificate of Incorporation and Bylaws

Our amended and restated certificate of incorporation may be amended or altered in any manner provided by the Delaware General Corporation Law (DGCL). Our amended and restated bylaws may be adopted, amended, altered or repealed by stockholders only upon approval of at least majority of the voting power of all the then outstanding shares of the common stock, except for any amendment of the above provisions and others, which would require the approval of a two-thirds majority of our then outstanding common stock. Additionally, our amended and restated certificate of incorporation will provide that our bylaws may be amended, altered or repealed by the affirmative vote of the majority of our board of directors.

Authorized but Unissued Shares

Our authorized but unissued shares of common stock and preferred stock will be available for future issuances without stockholder approval, except as required by the listing standards of Nasdaq, and could be utilized for a

variety of corporate purposes, including future offerings to raise additional capital, acquisitions and employee benefit plans. The existence of authorized but unissued and unreserved common stock and preferred stock could render more difficult or discourage an attempt to obtain control of the company by means of a proxy contest, tender offer, merger or otherwise.

Exclusive Jurisdiction

Our amended and restated bylaws will provide that, unless we consent to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for any derivative action or proceeding brought on our behalf, any action asserting a claim of breach of fiduciary duty, any action asserting a claim arising pursuant to the DGCL, any action regarding our amended and restated certificate of incorporation or amended and restated bylaws, or any action asserting a claim against us that is governed by the internal affairs doctrine. This provision would not apply to suits brought to enforce a duty or liability created by the Exchange Act or any other claim for which the U.S. federal courts have exclusive jurisdiction. Our amended and restated bylaws further provide that the federal district courts of the United States of America will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act. Any person or entity purchasing or otherwise acquiring any interest in our securities shall be deemed to have notice of and consented to these provisions. Although we believe these provisions benefit us by providing increased consistency in the application of law for the specified types of actions and proceedings, the provisions may have the effect of discouraging lawsuits against us or our directors and officers. There is uncertainty as to whether a court would enforce such provisions, and the enforceability of similar choice of forum provisions in other companies' charter documents has been challenged in legal proceedings. We also note that stockholders cannot waive compliance (or consent to noncompliance) with the federal securities laws and the rules and regulations thereunder. See the section titled "Risk Factors - Our amended and restated bylaws designate a state or federal court located within the State of Delaware as the exclusive forum for substantially all disputes between us and our stockholders, and also provide that the federal district courts will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act, each of which could limit our stockholders' ability to choose the judicial forum for disputes with us or our directors, officers, stockholders, or employees."

Business Combinations with Interested Stockholders

We are governed by Section 203 of the DGCL. Subject to certain exceptions, Section 203 of the DGCL prohibits a public Delaware corporation from engaging in a business combination (as defined in such section) with an "interested stockholder" (defined generally as any person who beneficially owns 15% or more of the outstanding voting stock of such corporation or any person affiliated with such person) for a period of three years following the time that such stockholder became an interested stockholder, unless (i) prior to such time the board of directors of such corporation approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder; (ii) upon consummation of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of such corporation at the time the transaction commenced (excluding for purposes of determining the voting stock of such corporation outstanding (but not the outstanding voting stock owned by the interested stockholder) those shares owned (a) by persons who are directors and also officers of such corporation and (b) by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer); or (iii) at or subsequent to such time the business combination is approved by the board of directors of such corporation and authorized at a meeting of stockholders (and not by written consent) by the affirmative vote of at least 66 2/3% of the outstanding voting stock of such corporation not owned by the interested stockholder.

Our amended and restated certificate of incorporation and our amended and restated bylaws will provide that we must indemnify our directors and officers to the fullest extent authorized by the DGCL. We are expressly authorized to, and do, carry directors' and officers' insurance providing coverage for our directors, officers and certain employees for some liabilities. We believe that these indemnification provisions and insurance are useful to attract and retain qualified directors and executive officers.

The limitation on liability and indemnification provisions in our certificate of incorporation and bylaws may discourage stockholders from bringing a lawsuit against directors for breach of their fiduciary duty. These provisions may also have the effect of reducing the likelihood of derivative litigation against directors and officers, even though such an action, if successful, might otherwise benefit us and our stockholders. In addition, your investment may be

adversely affected to the extent we pay the costs of settlement and damage awards against directors and officers pursuant to these indemnification provisions.

Listing

We intend to apply to list our common stock on the Nasdaq Global Market under the symbol “DNAY.”

Transfer Agent and Registrar

Upon completion of this offering, the transfer agent and registrar for our common stock will be . The transfer agent and registrar’s address is .

SHARES ELIGIBLE FOR FUTURE SALE

Prior to this offering, there has been no public market for our common stock, and although we expect that our common stock will be approved for listing on the Nasdaq Global Market, we cannot assure investors that there will be an active public market for our common stock following this offering. We cannot predict what effect, if any, sales of our shares in the public market or the availability of shares for sale will have on the market price of our common stock. Future sales of substantial amounts of common stock in the public market, including shares issued upon exercise of outstanding options, or the perception that such sales may occur, however, could adversely affect the market price of our common stock and also could adversely affect our future ability to raise capital through the sale of our common stock or other equity-related securities of ours at times and prices we believe appropriate.

Upon completion of this offering, based on our shares outstanding as of December 31, 2020 and after giving effect to the conversion of all outstanding shares of our convertible preferred stock, shares of our common stock will be outstanding, or shares of common stock if the underwriters exercise their option to purchase additional shares in full. All of the shares of common stock expected to be sold in this offering will be freely tradable without restriction or further registration under the Securities Act unless held by our "affiliates," as that term is defined in Rule 144 under the Securities Act. The remaining outstanding shares of our common stock will be deemed "restricted securities" as that term is defined under Rule 144. Restricted securities may be sold in the public market only if their offer and sale is registered under the Securities Act or if the offer and sale of those securities qualify for an exemption from registration, including exemptions provided by Rules 144 and 701 under the Securities Act, which are summarized below.

As a result of the lock-up agreements and market stand-off provisions described below and the provisions of Rules 144 or 701, the shares of our common stock that will be deemed "restricted securities" will be available for sale in the public market following the completion of this offering as follows:

- shares will be eligible for sale on the date of this prospectus; and
- shares will be eligible for sale upon expiration of the lock-up agreements and market stand-off provisions described below, following the date that is 180 days after the date of this prospectus.

Lock-up Agreements and Market Stand-Off Agreements

Our officers, directors and the holders of substantially all of our capital stock and options have entered into market stand-off agreements with us and have entered into or will enter into lock-up agreements with the underwriters, subject to certain exceptions, not to dispose of or hedge any of their common stock or securities convertible into or exchangeable for shares of common stock during the period from the date of this prospectus continuing through the date 180 days after the date of this prospectus, except with the prior consent of Jefferies LLC and Cowen and Company, LLC. See the section titled "Underwriting" for additional information.

Rule 144

Rule 144, as currently in effect, generally provides that, once we have been subject to the public company reporting requirements of Section 13 or Section 15(d) of the Exchange Act for at least 90 days, a stockholder who is not deemed to have been one of our affiliates at any time during the preceding 90 days and who has beneficially owned the shares of our capital stock proposed to be sold for at least six months is entitled to sell such shares in reliance upon Rule 144 without complying with the volume limitation, manner of sale or notice conditions of Rule 144. If such stockholder has beneficially owned the shares of our capital stock proposed to be sold for at least one year, then such person is entitled to sell such shares in reliance upon Rule 144 without complying with any of the other conditions of Rule 144.

Rule 144 also provides that a stockholder who is deemed to have been one of our affiliates at any time during the preceding 90 days and who has beneficially owned the shares of our common stock proposed to be sold for at least

six months is entitled to sell such shares in reliance upon Rule 144 within any three month period beginning 90 days after the date of this prospectus a number of such shares that does not exceed the greater of the following:

- 1% of the number of shares of our capital stock then outstanding, which will equal shares immediately after the completion of this offering, assuming no exercise by the underwriters of their option to purchase additional shares; or
- the average weekly trading volume of our common stock during the four calendar weeks preceding the filing of a notice on Form 144 with respect to such sale.

Sales of our capital stock made in reliance upon Rule 144 by a stockholder who is deemed to have been one of our affiliates at any time during the preceding 90 days are also subject to the current public information, manner of sale and notice conditions of Rule 144.

Rule 701

Rule 701 generally provides that, once we have been subject to the public company reporting requirements of Section 13 or Section 15(d) of the Exchange Act for at least 90 days, a stockholder who purchased shares of our common stock pursuant to a written compensatory benefit plan or contract and who is not deemed to have been one of our affiliates at any time during the preceding 90 days may sell such shares in reliance upon Rule 144 without complying with the current public information or holding period conditions of Rule 144. Rule 701 also provides that a stockholder who purchased shares of our common stock pursuant to a written compensatory benefit plan or contract and who is deemed to have been one of our affiliates during the preceding 90 days may sell such shares under Rule 144 without complying with the holding period condition of Rule 144. However, all stockholders who purchased shares of our common stock pursuant to a written compensatory benefit plan or contract are required to wait until 90 days after the date of this prospectus before selling such shares pursuant to Rule 701.

Registration Rights

After the completion of this offering, the holders of up to shares of our common stock will be entitled to certain rights with respect to the registration of such shares under the Securities Act. The registration of these shares of our common stock under the Securities Act would result in these shares becoming eligible for sale in the public market without restriction under the Securities Act immediately upon the effectiveness of such registration. See the section titled “Description of Capital Stock—Registration Rights” for a description of these registration rights.

Registration Statement

After the completion of this offering, we intend to file a registration statement on Form S-8 under the Securities Act to register all of the shares of our common stock subject to equity awards outstanding or reserved for issuance under our equity compensation plans. The shares of our common stock covered by such registration statement will be eligible for sale in the public market without restriction under the Securities Act immediately upon the effectiveness of such registration statement, subject to vesting restrictions, the conditions of Rule 144 applicable to affiliates, and any applicable market stand-off agreements and lock-up agreements. See the section titled “Executive Compensation—Employee Benefit and Stock Plans” for a description of our equity compensation plans.

MATERIAL U.S. FEDERAL INCOME TAX CONSIDERATIONS FOR NON-U.S. HOLDERS OF OUR COMMON STOCK

The following is a summary of the material U.S. federal income tax considerations of the ownership and disposition of our common stock acquired in this offering by a "non-U.S. holder" (as defined below), but does not purport to be a complete analysis of all the potential tax considerations relating thereto. This summary is based upon the provisions of the Internal Revenue Code of 1986, as amended (the Code), Treasury Regulations promulgated thereunder, administrative rulings and judicial decisions, all as of the date hereof. These authorities may be changed, possibly retroactively, so as to result in U.S. federal income tax consequences different from those set forth below. We have not sought, and do not intend to seek, any ruling from the Internal Revenue Service (the IRS), with respect to the statements made and the conclusions reached in the following summary, and there can be no assurance that the IRS or a court will agree with such statements and conclusions.

This summary also does not address the tax considerations arising under the laws of any non-U.S., state or local jurisdiction, under U.S. federal gift and estate tax rules or under any applicable tax treaty. In addition, this discussion does not address any tax considerations applicable to an investor's particular circumstances or investors that may be subject to special tax rules, including, without limitation:

- banks, insurance companies, regulated investment companies, real estate investment trusts or other financial institutions;
- tax-exempt organizations or accounts;
- pension plans and tax-qualified retirement plans;
- controlled foreign corporations and passive foreign investment companies and their stockholders, and corporations that accumulate earnings to avoid U.S. federal income tax;
- brokers or dealers in securities or currencies;
- traders in securities that elect to use a mark-to-market method of accounting for their securities holdings;
- persons that own, or are deemed to own, more than 5% of our capital stock (except to the extent specifically set forth below);
- U.S. expatriates and certain other former citizens or long-term residents of the United States;
- partnerships (or entities or arrangements classified as such for U.S. federal income tax purposes), other pass-through entities and investors therein;
- persons subject to the alternative minimum tax;
- persons who hold our common stock as a position in a hedging transaction, "straddle," "conversion transaction" or other risk reduction transaction;
- persons who hold or receive our common stock pursuant to the exercise of any option or otherwise as compensation;
- persons who do not hold our common stock as a capital asset within the meaning of Section 1221 of the Code (generally, property held for investment); or
- persons deemed to sell our common stock under the constructive sale provisions of the Code.

In addition, if a partnership, entity or arrangement classified as a partnership or flow-through entity for U.S. federal income tax purposes holds our common stock, the tax treatment of a partner generally will depend on the status of the partner and upon the activities of the partnership or other entity. A partner in a partnership or other such entity that will hold our common stock should consult his, her or its own tax advisor regarding the tax consequences of the ownership and disposition of our common stock through a partnership or other such entity, as applicable.

You are urged to consult your tax advisor with respect to the application of the U.S. federal income tax laws to your particular situation, as well as any tax consequences of the purchase, ownership and disposition of our common stock arising under the U.S. federal gift or estate tax rules or under the laws of any state, local, non-U.S. or other taxing jurisdiction or under any applicable tax treaty.

Non-U.S. Holder Defined

For purposes of this discussion, you are a "non-U.S. holder" if you are a beneficial owner of our common stock that, for U.S. federal income tax purposes, is not

- a partnership (including any entity or arrangement treated as a partnership and the equity holders therein);
- an individual who is a citizen or resident of the United States;
- a domestic corporation for U.S. federal income tax purposes;
- an estate whose income is subject to U.S. federal income tax regardless of its source; or
- a trust (i) whose administration is subject to the primary supervision of a U.S. court and that has one or more U.S. persons who have the authority to control all substantial decisions of the trust or (ii) that has made a valid election under applicable Treasury Regulations to be treated as a U.S. person.

Distributions

As described in the section titled "Dividend Policy," we have never declared or paid cash dividends on our capital stock, and we do not anticipate paying any cash dividends following the completion of this offering. However, if we do make distributions on our common stock, those payments will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. To the extent those distributions exceed both our current and our accumulated earnings and profits, the excess will, first, constitute a return of capital and reduce your basis in our common stock (determined separately with respect to each share of our common stock), but not below zero, and thereafter will be treated as gain from the sale of stock.

Subject to the discussions below on effectively connected income and in the sections titled "Backup Withholding and Information Reporting" and "Foreign Account Tax Compliance Act (FATCA)," any dividend paid to you generally will be subject to U.S. federal withholding tax either at a rate of 30% of the gross amount of the dividend or such lower rate as may be specified by an applicable income tax treaty between the United States and your country of residence. In order to qualify for a reduced treaty rate, you must provide us with a properly executed IRS Form W-8BEN or W-8BEN-E or other appropriate version of IRS Form W-8 certifying that you are eligible for the applicable treaty benefits. If you are eligible for a reduced rate of U.S. federal withholding tax pursuant to an income tax treaty, you may obtain a refund of any excess amounts withheld by filing an appropriate claim for refund with the IRS. If you hold our common stock through a financial institution or other agent acting on the non-U.S. holder's behalf, you will be required to provide appropriate documentation to the agent, which then will be required to provide certification to us or our paying agent, either directly or through other intermediaries.

Dividends received by you that are treated as effectively connected with your conduct of a U.S. trade or business (and, if required by an applicable income tax treaty, are attributable to a permanent establishment or fixed base maintained by you in the United States) are generally exempt from U.S. federal withholding tax, subject to the discussion below in the sections titled "Backup Withholding and Information Reporting" and "Foreign Account Tax Compliance Act (FATCA)." In order to obtain this exemption, you must provide us with a properly executed IRS Form W-8ECI or other appropriate form properly certifying such exemption. Such effectively connected dividends, although not subject to U.S. federal withholding tax, are taxed at the same graduated rates applicable to U.S. persons, net of certain deductions and credits, subject to an applicable income tax treaty providing otherwise. In addition, if you are a corporate non-U.S. holder, dividends you receive that are effectively connected with your conduct of a U.S. trade or business (and, if an income tax treaty applies, are attributable to a permanent establishment or fixed based maintained by you in the United States) may also be subject to a branch profits tax at a rate of 30% or such lower rate as may be specified by an applicable income tax treaty between the United States and your country of residence. You should consult your tax advisor regarding the tax consequences of the ownership and disposition of our common stock, including any applicable tax treaties that may provide for different rules.

Gain on Disposition of Common Stock

Subject to the discussion in the section titled “Backup Withholding and Information Reporting,” you generally will not be subject to U.S. federal income tax on any gain realized upon the sale or other disposition of our common stock unless:

- the gain is effectively connected with your conduct of a U.S. trade or business (and, if an applicable income tax treaty so provides, the gain is attributable to a permanent establishment or fixed base maintained by you in the United States);
- you are an individual who is present in the United States for a period or periods aggregating 183 days or more during the calendar year in which the sale or disposition occurs and certain other conditions are met; or
- our common stock constitutes a United States real property interest by reason of our status as a “United States real property holding corporation,” (or USRPHC), for U.S. federal income tax purposes at any time within the shorter of the five-year period preceding your disposition of, or your holding period for, our common stock, unless our common stock is regularly traded on an established securities market and you hold no more than 5% of our outstanding common stock, directly, indirectly and constructively, at all times, during the shorter of the five-year period ending on the date of the taxable disposition or your holding period for our common stock.

We believe that we are not currently and will not become a USRPHC for U.S. federal income tax purposes, and the remainder of this discussion so assumes. However, because the determination of whether we are a USRPHC depends on the fair market value of our U.S. real property relative to the fair market value of our U.S. and worldwide real property plus our other business assets, there can be no assurance that we will not become a USRPHC in the future. If we are USRPHC and either our common stock is not regularly traded on an established securities market or you hold, or are treated as holding, more than 5% of our outstanding common stock, directly or indirectly, during the applicable testing period, you will generally be taxed on any gain in the same manner as gain that is effectively connected with the conduct of a U.S. trade or business, except that the branch profits tax generally will not apply. If we are a USRPHC and our common stock is not regularly traded on an established securities market, your proceeds received on the disposition of shares will also generally be subject to withholding at a rate of 15%. You are encouraged to consult your own tax advisors regarding the possible consequences to you if we are, or were to become, a USRPHC.

If you are a non-U.S. holder described in the first bullet above, you will be required to pay tax on the gain derived from the sale (net of certain deductions and credits) under regular U.S. federal income tax rates, and a corporate non-U.S. holder described in the first bullet above also may be subject to the branch profits tax at a 30% rate, or such lower rate as may be specified by an applicable income tax treaty. If you are an individual non-U.S. holder described in the second bullet above, you will be subject to tax on such gain at 30% (or such lower rate specified by an applicable income tax treaty) on the gain derived from the sale, which gain may be offset by U.S. source capital losses for the year, provided you have timely filed U.S. federal income tax returns with respect to such losses. You should consult your tax advisor regarding any applicable income tax or other treaties that may provide for different rules.

Backup Withholding and Information Reporting

Generally, we must report annually to the IRS the amount of dividends paid to you, your name and address and the amount of tax withheld, if any. A similar report will be sent to you. Pursuant to applicable income tax treaties or other agreements, the IRS may make these reports available to tax authorities in your country of residence.

Payments of dividends on or of proceeds from the disposition of our common stock made to you may also be subject to backup withholding at a current rate of 24% unless you establish an exemption, for example, by properly certifying your non-U.S. status on a properly completed IRS Form W-8BEN or W-8BEN-E or another appropriate version of IRS Form W-8. Notwithstanding the foregoing, backup withholding may apply if either we or our paying agent has actual knowledge, or reason to know, that you are a U.S. person.

Backup withholding is not an additional tax; rather, the U.S. federal income tax liability of persons subject to backup withholding will be reduced by the amount of tax withheld. If withholding results in an overpayment of taxes, a

refund or credit may generally be obtained from the IRS, if you provide the required information to the IRS in a timely manner.

Foreign Account Tax Compliance Act (FATCA)

The Foreign Account Tax Compliance Act, Treasury Regulations issued thereunder and official IRS guidance (collectively FATCA), generally impose a U.S. federal withholding tax of 30% on dividends on, and, subject to the discussion of certain proposed Treasury Regulations below, the gross proceeds from a sale or other disposition of our common stock, paid to a "foreign financial institution" (as specially defined under these rules), unless such institution enters into an agreement with the U.S. government to, among other things, withhold on certain payments and to collect and provide to the U.S. tax authorities substantial information regarding the U.S. account holders of such institution (which includes certain equity and debt holders of such institution, as well as certain account holders that are foreign entities with U.S. owners) or otherwise establishes an exemption. FATCA also generally imposes a U.S. federal withholding tax of 30% on dividends on and, subject to the discussion of certain proposed Treasury Regulations below, the gross proceeds from a sale or other disposition of our common stock paid to a "non-financial foreign entity" (as specially defined under these rules) unless such entity provides the withholding agent with a certification identifying the substantial direct and indirect U.S. owners of the entity, certifies that it does not have any substantial U.S. owners, or otherwise establishes an exemption. The withholding tax will apply regardless of whether the payment otherwise would be exempt from U.S. nonresident and backup withholding tax, including under the other exemptions described above. Under certain circumstances, a non-U.S. holder might be eligible for refunds or credits of such taxes. An intergovernmental agreement between the United States and an applicable foreign country may modify the requirements described in this section. Prospective investors should consult with their own tax advisors regarding the application of FATCA withholding to their investment in, and ownership and disposition of, our common stock.

The Treasury Secretary has issued proposed Treasury Regulations, which, if finalized in their present form, would eliminate withholding under FATCA with respect to payment of gross proceeds from a sale or other disposition of our common stock. In its preamble to such proposed Treasury Regulations, the U.S. Treasury stated that taxpayers may generally rely on the proposed Treasury Regulations until final regulations are issued.

The preceding discussion of U.S. federal tax considerations is for general information only. It is not tax advice to investors in their particular circumstances. Each prospective investor should consult its own tax advisor regarding the particular U.S. federal, state and local and non-U.S. tax consequences of purchasing, holding and disposing of our common stock, including the consequences of any proposed change in applicable laws.

UNDERWRITING

Subject to the terms and conditions set forth in the underwriting agreement, dated , 2021, among us and Jefferies LLC and Cowen and Company, LLC, as the representatives of the underwriters named below and the joint book-running managers of this offering, we have agreed to sell to the underwriters, and each of the underwriters has agreed, severally and not jointly, to purchase from us, the respective number of shares of common stock shown opposite its name below:

Underwriter	Number of Shares
Jefferies LLC	
Cowen and Company, LLC	
KeyBanc Capital Markets Inc.	
Total	

The underwriting agreement provides that the obligations of the several underwriters are subject to certain conditions precedent such as the receipt by the underwriters of officers' certificates and legal opinions and approval of certain legal matters by their counsel. The underwriting agreement provides that the underwriters will purchase all of the shares of common stock if any of them are purchased. If an underwriter defaults, the underwriting agreement provides that the purchase commitments of the non-defaulting underwriters may be increased or the underwriting agreement may be terminated. We have agreed to indemnify the underwriters and certain of their controlling persons against certain liabilities, including liabilities under the Securities Act, and to contribute to payments that the underwriters may be required to make in respect of those liabilities.

The underwriters have advised us that, following the completion of this offering, they currently intend to make a market in the common stock as permitted by applicable laws and regulations. However, the underwriters are not obligated to do so, and the underwriters may discontinue any market-making activities at any time without notice in their sole discretion. Accordingly, no assurance can be given as to the liquidity of the trading market for the common stock, that you will be able to sell any of the common stock held by you at a particular time or that the prices that you receive when you sell will be favorable.

The underwriters are offering the shares of common stock subject to their acceptance of the shares of common stock from us and subject to prior sale. The underwriters reserve the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part. In addition, the underwriters have advised us that they do not intend to confirm sales to any account over which they exercise discretionary authority expect sales to accounts over which they have discretionary authority to exceed % of the common stock being offered.

Commission and Expenses

The underwriters have advised us that they propose to offer the shares of common stock to the public at the initial public offering price set forth on the cover page of this prospectus and to certain dealers, which may include the underwriters, at that price less a concession not in excess of $ per share of common stock. The underwriters may allow, and certain dealers may reallow, a discount from the concession not in excess of $ per share of common stock to certain brokers and dealers. After the offering, the initial public offering price, concession and reallowance to dealers may be reduced by the representatives. No such reduction will change the amount of proceeds to be received by us as set forth on the cover page of this prospectus.

The following table shows the public offering price, the underwriting discounts and commissions that we are to pay the underwriters and the proceeds, before expenses, to us in connection with this offering. Such amounts are shown assuming both no exercise and full exercise of the underwriters' option to purchase additional shares.

	Per Share		Total	
	Without Option to Purchase Additional Shares	With Option to Purchase Additional Shares	Without Option to Purchase Additional Shares	With Option to Purchase Additional Shares
Public offering price	$	$	$	$
Underwriting discounts and commissions paid by us	$	$	$	$
Proceeds to us, before expenses	$	$	$	$

We estimate expenses payable by us in connection with this offering, other than the underwriting discounts and commissions referred to above, will be approximately $. We also have agreed to reimburse the underwriters for up to $ for their Financial Industry Regulatory Authority (FINRA) counsel fee. In accordance with FINRA Rule 5110, these reimbursed fees and expenses are deemed underwriting compensation for this offering.

Determination of Offering Price

Prior to this offering, there has not been a public market for our common stock. Consequently, the initial public offering price for our common stock will be determined by negotiations between us and the representatives. Among the factors to be considered in these negotiations will be prevailing market conditions, our financial information, market valuations of other companies that we and the underwriters believe to be comparable to us, estimates of our business potential, the present state of our development and other factors deemed relevant.

We offer no assurances that the initial public offering price will correspond to the price at which the common stock will trade in the public market subsequent to the offering or that an active trading market for the common stock will develop and continue after the offering.

Listing

We intend to apply to have our common stock listed on the Nasdaq Global Market under the trading symbol “DNAY”.

Stamp Taxes

If you purchase shares of common stock offered in this prospectus, you may be required to pay stamp taxes and other charges under the laws and practices of the country of purchase, in addition to the offering price listed on the cover page of this prospectus.

Option to Purchase Additional Shares

We have granted to the underwriters an option, exercisable for 30 days from the date of this prospectus, to purchase, from time to time, in whole or in part, up to an aggregate of shares from us at the public offering price set forth on the cover page of this prospectus, less underwriting discounts and commissions. If the underwriters exercise this option, each underwriter will be obligated, subject to specified conditions, to purchase a number of additional shares proportionate to that underwriter’s initial purchase commitment as indicated in the table above. This option may be exercised only if the underwriters sell more shares than the total number set forth on the cover page of this prospectus.

No Sales of Similar Securities

We, our officers, directors and holders of all or substantially all our outstanding common stock or of securities convertible into or exchangeable or exercisable for shares of our common stock have agreed, subject to specified exceptions, not to directly or indirectly:

- sell, offer, contract or grant any option to sell (including any short sale), pledge, transfer, establish an open “put equivalent position” within the meaning of Rule 16a-l(h) under the Exchange Act, or
- otherwise dispose of any shares of common stock, options or warrants to acquire shares of common stock, or securities exchangeable or exercisable for or convertible into shares of common stock currently or hereafter owned either of record or beneficially, or

- publicly announce an intention to do any of the foregoing for a period of 180 days after the date of this prospectus without the prior written consent of Jefferies LLC and Cowen and Company, LLC.

This restriction terminates after the close of trading of the common stock on and including the 180th day after the date of this prospectus.

Jefferies LLC and Cowen and Company, LLC may, in their sole discretion and at any time or from time to time before the termination of the 180-day period release all or any portion of the securities subject to lock-up agreements. There are no existing agreements between the underwriters and any of our shareholders who will execute a lock-up agreement, providing consent to the sale of shares prior to the expiration of the lock-up period.

Stabilization

The underwriters have advised us that they, pursuant to Regulation M under the Exchange Act, and certain persons participating in the offering may engage in short sale transactions, stabilizing transactions, syndicate covering transactions or the imposition of penalty bids in connection with this offering. These activities may have the effect of stabilizing or maintaining the market price of the common stock at a level above that which might otherwise prevail in the open market. Establishing short sales positions may involve either “covered” short sales or “naked” short sales.

“Covered” short sales are sales made in an amount not greater than the underwriters’ option to purchase additional shares of our common stock in this offering. The underwriters may close out any covered short position by either exercising their option to purchase additional shares of our common stock or purchasing shares of our common stock in the open market. In determining the source of shares to close out the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through the option to purchase additional shares.

“Naked” short sales are sales in excess of the option to purchase additional shares of our common stock. The underwriters must close out any naked short position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the shares of our common stock in the open market after pricing that could adversely affect investors who purchase in this offering.

A stabilizing bid is a bid for the purchase of shares of common stock on behalf of the underwriters for the purpose of fixing or maintaining the price of the common stock. A syndicate covering transaction is the bid for or the purchase of shares of common stock on behalf of the underwriters to reduce a short position incurred by the underwriters in connection with the offering. Similar to other purchase transactions, the underwriters’ purchases to cover the syndicate short sales may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of our common stock. As a result, the price of our common stock may be higher than the price that might otherwise exist in the open market. A penalty bid is an arrangement permitting the underwriters to reclaim the selling concession otherwise accruing to a syndicate member in connection with the offering if the common stock originally sold by such syndicate member are purchased in a syndicate covering transaction and therefore have not been effectively placed by such syndicate member.

Neither we, nor any of the underwriters make any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of our common stock. The underwriters are not obligated to engage in these activities and, if commenced, any of the activities may be discontinued at any time.

The underwriters may also engage in passive market making transactions in our common stock on the Nasdaq Global Market in accordance with Rule 103 of Regulation M during a period before the commencement of offers or sales of shares of our common stock in this offering and extending through the completion of distribution. A passive market maker must display its bid at a price not in excess of the highest independent bid of that security. However, if all independent bids are lowered below the passive market maker’s bid, that bid must then be lowered when specified purchase limits are exceeded.

Electronic Distribution

A prospectus in electronic format may be made available by e-mail or on the web sites or through online services maintained by one or more of the underwriters or their affiliates. In those cases, prospective investors may view

offering terms online and may be allowed to place orders online. The underwriters may agree with us to allocate a specific number of shares of common stock for sale to online brokerage account holders. Any such allocation for online distributions will be made by the underwriters on the same basis as other allocations. Other than the prospectus in electronic format, the information on the underwriters' web sites and any information contained in any other web site maintained by any of the underwriters is not part of this prospectus, has not been approved or endorsed by us or the underwriters and should not be relied upon by investors.

Other Activities and Relationships

The underwriters and certain of their affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing and brokerage activities. The underwriters and certain of their affiliates have, from time to time, performed, and may in the future perform, various commercial and investment banking and financial advisory services for us and our affiliates, for which they received or will receive customary fees and expenses.

In the ordinary course of their various business activities, the underwriters and certain of their affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers, and such investment and securities activities may involve securities or instruments issued by us and our affiliates. If the underwriters or their respective affiliates have a lending relationship with us, they routinely hedge their credit exposure to us consistent with their customary risk management policies. The underwriters and their respective affiliates may hedge such exposure by entering into transactions which consist of either the purchase of credit default swaps or the creation of short positions in our securities or the securities of our affiliates, including potentially the common stock offered hereby. Any such short positions could adversely affect future trading prices of the common stock offered hereby. The underwriters and certain of their respective affiliates may also communicate independent investment recommendations, market color or trading ideas or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long or short positions in such securities and instruments.

NOTICE TO INVESTORS

Canada

Resale Restrictions

The distribution of the securities in Canada is being made only in the provinces of Ontario, Quebec, Alberta, British Columbia, Manitoba, New Brunswick and Nova Scotia on a private placement basis exempt from the requirement that we prepare and file a prospectus with the securities regulatory authorities in each province where trades of these securities are made. Any resale of the securities in Canada must be made under applicable securities laws which may vary depending on the relevant jurisdiction, and which may require resales to be made under available statutory exemptions or under a discretionary exemption granted by the applicable Canadian securities regulatory authority. Purchasers are advised to seek legal advice prior to any resale of the securities.

Representations of Canadian Purchasers By purchasing the securities in Canada and accepting delivery of a purchase confirmation, a purchaser is representing to us and the dealer from whom the purchase confirmation is received that:

- the purchaser is entitled under applicable provincial securities laws to purchase the securities without the benefit of a prospectus qualified under those securities laws as it is an "accredited investor" as defined under National Instrument 45-106 – Prospectus Exemptions or Section 73.3(1) of the Securities Act (Ontario), as applicable,
- the purchaser is a "permitted client" as defined in National Instrument 31-103 - Registration Requirements, Exemptions and Ongoing Registrant Obligations,
- where required by law, the purchaser is purchasing as principal and not as agent, and
- the purchaser has reviewed the text above under Resale Restrictions.

Conflicts of Interest

Canadian purchasers are hereby notified that certain of the underwriters are relying on the exemption set out in section 3A.3 or 3A.4, if applicable, of National Instrument 33-105 – Underwriting Conflicts from having to provide certain conflict of interest disclosure in this document.

Statutory Rights of Action

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if the prospectus (including any amendment thereto) such as this document contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser of these securities in Canada should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Enforcement of Legal Rights

All of our directors and officers as well as the experts named herein may be located outside of Canada and, as a result, it may not be possible for Canadian purchasers to effect service of process within Canada upon us or those persons. All or a substantial portion of our assets and the assets of those persons may be located outside of Canada and, as a result, it may not be possible to satisfy a judgment against us or those persons in Canada or to enforce a judgment obtained in Canadian courts against us or those persons outside of Canada.

Taxation and Eligibility for Investment

Canadian purchasers of the securities should consult their own legal and tax advisors with respect to the tax consequences of an investment in the securities in their particular circumstances and about the eligibility of the securities for investment by the purchaser under relevant Canadian legislation.

Australia

This prospectus is not a disclosure document for the purposes of Australia's Corporations Act 2001 (Cth) of Australia (Corporations Act), has not been lodged with the Australian Securities & Investments Commission and is only directed to the categories of exempt persons set out below. Accordingly, if you receive this prospectus in Australia:

You confirm and warrant that you are either:

- a “sophisticated investor” under section 708(8)(a) or (b) of the Corporations Act;
- a “sophisticated investor” under section 708(8)(c) or (d) of the Corporations Act and that you have provided an accountant’s certificate to the company which complies with the requirements of section 708(8)(c)(i) or (ii) of the Corporations Act and related regulations before the offer has been made;
- a person associated with the company under Section 708(12) of the Corporations Act; or
- a “professional investor” within the meaning of section 708(11)(a) or (b) of the Corporations Act.

To the extent that you are unable to confirm or warrant that you are an exempt sophisticated investor, associated person or professional investor under the Corporations Act any offer made to you under this prospectus is void and incapable of acceptance.

You warrant and agree that you will not offer any of the securities issued to you pursuant to this prospectus for resale in Australia within 12 months of those securities being issued unless any such resale offer is exempt from the requirement to issue a disclosure document under section 708 of the Corporations Act.

European Economic Area

In relation to each Member State of the European Economic Area (Relevant State), no shares have been offered or will be offered pursuant to the offering to the public in that Relevant State prior to the publication of a prospectus in relation to the shares which have been approved by the competent authority in that Relevant State or, where appropriate, approved in another Relevant State and notified to the competent authority in that Relevant State, all in accordance with the Prospectus Regulation, except that the shares may be offered to the public in that Relevant State at any time:

(a) to any legal entity which is a “qualified investor” as defined under Article 2 of the Prospectus Regulation;
(b) to fewer than 150 natural or legal persons (other than qualified investors as defined under Article 2 of the Prospectus Regulation), subject to obtaining the prior consent of representatives for any such offer; or
(c) in any other circumstances falling within Article 1(4) of the Prospectus Regulation,

provided that no such offer of the shares shall require us or any of the representatives to publish a prospectus pursuant to Article 3 of the Prospectus Regulation or supplement a prospectus pursuant to Article 23 of the Prospectus Regulation. For the purposes of this provision, the expression “offer to the public” in relation to the shares in any Relevant State means the communication in any form and by any means of sufficient information on the terms of the offer and any shares to be offered so as to enable an investor to decide to purchase or subscribe for any shares, and the expression “Prospectus Regulation” means Regulation (EU) 2017/1129.

MiFID II Product Governance

Any distributor subject to MiFID II that is offering, selling or recommending the shares is responsible for undertaking its own target market assessment in respect of the shares and determining its own distribution channels for the purposes of the MiFID product governance rules under Commission Delegated Directive (EU) 2017/593 (Delegated Directive). Neither we nor the underwriters make any representations or warranties as to a distributor’s compliance with the Delegated Directive.

Hong Kong

No securities have been offered or sold, and no securities may be offered or sold, in Hong Kong, by means of any document, other than to persons whose ordinary business is to buy or sell shares or debentures, whether as principal or agent; or to “professional investors” as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong (SFO) and any rules made under that Ordinance; or in other circumstances which do not result in the document being a “prospectus” as defined in the Companies Ordinance (Cap. 32) of Hong Kong (CO) or which do not constitute an offer or invitation to the public for the purpose of the CO or the SFO. No document, invitation or advertisement relating to the securities has been issued or may be issued or may be in the possession of any person for the purpose of issue (in each case whether in Hong Kong or elsewhere), which is directed at, or the contents of which are likely to be accessed or read by, the public of Hong Kong (except if permitted under the securities laws of

Hong Kong) other than with respect to securities which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" as defined in the SFO and any rules made under that Ordinance.

This prospectus has not been registered with the Registrar of Companies in Hong Kong. Accordingly, this prospectus may not be issued, circulated or distributed in Hong Kong, and the securities may not be offered for subscription to members of the public in Hong Kong. Each person acquiring the securities will be required, and is deemed by the acquisition of the securities, to confirm that he is aware of the restriction on offers of the securities described in this prospectus and the relevant offering documents and that he is not acquiring, and has not been offered any securities in circumstances that contravene any such restrictions.

Israel

This document does not constitute a prospectus under the Israeli Securities Law, 5728-1968 (the Israeli Securities Law), and has not been filed with or approved by the Israel Securities Authority. In Israel, this prospectus is being distributed only to, and is directed only at, and any offer of the shares is directed only at, (i) a limited number of persons in accordance with the Israeli Securities Law and (ii) investors listed in the first addendum (the Addendum), to the Israeli Securities Law, consisting primarily of joint investment in trust funds, provident funds, insurance companies, banks, portfolio managers, investment advisors, members of the Tel Aviv Stock Exchange, underwriters, venture capital funds, entities with equity in excess of NIS 50 million and "qualified individuals," each as defined in the Addendum (as it may be amended from time to time), collectively referred to as qualified investors (in each case, purchasing for their own account or, where permitted under the Addendum, for the accounts of their clients who are investors listed in the Addendum). Qualified investors are required to submit written confirmation that they fall within the scope of the Addendum, are aware of the meaning of same and agree to it.

Japan

The offering has not been and will not be registered under the Financial Instruments and Exchange Law of Japan (Law No. 25 of 1948 of Japan, as amended (FIEL), and the underwriters will not offer or sell any securities, directly or indirectly, in Japan or to, or for the benefit of, any resident of Japan (which term as used herein means any person resident in Japan, including any corporation or other entity organized under the laws of Japan), or to others for re-offering or resale, directly or indirectly, in Japan or to, or for the benefit of, any resident of Japan, except pursuant to an exemption from the registration requirements of, and otherwise in compliance with, the FIEL and any other applicable laws, regulations and ministerial guidelines of Japan.

Singapore

This prospectus has not been and will not be lodged or registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the securities may not be circulated or distributed, nor may the securities be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor under Section 274 of the Securities and Futures Act, Chapter 289 of Singapore (SFA), (ii) to a relevant person pursuant to Section 275(1), or any person pursuant to Section 275(1A), and in accordance with the conditions specified in Section 275, of the SFA, or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Where the securities are subscribed or purchased under Section 275 of the SFA by a relevant person which is:

- a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or
- a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor,

securities (as defined in Section 239(1) of the SFA) of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the securities pursuant to an offer made under Section 275 of the SFA except:

- to an institutional investor or to a relevant person defined in Section 275(2) of the SFA, or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i)(B) of the SFA;

- where no consideration is or will be given for the transfer;
- where the transfer is by operation of law;
- as specified in Section 276(7) of the SFA; or
- as specified in Regulation 32 of the Securities and Futures (Offers of Investments) (Shares and Debentures) Regulations 2005 of Singapore.

Switzerland

The securities may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange (SIX) or on any other stock exchange or regulated trading facility in Switzerland. This prospectus has been prepared without regard to the disclosure standards for issuance prospectuses under art. 652a or art. 1156 of the Swiss Code of Obligations or the disclosure standards for listing prospectuses under art. 27 ff. of the SIX Listing Rules or the listing rules of any other stock exchange or regulated trading facility in Switzerland. Neither this prospectus nor any other offering or marketing material relating to the securities or the offering may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this prospectus nor any other offering or marketing material relating to the offering, the company or the securities have been or will be filed with or approved by any Swiss regulatory authority. In particular, this prospectus will not be filed with, and the offer of securities will not be supervised by, the Swiss Financial Market Supervisory Authority FINMA, and the offer of securities has not been and will not be authorized under the Swiss Federal Act on Collective Investment Schemes (CISA). The investor protection afforded to acquirers of interests in collective investment schemes under the CISA does not extend to acquirers of securities.

United Kingdom

No shares have been offered or will be offered pursuant to the offering to the public in the United Kingdom prior to the publication of a prospectus in relation to the shares which has been approved by the Financial Conduct Authority, except that the shares may be offered to the public in the United Kingdom at any time:

(a) to any legal entity which is a qualified investor as defined under Article 2 of the UK Prospectus Regulation;
(b) to fewer than 150 natural or legal persons (other than qualified investors as defined under Article 2 of the UK Prospectus Regulation), subject to obtaining the prior consent of the representatives for any such offer; or
(c) in any other circumstances falling within Section 86 of the Financial Services and Markets Act 2000 (FSMA),

provided that no such offer of the shares shall require us or any of the representatives to publish a prospectus pursuant to Section 85 of the FSMA or supplement a prospectus pursuant to Article 23 of the UK Prospectus Regulation. For the purposes of this provision, the expression an “offer to the public” in relation to the shares in the United Kingdom means the communication in any form and by any means of sufficient information on the terms of the offer and any shares to be offered so as to enable an investor to decide to purchase or subscribe for any shares and the expression “UK Prospectus Regulation” means Regulation (EU) 2017/1129 as it forms part of domestic law by virtue of the European Union (Withdrawal) Act 2018.

LEGAL MATTERS

The validity of the issuance of our common stock offered in this prospectus will be passed upon for us by Wilson Sonsini Goodrich & Rosati, Professional Corporation, San Diego, California. Covington & Burling LLP, New York, New York is counsel for the underwriters in connection with this offering.

EXPERTS

OUM & Co. LLP, our independent registered public accounting firm, has audited our consolidated financial statements at December 31, 2019 and 2020, and for the periods from March 8, 2019 (inception) to December 31, 2019 and from January 1, 2020 to December 31, 2020, as set forth in their report. We have included our consolidated financial statements in the prospectus and elsewhere in the registration statement in reliance on OUM & Co. LLP's report, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

We have filed with the SEC a registration statement on Form S-1 under the Securities Act with respect to the shares of our common stock offered by this prospectus. This prospectus, which constitutes a part of the registration statement, does not contain all of the information set forth in the registration statement, as permitted by the rules and regulations of the SEC. For further information with respect to us and our common stock, we refer you to the registration statement, including the exhibits filed as a part of the registration statement. Statements contained in this prospectus concerning the contents of any contract or any other document are not necessarily complete. If a contract or document has been filed as an exhibit to the registration statement, please see the copy of the contract or document that has been filed. Each statement in this prospectus relating to a contract or document filed as an exhibit is qualified in all respects by the filed exhibit. The SEC also maintains an Internet website that contains the registration statement of which this prospectus forms a part, as well as the exhibits thereto. These documents, along with future reports, proxy statements and other information about us, are available at the SEC's website, www.sec.gov.

As a result of this offering, we will become subject to the information and reporting requirements of the Exchange Act, and, in accordance with this law, will file periodic reports, proxy statements and other information with the SEC. These periodic reports, proxy statements and other information will be available for inspection and copying at the SEC's public reference facilities and the website of the SEC referred to above. We also maintain a website at www.codexdna.com where these materials are available. Upon the completion of this offering, you may access these materials free of charge as soon as reasonably practicable after they are electronically filed with, or furnished to, the SEC. Information contained on, or that can be accessible through, our website is not a part of this prospectus and the inclusion of our website address in this prospectus is an inactive textual reference only.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Stockholders and Board of Directors

Codex DNA, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheet of Codex DNA, Inc. (the Company) as of December 31, 2019 and 2020, and the related consolidated statement of operations and comprehensive loss, convertible preferred stock and stockholders' equity (deficit), and cash flows for the period from March 8, 2019 (inception) to December 31, 2019 and the year ended December 31, 2020, and the related notes to the consolidated financial statements (collectively referred to as the consolidated "financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2019 and 2020, and the results of its operations and its cash flows for the period from March 8, 2019 (inception) to December 31, 2019 and the year ended December 31, 2020, in conformity with accounting principles generally accepted in the United States of America.

Going Concern Uncertainty

The accompanying consolidated financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 1, the Company has had recurring losses and negative operating cash flows since inception, an accumulated deficit at December 31, 2020, and insufficient cash and loan proceeds at December 31, 2020 to fund operations for twelve months from the date of issuance. All of these matters raise substantial doubt about the Company's ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 1. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ OUM & CO. LLP
San Francisco, California
March 16, 2021
We have served as the Company's auditor since 2020.

Codex DNA, Inc.
Consolidated Balance Sheet
(In thousands, except share and per share data)

	December 31, 2019	December 31, 2020
Assets		
Current assets:		
Cash	$ 29,144	$ 13,463
Accounts receivable, net of allowance for bad debts of $105 at December 31, 2019 and 2020	1,492	2,266
Inventory, net	712	601
Prepaid expenses and other current assets	86	851
Total current assets	31,434	17,181
Property and equipment, net	888	689
Right-of-use assets	—	3,090
Long-term deposits	81	81
Goodwill	3,497	3,497
Other intangible assets, net	2,861	2,325
Total Assets	$ 38,761	$ 26,863
Liabilities, convertible preferred stock and stockholders' equity (deficit)		
Current liabilities:		
Accounts payable	$ 614	$ 1,191
Accrued employee expenses	758	1,470
Finance lease liability, current portion	111	90
Operating lease liability, current portion	—	693
Deferred revenue, current portion	112	606
Other accrued liabilities	127	220
Notes payable, current portion	—	1,333
Other current liabilities	—	22
Total current liabilities	1,722	5,625
Finance lease liability, net of current portion	185	81
Operating lease liability, net of current portion	—	2,776
Notes payable, net of discount and current portion	4,472	3,353
Deferred rent	284	—
Derivative liabilities	654	1,533
Deferred revenue, net of current portion	33	40
Total liabilities	$ 7,350	$ 13,408
Commitments and contingencies (Note 14)		
Convertible preferred stock		
Series Z Preferred stock, $.0001 par value; 7,500,000 shares authorized, issued, and outstanding at December 31, 2019 and 2020	1	1
Series A Preferred stock, $.0001 par value; 22,797,830 shares authorized, issued, and outstanding at December 31, 2019 and 2020	20,992	20,992
Series A1 Preferred stock, $.0001 par value; 15,402,237 shares authorized at December 31, 2019 and 2020; 14,940,170 shares issued and outstanding at December 31, 2019 and 2020	17,921	17,921
Stockholders' equity (deficit)		
Common stock, $.0001 par value; 72,000,000 shares authorized at December 31, 2019 and 2020; 15,000,000 and 15,071,978 shares issued and outstanding at December 31, 2019 and 2020, respectively	2	2
Additional paid-in capital	797	851
Accumulated deficit	(8,302)	(26,312)
Total stockholders' equity (deficit)	(7,503)	(25,459)
Total liabilities, convertible preferred stock and stockholders' equity (deficit)	$ 38,761	$ 26,863

The accompanying notes are an integral part of these consolidated financial statements.

Codex DNA, Inc.
Consolidated Statement of Operations and Comprehensive Loss
(in thousands, except share and per share data)

	Period from March 8, 2019 (Inception) to December 31, 2019	Year Ended December 31, 2020
Revenue:		
Product sales	$ 3,555	$ 5,131
Royalties	1,250	1,445
Total revenue	4,805	6,576
Cost of revenue	2,677	2,951
Gross profit	2,128	3,625
Operating expenses:		
Research and development	3,318	8,925
Sales and marketing	1,878	6,931
General and administrative	3,908	4,130
Total operating expenses	9,104	19,986
Loss from operations	(6,976)	(16,361)
Other income (expense):		
Interest expense	(1,490)	(690)
Change in fair value of derivative liabilities	62	(880)
Other income (expense), net	102	(74)
Total other income (expense), net	(1,326)	(1,644)
Loss before provision for income taxes	(8,302)	(18,005)
Provision for income taxes	—	$ (5)
Net loss and comprehensive loss	$ (8,302)	$ (18,010)
Net loss attributable to common stockholders	$ (8,302)	$ (18,010)
Net loss per share attributable to common stockholders—basic and diluted	$ (0.55)	$ (1.20)
Weighted average common stock outstanding—basic and diluted	15,000,000	15,004,616

The accompanying notes are an integral part of these consolidated financial statements.

Codex DNA, Inc.
Consolidated Statements of Convertible Preferred Stock and Stockholders' Equity (Deficit)
(in thousands, except share data)

	Convertible Preferred Stock		Common Stock		Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity (Deficit)
	Shares	Amount	Shares	Amount			
Balance at March 8, 2019 (Inception)	7,500,000	$ 1	15,000,000	$ 2	$ —	—	$ 2
Conversion of debt to Series A	7,153,275	6,859	—	—		—	—
Issuance of Series A	15,644,555	14,999	—	—		—	—
Issuance of Series A-1	14,940,170	17,955	—	—		—	—
Equity financing costs	—	(900)	—	—		—	—
Warrant on common shares	—	—	—	—	786	—	786
Stock-based compensation expense	—	—	—	—	11	—	11
Net loss	—	—	—	—	—	(8,302)	(8,302)
Balances at December 31, 2019	45,238,000	38,914	15,000,000	2	797	(8,302)	(7,503)
Issuance of Common Stock upon exercise of stock options	—	—	71,978	—	11	—	11
Stock-based compensation expense	—	—	—	—	43	—	43
Net loss	—	—	—	—	—	(18,010)	(18,010)
Balances at December 31, 2020	45,238,000	38,914	15,071,978	2	851	(26,312)	(25,459)

The accompanying notes are an integral part of these consolidated financial statements.

Codex DNA, Inc.
Consolidated Statements of Cash Flows
(in thousands)

	Period from March 8, 2019 (Inception) to December 31, 2019	Year Ended December 31, 2020
Cash Flows From Operating Activities:		
Net loss	$ (8,302)	$ (18,010)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation	448	403
Amortization of intangible assets	409	463
Amortization of debt discount	54	214
Loss on disposal of assets	194	—
Impairment of intangible asset	—	73
Stock-based compensation	11	43
Amortization of lease right-of-use assets	—	591
Change in fair value of warrant liability	169	425
Change in fair value of put option liability	(20)	(55)
Change in fair value of participation right liability	(42)	420
Change in fair value of success fee liability	379	89
Non-cash interest on convertible notes	109	—
Non-cash interest on finance leases	(24)	(17)
Changes in assets and liabilities:		
Accounts receivable	(859)	(774)
Inventories	723	111
Deposits, prepaid expenses and other current assets	(49)	(765)
Accounts payable, accrued payroll and accrued liabilities	232	1,404
Deferred revenue	(15)	501
Operating lease liabilities	—	(497)
Deferred rent	193	—
Net cash used in operating activities	(6,390)	(15,381)
Cash Flows From Investing Activities:		
Purchase of property and equipment	(79)	(204)
Net cash used in investing activities	(79)	(204)
Cash Flows From Financing Activities:		
Borrowings on term loan	5,000	—
Repayment of promissory note	(8,926)	—
Borrowings on convertible notes	5,000	—
Borrowings under promissory notes	1,750	—
Finance lease liability	(103)	(107)
Equity financing costs	(113)	—
Debt financing costs	(456)	—
Series A preferred stock	14,999	—
Series A-1 preferred stock	17,955	—
Proceeds from the exercise of common stock options	—	11
Net cash provided by (used in) financing activities	35,106	(96)
Net Increase (Decrease) In Cash And Restricted Cash	28,637	(15,681)
Cash and restricted cash at beginning of period/year	507	29,144
Cash and restricted cash at end of period/year	$ 29,144	$ 13,463
Supplemental Disclosure Of Cash Flow Information:		
Cash paid for income taxes	$ —	$ —
Cash paid for interest	$ 1,329	$ 464
Notes payable converted to Series A Preferred shares	$ 6,859	$ —
Issuance of common warrant for offering costs	$ 785	$ —

The accompanying notes are an integral part of these consolidated financial statements.

Codex DNA, Inc.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
AS OF AND FOR THE PERIOD FROM MARCH 8, 2019 (INCEPTION) TO DECEMBER 2019
AND FOR THE YEAR ENDED ON DECEMBER 31, 2020

1. ORGANIZATION AND OPERATIONS

Business

Codex, DNA, Inc. (the Company) was incorporated in the state of Delaware in March 2011, as Synthetic Genomics Solution, Inc., a wholly owned subsidiary of Synthetic Genomics, Inc. (SGI). The Company changed its name to SGI-DNA, Inc. (SGI-DNA) in February 2013, and then to Codex DNA, Inc. in March 2020. SGI-DNA Limited, a United Kingdom company focused on sales and marketing activities, is a wholly owned subsidiary of Codex DNA, Inc. The Company manufactures and sells laboratory equipment, specifically synthetic biology instruments, reagents and associated products and related services, primarily to pharmaceutical and academic laboratories worldwide.

On March 8, 2019, SGI sold SGI-DNA to GATTACA Mining, LLC (Purchaser or GATTACA) by entering into a stock purchase agreement to sell all of the Company's outstanding common and preferred stock in exchange for a $10 million non-recourse promissory note (see Note 3). Both the Company and Purchaser are co-borrowers of the promissory note. As this transaction was a change in control transaction in accordance with generally accepted accounting principles in the United States (US GAAP), the Company elected to apply push-down accounting and recognized a step up in the basis of the assets acquired and liabilities assumed in the acquisition (see Note 3 for further discussion of the stock purchase transaction).

Since its inception, the Company has devoted substantially all of its efforts to raising capital, commercializing its current products, and developing new product offerings. The Company is subject to a number of risks similar to those of other companies conducting high-risk, early-stage research and development of products. Principal among these risks are a dependence on key individuals and intellectual property, competition from other products and companies, and the technical risks associated with the successful research, development and manufacturing of its products. The Company's success is dependent upon its ability to continue to raise additional capital in order to fund ongoing research and development, commercialize its products, generate revenue, meet its obligations, and, ultimately, attain profitable operations.

Products currently under development will require significant additional research and development efforts. These efforts require significant amounts of additional capital, adequate personnel and infrastructure.

Going Concern

The Company has evaluated whether there are conditions and events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern within one year after the date the consolidated financial statements are issued.

Since inception, the Company has incurred cumulative operating losses and negative cash flows from operations. These operating losses and negative cash flows have been financed principally from the issuance of equity securities and debt. The Company's ability to continue as a going concern is dependent upon the ability to raise additional debt or equity capital. There can be no assurance that such capital will be available in sufficient amounts or on terms acceptable to the Company. These factors raise substantial doubt about the Company's ability to continue as a going concern. Risks to which the Company is exposed include uncertainties related to the ability to achieve revenue-generating products; current and potential competitors with greater financial, technological, production, and marketing resources; dependence on key management personnel; and raising additional capital, as needed. Based upon the Company's current plans, management believes there currently is insufficient financial resources to fund the Company's operations for at least twelve months from the issuance date of the 2020 consolidated financial statements.

To address the Company's capital needs, the Company must continue to actively pursue additional equity or debt financing. The Company has been in ongoing discussions with different sources of capital, including financial institutions with respect to such financing. Adequate financing opportunities might not be available to the Company, when and if needed, on acceptable terms or at all. If the Company is unable to obtain additional financing in

sufficient amounts or on acceptable terms under such circumstances, the Company's operating results and prospects will be adversely affected.

The accompanying consolidated financial statements have been prepared on a going concern basis, which contemplates the realization of assets and satisfaction of liabilities in the ordinary course of business. The consolidated financial statements do not include any adjustments relating to the recoverability and classification of recorded asset amounts or the amounts and classification of liabilities that might result from the outcome of this uncertainty.

Impact of COVID-19

In December 2019, a novel strain of coronavirus, which causes the disease known as COVID-19, was reported to have surfaced in Wuhan, China. Since then, COVID-19 coronavirus has spread globally. In March 2020, the World Health Organization declared the COVID-19 outbreak a pandemic. The ongoing COVID-19 global and national health emergency has caused significant disruption in the international and United States economies and financial markets. The spread of COVID-19 has caused illness, quarantines, cancellation of events and travel, business and school shutdowns, reduction in business activity and financial transactions, labor shortages, supply chain interruptions and overall economic and financial market instability.

In response to public health directives and orders and to help minimize the risk of the virus to employees, the Company has taken precautionary measures, including implementing work-from home policies for certain employees. The COVID-19 pandemic has the potential to significantly impact the Company's manufacturing supply chain, distribution or logistics and other services. Additionally, the Company's service providers and their operations may be disrupted, temporarily closed or experience worker or supply shortages, which could result in additional disruptions or delays in shipments of laboratory equipment or the advancement of the scientific research. To date, the Company is not aware of any such disruptions. Furthermore, to date, the Company has not experienced the pandemic's adverse impacts in any material respect. The Company is not able to estimate the duration of the pandemic or potential impact on the business if disruptions or delays in shipments of product occur. In addition, a severe prolonged economic downturn could result in a variety of risks to the business, including weakened demand for product and a decreased ability to raise additional capital when needed on acceptable terms, if at all. As the situation continues to evolve, the Company will continue to closely monitor market conditions and respond accordingly.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation and Principles of Consolidation

The Company has prepared the accompanying consolidated financial statements in accordance with US GAAP and included the accounts of the Company and its wholly owned subsidiary after the elimination of all significant intercompany accounts and transactions.

Use of Estimates

The preparation of consolidated financial statements in conformity with US GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, disclosure of contingent assets and liabilities at the date of the consolidated financial statements, and the reported amounts of revenues and expenses during the reporting periods presented. Key estimates in the consolidated financial statements include the Company's ability to continue as a going concern, revenue recognition, impairment assessment for goodwill and intangible assets, allowance for doubtful accounts, estimated useful lives of property and equipment, valuation of inventory, accrued expenses, valuation of deferred income tax assets, valuation of derivative liabilities, share-based compensation and accrued warranty are subject to significant estimation. Actual results could differ from those estimates.

Concentrations of Credit Risk and Significant Customers

Financial instruments that potentially subject the Company to concentrations of credit risk consist of cash and accounts receivable.

The Company's accounts receivable are derived from revenue earned from customers. The Company does not require collateral on accounts receivable. The Company maintains reserves for estimated potential credit losses. For the period from March 8, 2019 (inception) to December 31, 2019, two customers accounted for 32% and 20% of

the Company's accounts receivable, respectively. For the year ended December 31, 2020, one customer accounted for 23% of the Company's accounts receivable balance. For the year ended December 31, 2020, one customer accounted for 21% of the Company's revenue.

The Company maintains its cash with financial Institutions. Deposits held with banks may exceed the amount of insurance provided on such deposits.

Cash

As of December 31, 2019 and 2020, cash consisted of cash deposited with banks.

Accounts Receivable

Accounts receivable is comprised of amounts due from third-party payors recorded at the invoice amount and does not bear interest. The Company reports accounts receivable net of estimated contractual adjustments and any allowance for doubtful accounts. The Company reviews accounts receivable on an ongoing basis to determine collectability. The Company maintains an allowance for doubtful accounts based on its assessment of the collectability of the amounts owed to the Company by its customers. The Company considers the following in determining the level of allowance required: its customer's payment history, the age of the receivable, the credit quality of its customers, the general financial condition of its customer base and other factors that may affect the customers' ability to pay. The Company writes off accounts against the allowance for doubtful accounts when they are deemed to be uncollectible. The Company's allowance for doubtful accounts at the end of both December 31, 2019 and 2020 was $0.1 million.

Inventory

Inventory, which primarily consists of raw materials, labor and overhead related to work in process and sub-assemblies are stated at the lower of cost or net realizable value. Cost is computed using standard cost, which approximates actual cost on a first-in, first-out basis. Net realizable value is evaluated by considering obsolescence, excessive levels of inventory, deterioration and other factors. Adjustments to reduce the cost of inventory to its net realizable value, if required, are made for estimated excess, obsolescence or impaired inventory. Excess and obsolete inventory is charged to cost of revenue and a new, lower-cost basis for that inventory is established and subsequent changes in facts and circumstances do not result in the restoration of amounts previously written off.

Property and Equipment

Property and equipment are recorded at cost, net of accumulated depreciation and amortization. The Company depreciates property and equipment using the straight-line method over estimated useful lives ranging from three to five years. Leasehold improvements and equipment held under capital leases are amortized on a straight-line basis over the shorter of the lease term or the estimated life of the asset.

Upon the sale or retirement of assets, the cost and related accumulated depreciation and amortization are removed from the balance sheet and the resulting gain or loss is reflected in other income (expense) in the consolidated statement of operations and comprehensive loss. Maintenance and repairs are charged to the general and administrative expenses in the consolidated statement of operations and comprehensive loss as incurred.

Intangible Assets

The Company has intangible assets and goodwill recorded in connection with its acquisition in March 2019 (see Note 3). Intangible assets are recognized apart from goodwill if they arise from contractual or other legal rights or if they are separable. An asset is considered separable if (a) it is capable of being separated from the acquired entity and sold, transferred, licensed, rented or exchanged, or (b) it can be conveyed in combination with a related asset or liability. Those assets that do not meet either criterion are included in goodwill for financial reporting purposes. The following assets were recognized as part of the acquisition:

- Purchased technology: valued by management using an income approach.
- Trade name: valued by management using an income approach. The amount allocated to trade name was deemed impaired as the Company changed its name to Codex DNA, Inc. in 2020 (see Note 1 and 7).

Intangible assets are amortized over their estimated useful lives based upon the estimated economic value derived from the related intangible asset. Intangible assets are reviewed for impairment whenever events or changes in

circumstances, such as service discontinuance, technological obsolescence, or significant decreases in the Company's market capitalization indicate that the carrying amount of the asset may not be recoverable. When such events occur, the Company compares the carrying amount of the asset to the undiscounted expected future cash flows related to the asset. If this comparison indicates that an impairment is present, the amount of the impairment is calculated as the difference between the carrying amount and the fair value of the asset. There was no impairment recorded for the period from March 8 (inception) to December 31, 2019. For the year ended December 31, 2020, the Company recorded impairment of $0.1 million on its trademark (see Note 1 and 7).

Goodwill

The Company recognizes the excess of the purchase price over the fair value of identifiable net assets acquired as goodwill. Goodwill is not amortized but is tested for impairment annually or more frequently if events or changes in circumstances indicate that the carrying amount of the goodwill may not be recoverable. The Company's goodwill impairment tests are performed at the enterprise level given the Company's single reporting unit.

The Company's goodwill impairment analysis first assesses qualitative factors to determine whether events or circumstances existed that would lead the Company to conclude it is more likely than not that the fair value of the reporting unit is below its carrying amount. If the Company determines that it is more likely than not that the fair value of the reporting unit is below the carrying amount, a quantitative goodwill assessment is required. In the quantitative evaluation, the fair value of the reporting unit is determined and compared to the carrying value. If the fair value is greater than the carrying value, then the carrying value is deemed to be recoverable and no further action is required. If the fair value estimate is less than the carrying value, goodwill is considered impaired for the amount by which the carrying value exceeds the reporting unit's fair value and a charge would be recognized as impairment of goodwill in the consolidated statement of operations and comprehensive loss.

Accounting for Long-Lived Assets

The Company reviews its long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of an asset to be held and used is measured by a comparison of the carrying amount of an asset or asset group to the future undiscounted cash flows expected to be generated by the asset or asset group. No such impairments have been identified for the period ended December 31, 2019 and for the year ended December 31, 2020.

Deferred Offering Costs

The Company capitalizes within other assets certain legal, consulting and other third-party fees that are directly related to the Company's in-process equity financings, including the planned initial public offering, until such financings are consummated. After consummation of the equity financing, these costs are recorded as a reduction of the proceeds received as a result of the offering. Should a planned equity financing be abandoned, terminated, or significantly delayed, the deferred offering costs are immediately written off to operating expenses. There were no deferred offering costs capitalized during the period ended December 31, 2019 and for the year ended December 31, 2020.

Deferred Financing Costs

The Company capitalizes certain legal and other third-party fees that are directly associated with obtaining access to capital under credit facilities. Deferred financing costs incurred in connection with obtaining access to capital under credit facilities are recorded as a reduction to the carrying amount of the debt and amortized to interest expense using the effective interest method over the repayment term.

Income Taxes

The Company is a C Corporation for federal income tax purposes. The Company was not profitable during 2019 and 2020. Accordingly, no provision for federal income taxes has been presented in the accompanying consolidated statement of operations and comprehensive loss.

The Company accounts for income taxes under the asset and liability method. Under this method, deferred tax assets and liabilities are recognized for the future tax consequences attributed to differences between financial statement carrying amounts of existing assets and liabilities and their respective tax bases, including operating losses and tax credit carryforwards, if applicable. Deferred tax assets and liabilities are measured using the enacted tax rates expected to apply to taxable income in the years in which the differences are expected to be recovered or

settled. The effect on deferred tax assets and liabilities of a change in the tax rates is recognized in income in the period that includes the enactment date.

A valuation allowance may be established for carryforwards and other deferred tax assets when it is more likely than not that such deferred tax assets will not be realized. Based on its facts, the Company considered all available evidence, both positive and negative, including historical levels of taxable income, expectations, and risks associated with estimates of future taxable income, and ongoing prudent and feasible tax planning strategies in assessing the need for a valuation allowance. The Company recorded a valuation allowance against the deferred tax asset as the Company believes it is more likely than not that the deferred asset will not be utilized.

The Company recognizes the effect of income tax positions only if those positions are more likely than not to be sustained upon examination, including resolution of any related appeals or litigation processes. A tax position that meets the more likely than not recognition threshold is measured at the largest amount of benefit that is greater than 50% likely of being realized upon ultimate settlement with a taxing authority. Changes in recognition or measurement are reflected in the period in which the change in judgment occurs. The Company records interest related to unrecognized tax benefits in interest and penalties in general and administrative expenses. The Company has determined that it has an uncertain tax position as it relates to its state research and development credits for the period ended December 31, 2019 and for the year ended December 31, 2020 (see Note 13).

Share-Based Compensation

For share-based awards granted to employees and directors, the Company estimates the grant-date fair value using the Black-Scholes option-pricing model. Compensation expense for these awards is recognized net of the estimated forfeiture rate, over the requisite service period, which is generally the vesting period of the respective award.

For share-based awards granted to non-employees, the Company adopted Accounting Standards Update No. (ASU) 2018-07, Compensation—Stock Compensation (Topic 718) (ASU 2018-07) at inception, as discussed below, in which the measurement date for non-employee awards is the date of grant. The compensation expense for non-employees is recognized in the same manner as if the Company had paid cash in exchange for the goods or services, which is generally the vesting period of the award. The Company applies an estimated forfeiture rate to share-based compensation.

The Company classifies share-based compensation expense in its consolidated statement of operations and comprehensive loss in the same manner in which the award recipient's payroll costs are classified or in which the award recipient's service payments are classified.

Revenue Recognition

The Company recognizes revenues in accordance with Financial Accounting Standards Board (FASB) ASU 2014-09, Revenue from Contracts with Customers (Topic 606) (ASC 606). To date, revenues have consisted primarily of payments received related to product sales and royalty agreements. Under ASC 606, the Company recognizes revenue when customers obtain control of promised goods or services, in an amount that reflects the consideration which the Company expects to receive in exchange for those goods or services.

Revenue for product sales is recognized upon delivery to the customer. Revenue related to services and product warranty arrangements is deferred and recognized over time, as services are delivered. To determine the appropriate amount of revenue to be recognized for arrangements determined to be within the scope of ASC 606, the Company performs the following five steps: (i) identification of the promised goods or services in the contract; (ii) determination of whether the promised goods or services are performance obligations including whether they are distinct in the context of the contract; (iii) measurement of the transaction price, including the assessment of the constraint on variable consideration; (iv) allocation of the transaction price to the performance obligations; and (v) recognition of revenue when, or as the Company satisfies each performance obligation. As part of the accounting for arrangements under ASC 606, management must use its significant judgment to determine: (a) the performance obligations based on the determination under step (ii) above; (b) the transaction price under step (iii) above; and (c) the standalone selling price for each performance obligation identified in the contract for the allocation of transaction price in step (iv) above. Management also uses its judgment to determine whether milestones or other variable consideration, except for royalties and sales-based milestones, should be included in the transaction price as described below. The transaction price is allocated to each performance obligation based on the relative stand-alone selling price of each

performance obligation in the contract, and revenue is recognized based on those amounts when, or as, the performance obligations under the contract are satisfied.

The standalone selling price is the price at which an entity would sell a promised good or service separately to a customer. Management estimates the standalone selling price of each of the identified performance obligations in customer contracts, maximizing the use of observable inputs. Because the Company has not sold the same goods or services in the contracts separately to any customers on a standalone basis and there are no similar observable transactions in the marketplace, the Company estimates the standalone selling price of each performance obligation in customer arrangements based on estimated costs to be incurred to fulfil obligations associated with the performance, plus a reasonable margin.

Amounts received prior to revenue recognition are recorded as deferred revenue in the consolidated balance sheet. Amounts expected to be recognized as revenue within the twelve months following the balance sheet date are classified as deferred revenue, current portion in the consolidated balance sheet. Amounts not expected to be recognized as revenue within the twelve months following the balance sheet date are classified as other long-term liabilities in the consolidated balance sheet. Amounts are recorded as accounts receivable when the right to consideration is unconditional.

Product Revenue, Net

The Company recognizes revenue on product sales when the customer obtains control of the product, which occurs upon delivery to the customer. The Company recognizes revenue on installation and training when the service has been rendered and recognizes warranty revenue over the warranty term. Product revenues are recorded net of variable consideration, including discounts.

Product Returns

The Company does not generally offer customers the ability to return product and has received an immaterial amount of returns to date.

Royalty Revenue

The Company enters into licensing arrangements that are within the scope of ASC 606, under which the Company will provide non-exclusive sales of licensing rights of its patents to customers. The terms of these arrangements include royalty payments to the Company of a fixed tiered percentage of sales based on the Company's technology that has been licensed. Customers submit their usage and payments on a quarterly or semiannual basis.

Warranties

The Company provides warranty coverage on its systems. Warranty coverage includes providing labor and parts necessary to repair the systems during the warranty period. The standard warranty coverage is twelve months for system sales. In addition, customers may pay for enhanced warranty service or to extend the warranty period to 24 months. Warranty revenue is deferred and recognized over the warranty period as a part of product sales in the consolidated statement of operations and comprehensive loss. The Company charges warranty expenses to cost of revenue in the period the expense is incurred. The changes in deferred revenue for warranties during the period ended December 31, 2019 and for the year ended December 31, 2020 are summarized as follows (in thousands):

Balance at March 8, 2019 (inception)	$	171
Warranty revenue deferred		146
Warranty revenue recognized		(172)
Balance at December 31, 2019		145
Warranty revenue deferred		404
Warranty revenue recognized		(292)
Balance at December 31, 2020	$	257

The deferred revenue for warranties at December 31, 2019 and 2020 are summarized as follows (in thousands):

	December 31,	
	2019	2020
Deferred warranty revenue, current portion	$ 112	$ 217
Deferred warranty revenue, net of current portion	33	40
Total deferred warranty revenue	$ 145	$ 257

Shipping and Handling Costs

Shipping and handling costs are included as a component of cost of revenue in the consolidated statement of operations and comprehensive loss.

Fair Value of Assets and Liabilities

In accordance with ASC 820, fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. When determining fair value, the Company considers the principal or most advantageous market in which the Company would transact, and considers assumptions that market participants would use when pricing the asset or liability. The fair value hierarchy distinguishes between (1) market participant assumptions developed based on market data obtained from independent sources (observable inputs) and (2) an entity's own assumptions about market participant assumptions developed based on the best information available in the circumstances (unobservable inputs).

The fair value hierarchy consists of three broad levels, which gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). The three levels of the fair value hierarchy as described below:

Level 1–Quoted prices (unadjusted) in active markets for identical assets or liabilities.

Level 2–Directly or indirectly observable inputs as of the reporting date through correlation with market data, including quoted prices for similar assets and liabilities in active markets and quoted prices in markets that are not active. Level 2 also includes assets and liabilities that are valued using models or other pricing methodologies that do not require significant judgment since the input assumption used in the models, such as interest rates and volatility factors, are corroborated by readily observable data from actively quoted markets substantially the full term of the financial instrument.

Level 3–Unobservable inputs that are supported by little or no market data and require the use of significant management judgment. These values are generally determined using pricing models for which the assumptions utilize management's estimates of market participant assumptions.

The Company's participation right liability, warrant liability, contingent put liability, and success fee contingent liability are carried at fair value, determined according to Level 3 inputs in the fair value hierarchy described above (see Note 4).The carrying value of financial instruments included in current assets and liabilities approximate their fair value principally because of the short-term maturities of these instruments.

Research and Development

Research and development costs, including direct and allocated expenses, are expensed in the period incurred. Research and development costs include payroll and personnel expense; consulting costs; external contract research and development costs; raw materials and allocated overhead such as depreciation and amortization, rent and utilities. Advance payments for goods and services to be used in future research and development activities are recorded as prepaid expenses and are expensed over the service period as the services are provided or when the goods are consumed.

Advertising

The Company expenses the cost of advertising, including promotional expenses, as incurred. Advertising and promotional expenses for the period ended December 31, 2019 and for the year ended on December 31, 2020 were $0.1 million and $0.8 million, respectively.

Comprehensive Loss

Comprehensive loss includes net loss as well as other changes in stockholders' equity (deficit) that result from transactions and economic events other than those with stockholders. There was no difference between net loss and comprehensive loss for each of the period ended December 31, 2019 and the year ended December 31, 2020 as presented in the accompanying consolidated financial statements.

Classification of Convertible Preferred Stock

The Company's convertible preferred stock is classified outside of stockholders' equity (deficit) because the holders of such shares have liquidation rights in the event of a deemed liquidation that, in certain situations, are not solely within the control of the Company.

Net Loss per Share

The Company follows the two-class method when computing net loss per share as the Company has issued shares that meet the definition of participating securities. The two-class method determines net loss per share for each class of common and participating securities according to dividends declared or accumulated and participation rights in undistributed earnings. The two-class method requires income available to common stockholders for the period to be allocated between common and participating securities based upon their respective rights to receive dividends as if all income for the period had been distributed.

Basic net loss per share attributable to common stockholders is computed by dividing net loss attributable to common stockholders by the weighted-average number of common shares outstanding for the period. Diluted net loss per share attributable to common stockholders is computed by adjusting net loss attributable to common stockholders to reallocate undistributed earnings based on the potential impact of dilutive securities. Diluted net loss per share attributable to common stockholders is computed by dividing the diluted net loss attributable to common stockholders by the weighted-average number of common shares outstanding for the period, including potential dilutive common shares assuming the dilutive effect of common stock equivalents. For purposes of this calculation, outstanding stock options, unvested restricted common stock, and convertible preferred stock are considered potential dilutive common stock and are excluded from the computation of diluted net loss per share attributable to common stockholders if their effect is anti-dilutive.

The Company's convertible preferred stock contractually entitles the holders of such shares to participate in dividends but do not contractually require the holders of such shares to participate in losses of the Company. Accordingly, in periods in which the Company reports a net loss, such losses are not allocated to such participating securities. In periods in which the Company reports a net loss attributable to common stockholders, diluted net loss per share attributable to common stockholders is the same as basic net loss per share attributable to common stockholders, since dilutive common shares are not assumed to have been issued if their effect is anti-dilutive. The Company reported a net loss attributable to common stockholders for the period ended December 31, 2019 and the year ended December 31, 2020.

Segments Information

Operating segments are defined as components of an entity for which separate financial information is available and that is regularly reviewed by the chief operating decision maker (CODM), in deciding how to allocate resources to an individual segment and in assessing performance. The Company's CODM is its chief executive officer. The Company has determined it operates in one segment.

Recent Accounting Pronouncements Adopted

In February 2016, the FASB issued ASU 2016-02, Leases (Topic 842) (ASC 842), as subsequently amended, which sets out the principles for the recognition, measurement, presentation, and disclosure of leases for both parties to a contract (i.e., lessees and lessors), and replaces the existing guidance in ASC 840, Leases. The FASB subsequently issued amendments to ASC 842, which have the same effective date of January 1, 2019: (i) ASU 2018-10, Codification Improvements to Topic 842, Leases, which amends certain narrow aspects of the guidance issued in ASU 2016-02; and (ii) ASU 2018-11, Leases (Topic 842): Targeted Improvements, which allows for a transition approach to initially apply ASU 2016-02 at the adoption date and not restate prior periods presented. ASC 842 requires lessees to classify leases as either finance or operating leases based on the principle of whether or not the lease is effectively a financed purchase by the lessee. This classification will determine the recognition pattern of lease expense over the term of the lease. The Company recognizes the lease expense for its operating leases on a

straight-line basis. A lessee is also required to record a right-of-use asset and a lease liability for all leases with a term of greater than 12 months regardless of their classification. Leases with a term of 12 months or less will be accounted for similar to existing guidance for operating leases under ASC 840.

The Company early adopted ASC 842 effective January 1, 2020 using the required modified retrospective approach and utilizing the effective date as its date of initial application. As a result, prior periods are presented in accordance with the previous guidance in ASC 840. ASC 842 provides a number of optional practical expedients in transition. The Company applied the package of practical expedients to leases that commenced prior to the effective date whereby the following are not required to be reassessed: (i) whether any expired or existing contracts are or contain leases; (ii) the lease classification for any expired or existing leases; and (iii) the treatment of initial direct costs for existing leases. The Company elected the short-term lease expedient for all leases that qualified based on a lease term of 12 months or less, and consequently a right-of-use asset or lease liability was not recognized for short term leases.

The adoption of ASC 842 resulted in the recognition of operating lease liabilities of $4.0 million and right-of-use assets of $3.7 million and the de-recognition of deferred rent liabilities of $0.3 million on the Company's consolidated balance sheet as of January 1, 2020. The impact of adoption relates to the Company's existing operating lease for operating and laboratory space. The adoption of ASC 842 did not have a material impact on the Company's consolidated statement of operations and comprehensive loss or consolidated statements of cash flows.

In August 2018, the FASB issued ASU 2018-13, Fair Value Measurement (Topic 820), Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement, (ASU 2018-13). This update removed the following disclosure requirements: (1) the amount of and reasons for transfers between Level 1 and Level 2 of the fair value hierarchy; (2) the policy for timing of transfers between levels; and (3) the valuation processes for Level 3 fair value measurements. Additionally, this update added the following disclosure requirements: (1) the changes in unrealized gains and losses for the period included in other comprehensive income and loss for recurring Level 3 fair value measurements held at the end of the reporting period; (2) the range and weighted average of significant unobservable inputs used to develop Level 3 fair value measurements. For certain unobservable inputs, an entity may disclose other quantitative information (such as the median or arithmetic average) in lieu of the weighted average if the entity determines that other quantitative information would be a more reasonable and rational method to reflect the distribution of unobservable inputs used to develop Level 3 fair value measurements. ASU 2018-13 was effective for fiscal years beginning after December 15, 2019 with early adoption permitted. The Company has adopted this update and there was no material effect on the consolidated financial statements and related disclosures.

Recent Accounting Pronouncements Not Yet Adopted

In June 2016, the FASB issued ASU 2016-13, Financial Instruments-Credit Losses: Measurement of Credit Losses on Financial Instruments (Topic 326) (ASU 2016-13). ASU 2016-13 requires measurement and recognition of expected credit losses for financial assets. In April 2019, the FASB issued clarification to ASU 2016-13 within ASU No. 2019-04, Codification Improvements to Topic 326, Financial Instruments-Credit Losses, Topic 815, Derivatives and Hedging, and Topic 825, Financial Instruments. This update is effective for entities other than public business entities, including emerging growth companies that elected to defer compliance with new or revised financial accounting standards until a company that is not an issuer is required to comply with such standards, for annual reporting periods beginning after December 15, 2021. The Company is currently evaluating the impact that ASU 2016-13 will have on the consolidated financial statements and related disclosures.

In December 2019, the FASB issued ASU 2019-12, Simplifying the Accounting for Income Taxes (ASU 2019-12). ASU 2019-12 eliminates certain exceptions related to the approach for intra-period tax allocation, the methodology for calculating income taxes in an interim period and the recognition of deferred tax liabilities for outside basis differences. It also clarifies and simplifies other aspects of the accounting for income taxes. This update is effective for entities other than public business entities, including emerging growth companies that elected to defer compliance with new or revised financial accounting standards until a company that is not an issuer is required to comply with such standards, for annual reporting periods beginning after December 15, 2021, and interim periods within annual periods beginning after December 15, 2022. The Company is currently evaluating the impact that ASU 2019-12 will have on its consolidated financial statements and related disclosures.

In August 2020, the FASB issued ASU 2020-06, Debt – Debt with Conversion and Other (Subtopic 470-20) and Derivatives and Hedging – Contracts in Entity's Own Equity (Subtopic 815-40). This update simplifies the accounting for convertible debt instruments by removing certain accounting separation models as well as the accounting for debt instruments with embedded conversion features that are not required to be accounted for as derivative instruments. The update also updates and improves the consistency of earnings per share calculations for convertible instruments. The amendments in this ASU are effective for fiscal years beginning after December 15, 2021, including interim periods within those fiscal years. The Company is currently evaluating the impact that the implementation of this standard will have on the Company's consolidated financial statements and related disclosures.

3. PURCHASE PRICE ALLOCATION

On March 8, 2019, GATTACA acquired 100% of the outstanding preferred and common stock of SGI-DNA from SGI in exchange for consideration comprising a $10.0 million non-recourse promissory note (the Purchase Note), and a participation right. The Purchase Note was subject to a working capital adjustment and was subsequently reduced to $9.8 million. The Purchase Note bore interest at 6% per annum with the principal and interest due and payable on September 8, 2019. The participation right enabled SGI to receive property with a value equal to the net proceeds a person would receive as a holder of 6% of the common stock of the Company in a change of control transaction. SGI was also awarded a warrant to purchase common stock, equal to 6% of the shares of common stock issued and outstanding as of the time of exercise, which will automatically be net exercised immediately prior to the consummation of an initial public offering. This warrant and participation right were later amended on August 27, 2019 to provide a warrant for 3,245,235 shares of common stock, a participation right to receive property with a value equal to the net proceeds a person would receive as a holder of 3,245,235 shares in a change of control transaction, and additional warrants equal to 3% of the shares sold in future equity financings prior to an initial public offering or certain change of control transactions.

The Purchase Note and warrant were determined to have a fair value of $9.0 million, which was determined to be the purchase price of the Company and was allocated as follows (in thousands):

Cash	$ 508
Net working capital	841
Fixed assets and other long-term assets	1,451
Technology	3,150
Trade name	120
Goodwill	3,497
Total acquired assets	9,567
Long-term liabilities	(599)
Net assets acquired	$ 8,968

4. FAIR VALUE MEASUREMENT

The following table summarizes the fair values of the Company's derivative liabilities on the consolidated balance sheet which comprise the participation right liability, warrant liability, contingent put liability, and success fee contingent liability which are all deemed Level 3 liabilities (in thousands):

	Fair value measurements as of December 31, 2019			
	Level 1	Level 2	Level 3	Total
Liabilities				
Warrant liability	$ —	$ —	$ 169	$ 169
Contingent put option liability	—	—	106	106
Success fee contingent liability	—	—	379	379
Total	$ —	$ —	$ 654	$ 654

	Fair value measurements as of December 31, 2020			
	Level 1	Level 2	Level 3	Total
Liabilities				
Participation right liability	$ —	$ —	$ 420	$ 420
Warrant liability	—	—	594	594
Contingent put option liability	—	—	51	51
Success fee contingent liability	—	—	468	468
Total	$ —	$ —	$ 1,533	$ 1,533

During the period from March 8, 2019 (inception) to December 31, 2019 and year ended December 31, 2020, there were no transfers between Level 1, Level 2 and Level 3.

Participation Right Liability

The participation right liability consists of the fair value of 3% of the securities sold in a future equity financing round and was originated from the participation right that was given to SGI in conjunction with the Company acquisition (see Note 1 and 3). The fair value of the participation right liability was based on significant inputs not observable in the market, which represent a Level 3 measurement within the fair value hierarchy. The Company's valuation of the participation right liability utilized the estimated capital raised from the next financing round and the probability of success to obtain such capital. The Company reassesses these assumptions and estimates at least annually as additional information impacting the assumptions are obtained. Changes in the fair value of the participation right liability is recognized as part of the change in fair value of derivative liabilities in other income (expense) in the consolidated statement of operations and comprehensive loss.

The quantitative elements associated with the Company's Level 3 inputs impacting the fair value measurement of the participation right liability include management's expectation of amounts to be raised and the probability of success in obtaining the funds. The Company determines the estimated capital raised from the financing round to be $20.0 million with a probability of success of 70%. The fair value was determined by multiplying the amount expected to be raised versus the probability of success and the percentage right (3%). As of December 31, 2019, the participation right liability was determined not to be material; however, for December 31, 2020, the fair value of the participation right was valued at $0.4 million.

Preferred Stock Warrants

The preferred stock warrant liability consists of the fair value of warrants to purchase Series A-1 Preferred Stock in conjunction with the Series A-1 financing in December 2019 with SGI (see Note 10) and was based on significant inputs not observable in the market, which represent a Level 3 measurement within the fair value hierarchy. The Company's valuation of the preferred stock warrants utilized the Black-Scholes option-pricing model, which incorporates assumptions and estimates that are subjective. The Company assesses these assumptions and estimates at least annually as additional information impacting the assumptions are obtained. Changes in the fair value of the preferred stock warrants are recognized in other income (expense) as part of the change in fair value of derivative liabilities in the consolidated statement of operations and comprehensive loss.

The quantitative elements associated with the Company's Level 3 inputs impacting the fair value measurement of the preferred stock warrant liability include the fair value per share of the underlying Series A-1 convertible preferred stock, the remaining contractual term of the warrants, risk-free interest rate, expected dividend yield and expected volatility of the price of the underlying preferred stock. The most significant assumption in the Black-Scholes option-pricing model impacting the fair value of the preferred stock warrants is the fair value of the Company's convertible preferred stock as of each remeasurement date. The Company determines the fair value per share of the underlying preferred stock by taking into consideration its most recent sales of convertible preferred stock as well as additional factors that the Company deems relevant. As of December 31, 2019 and 2020, the fair value of the Series A-1 convertible preferred stock warrant was $0.37 and $1.29 per share, respectively. The Company is currently a private company and lacks company-specific historical and implied volatility information of its stock. Therefore, it estimates its expected stock volatility based on the historical volatility of publicly traded peer companies for a term equal to the remaining contractual term of the warrants. The risk-free interest rate is determined by reference to the U.S.

Treasury yield curve for time periods approximately equal to the remaining contractual term of the warrants. The Company has estimated a 0% dividend yield based on the expected dividend yield and the fact that the Company has never paid or declared dividends.

The following reflects the significant quantitative inputs used in the valuation of the preferred stock warrant liability:

	December 31,	
	2019	2020
Risk-free interest rate	1.7 %	0.1 %
Expected term	4.0 years	2.0 years
Expected volatility	65.0 %	83.6 %
Expected dividend yield	0.0 %	0.0 %

Contingent Put Option Liability

The contingent put option liability consists of the fair value of the contingent interest feature and acceleration clause (contingent put option) under the 2019 Loan Agreement (see Note 9). The fair value of the contingent put option liability was based on significant inputs not observable in the market, which represent a Level 3 measurement within the fair value hierarchy. The Company's valuation of the contingent put option liability utilized a risk-neutral valuation model wherein the fair value of the underlying debt facility is estimated, both with and without the presence of the default provisions, holding all other assumptions constant. The Company assesses these assumptions and estimates at least annually as additional information impacting the assumptions are obtained. Changes in the fair value of the contingent put option liability is recognized in other income (expense) as part of the change in fair value of derivative liabilities in the consolidated statement of operations and comprehensive loss.

Success Fee Contingent Liability

The success fee contingent liability consists of the fair value of contingent obligation to pay the lender a success fee of $0.8 million upon a Liquidity Event under the 2019 Loan Agreement (see Note 9). The fair value of the success fee contingent liability was based on significant inputs not observable in the market, which represent a Level 3 measurement within the fair value hierarchy. The Company's valuation of the success fee contingent liability utilized a liquidity event scenario analysis discounted at the Company's cost of capital. This analysis consists of both the probability adjusted value of the success fee based on liquidity scenarios, and the risk adjusted present value of the success fee discounted at the Company's cost of capital on the valuation date, to take into account the risk of achieving the liquidity scenarios. The Company assesses these assumptions and estimates at least annually as additional information impacting the assumptions are obtained. Changes in the fair value of the success fee contingent liability is recognized in other income (expense) as part of the change in fair value of derivative liabilities in the consolidated statement of operations and comprehensive loss.

The following table provides a roll-forward of the aggregate fair value of the Company's derivative liabilities for which fair value is determined using Level 3 inputs (in thousands):

	Participation right liability	Warrant liability	Contingent put liability	Success fee contingent liability
Fair value at March 8, 2019 (inception)	$ 42	$ —	$ —	$ —
Issuance of derivative liabilities	—	169	126	379
Change in fair value	(42)	—	(20)	—
Fair value at December 31, 2019	$ —	$ 169	$ 106	$ 379
Change in fair value	420	425	(55)	89
Fair value at December 31, 2020	$ 420	$ 594	$ 51	$ 468

For the period from March 8, 2019 (inception) to December 31, 2019 and year ended December 31, 2020, the Company recorded a change in fair value of derivative liabilities included in other income (expense) of $0.1 million and $(0.9) million, respectively.

5. INVENTORY

Inventories include material, labor and overhead and are stated at the lower of cost (first-in and first-out method) or net realizable value. The components of inventory are as follows as of December 31, 2019 and 2020 (in thousands):

	December 31,	
	2019	2020
Raw materials	$ 612	$ 299
Work in process and sub-assemblies	167	201
Finished goods	13	101
Reserves	(80)	—
Total	$ 712	$ 601

6. PROPERTY AND EQUIPMENT

Property and equipment consisted of the following on December 31, 2019 and 2020 (in thousands):

	December 31,	
	2019	2020
Machinery and equipment	$ 1,244	$ 1,315
Computer hardware and software	6	6
Leasehold improvements	—	32
Construction in progress	—	102
Total	1,250	1,455
Less: Accumulated depreciation and amortization	(362)	(766)
Total property and equipment, net	$ 888	$ 689

Depreciation expense for the period from March 8, 2019 (inception) to December 31, 2019 and the year ended December 31, 2020 was $0.4 million and is included in operating expenses.

During the period from March 8, 2019 (inception) to December 31, 2019 the Company retired assets no longer in service resulting in a loss on disposal of $0.2 million.

7. GOODWILL AND OTHER INTANGIBLE ASSETS

Goodwill

As part of the March 8, 2019 transaction (see Note 1), the Company acquired its intangible assets with resulting goodwill. The resulting goodwill carries a value of approximately $3.5 million. Due to the recent decline in global economic and labor market conditions caused by the global outbreak of the COVID-19 pandemic, the Company considered the effects on its goodwill and determined that there was no material significant impact that would cause a change in its analysis. There were no other events or circumstances that have changed since the last annual assessment that could reduce the fair value of the Company's reporting segments below its carrying values.

For the period ended December 31, 2019 and for the year ended December 31, 2020, the Company has not recorded any impairment of goodwill.

Other Intangible Assets

Other intangible assets include the rights to technology and the SGI-DNA trade name. The Company engaged an independent consultant to value the intangible assets and to determine the useful lives. The technology was valued at approximately $3.2 million with a seven year useful life and the SGI-DNA trade name at approximately $0.1 million with a three year useful life.

Amortization expense related to the intangible assets for the period from March 8, 2019 (inception) to December 31, 2019 and the year ended on December 31, 2020 was approximately $0.4 million and $0.5 million, respectively.

The following table summarizes the estimated future amortization expense of the intangible assets (in thousands):

Years ending December 31:	
2021	$ 450
2022	450
2023	450
2024	450
2025	450
Thereafter	75
Total	$ 2,325

8. LEASES

As of December 31, 2020, the Company had four outstanding leases for office and scientific manufacturing equipment. The leases have terms between 25 and 60 months.

Corporate Headquarters

In April of 2019, the Company entered into an operating lease agreement for its corporate headquarters located at 9535 Waples Street, San Diego, California. The term of the lease commenced in 2019 and is scheduled to expire in January 2025. Under the terms of the lease, the Company provided a security deposit of $0.1 million, which is included in long-term deposits in the accompanying consolidated balance sheet. The lease provides for annual rent escalations. The Company is required to pay a portion of the operating costs, including insurance and maintenance under the agreement that are treated as variable costs and excluded from the measurement of the lease. The Company is entitled to one option to extend the lease term for an additional five years. The option to extend the lease term was not included in the right-of-use asset and lease liability as it was not reasonably certain of being exercised.

Equipment

The Company entered into finance lease agreements for equipment in November 2017 (the 2017 Equipment Lease), January 2018 (the 2018 Equipment Lease), and in March 2019 (the 2019 Equipment Lease). The terms of the leases commenced when the equipment was delivered which happened in the same months and years as above, respectively, and accordingly the related right-of-use assets and lease liabilities were recognized on the consolidated balance sheet at their respective commencement dates. The November 2017 Equipment Lease is scheduled to expire on October 1, 2022, the 2018 Equipment Lease on December 31, 2022, and the March 2019 Equipment Lease on April 25, 2021.

Summary of Lease Cost

The components of lease cost under ASC 842 are as follows (in thousands):

	December 31, 2020
Lease costs	
Finance lease cost:	
Payment of finance lease liability	$ 107
Interest on lease liabilities	17
Amortization of right-of-use asset	591
Variable lease cost	350
Total lease cost	$ 1,065

Supplemental disclosure of cash flow information related to leases are as follows (in thousands):

	December 31, 2020
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash flows from operating leases	$ 826
Operating cash flows from finance leases	$ 17
Financing cash flows from finance leases	$ 107

The weighted-average remaining lease term and discount rate were as follows:

	December 31, 2020
Weighted-average remaining lease term	
Finance leases	1.8 years
Operating leases	4.1 years
Weighted-average discount rate	
Finance leases	7.9 %
Operating leases	8.9 %

The following table summarizes the minimum lease payments of the Company's operating and finance lease liabilities as of December 31, 2020 (in thousands):

Year Ending December 31,	Operating	Finance
2021	$ 967	$ 99
2022	997	85
2023	1,026	—
2024	1,057	—
2025	89	—
Thereafter	—	—
Total future minimum lease payments	4,136	184
Less: imputed interest	(667)	(13)
Present value of operating lease liability	$ 3,469	$ 171
Less: current portion of lease liability	(693)	(90)
Non-current portion of lease liability	2,776	81

Disclosures under ASC 840

The following table summarizes the future minimum lease payments due under the Company's operating and finance leases as of December 31, 2019, presented in accordance with ASC 840, the relevant accounting standard at that time (in thousands):

Finance Leases	
Years ending December 31:	
2020	144
2021	99
2022	85
Total minimum payments	328
Less: Amount representing interest and taxes	(32)
Present value of future minimum payments	296
Less: Current portion	(111)
Long-term portion of finance lease liability	185

Operating Leases	
Years ending December 31:	
2020	826
2021	967
2022	997
2023	1,026
2024	1,057
2025	89
Total	4,962

Rent expense under the operating lease was approximately $0.5 million in 2019.

9. NOTES PAYABLE

Non-Recourse Secured Promissory Notes

In March of 2019, GATTACA and the Company jointly issued a Non-Recourse Secured Promissory Note (see Note 1) to SGI. The Purchase Note matured in September 2019, bore interest at 6% per annum, and was secured by all of the Company's assets. This note had a principal value of $10.0 million subject to a working capital adjustment. The principal was adjusted to approximately $9.8 million. In March of 2019, the fair value of this liability was $8.9 million based on the purchase price allocation (see Note 2). The note and accumulated interest were paid in full in August of 2019.

In March of 2019, GATTACA executed a Secured Note Purchase Agreement with an investor in the Company. The agreement was entered into in connection with GATTACA's purchase of the Company (see Note 1). Under the agreement, GATTACA borrowed $1.5 million in a series of transactions between March 2019 and August 2019. The notes issued under this agreement matured on the earlier of an acquisition event or June 30, 2022 and bore annual interest of 10% to be paid to the holder of such note on a monthly basis beginning on the earlier of a qualifying financing or July 2020. The proceeds of the note were used for working capital advances made to the Company. In connection with the Company's Series A convertible preferred stock financing in August 2019, the outstanding debt balance of $1.5 million of principal and approximately $0.1 million of accrued interest were converted into 1,625,033 shares of Series A convertible preferred stock.

In March of 2019, GATTACA executed a Secured Note Purchase Agreement with the Chief Executive Officer of the Company. Under the agreement, the Company borrowed $0.3 million to fund operations prior to selling preferred

stock. Company (see Note 1). The note issued under this agreement matured on the earlier of an acquisition event or June 30, 2022 and bore annual interest of 10%, to be paid to the holder of such note on a monthly basis beginning on the earlier of a qualifying financing or July 2020. In connection with the Company's Series A convertible preferred stock financing in August 2019, the entire $0.3 million of principal and approximately $11,000 of accrued interest were converted into 272,243 shares of Series A convertible preferred stock.

Convertible Note

In July of 2019, the Company issued a convertible promissory note in the amount of $5.0 million. The note would have matured in July of 2022 and bore annual interest of 6% with the first payment due July 2022. In August of 2019, the Company completed the Series A convertible preferred stock financing and, under the terms of the note, the entire $5.0 million in principal and approximately $39,000 in accrued interest automatically converted into 5,255,999 shares of Series A convertible preferred stock.

Loan and Security Agreement

As of December 31, 2019 and 2020, the loans payable on the consolidated balance sheet pertains to the Loan and Security Agreement with Oxford and consists of the following (in thousands):

	December 31,	
	2019	2020
Principal amount of loans payable	$ 5,000	$ 5,000
Less: Current portion of loans payable	—	(1,333)
Loans payable, net of current portion	5,000	3,667
Accrued Interest	18	90
Debt discount and financing costs, net of accretion	(546)	(404)
Loans payable, net of discount and current portion	$ 4,472	$ 3,353

In September 2019, the Company entered into a Loan and Security Agreement (the 2019 Loan Agreement) with Oxford. Under the agreement, the Company borrowed a total of $5.0 million in secured loans. The loans accrued interest at 8.79% per annum, had a tenor of 48 months and were secured by all of the Company's assets, other than its intellectual property, which is subject to a negative pledge. In addition, the Company has a contingent obligation to pay Oxford a success fee of $0.8 million upon a Liquidity Event (as defined in the success fee letter). On December 31, 2019, the fair value of this contingent success fee liability was estimated at $0.4 million and was recorded as a derivative liability with the corresponding discount applied against the loans. Issuance costs related to the loans, inclusive of the success fee contingent liability, were $0.5 million. For the period from March 8, 2019 (inception) to December 31, 2019 and the year ended on December 31, 2020, the effective interest rate on outstanding borrowings was approximately 11.9%.

The interest rate was calculated at a rate equal to the greater of (i) 8.79% and (ii) the sum of (a) the 30-day U.S. LIBOR rate reported in The Wall Street Journal on the last business day of the month that immediately precedes the month in which the interest will accrue and (b) 6.38%. If LIBOR is no longer reported, the collateral agent could have selected a substantially similar replacement rate. Payments on the loans were interest-only until May 1, 2021, followed by equal monthly principal payments and accrued interest through the scheduled maturity date of October 1, 2023; provided, the interest-only period may have been extended to November 1, 2021 if, prior to April 30, 2021, the Company had achieved six consecutive months of trailing consolidated revenues of at least $10.5 million. A final payment (the Final Payment) equal to $287,500 (which was 5.75% of the aggregate original principal amounts of the loans) was due at the earlier of the maturity date, acceleration of the loans, or a voluntary or mandatory prepayment of the loans.

The Company may have prepaid the loans at any time. If the loans were prepaid prior to the maturity date, the Company was required to pay the lender a prepayment fee, equal to 3.0% of the then outstanding principal balance if the prepayment occurred on or before September 5, 2020, 2.0% of the then outstanding principal balance if the prepayment occurs after September 5, 2020 but on or before September 5, 2021, or 1.0% of the then outstanding principal balance if the prepayment occurs after September 5, 2021, but on or before September 5, 2022. No prepayment fee is applicable after September 5, 2022. Upon a voluntary or mandatory prepayment of the loans, in

addition to such prepayment fee, the Company was also required to pay the lender's expenses and all accrued but unpaid interest through the prepayment date.

The 2019 Loan Agreement included customary representations and covenants that, subject to exceptions and qualifications, restricted our ability to do the following things: declare dividends or redeem or repurchase equity interests; incur additional liens; make loans and investments; incur additional indebtedness; engage in mergers, acquisitions, and asset sales; transact with affiliates; undergo a change in control; add or change business locations; and engage in businesses that are not related to its existing business. In addition, the 2019 Loan Agreement contained customary affirmative covenants, including covenants regarding the payment of taxes and other obligations, maintenance of insurance, reporting requirements and compliance with applicable laws and regulations

The 2019 Loan Agreement also included standard events of default, including payment defaults, breaches of covenants following any applicable cure period, material misrepresentations, a failure of the lender's security interest in the collateral to be perfected or to have the priority as required under the 2019 Loan Agreement, a material adverse change as defined in the 2019 Loan Agreement (including without limitation as a result of a government approval having been revoked, rescinded, suspended, modified or not renewed), certain material judgments and attachments, and events relating to bankruptcy or insolvency of the Company. The 2019 Loan Agreement also contained a cross default provision under which, if a third party (under any agreement) has a right to accelerate indebtedness greater than $250,000, the Company would be in default of the 2019 Loan Agreement. During the continuance of an event of default, the lender could apply a default interest rate of an additional 5.0% to the outstanding loan balances, and the lender could declare all outstanding obligations immediately due and payable and could exercise other rights and remedies as set forth in the 2019 Loan Agreement and related loan documents. Acceleration would result in the payment of any applicable prepayment fees, the Final Payment and any default interest charged by the lender.

As of December 31, 2020, the estimated future principal payments due were as follows:

Estimated future principal payments due		
2021	$	1,333
2022		2,000
2023		1,667
Total	$	5,000

The Company bifurcated a compound derivative liability related to the contingent interest feature and acceleration clause (contingent put option) under the 2019 Loan Agreement. The contingent put option liability was valued and separately accounted for in the Company's consolidated financial statements. The contingent put option liability is classified as a component of derivative liabilities on the consolidated balance sheet. As of December 31, 2019 and 2020, the estimated fair value of the contingent put option liability was $0.1 million, which was determined by using a risk-neutral valuation model wherein the fair value of the underlying debt facility is estimated, both with and without the presence of the default provisions, holding all other assumptions constant (see Note 4).

10. PREFERRED STOCK

The Company's Amended and Restated Certificate of Incorporation (the Amended and Restated Certificate), as filed in December of 2019 with the state of Delaware, authorizes the Company to issue 72,000,000 shares of common stock and 45,700,067 shares of preferred stock, all of which have a par value per share of $0.0001. Holders of preferred stock have rights to an 8% dividend when and if declared by the Board of Directors. 15,402,237 shares of preferred stock are designated "Series A-1 Preferred Stock", 22,797,830 shares of preferred stock are designated "Series A Preferred Stock", and 7,500,000 shares of preferred stock are designated "Series Z Preferred Stock" (collectively, the Series Preferred).

Preferred Stock

In December of 2019, the Company issued 14,940,170 shares of Series A-1 Preferred Stock for approximately $18.0 million. In the event of a deemed liquidation event, holders of Series A-1 Preferred Stock have rights to preferential payments approximately equal to $2.94 per share or $44.0 million in the aggregate. Issuance costs related to the Series A-1 financing were $33,000.

In August of 2019, the Company issued 22,797,830 shares of Series A Preferred Stock for approximately $21.9 million, including debt that was converted as part of the transaction. In the event of a deemed liquidation event, the holders of Series A Preferred Stock have rights to preferential payments approximately equal to $1.92 per share or $43.7 million in the aggregate. Issuance costs related to the Series A financing were $0.9 million.

Prior to March of 2019, the Company issued 7,500,000 shares of Series Z Preferred Stock at par value. In the event of a deemed liquidation event, holders of the Series Z Preferred Stock have rights to preferential payments approximately equal to $1.00 per share or $7.5 million in the aggregate.

Additional rights, preferences, privileges and restrictions relating to Series A Preferred Stock, Series A-1 Preferred Stock, and Series Z Preferred Stock (together the Series Preferred) at December 31, 2019 and 2020 are as set forth below (in thousands, except share amounts):

	Total shares authorized	Total shares issued and outstanding	Carrying value	Liquidation preference	Common shares issuable upon conversion
Series Z Preferred Stock	7,500,000	7,500,000	$ 1	$ 7,500	7,500,000
Series A Preferred Stock	22,797,830	22,797,830	20,992	43,717	22,797,830
Series A-1 Preferred Stock	15,402,237	14,940,170	17,921	43,989	14,940,170
Total	45,700,067	45,238,000	$ 38,914	$ 95,206	45,238,000

Dividends

The holders of the Series Preferred are entitled to receive non-cumulative dividends, when and if declared by the Board of Directors, prior to and in preference to any declaration or payment of dividends on the common stock. In the event dividends are paid on any share of common stock, the Company will also pay a dividend on all outstanding shares of preferred stock in a per share amount equal to the amount paid or set aside for each share of common stock, on an as-if-converted to common stock basis. No dividends have been declared or paid as of December 31, 2019 and 2020.

Voting

The holders of the Series Preferred are entitled to voting rights equal to the number of shares of common stock into which each share of preferred stock could be converted. The holders of Series A Preferred Stock, voting as a separate class, are entitled to elect one members of the Board of Directors. The holders of Common Stock, voting as a separate class, are entitled to elect one members of the Board of Directors. The remaining members of the Board of Directors will be elected by the holders of the common stock and preferred stock, voting together as a single class and on an as-converted basis.

Liquidation

In the event of any liquidation, dissolution or winding up of the Company, either voluntary or involuntary, the holders of preferred shares are entitled to preferential payments based on the original per share issue price or the amount they would be paid as common shareholders had they converted immediately prior to the liquidation event. The original per share issue price is equal to $1.20177 for Series A-1 Preferred Stock, $0.9588 for Series A Preferred Stock and $1.00 for Series Z Preferred Stock.

The Series A Preferred Stock and Series A-1 Preferred Stock are entitled to be paid, out of the available funds and assets, prior and in preference to any payment or distribution of any such funds on any shares of common stock or Series Z Preferred Stock, an amount per share equal to the greater of (a) twice the original issue price for the Series Preferred, plus all accrued and declared but unpaid dividends, and (b) the amount per share as would have been payable had all shares of Series A Preferred Stock and Series A-1 Preferred Stock converted to common stock. In addition, and prior to any further payments to holders of other classes of shares, the holders of Series A-1 Preferred Stock are entitled to a second payment of amount per share equal to 45% of the original issue price of Series A-1 Preferred Stock. Then, the holders of the Series Z Preferred Stock are entitled to be paid, out of the then available funds and assets, prior and in preference to any payment or distribution of any such funds on any shares of common stock, an amount per share equal to the greater of (a) the original issue price for the Series Preferred, plus

all accrued and declared but unpaid dividends and (b) the amount per share as would have been payable had all shares of Series Z Preferred Stock been converted to common stock.

If assets are insufficient to permit such payments, payment will be distributed ratably among the holders of outstanding preferred stock in proportion to the amount owned by each holder. After the liquidation preference of the holders of the Series Preferred has been satisfied, the remaining assets of the Company will be distributed ratably among the holders of outstanding common stock in proportion to the amount owned by each holder.

Conversion

Each share of Series Preferred is convertible into shares of common stock, at the option of the holder, at any time after the date of issuance. Each share of Series Preferred automatically converts into the number of shares of common stock determined in accordance with the conversion rate upon the earlier of (i) the date specified by election of the holders of a majority of the shares of Series Preferred, or (ii) the closing of a public offering of common stock resulting in aggregate gross proceeds of at least $40.0 million and having a price per share to the public of at least $2.40 adjusted for splits, recapitalizations and the like. At December 31, 2019 and 2020, the conversion price for each share was equal to $1.20177 for Series A-1, $0.9588 for Series A Preferred Stock and $1.00 for Series Z Preferred Stock.

Redemption

The Series Preferred are not redeemable at the option of the holder.

Protection Provisions

The holders of Series Preferred have certain protective provisions. As long as at least 7,574,458 shares of Series A Preferred Stock and Series A-1 Preferred Stock remain outstanding, the Company cannot, without the approval of a majority in interest of Series Preferred holders, take any action that: (i) consummates a liquidation, dissolution or winding up of the Company; (ii) amends or repeals any provision of either the certificate of incorporation or the bylaws the Company; (iii) changes the rights, preferences or privileges of Series Preferred; (iv) creates or authorizes the creation of any capital stock having the rights, preferences or privileges senior or on a parity with preferred stock; (v) increases or decreases the authorized number of shares of preferred stock or common stock; (vi) results in redemption, repurchase, payment or declaration of dividends or other distributions with respect to shares of preferred stock or common stock other than permitted repurchases and dividends; (vii) permits a) the Company to create or hold capital stock in a subsidiary that is not wholly owned, b) a subsidiary to issue, sell or transfer capital stock and c) a subsidiary to sell, lease, transfer, exclusively license or dispose of substantially of its assets; (viii) increases or decreases the authorized members of the Board of Directors; (ix) increases the number of shares under any employee stock option plan or create a new stock plan; (x) effect any transactions with related parties except as permitted or (xi) effect a material change in the activity or industry of the Company.

Preferred Stock Warrants

In connection with the Company’s Series A-1 convertible preferred stock financing in December 2019, the Company issued a warrant to purchase up to 462,067 shares of Series A-1 Preferred Stock (the A-1 Warrants) to SGI at an exercise price of $1.20177 per share, which was the exercise price stated in the financing agreement entered into with the Series A-1 investors at that time. The A-1 Warrants were recorded as a liability at their fair value, which was $0.2 million at both the issuance date and at December 31, 2019 and $0.6 million at December 31, 2020. The warrant liability is included in derivative liabilities on the Company's accompanying consolidated balance sheet. The A-1 Warrants were valued using the Black-Scholes option-pricing model, the inputs for which included the exercise price of the warrants, the fair value of the underlying preferred shares, the expected term, volatility based on a group of the Company’s peers and the risk-free interest rate corresponding to the expected term of the warrants.

Participation Right and Common Stock Warrant

Prior to March 2019, the Company was a wholly owned subsidiary of SGI. As part of its divestiture of the Company in March of 2019, SGI retained a right to participate in a future merger, acquisition or initial public offering of the Company under certain conditions. This participation right was modified in August of 2019 to provide SGI with (i) a warrant exercisable into 3,245,235 shares of common stock of the Company, with an aggregate exercise price of $1 and (ii) a right to additional warrants exercisable into 3% of shares of common stock of the Company sold in future financings, if any, under certain conditions. The participation right was valued at $42,000 at the time of divestiture and was deemed to be of de minimis value as of December 31, 2019 due to warrants issued during the year and

management's expectations of future financings. The value of the participation right was $0.4 million at December 31, 2020. As of December 31, 2019, the common stock warrants were valued at $0.8 million and recorded as financing costs of the Series A convertible preferred stock financing.

11. COMMON STOCK

Each share of common stock entitles the holder to one vote on all matters submitted to a vote of the Company's stockholders. Common stockholders are entitled to receive dividends, as may be declared by the board of directors, if any, subject to the preferential dividend rights of the convertible preferred stock. As of December 31, 2019 and 2020, no dividends had been declared or paid.

12. STOCK-BASED COMPENSATION

For the period from March 8, 2019 (inception) to December 31, 2019 and the year ended on December 31, 2020, the Company recorded stock-based compensation expense of approximately $11,000 and $43,000, respectively. No income tax benefit was recognized in the accompanying consolidated statement of operations and comprehensive loss for the Company's equity incentive plan.

The Company's Board of Directors approved the adoption of the SGI-DNA, Inc. 2019 Stock Plan (the 2019 Plan) in March of 2019. The Stock Plan permits the Company to grant up to 5,544,187 shares for options and restricted stock units of the Company's common stock.

The Stock Plan provides for the grant of incentive and nonstatutory stock options to employees, nonemployee directors and consultants of the Company. Options granted under the 2019 Plan generally become exercisable over a 4-year period following the date service begins and expire 10 years from the date of grant. The exercise price of incentive stock options granted under the 2019 Plan must be at least equal to 100% of the fair value of the Company's common stock at the date of the grant, except for greater than 10% stockholders for which the exercise price of incentive stock options granted under the 2019 Plan must be at least equal to 110% of the fair value of the Company's common stock at the date of the grant, as determined by the Board of Directors. The exercise price of nonstatutory options granted under the 2019 Plan must be at least equal to 100% of the fair value of the Company's common stock at the date of grant, as determined by the Board of Directors. The 2019 Plan grants the Company a right of first refusal to repurchase shares issued under the plan at a price set by the optionee. As of December 31, 2019 and 2020, there were no outstanding shares subject to these repurchase rights.

Stock option activity under the 2019 Plan for the period from March 8, 2019 (inception) to December 31, 2019 and year ended on December 31, 2020 are as follows:

	Number of options	Weighted average exercise price	Weighted average remaining contractual term (in years)	Aggregate intrin value (in thousands)
Balances at March 8, 2019 (Inception)	—	$ —	—	$ -
Options granted	2,296,596	0.18	9.5	-
Options cancelled	(179,883)	0.13	9.2	-
Balances at December 31, 2019	2,116,713	$ 0.18	9.5	$ 11
Options granted	914,517	0.24	9.3	-
Options exercised	(71,878)	0.16	8.5	9
Options cancelled	(673,509)	0.21	8.9	-
Balances at December 31, 2020	2,285,843	$ 0.20	8.7	$ 2,88
Vested and expected to vest at December 31, 2019	2,116,713	$ 0.18	9.5	$ 11
Vested and expected to vest at December 31, 2020	2,285,843	$ 0.20	8.7	$ 2,88
Exercisable at December 31, 2019	—	$ —	—	$ -
Exercisable at December 31, 2020	774,995	$ 0.19	8.5	$ 98

No options were exercised during the period from March 8, 2019 (inception) to December 31, 2019.

There were 2,296,596 and 914,517 options granted during the period from March 8, 2019 (inception) to December 31, 2019 and the year ended December 31, 2020, respectively. The weighted average grant date calculated fair value of options granted during the period from March 8, 2019 (inception) to December 31, 2019 and for the year ended on December 31, 2020 was $0.06 and $0.09 per share, respectively.

The calculated value of option grants during the period from March 8, 2019 (inception) to December 31, 2019 and for the year ended on December 31, 2020 were estimated using the Black-Scholes option pricing model with the following weighted average assumptions:

	Period from March 8, 2019 (Inception) to December 31, 2019	Year Ended December 31, 2020
Risk free interest rate	2.0 %	1.1 %
Expected dividend yield	— %	— %
Expected term (in years)	6.1 years	6.1 years
Expected volatility	32.9 %	36.4 %

Stock-based compensation expense related to stock options was classified in the consolidated statement of operations and comprehensive loss as follows (in thousands):

	Period from March 8, 2019 (Inception) to December 31, 2019	Year Ended December 31, 2020
Research and development	$ 4	$ 13
Sales and marketing	1	5
General and administrative	6	25
Total	$ 11	$ 43

As of December 31, 2020, total unrecognized stock-based compensation expense related to unvested stock-based awards was $0.1 million, which is expected to be recognized over a weighted average period of 2.6 years.

13. INCOME TAXES

The domestic and foreign components of pre-tax loss for the period from March 8, 2019 (inception) to December 31, 2019 and the year ended December 31, 2020 were as follows (in thousands):

	Period from March 8, 2019 (Inception) to December 31, 2019	Year Ended December 31, 2020
Domestic	$ (8,302)	$ (18,011)
Foreign	—	1
Total	$ (8,302)	$ (18,010)

The Company had no current or deferred federal and state income tax expense or benefit for the period from March 8, 2019 (inception) to December 31, 2019 or the year ended December 31, 2020 because the Company generated net operating losses, and currently management does not believe it is more likely than not that the net operating losses will be realized. The Company's non-U.S. tax obligation is primarily for business activities conducted through the United Kingdom subsidiary for which taxes were determined to be immaterial and accordingly, such amounts were excluded from the following tables.

A reconciliation of the U.S. federal statutory income tax rate to the Company's effective income tax rate is as follows:

	Period from March 8, 2019 (Inception) to December 31, 2019	Year Ended December 31, 2020
Federal statutory income (benefit) tax rate	(21.0)%	(21.0)%
State income taxes, net of federal benefit	(5.9)	(4.9)
Change in valuation allowance	27.6	27.2
Permanent items	0.7	1.2
Tax credits	(1.4)	(2.5)
Effective income tax rate	— %	— %

The components of our deferred tax assets and liabilities on December 31, 2019 and 2020 consisted of (in thousands):

	Period from March 8, 2019 (Inception) to December 31, 2019	Year Ended December 31, 2020
Deferred tax assets:		
Net operating loss carryforwards	$ 3,040	$ 7,045
Research and development tax credit carryforwards	199	865
Accruals and other	311	303
	3,550	8,213
Valuation Allowance	(2,664)	(7,554)
Total deferred tax assets	886	659
Deferred tax liabilities:		
Fixed assets	(156)	(80)
Intangibles	(730)	(579)
Total deferred tax liabilities	(886)	(659)
Net deferred tax assets	$ —	$ —

The Company has evaluated the positive and negative evidence bearing upon its ability to realize its deferred tax assets, which are composed principally of net operating loss carryforwards. Management has considered the Company's history of cumulative net losses incurred since inception and has concluded that it is more likely than not that the Company will not realize the benefits of its federal and state net deferred tax assets. Accordingly, a full valuation allowance has been established against the net deferred tax assets as of December 31, 2019 and 2020. The Company reevaluates the positive and negative evidence at each reporting period.

The changes in the valuation allowance for deferred tax assets during the period from March 8, 2019 (inception) to December 31, 2019, and the year ended December 31, 2020, related primarily to the increases in net operating loss carryforwards, research and development tax credits generated and accruals.

The valuation allowance increased by $2.3 million and $4.9 million during the year ended December 31, 2019 and 2020, respectively.

On March 27, 2020, the U.S. enacted the Coronavirus Aid, Relief, and Economic Security Act (the CARES Act). On December 21, 2020, the U.S. Congress passed the Consolidation Appropriations Act, 2021 (the CAA Act). The tax provisions under the CARES Act and CAA Act, do not have a material impact on the financial statements for the year ended December 31, 2019 and December 31, 2020 given the existence of the full valuation allowance.

On June 29, 2020 California Assembly Bill 85 (AB 85) was signed into law, which suspends the use of California net operating losses and limits the use of California research tax credits for tax years beginning in 2020 and before 2023. The Company does not expect the suspension of net operating losses and the restriction of research tax credits to have a significant impact on the financial statements.

As of December 31, 2020, the Company had U.S. federal net operating loss carryforwards of $28.4 million. The federal net operating loss carryforwards of $1.3 million, generated before January 1, 2018, will begin to expire in 2034 and the other $27.0 million will carryforward indefinitely but are subject to an 80 percent taxable income limitation. The Company also had federal research and development tax credit carryforwards of approximately $0.7 million which will begin to expire in 2039, if not utilized.

As of December 31, 2020, the Company had state net operating loss carryforwards of $15.9 million which will begin to expire in 2036. The Company also had California research and development tax credit carryforwards of approximately $0.5 million which do not expire.

The utilization of net operating losses and tax credit carryforwards may be subject to an annual limitation as a result of ownership changes that have occurred previously or may occur in the future. Under Sections 382 and 383 of the Internal Revenue Code (the Code), a corporation that undergoes an ownership change may be subject to limitations on its ability to utilize its pre-change net operating losses and other tax attributes otherwise available to offset future taxable income or tax liability. An ownership change is defined as a cumulative change of 50% or more in the ownership positions of certain stockholders during a rolling three-year period. The Company has not completed a formal study to determine if any ownership changes within the meaning of Code Section 382 and 383 have occurred. If such ownership change has occurred, the Company's ability to use its net operating losses or tax credit carryforwards may be restricted, which could require the Company to pay federal or state income taxes earlier than would be required if such limitations were not in effect.

The Company recognizes the financial statements benefit of a tax position only after determining that the relevant tax authority would more likely than not sustain the position following an audit. For tax positions meeting the more likely than not threshold, the amount recognized in the financial statements is the largest benefit that has a greater than 50% likelihood of being realized upon ultimate settlement with the relevant tax authority. The Company's policy is to record interest and penalties associated with uncertain tax positions as a component of income tax expense.

The following table shows the changes in the gross amount of unrecognized tax benefits as of December 31, 2019 and 2020 (in thousands):

Balance as of December 31, 2019	$	74
Increase of unrecognized tax benefits taken in prior years		—
Increase of unrecognized tax benefits taken in current year		242
Balance as of December 31, 2020	$	316

If the Company is able to recognize these uncertain tax positions, the unrecognized tax benefits would not impact the effective tax rate if the Company applies a full valuation allowance against the deferred tax assets, as provided in the Company's current policy.

The Company had not incurred any material tax interest or penalties as of December 31, 2020. The Company does not anticipate any significant change within 12 months of this reporting date of its uncertain tax positions. The Company is subject to taxation in the United States and various state jurisdictions, and the United Kingdom. There are no ongoing examinations by taxing authorities at this time. The Company's tax years 2014 through 2020 will remain open for examination by the federal and state authorities for three and four years, respectively, from the date of utilization of any net operating loss credits. The Company's 2020 tax year will remain open for examination by the United Kingdom tax authority for one year from the filing deadline.

14. COMMITMENTS AND CONTINGENCIES

Litigation

The Company may become involved in various claims, suits, and legal proceedings from time to time in the ordinary course of its business. The Company accrues a liability when it believes that it is both probable and the amount of loss can be reasonably estimated. While the outcome of such claims, lawsuits or other proceedings cannot be predicted with certainty, management expects that any liability, to the extent not provided for by insurance or otherwise, will not have a material adverse effect on the Company's consolidated financial position or results of operations.

Contingencies

As described in the above in Note 9, the Company has a success fee contingent liability to a creditor that may require a payment of $0.8 million. This contingent liability was recorded at its fair value of $0.5 million at December 31, 2020. The contingent liability is recorded as a component of derivative liabilities on the consolidated balance sheet and recorded as an offset against the notes payable as a debt financing cost in the accompanying consolidated balance sheet.

As described in Note 4, our former parent company has a participation right which requires the issuance of warrants equal to 3% of the shares raised in all future equity financings prior to an initial public offering or certain change of

control transactions. As of December 31, 2020, the participation right liability was recorded at its fair value of $0.4 million as a component of derivative liabilities on the consolidated balance sheet.

Leases

The Company's non-cancelable lease commitments are described in Note 9.

15. NET LOSS PER SHARE

Net loss per share

Basic and diluted net loss per share attributable to common stockholders was calculated as follows (in thousands, except share and per share amounts:):

	Period from March 8, 2019 (Inception) to December 31, 2019	Year Ended December 31, 2020
Numerator:		
Net loss	$ (8,302)	$ (18,010)
Net loss attributable to common stockholders	$ (8,302)	$ (18,010)
Denominator:		
Weighted average common stock outstanding - basic and diluted	15,000,000	15,004,616
Net loss per share attributable to common stockholders - basic and diluted	$ (0.55)	$ (1.20)

The Company's potential dilutive securities have been excluded from the computation of diluted net loss per share as the effect would be to reduce the net loss per share. Therefore, the weighted-average number of common shares outstanding used to calculate both basic and diluted net loss per share attributable to common stockholders is the same. The Company excluded the following potential common shares from the computation of diluted net loss per share attributable to common stockholders for the periods indicated because including them would have had an anti-dilutive effect:

	Period from March 8, 2019 (Inception) to December 31, 2019	Year Ended December 31, 2020
Series Z convertible preferred stock (as converted to common stock)	7,500,000	7,500,000
Series A convertible preferred stock (as converted to common stock)	22,797,830	22,797,830
Series A-1 convertible preferred stock (as converted to common stock)	14,940,170	14,940,170
Warrants to purchase common stock	3,245,235	3,245,235
Warrants to purchase Series A-1 convertible preferred stock (as converted to common stock)	462,067	462,067
Stock options to purchase common stock	2,116,713	2,285,843
Total	51,062,015	51,231,145

16. RETIREMENT PLAN

The Company has a retirement saving plan (the 401(k) Plan) that allows participating employees to defer a portion of their annual compensation on a pretax basis. The Company made no contributions to the 401(k) Plan for the period from March 8, 2019 (inception) to December 31, 2019 and for the year ended on December 31, 2020.

17. RELATED PARTY TRANSACTIONS

As discussed in Note 9, GATTACA obtained $1.5 million in notes from investors owning greater than 5% of the Company's outstanding stock and $0.3 million in notes from the Company's Chief Executive Officer in order to fund

operations of the Company. These notes and approximately $0.1 million of accrued interest were assigned to the Company and converted into shares of Series A convertible preferred stock as part of the Series A financing.

During the year ended December 31, 2020, the Company made payments to SGI of approximately $0.2 million for services relating to intellectual property matters, including patent filings and patent prosecution.

18. SUBSEQUENT EVENT

The Company has evaluated subsequent events through March 16, 2021, the date these consolidated financial statements were issued.

Long-Term Loan

In March 2021, the Company entered into a term loan facility with Silicon Valley Bank (SVB) pursuant to a Loan and Security Agreement with SVB as the lender (the 2021 Loan Agreement). Effective as of March 5, 2020, the Company repaid in full its borrowings under the 2019 Loan Agreement using part of the proceeds from a $15.0 million loan borrowed under the 2021 Loan Agreement. Under the 2021 Loan Agreement, the lender may elect to make a second term loan to the Company in a principal amount up to but not exceeding $5.0 million, as SVB may determine in its sole discretion. The loans bear interest at a per annum rate equal to the greater of (a) 4.0% above the prime rate and (b) 7.25%. The loans mature on January 1, 2024; provided, the loan maturity date will be extended by one year to January 1, 2025, if SVB is satisfied that the Company has achieved at least $4.0 million in trailing three-month instruments and reagents revenue for any three-month period occurring after March 4, 2021 but ending on or before December 31, 2021, subject to confirmatory lender calls. Payments on the term loans are interest-only until February 1, 2022, followed by equal principal payments and monthly accrued interest payments through the scheduled maturity date; provided, the interest-only period may be extended to August 1, 2022 if, on or before December 31, 2021, SVB is satisfied that the Company has achieved at least $4.0 million in trailing three-month product revenue for any three-month period occurring after March 4, 2021, but ending on or before December 31, 2021, subject to confirmatory lender calls.

In connection with the 2021 Loan Agreement, the Company issued to SVB a warrant to purchase a number of shares of preferred stock (the Preferred Warrant). The Preferred Warrant is exercisable into the number of preferred shares equal to $225,000 divided by the applicable warrant price. The Preferred Warrant also provides for the grant of additional shares upon the disbursement of an advance under the loan. Such additional shares will be equal to 1.5% of principal amount of the advances divided by the then applicable warrant price, as defined in the 2021 Loan Agreement. The Preferred Warrant is exercisable at either the original purchase price of the Series A-1 convertible preferred stock or the next convertible preferred stock financing if such round is closed on or before August 1, 2021. If the class of preferred which the warrant would be exercisable into is converted into common stock, the warrant holder would have the right to exercise the warrant for such number of common shares into which the preferred shares would have converted into had they been exercised prior to the conversion. Unless previously exercised, the Preferred Warrant will expire on March 4, 2031. No portion of the Preferred Warrant has been exercised.

Amendment to Certificate of Incorporation

On March 3, 2021, the Company's board of directors and stockholders approved an amendment to the Company's Amended and Restated Certificate of Incorporation to increase the authorized number of shares of Preferred Stock to 45,949,693 and authorized number of shares of Series A-1 Preferred Stock to 15,651,863.

2021 Equity Incentive Plan

On March 3, 2021, the Company's board of directors and stockholders approved the termination of the 2019 Plan and the adoption of the 2021 Plan. 4,300,000 common shares are reserved for issuance under the 2021 Plan.

On March 3, 2021, the Board of Directors of the Company authorized the issuance of an aggregate of 1,986,394 stock options to employees, at an exercise price of $1.46 per share under the 2021 Plan.

Shares

Codex DNA, Inc.

Common Stock

PRELIMINARY PROSPECTUS

Jefferies
Cowen
KeyBanc Capital Markets

, 2021

PART II
INFORMATION NOT REQUIRED IN THE PROSPECTUS

Item 13. Other Expenses of Issuance and Distribution

The following table sets forth the expenses to be incurred in connection with the offering described in this Registration Statement, other than underwriting discounts and commissions, all of which will be paid by us. All amounts are estimates except the SEC registration fee, the Financial Industry Regulatory Authority, Inc. (FINRA) filing fee and the Nasdaq listing fee.

	Amount Paid or to Be Paid
SEC registration fee	$ *
FINRA filing fee	*
Nasdaq listing fee	*
Printing and engraving expenses	*
Legal fees and expenses	*
Accounting fees and expenses	*
Transfer agent and registrar fees	*
Miscellaneous expenses	*
Total	$ *

* To be provided by amendment.

Item 14. Indemnification of Directors and Officers

Section 145 of the Delaware General Corporation Law empowers a corporation to indemnify its directors and officers and to purchase insurance with respect to liability arising out of their capacity or status as directors and officers, provided that the person acted in good faith and in a manner the person reasonably believed to be in our best interests, and, with respect to any criminal action, had no reasonable cause to believe the person's actions were unlawful. The Delaware General Corporation Law further provides that the indemnification permitted thereunder shall not be deemed exclusive of any other rights to which the directors and officers may be entitled under the corporation's bylaws, any agreement, a vote of stockholders or otherwise. The certificate of incorporation of the registrant to be in effect upon the completion of this offering provides for the indemnification of the registrant's directors and officers to the fullest extent permitted under the Delaware General Corporation Law. In addition, the bylaws of the registrant to be in effect upon the completion of this offering require the registrant to fully indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding (whether civil, criminal, administrative or investigative) by reason of the fact that such person is or was a director or officer of the registrant, or is or was a director or officer of the registrant serving at the registrant's request as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorney's fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with such action, suit or proceeding, to the fullest extent permitted by applicable law.

Section 102(b)(7) of the Delaware General Corporation Law permits a corporation to provide in its certificate of incorporation that a director of the corporation shall not be personally liable to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, except (1) for any breach of the director's duty of loyalty to the corporation or its stockholders, (2) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (3) for payments of unlawful dividends or unlawful stock repurchases or redemptions or (4) for any transaction from which the director derived an improper personal benefit. The registrant's certificate of incorporation to be in effect upon the completion of this offering provides that the registrant's directors shall not be personally liable to it or its stockholders for monetary damages for breach of fiduciary duty as a director

and that if the Delaware General Corporation Law is amended to authorize corporate action further eliminating or limiting the personal liability of directors, then the liability of the registrant's directors shall be eliminated or limited to the fullest extent permitted by the Delaware General Corporation Law, as so amended.

Section 174 of the Delaware General Corporation Law provides, among other things, that a director who willfully or negligently approves of an unlawful payment of dividends or an unlawful stock purchase or redemption may be held liable for such actions. A director who was either absent when the unlawful actions were approved, or dissented at the time, may avoid liability by causing his or her dissent to such actions to be entered in the books containing minutes of the meetings of the board of directors at the time such action occurred or immediately after such absent director receives notice of the unlawful acts.

As permitted by the Delaware General Corporation Law, the registrant has entered into separate indemnification agreements with each of the registrant's directors and executive officers which would require the registrant, among other things, to indemnify them against certain liabilities which may arise by reason of their status as directors or executive officers.

The registrant expects to obtain and maintain insurance policies under which its directors and officers are insured, within the limits and subject to the limitations of those policies, against certain expenses in connection with the defense of, and certain liabilities which might be imposed as a result of, actions, suits or proceedings to which they are parties by reason of being or having been directors or officers. The coverage provided by these policies may apply whether or not the registrant would have the power to indemnify such person against such liability under the provisions of the Delaware General Corporation Law.

These indemnification provisions and the indemnification agreements entered into between the registrant and the registrant's officers and directors may be sufficiently broad to permit indemnification of the registrant's officers and directors for liabilities (including reimbursement of expenses incurred) arising under the Securities Act.

The underwriting agreement between the registrant and the underwriters filed as Exhibit 1.1 to this registration statement provides for the indemnification by the underwriters of the registrant's directors and officers and certain controlling persons against specified liabilities, including liabilities under the Securities Act with respect to information provided by the underwriters specifically for inclusion in the registration statement. The investors' rights agreement with certain holders of our capital stock also provides for cross-indemnification in connection with the registration of the registrant's common stock on behalf of such holders.

Item 15. Recent Sales of Unregistered Securities

The following list sets forth information regarding all unregistered securities sold by us since January 1, 2017. No underwriters were involved in the sales and the certificates representing the securities sold and issued contain legends restricting transfer of the securities without registration under the Securities Act or an applicable exemption from registration.

Issuances of Convertible Preferred Stock

In 2018, we sold 7,500,000 shares of Series Z convertible preferred stock to our parent company, SGI, at a price of $ per share, for aggregate proceeds of $.

On August 27, 2019, we sold 22,797,831 shares of Series A convertible preferred stock to four accredited investors at a price of $0.96 per share, for aggregate proceeds of $21.3 million.

On December 19, 2019, we sold 14,940,170 shares of Series A-1 convertible preferred stock to three accredited investors at a price of $1.20 per share, for aggregate proceeds of $18.0 million.

Warrant Issuances

On March 8, 2019, we issued SGI a warrant to purchase common stock, equal to 6% of the shares of common stock issued and outstanding as of the time of exercise, which will automatically be exercised immediately prior to the consummation of an initial public offering. This warrant and participation right were later amended on August 27, 2019 to provide a warrant on 3,245,235 shares of common stock at an exercise price of $1.00.

On December 14, 2019, we issued SGI a warrant to purchase 462,067 shares of Series A-1 convertible preferred stock at an exercise price of $1.20 per share

Option Issuances

From March 8, 2019 to , 2021, we issued and sold to our officers, directors, employees, consultants and other service providers an aggregate of shares of our common stock upon the exercise of options under our equity compensation plans at exercise prices ranging from $0.13 to $1.46 per share, for a weighted-average exercise price of $ per share.

The offers, sales and issuances of the convertible preferred stock and warrants described in this Item 15 were exempt from registration under the Securities Act under Section 4(a)(2) of the Securities Act or Regulation D promulgated thereunder as transactions by an issuer not involving a public offering. The recipients of securities in each of these transactions acquired the securities for investment only and not with a view to or for sale in connection with any distribution thereof and appropriate legends were affixed to the securities issued in these transactions. Each of the recipients of securities in these transactions was an accredited person and had adequate access, through employment, business or other relationships, to information about the registrant.

The offers, sales and issuances of the options described in Item 15 were exempt from registration under the Securities Act under either (1) Rule 701 in that the transactions were under compensatory benefit plans and contracts relating to compensation as provided under Rule 701 or (2) Section 4(a)(2) of the Securities Act as transactions by an issuer not involving any public offering. The recipients of such securities were the registrant's employees, consultants or directors and received the securities under our 2019 Plan and 2021 Plan. The recipients of securities in each of these transactions represented their intention to acquire the securities for investment only and not with view to or for sale in connection with any distribution thereof and appropriate legends were affixed to the securities issued in these transactions.

Item 16. Exhibit and Financial Statement Schedules

(a) *Exhibits*.

See the Exhibit Index immediately preceding the signature page hereto for a list of exhibits filed as part of this registration statement on Form S-1, which Exhibit Index is incorporated herein by reference.

(b) Financial Statement Schedules.

Schedules have been omitted because the information required to be set forth therein is not applicable or is shown in the consolidated financial statements or notes thereto.

Item 17. Undertakings

The undersigned registrant hereby undertakes to provide to the underwriters at the closing specified in the underwriting agreements, certificates in such denominations and registered in such names as required by the underwriters to permit prompt delivery to each purchaser.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

The undersigned registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(2) For the purpose of determining any liability under the Securities Act, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

EXHIBIT INDEX

Exhibit Number	Description
1.1*	Form of Underwriting Agreement.
3.1	Amended and Restated Certificate of Incorporation of the Registrant, and amendments thereto, as currently in effect.
3.2*	Form of Amended and Restated Certificate of Incorporation of the Registrant, to be in effect upon the completion of this offering.
3.3	Amended and Restated Bylaws of the Registrant, as currently in effect.
3.4*	Form of Amended and Restated Bylaws of the Registrant, to be in effect upon the completion of this offering.
4.1	Amended and Restated Investors' Rights Agreement by and among the Registrant and certain of its stockholders, dated December 19, 2019.
4.2*	Specimen common stock certificate of the Registrant.
4.3*	Warrant to Purchase Stock issued to Silicon Valley Bank, dated as of March 4, 2021.
5.1*	Opinion of Wilson Sonsini Goodrich & Rosati, Professional Corporation.
10.1+*	Form of Indemnification Agreement between the Registrant and each of its directors and executive officers.
10.2+	2019 Stock Plan, as amended, and forms of agreement thereunder.
10.3+*	2021 Equity Incentive Plan, as amended, and forms of agreement thereunder.
10.4+*	2021 Stock Incentive Plan and forms of agreements thereunder, to be in effect upon the completion of this offering.
10.5+*	2021 Employee Stock Purchase Plan and forms of agreements thereunder, to be in effect upon the completion of this offering.
10.6+*	Form of Employment Letter between the Registrant and each executive officer.
10.7+*	Executive Incentive Compensation Plan.
10.8+*	Change in Control and Severance Policy.
10.9+*	Outside Director Compensation Policy.
10.10*	Office Lease, dated April 4, 2019, between the Registrant and BMR-Waples LP, as amended.
10.11*	Office Lease, dated May 1, 2015, between the Registrant and HCP Torrey Pines, LLC, as amended.
10.12#*	Supply Agreement, dated October 26, 2015, between the Registrant and Integrated DNA Technologies, Inc., as amended.
10.13#*	Loan and Security Agreement, dated March 4, 2021, between the Registrant and Silicon Valley Bank.
21.1	Subsidiaries of the Registrant
23.1*	Consent of Independent Registered Public Accounting Firm.
23.2*	Consent of Wilson Sonsini Goodrich & Rosati, Professional Corporation (included in Exhibit 5.1).
24.1*	Power of Attorney (see page II-6 to this Form S-1).

* To be filed by amendment.
\+ Indicates management contract or compensatory plan.
\# Portions of the exhibit have been omitted as the Registrant has determined that (i) the omitted information is not material; and (ii) the Registrant customarily and actually treats the omitted information as private or confidential.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the registrant has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of San Diego, State of California, on , 2021.

CODEX DNA, INC.

By: _____
Todd R. Nelson
President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Todd R. Nelson and Dimas Jimenez as his or her true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities to sign any or all amendments (including post-effective amendments) to this registration statement and any and all additional registration statements pursuant to Rule 462(b) of the Securities Act of 1933, as amended, and to file the same, with all exhibits thereto, and all other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as they, he or she might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agents or any of them, or their, his or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, this registration statement has been signed by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
Todd R. Nelson	President, Chief Executive Officer and Director *(Principal Executive Officer)*	, 2021
Dimas Jimenez	Corporate Controller *(Principal Financial and Accounting Officer)*	, 2021
William F. Snider	Director	, 2021
Sharon Kedar	Director	, 2021
Frank R. Witney	Director	, 2021

AMENDED AND RESTATED CERTIFICATE OF INCORPORATION OF SGI-DNA, INC.

(Pursuant to Sections 242 and 245 of the General Corporation Law of the State of Delaware)

SGI-DNA, Inc., a corporation organized and existing under and by virtue of the provisions of the General Corporation Law of the State of Delaware (the "**General Corporation Law**"),

DOES HEREBY CERTIFY:

1. That the name of this corporation is SGI-DNA, Inc., and that this corporation was originally incorporated pursuant to the General Corporation Law on March 24, 2011 under the name Synthetic Genomics Solutions, Inc.

2. That the Board of Directors of the corporation duly adopted resolutions proposing to amend and restate the Amended and Restated Certificate of Incorporation of this corporation, declaring said amendment and restatement to be advisable and in the best interests of this corporation and its stockholders, and authorizing the appropriate officers of this corporation to solicit the consent of the stockholders therefor, which resolution setting forth the proposed amendment and restatement is as follows:

RESOLVED, that the Amended and Restated Certificate of Incorporation of this corporation be amended and restated in its entirety to read as follows:

FIRST: The name of this corporation is SGI-DNA, Inc. (the "**Corporation**").

SECOND: The address of the registered office of the Corporation in the State of Delaware is 251 Little Falls Drive, in the City of Wilmington, County of New Castle, 19808. The name of its registered agent at such address is Corporation Service Company.

THIRD: The nature of the business or purposes to be conducted or promoted is to engage in any lawful act or activity for which corporations may be organized under the General Corporation Law.

FOURTH: The total number of shares of all classes of stock which the Corporation shall have authority to issue is (i) 72,000,000 shares of Common Stock, $0.0001 par value per share ("**Common Stock**") and (ii) 45,700,067 shares of Preferred Stock, $0.0001 par value per share ("**Preferred Stock**").

The following is a statement of the designations and the powers, privileges and rights, and the qualifications, limitations or restrictions thereof in respect of each class of capital stock of the Corporation.

A. COMMON STOCK

1. General. The voting, dividend and liquidation rights of the holders of the Common Stock are subject to and qualified by the rights, powers and preferences of the holders of the Preferred Stock set forth herein.

2. Voting. The holders of the Common Stock are entitled to one vote for each share of Common Stock held at all meetings of stockholders (and written actions in lieu of meetings). There shall be no cumulative voting. The number of authorized shares of Common Stock may be increased or decreased (but not below the number of shares thereof then outstanding) by (in addition to any vote of the holders of one or more series of Preferred Stock that may be required by the terms of this Amended and Restated Certificate of Incorporation (this "**Restated Certificate"))** the affirmative vote of the holders of shares of capital stock of the Corporation representing a majority of the votes represented by all outstanding shares of capital stock of the Corporation entitled to vote, irrespective of the provisions of Section 242(b)(2) of the General Corporation Law.

B. PREFERRED STOCK

15,402,237 shares of the authorized and unissued Preferred Stock of the Corporation are hereby designated "**Series A-1 Preferred Stock**", 22,797,830 shares of the authorized and unissued Preferred Stock of the Corporation are hereby designated "**Series A Preferred Stock**" and 7,500,000 shares of the authorized and unissued Preferred Stock of the Corporation are hereby designated "**Series Z Preferred Stock**", each with the following rights, preferences, powers, privileges and restrictions, qualifications and limitations. Unless otherwise indicated, references to "sections" or "Sections" in this Part B of this Article Fourth refer to sections and Sections of Part B of this Article Fourth. The Series A-1 Preferred Stock and the Series A Preferred Stock are sometimes collectively referred to herein as the "**Senior Preferred Stock**."

1. Dividends. From and after the date of the issuance of any shares of the Preferred Stock, the holders of such Preferred Stock shall be entitled to receive dividends, out of any assets legally available therefor, at the rate of eight percent (8%) of the applicable Original Issue Price (as defined below) per annum per outstanding share of Preferred Stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to such series of Preferred Stock) (the "**Preferred Dividend**"). The Preferred Dividend shall be payable only when, as, and if declared by the Board of Directors of the Corporation (the "**Board of Directors**") and shall be non-cumulative. The Corporation shall not declare, pay or set aside any dividends on shares of any other class or series of capital stock of the Corporation (other than dividends on shares of Common Stock payable in shares of Common Stock) unless (in addition to the obtaining of any consents required elsewhere in this Restated Certificate) the holders of the Preferred Stock then outstanding shall first receive, or simultaneously receive, a dividend on each outstanding share of Preferred Stock in an amount at least equal to (x) the Preferred Dividend (if any) plus (y) (i) in the case of a dividend on Common Stock or any class or series that is convertible into Common Stock, that dividend per share of Preferred Stock as would equal the product of (A) the dividend payable on each share of such class or series determined, if applicable, as if all shares of such class or series had been converted into Common Stock and (B) the number of shares of Common Stock

issuable upon conversion of a share of Preferred Stock, in each case calculated on the record date for determination of holders entitled to receive such dividend or (ii) in the case of a dividend on any class or series that is not convertible into Common Stock, at a rate per share of Preferred Stock determined by (A) dividing the amount of the dividend payable on each share of such class or series of capital stock by the original issuance price of such class or series of capital stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to such class or series) and (B) multiplying such fraction by an amount equal to the Original Issue Price (as defined below); provided that, if the Corporation declares, pays or sets aside, on the same date, a dividend on shares of more than one class or series of capital stock of the Corporation, the dividend payable to the holders of Preferred Stock pursuant to this Section 1 shall be calculated based upon the dividend on the class or series of capital stock that would result in the highest Preferred Stock dividend. The "**Series A-1 Original Issue Price**" shall mean $1.20177 per share, the "**Series A Original Issue Price**" shall mean $0.9588 per share, and the "**Series Z Original Issue Price**" shall mean $1.00 per share, each subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to the applicable series of Preferred Stock. The Series A-1 Original Issue Price, Series A Original Issue Price and the Series Z Original Issue Price are sometimes individually referred to herein as an "Original Issue Price" and collectively referred to herein as the "**Original Issue Prices**."

2. Liquidation, Dissolution or Winding Up; Certain Mergers, Consolidations and Asset Sales.

2.1 Preferential Payments to Holders of Preferred Stock.

2.1.1 Preferential Payments to Holders of Senior Preferred Stock. In the event of any voluntary or involuntary liquidation, dissolution or winding up of the Corporation, the holders of shares of Senior Preferred Stock then outstanding, on a pari passu basis, shall be entitled to be paid out of the assets of the Corporation available for distribution to its stockholders, and in the event of a Deemed Liquidation Event (as defined below), the holders of shares of Senior Preferred Stock then outstanding, on a pan passu basis, shall be entitled to be paid out of the consideration payable to stockholders in such Deemed Liquidation Event or out of the Available Proceeds (as defined below), as applicable, before any payment shall be made to the holders of Series Z Preferred Stock and Common Stock by reason of their ownership thereof, with respect to each share of Senior Preferred Stock, an amount per share equal to the greater of (i) two (2) times the applicable Original Issue Price, plus any dividends declared but unpaid thereon, or (ii) such amount per share as would have been payable had all shares of Senior Preferred Stock been converted into Common Stock pursuant to Section 4 hereof immediately prior to such liquidation, dissolution, winding up or Deemed Liquidation Event. If upon any such liquidation, dissolution or winding up of the Corporation or Deemed Liquidation Event, the assets of the Corporation available for distribution to its stockholders shall be insufficient to pay the holders of shares of Senior Preferred Stock the full amount to which they shall be entitled under the foregoing provisions of this Section 2.1.1, the holders of shares of Senior Preferred Stock shall share ratably in any distribution of the assets available for distribution in proportion to the respective amounts which would otherwise be payable in respect of the shares held by them upon such distribution if all amounts payable on or with respect to such shares were paid in

full. The aggregate amount which a holder of a share of Series A Preferred Stock is entitled to receive under this Section 2.1.1 is hereinafter referred to as the "**Series A Liquidation Amount**."

2.1.2 Second Preferential Payments to Holders of Series A-1 Preferred Stock. In the event of any voluntary or involuntary liquidation, dissolution or winding up of the Corporation and after payment in full of the amounts set forth in Section 2.1.1 above and provided that the holders of Series A-1 Preferred Stock did not receive an amount per share as would have been payable had all shares of Series A-1 Preferred Stock been converted into Common Stock pursuant to Section 4 hereof immediately prior to such liquidation, dissolution, winding up or Deemed Liquidation Event pursuant to clause (ii) of the first sentence of Section 2.1.1, the holders of shares of Series A-1 Preferred Stock then outstanding shall be entitled to be paid out of the assets of the Corporation available for distribution to its stockholders, and in the event of a Deemed Liquidation Event, the holders of shares of Series A-1 Preferred Stock then outstanding shall be entitled to be paid out of the consideration payable to stockholders in such Deemed Liquidation Event or out of the Available Proceeds, as applicable, before any additional payment shall be made to the holders of Series A Preferred Stock by reason of their ownership thereof and before any payment shall be made to the holders of Series Z Preferred Stock and Common Stock by reason of their ownership thereof, with respect to each share of Series A-1 Preferred Stock, an amount per share equal to 0.45 times the Series A-1 Original Issue Price. If upon any such liquidation, dissolution or winding up of the Corporation or Deemed Liquidation Event, the assets of the Corporation available for distribution to its stockholders shall be insufficient to pay the holders of shares of Series A-1 Preferred Stock the full amount to which they shall be entitled under the foregoing provisions of this Section 2.1.2, the holders of shares of Series A-1 Preferred Stock shall share ratably in any distribution of the assets available for distribution in proportion to the respective amounts which would otherwise be payable in respect of the shares held by them upon such distribution if all amounts payable on or with respect to such shares were paid in full. The aggregate amount which a holder of a share of Series A-1 Preferred Stock is entitled to receive under Section 2.1.1 and this Section 2.1.2 is hereinafter referred to as the "**Series A-1 Liquidation Amount**."

2.1.3 Preferential Payments to Holders of Series Z Preferred Stock. In the event of any voluntary or involuntary liquidation, dissolution or winding up of the Corporation and after payment in full of the amounts set forth in Section 2.1.1 and Section 2.1.2 above, the holders of shares of Series Z Preferred Stock then outstanding shall be entitled to be paid out of the remaining assets of the Corporation available for distribution to its stockholders, and in the event of a Deemed Liquidation Event, the holders of shares of Series Z Preferred Stock then outstanding shall be entitled to be paid out of the remaining consideration payable to stockholders in such Deemed Liquidation Event or out of the Available Proceeds, as applicable, before any payment shall be made to the holders of Common Stock by reason of their ownership thereof, with respect to each share of Series Z Preferred Stock, an amount per share equal to the greater of (0 the Series Z Original Issue Price, plus any dividends declared but unpaid thereon, or (ii) such amount per share as would have been payable had all shares of Series Z Preferred Stock been converted into Common Stock pursuant to Section 4 hereof immediately prior to such liquidation, dissolution, winding up or Deemed Liquidation Event (the amount payable pursuant

to this sentence is hereinafter referred to as the "**Series Z Liquidation Amount**"). If upon any such liquidation, dissolution or winding up of the Corporation or Deemed Liquidation Event, the remaining assets of the Corporation available for distribution to its stockholders shall be insufficient to pay the holders of shares of Series Z Preferred Stock the full amount to which they shall be entitled under the foregoing provisions of this Section 2.1.3, the holders of shares of Series Z Preferred Stock shall share ratably in any distribution of the assets available for distribution in proportion to the respective amounts which would otherwise be payable in respect of the shares held by them upon such distribution if all amounts payable on or with respect to such shares were paid in full. The Series A-1 Liquidation Amount, the Series A Liquidation Amount and the Series Z Liquidation Amount are sometimes individually referred to herein as an "**Liquidation Amount**" and collectively referred to herein as the "**Liquidation Amounts**."

2.2 Payments to Holders of Common Stock. In the event of any voluntary or involuntary liquidation, dissolution or winding up of the Corporation, after the payment in full of all Liquidation Amounts required to be paid to the holders of shares of Preferred Stock, the remaining assets of the Corporation available for distribution to its stockholders or, in the case of a Deemed Liquidation Event, the consideration not payable to the holders of shares of Preferred pursuant to Section 2.1or the remaining Available Proceeds, as the case may be, shall be distributed among the holders of shares of Common Stock, pro rata based on the number of shares held by each such holder.

2.3 Deemed Liquidation Events.

2.3.1 Definition. Each of the following events shall be considered a "**Deemed Liquidation Event**" unless the holders of a majority of the outstanding shares of Preferred Stock (the "**Requisite Holders**"), voting together as a single class on an as converted basis, elect otherwise by written notice sent to the Corporation at least five (5) business days prior to the effective date of any such event:

(a) a merger or consolidation in which

(i) the Corporation is a constituent party or

(ii) a subsidiary of the Corporation is a constituent party and the Corporation issues shares of its capital stock pursuant to such merger or consolidation, except any such merger or consolidation involving the Corporation or a subsidiary in which the shares of capital stock of the Corporation outstanding immediately prior to such merger or consolidation continue to represent, or are converted into or exchanged for shares of capital stock that represent, immediately following such merger or consolidation, a majority, by voting power, of the capital stock of (1) the surviving or resulting corporation; or (2) if the surviving or resulting corporation is a wholly owned subsidiary of another corporation immediately following such merger or consolidation, the parent corporation of such surviving or resulting corporation; or

(b) (1) the sale, exclusive lease, transfer, exclusive license or other disposition, in a single transaction or series of related transactions, by the Corporation or any subsidiary of the Corporation of all or substantially all the assets of the

Corporation and its subsidiaries taken as a whole, or (2) the sale or disposition (whether by merger, consolidation or otherwise, and whether in a single transaction or a series of related transactions) of one or more subsidiaries of the Corporation if substantially all of the assets of the Corporation and its subsidiaries taken as a whole are held by such subsidiary or subsidiaries, except where such sale, lease, transfer, exclusive license or other disposition is to a wholly owned subsidiary of the Corporation.

2.3.2 Effecting a Deemed Liquidation Event.

(a) The Corporation shall not have the power to effect a Deemed Liquidation Event referred to in Section 2.3.1(a)(i) unless the agreement or plan of merger or consolidation for such transaction (the "**Merger Agreement**") provides that the consideration payable to the stockholders of the Corporation in such Deemed Liquidation Event shall be paid to the holders of capital stock of the Corporation in accordance with Sections 2.1 and 2.2.

(b) In the event of a Deemed Liquidation Event referred to in Section 2.3.1(a)(ii) or 2.3.1(b) if the Corporation does not effect a dissolution of the Corporation under the General Corporation Law within thirty (30) days after such Deemed Liquidation Event, then (i) the Corporation shall send a written notice to each holder of Preferred Stock no later than the thirtieth (30th) day after the Deemed Liquidation Event advising such holders of their right (and the requirements to be met to secure such right) pursuant to the terms of the following clause; (ii) to require the redemption of such shares of Preferred Stock, and (iii) unless the Requisite Holders request otherwise in a written instrument delivered to the Corporation, the Corporation shall use the consideration received by the Corporation for such Deemed Liquidation Event (net of any retained liabilities associated with the assets sold or technology licensed, as determined in good faith by the Board of Directors of the Corporation), together with any other assets of the Corporation available for distribution to its stockholders, all to the extent permitted by Delaware law governing distributions to stockholders (the "**Available Proceeds**"), on the ninetieth (90th) day after such Deemed Liquidation Event, to redeem all outstanding shares of Series A-1 Preferred Stock at a price per share equal to the Series A-1 Liquidation Amount, to redeem all outstanding shares of Series A Preferred Stock at a price per share equal to the Series A Liquidation Amount and to redeem all outstanding shares of Series Z Preferred Stock at a price per share equal to the Series Z Liquidation Amount. Notwithstanding the foregoing, in the event of a redemption pursuant to the preceding sentence, if the Available Proceeds are not sufficient to redeem all outstanding shares of Senior Preferred Stock and Series Z Preferred Stock, the Corporation shall redeem a pro rata portion of each holder's shares of Senior Preferred Stock to the fullest extent of such Available Proceeds, based on the respective amounts which would otherwise be payable in respect of the shares to be redeemed if the Available Proceeds were sufficient to redeem all such shares, and shall redeem the remaining shares as soon as it may lawfully do so under Delaware law governing distributions to stockholders. Following the redemption of all shares of Senior Preferred Stock pursuant to the preceding sentence, the Corporation shall redeem a pro rata portion of each holder's shares of Series Z Preferred Stock to the fullest extent of the remaining Available Proceeds, based on the respective amounts which would otherwise be payable in respect of the shares to be redeemed if the Available Proceeds were sufficient to redeem all such shares, and shall redeem the remaining

shares as soon as it may lawfully do so under Delaware law governing distributions to stockholders. Prior to the distribution or redemption provided for in this Section 2.3.2(b), the Corporation shall not expend or dissipate the consideration received for such Deemed Liquidation Event, except to discharge expenses incurred in connection with such Deemed Liquidation Event or in the ordinary course of business.

(c) Surrender of Certificates; Payment. On or before the redemption effected pursuant to Section 2.3.2(b), each holder of shares of Preferred Stock to be redeemed on such date, unless such holder has previously exercised his, her or its right to convert such shares as provided in Section 4, shall surrender the certificate or certificates representing such shares (or, if such registered holder alleges that such certificate has been lost, stolen or destroyed, a lost certificate affidavit and agreement reasonably acceptable to the Corporation to indemnify the Corporation against any claim that may be made against the Corporation on account of the alleged loss, theft or destruction of such certificate) to the Corporation, as requested in writing by the Corporation, and thereupon the portion of such Available Proceeds payable with respect to such shares shall be payable to the order of the person whose name appears on such certificate or certificates as the owner thereof.

2.3.3 Amount Deemed Paid or Distributed. The amount deemed paid or distributed to the holders of capital stock of the Corporation upon any such merger, consolidation, sale, transfer, exclusive license, other disposition or redemption shall be the cash or the value of the property, rights or securities to be paid or distributed to such holders pursuant to such Deemed Liquidation Event. The value of such property, rights or securities shall be determined in good faith by the Board of Directors.

2.3.4 Allocation of Escrow and Contingent Consideration. In the event of a Deemed Liquidation Event pursuant to Section 2.3.1(a)(i) if any portion of the consideration payable to the stockholders of the Corporation is payable only upon satisfaction of contingencies (the "**Additional Consideration**"), the Merger Agreement shall provide that (a) the portion of such consideration that is not Additional Consideration (such portion, the "**Initial Consideration**") shall be allocated among the holders of capital stock of the Corporation in accordance with Sections 2.1 and 2.2 as if the Initial Consideration were the only consideration payable in connection with such Deemed Liquidation Event; and (b) any Additional Consideration which becomes payable to the stockholders of the Corporation upon satisfaction of such contingencies shall be allocated among the holders of capital stock of the Corporation in accordance with Sections 2.1 and 2.2 after taking into account the previous payment of the Initial Consideration as part of the same transaction. For the purposes of this Section 2.3.4, consideration placed into escrow or retained as a holdback to be available for satisfaction of indemnification or similar obligations in connection with such Deemed Liquidation Event shall be deemed to be Additional Consideration.

3. Voting.

3.1 General. On any matter presented to the stockholders of the Corporation for their action or consideration at any meeting of stockholders of the Corporation (or by written consent of stockholders in lieu of meeting), each holder of outstanding shares of Preferred Stock shall be entitled to cast the number of votes equal to the number of whole shares

of Common Stock into which the shares of Preferred Stock held by such holder are convertible as of the record date for determining stockholders entitled to vote on such matter. Except as provided by law or by the other provisions of this Restated Certificate, holders of Preferred Stock shall vote together with the holders of Common Stock as a single class and on an as-converted to Common Stock basis.

3.2 Election of Directors. The holders of record of the shares of Series A Preferred Stock, exclusively and together as a single class, shall be entitled to elect one (1) director of the Corporation (the "**Series A Director**"). The holders of record of the shares of Common Stock, exclusively and as a separate class, shall be entitled to elect one (1) director of the Corporation (the "**Common Director**"). Any director elected as provided in the preceding sentences may be removed without cause by, and only by, the affirmative vote of the holders of the shares of the class or series of capital stock entitled to elect such director or directors, given either at a special meeting of such stockholders duly called for that purpose or pursuant to a written consent of stockholders. If the holders of shares of Series A Preferred Stock or Common Stock, as the case may be, fail to elect a sufficient number of directors to fill all directorships for which they are entitled to elect directors, voting exclusively and as a separate class (and with respect to the Series A Preferred Stock, on an as converted basis), pursuant to this Section 3.2, then any directorship not so filled shall remain vacant until such time as the requisite holders of the Series A Preferred Stock or Common Stock, as the case may be, elect a person to fill such directorship by vote or written consent in lieu of a meeting; and no such directorship may be filled by stockholders of the Corporation other than by the stockholders of the Corporation that are entitled to elect a person to fill such directorship, voting exclusively and as a separate class (and with respect to the Series A Preferred Stock, on an as converted basis). The holders of record of the shares of Common Stock and of any other class or series of voting stock (including the Preferred Stock), exclusively and voting together as a single class (and with respect to the Preferred Stock, on an as converted basis), shall be entitled to elect the balance of the total number of directors of the Corporation. At any meeting held for the purpose of electing a director, the presence in person or by proxy of the holders of a majority of the outstanding shares of the class or series entitled to elect such director shall constitute a quorum for the purpose of electing such director. Except as otherwise provided in this Section 3.2, a vacancy in any directorship filled by the holders of any class or series shall be filled only by vote or written consent in lieu of a meeting of the holders of such class or series or by any remaining director or directors elected by the holders of such class or series pursuant to this Section 3.2.

Any director may be removed during his or her term of office, either with or without cause, by, and only by, the affirmative vote of the holders of the shares of the class or series of stock entitled to elect such director or directors, given either at a special meeting of such stockholders duly called for that purpose or pursuant to a written consent of stockholders, and any vacancy thereby created may be filled by the holders of that class or series of stock represented at the meeting or pursuant to written consent.

3.3 Preferred Stock Protective Provisions. As long as 7,574,458 shares of Senior Preferred Stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to the Senior Preferred Stock) are outstanding, the Corporation shall not, either directly or indirectly by amendment,

merger, consolidation or otherwise, do any of the following without (in addition to any other vote required by law or this Restated Certificate) the written consent or affirmative vote of the Requisite Holders, given in writing or by vote at a meeting, consenting or voting (as the case may be) together as a single class on an as converted basis, and any such act or transaction entered into without such consent or vote shall be null and void ab initio, and of no force or effect.

3.3.1 liquidate, dissolve or wind-up the business and affairs of the Corporation, effect any merger or consolidation or any other Deemed Liquidation Event, or consent to any of the foregoing;

3.3.2 amend, alter or repeal any provision of this Restated Certificate or Bylaws of the Corporation (the "**Bylaws**");

3.3.3 alter, change or waive the rights, preferences or privileges of the Preferred Stock;

3.3.4 create, or authorize the creation of, or issue or obligate itself to issue shares of, any additional class or series of capital stock unless the same ranks junior to the Preferred Stock in all respects, including with respect to the distribution of assets upon liquidation the payment of dividends and redemption rights;

3.3.5 increase or decrease the authorized number of shares of Preferred Stock or Common Stock;

3.3.6 purchase or redeem (or permit any subsidiary to purchase or redeem) or pay or declare any dividend or make any distribution on, any shares of capital stock of the Corporation other than (i) dividends or other distributions payable on the Common Stock solely in the form of additional shares of Common Stock, and (ii) repurchases of stock from former employees, officers, directors, consultants or other persons who performed services for the Corporation or any subsidiary in connection with the cessation of such employment or service at a purchase price no greater than the original purchase price thereof;

3.3.7 create, or hold capital stock in, any subsidiary that is not wholly owned (either directly or through one or more other subsidiaries) by the Corporation, or permit any subsidiary to create, or authorize the creation of, or issue or obligate itself to issue, any shares of any class or series of capital stock, or sell, transfer or otherwise dispose of any capital stock of any direct or indirect subsidiary of the Corporation, or permit any direct or indirect subsidiary to sell, lease, transfer, exclusively license or otherwise dispose (in a single transaction or series of related transactions) of all or substantially all of the assets of such subsidiary;

3.3.8 increase or decrease the authorized number of directors constituting the Board of Directors;

3.3.9 increase the number of shares of Common Stock reserved under the Corporation's existing stock option plan or any other employee stock option plan, or create any new stock plan or stock option plan;

3.3.10 effect any transactions with directors, stockholders, senior management, or known affiliates or related parties (other than arm's length agreements on reasonable terms approved by the Board of Directors, including the Series A Director); or

3.3.11 effect any material change in the activity or industry of the business of the Corporation.

4. Optional Conversion. The holders of the Preferred Stock shall have conversion rights as follows (the "**Conversion Rights**"):

4.1 Right to Convert. Each share of Preferred Stock shall be convertible, at the option of the holder thereof, at any time and from time to time, and without the payment of additional consideration by the holder thereof, into such number of fully paid and non-assessable shares of Common Stock as is determined by dividing the applicable Original Issue Price by the applicable Conversion Price (as defined below) for such series of Preferred Stock in effect at the time of conversion. The "**Conversion Price**" for each series of Preferred Stock in effect at the of conversion shall initially mean the applicable Original Issue Price for such series of Preferred Stock. Such initial Conversion Price, and the rate at which shares of each series of Preferred Stock may be converted into shares of Common Stock, shall be subject to adjustment as provided below.

4.2 Fractional Shares. No fractional shares of Common Stock shall be issued upon conversion of the Preferred Stock. In lieu of any fractional shares to which the holder would otherwise be entitled, the Corporation shall pay cash equal to such fraction multiplied by the fair market value of a share of Common Stock as determined in good faith by the Board of Directors. Whether or not fractional shares would be issuable upon such conversion shall be determined on the basis of the total number of shares of Preferred Stock the holder is at the time converting into Common Stock and the aggregate number of shares of Common Stock issuable upon such conversion.

4.3 Mechanics of Conversion.

4.3.1 Notice of Conversion. In order for a holder of Preferred Stock to voluntarily convert shares of Preferred Stock into shares of Common Stock, such holder shall (a) provide written notice to the Corporation's transfer agent at the office of the transfer agent for the Preferred Stock (or at the principal office of the Corporation if the Corporation serves as its own transfer agent) that such holder elects to convert all or any number of such holder's shares of Preferred Stock and, if applicable, any event on which such conversion is contingent and (b), if such holder's shares are certificated, surrender the certificate or certificates for such shares of Preferred Stock (or, if such registered holder alleges that such certificate has been lost, stolen or destroyed, a lost certificate affidavit and agreement reasonably acceptable to the Corporation to indemnify the Corporation against any claim that may be made against the Corporation on account of the alleged loss, theft or destruction of such certificate), at the office of the transfer agent for the Preferred Stock (or at the principal office of the Corporation if the Corporation serves as its own transfer agent). Such notice shall state such holder's name or the names of the nominees in which such holder wishes the shares of Common Stock to be issued. If required by the Corporation, any certificates surrendered for conversion shall be endorsed or

accompanied by a written instrument or instruments of transfer, in form satisfactory to the Corporation, duly executed by the registered holder or his, her or its attorney duly authorized in writing. The close of business on the date of receipt by the transfer agent (or by the Corporation if the Corporation serves as its own transfer agent) of such notice and, if applicable, certificates (or lost certificate affidavit and agreement) shall be the time of conversion (the "**Conversion Time**"), and the shares of Common Stock issuable upon conversion of the specified shares shall be deemed to be outstanding of record as of such date. The Corporation shall, as soon as practicable after the Conversion Time (i) issue and deliver to such holder of Preferred Stock, or to his, her or its nominees, a certificate or certificates (or notice of issuance if such shares are uncertificated) for the number of full shares of Common Stock issuable upon such conversion in accordance with the provisions hereof and a certificate for the number (if any) of the shares of Preferred Stock represented by the surrendered certificate (if any) that were not converted into Common Stock, (ii) pay in cash such amount as provided in Section 4.2 in lieu of any fraction of a share of Common Stock otherwise issuable upon such conversion and (iii) pay all declared but unpaid dividends on the shares of Preferred Stock converted.

4.3.2 Reservation of Shares. The Corporation shall at all times when the Preferred Stock shall be outstanding, reserve and keep available out of its authorized but unissued capital stock, for the purpose of effecting the conversion of the Preferred Stock, such number of its duly authorized shares of Common Stock as shall from time to time be sufficient to effect the conversion of all outstanding Preferred Stock; and if at any time the number of authorized but unissued shares of Common Stock shall not be sufficient to effect the conversion of all then outstanding shares of the Preferred Stock, the Corporation shall take such corporate action as may be necessary to increase its authorized but unissued shares of Common Stock to such number of shares as shall be sufficient for such purposes, including, without limitation, engaging in best efforts to obtain the requisite stockholder approval of any necessary amendment to this Restated Certificate. Before taking any action which would cause an adjustment reducing the Conversion Price of a series of Preferred Stock below the then par value of the shares of Common Stock issuable upon conversion of the Preferred Stock, the Corporation will take any corporate action which may, in the opinion of its counsel, be necessary in order that the Corporation may validly and legally issue fully paid and non-assessable shares of Common Stock at such adjusted Conversion Price.

4.3.3 Effect of Conversion. All shares of Preferred Stock which shall have been surrendered for conversion as herein provided shall no longer be deemed to be outstanding and all rights with respect to such shares shall immediately cease and terminate at the Conversion Time, except only the right of the holders thereof to receive shares of Common Stock in exchange therefor, to receive payment in lieu of any fraction of a share otherwise issuable upon such conversion as provided in Section 4.2 and to receive payment of any dividends declared but unpaid thereon. Any shares of Preferred Stock so converted shall be retired and cancelled and may not be reissued as shares of such series, and the Corporation may thereafter take such appropriate action (without the need for stockholder action) as may be necessary to reduce the authorized number of shares of Preferred Stock accordingly.

4.3.4 No Further Adjustment. Upon any such conversion, no adjustment to the Conversion Price of the applicable series of Preferred Stock shall be made for

any declared but unpaid dividends on the Preferred Stock surrendered for conversion or on the Common Stock delivered upon conversion.

4.3.5 Taxes. The Corporation shall pay any and all issue and other similar taxes that may be payable in respect of any issuance or delivery of shares of Common Stock upon conversion of shares of Preferred Stock pursuant to this Section 4. The Corporation shall not, however, be required to pay any tax which may be payable in respect of any transfer involved in the issuance and delivery of shares of Common Stock in a name other than that in which the shares of Preferred Stock so converted were registered, and no such issuance or delivery shall be made unless and until the person or entity requesting such issuance has paid to the Corporation the amount of any such tax or has established, to the satisfaction of the Corporation, that such tax has been paid.

4.4. Adjustments to Conversion Price for Diluting Issues.

4.4.1 Special Definitions. For purposes of this Article Fourth, the following definitions shall apply:

(a) "**Option**" shall mean rights, options or warrants to subscribe for, purchase or otherwise acquire Common Stock or Convertible Securities.

(b) "**Original Issue Date**" shall mean the date on which the first share of Series A-1 Preferred Stock was issued.

(c) "**Convertible Securities**" shall mean any evidences of indebtedness, shares or other securities directly or indirectly convertible into or exchangeable for Common Stock, but excluding Options.

(d) "**Additional Shares of Common Stock**" shall mean all shares of Common Stock issued (or, pursuant to Section 4.4.3 below, deemed to be issued) by the Corporation after the Original Issue Date, other than (1) the following shares of Common Stock and (2) shares of Common Stock deemed issued pursuant to the following Options and Convertible Securities (clauses (1) and (2), collectively, "**Exempted Securities**"):

(i) shares of Series A-1 Preferred Stock sold and issued pursuant to a Series A-1 Preferred Stock Purchase Agreement, dated on or about the date hereof;

(ii) shares of Common Stock issued upon conversion of the Preferred Stock;

(iii) shares of Common Stock, Options or Convertible Securities issued as a dividend or distribution on Preferred Stock;

(iv) shares of Common Stock, Options or Convertible Securities issued by reason of a dividend, stock split, split-up or other distribution on shares of Common Stock that is covered by Section 4.5, 4.6, 4.7or 4.8;

(v) shares of Common Stock or Options issued to employees, officers or directors of, or consultants or advisors to, the Corporation or any of its subsidiaries pursuant to a plan, agreement or arrangement approved by the Board of Directors;

(vi) shares of Common Stock or Convertible Securities actually issued upon the exercise of Options or shares of Common Stock actually issued upon the conversion or exchange of Convertible Securities, in each case provided such issuance is pursuant to the terms of such Option or Convertible Security;

(vii) shares of Common Stock, Options or Convertible Securities issued to banks, equipment lessors or other financial institutions, or to real property lessors (including leasing companies), or to other providers of goods and services, pursuant to a debt financing, equipment leasing or real property leasing transaction approved by the Board of Directors;

(viii) shares of Common Stock, Options or Convertible Securities issued to suppliers or third-party service providers as consideration for the provision of goods or services pursuant to transactions approved by the Board of Directors, including the approval of the Series A Director;

(ix) shares of Common Stock, Options or Convertible Securities issued as acquisition consideration pursuant to the acquisition of another corporation by the Corporation by merger, purchase of substantially all of the assets or other reorganization or to a joint venture agreement, provided that such issuances are approved by the Board of Directors, including the approval of the Series A Director;

(x) shares of Common Stock, Options or Convertible Securities issued as consideration for sponsored research, collaboration, technology license, development, OEM, marketing or other similar agreements or strategic partnerships approved by the Board of Directors, including the approval of the Series A Director;

(xi) shares of Common Stock issued in a registered public offering under the Securities Act of 1933, as amended (the "**Securities Act**"), pursuant to which all outstanding Preferred Stock are automatically converted into Common Stock.

4.4.2 No Adjustment of Conversion Price. No adjustment in any Conversion Price of the Preferred Stock shall be made as the result of the issuance or deemed issuance of Additional Shares of Common Stock if the Corporation receives written notice from the Requisite Holders agreeing that no such adjustment shall be made as the result of the issuance or deemed issuance of such Additional Shares of Common Stock. No adjustment in the Conversion Price of a series of Preferred Stock shall be made as the result of the issuance or deemed issuance of Additional Shares of Common Stock if the Corporation receives written notice from the holders of a majority of the then outstanding shares of such series of Preferred Stock agreeing that no such adjustment shall be made as the result of the issuance or deemed issuance of such Additional Shares of Common Stock.

4.4.3 Deemed Issue of Additional Shares of Common Stock.

(a) If the Corporation at any time or from time to time after the Original Issue Date shall issue any Options or Convertible Securities (excluding Options or Convertible Securities which are themselves Exempted Securities) or shall fix a record date for the determination of holders of any class of securities entitled to receive any such Options or Convertible Securities, then the maximum number of shares of Common Stock (as set forth in the instrument relating thereto, assuming the satisfaction of any conditions to exercisability, convertibility or exchangeability but without regard to any provision contained therein for a subsequent adjustment of such number) issuable upon the exercise of such Options or, in the case of Convertible Securities and Options therefor, the conversion or exchange of such Convertible Securities, shall be deemed to be Additional Shares of Common Stock issued as of the time of such issue or, in case such a record date shall have been fixed, as of the close of business on such record date.

(b) If the terms of any Option or Convertible Security, the issuance of which resulted in an adjustment to the Conversion Price pursuant to the terms of Section 4.4.4, are revised as a result of an amendment to such terms or any other adjustment pursuant to the provisions of such Option or Convertible Security (but excluding automatic adjustments to such terms pursuant to anti-dilution or similar provisions of such Option or Convertible Security) to provide for either (1) any increase or decrease in the number of shares of Common Stock issuable upon the exercise, conversion and/or exchange of any such Option or Convertible Security or (2) any increase or decrease in the consideration payable to the Corporation upon such exercise, conversion and/or exchange, then, effective upon such increase or decrease becoming effective, the Conversion Price computed upon the original issue of such Option or Convertible Security (or upon the occurrence of a record date with respect thereto) shall be readjusted to such Conversion Price as would have obtained had such revised terms been in effect upon the original date of issuance of such Option or Convertible Security. Notwithstanding the foregoing, no readjustment pursuant to this clause (b) shall have the effect of increasing the Conversion Price to an amount which exceeds the lower of (i) the Conversion Price in effect immediately prior to the original adjustment made as a result of the issuance of such Option or Convertible Security, or (ii) the Conversion Price that would have resulted from any issuances of Additional Shares of Common Stock (other than deemed issuances of Additional Shares of Common Stock as a result of the issuance of such Option or Convertible Security) between the original adjustment date and such readjustment date.

(c) If the terms of any Option or Convertible Security (excluding Options or Convertible Securities which are themselves Exempted Securities), the issuance of which did not result in an adjustment to the Conversion Price pursuant to the terms of Section 4.4.4 (either because the consideration per share (determined pursuant to Section 4.4.5) of the Additional Shares of Common Stock subject thereto was equal to or greater than the Conversion Price then in effect, or because such Option or Convertible Security was issued before the Original Issue Date), are revised after the Original Issue Date as a result of an amendment to such terms or any other adjustment pursuant to the provisions of such Option or Convertible Security (but excluding automatic adjustments to such terms pursuant to anti-dilution or similar provisions of such Option or Convertible Security) to provide for either (1)

any increase in the number of shares of Common Stock issuable upon the exercise, conversion or exchange of any such Option or Convertible Security or (2) any decrease in the consideration payable to the Corporation upon such exercise, conversion or exchange, then such Option or Convertible Security, as so amended or adjusted, and the Additional Shares of Common Stock subject thereto (determined in the manner provided in Section 4.4.3(a) shall be deemed to have been issued effective upon such increase or decrease becoming effective.

(d) Upon the expiration or termination of any unexercised Option or unconverted or unexchanged Convertible Security (or portion thereof) which resulted (either upon its original issuance or upon a revision of its terms) in an adjustment to the Conversion Price pursuant to the terms of Section 4.4.4, the Conversion Price shall be readjusted to such Conversion Price as would have obtained had such Option or Convertible Security (or portion thereof) never been issued.

(e) If the number of shares of Common Stock issuable upon the exercise, conversion and/or exchange of any Option or Convertible Security, or the consideration payable to the Corporation upon such exercise, conversion and/or exchange, is calculable at the time such Option or Convertible Security is issued or amended but is subject to adjustment based upon subsequent events, any adjustment to the Conversion Price provided for in this Section 4.4.3 shall be effected at the time of such issuance or amendment based on such number of shares or amount of consideration without regard to any provisions for subsequent adjustments (and any subsequent adjustments shall be treated as provided in clauses (b) and (c) of this Section 4.4.3). If the number of shares of Common Stock issuable upon the exercise, conversion and/or exchange of any Option or Convertible Security, or the consideration payable to the Corporation upon such exercise, conversion and/or exchange, cannot be calculated at all at the time such Option or Convertible Security is issued or amended, any adjustment to the Conversion Price that would result under the terms of this Section 4.4.3 at the time of such issuance or amendment shall instead be effected at the time such number of shares and/or amount of consideration is first calculable (even if subject to subsequent adjustments), assuming for purposes of calculating such adjustment to the Conversion Price that such issuance or amendment took place at the time such calculation can first be made.

4.4.4 Adjustment of Conversion Price Upon Issuance of Additional Shares of Common Stock. In the event the Corporation shall at any time after the Original Issue Date issue Additional Shares of Common Stock (including Additional Shares of Common Stock deemed to be issued pursuant to Section 4.4.3), without consideration or for a consideration per share less than the Conversion Price in effect immediately prior to such issuance or deemed issuance, then the Conversion Price shall be reduced, concurrently with such issue, to a price (calculated to the nearest one-hundredth of a cent) determined in accordance with the following formula:

$$CP_2 = CP_1 * (A + B) \div (A + C).$$

For purposes of the foregoing formula, the following definitions shall apply:

(a) "CP_2" shall mean the applicable Conversion Price in effect immediately after such issuance or deemed issuance of Additional Shares of Common Stock;

(b) "CP_1" shall mean the applicable Conversion Price in effect immediately prior to such issuance or deemed issuance of Additional Shares of Common Stock;

(c) "A" shall mean the number of shares of Common Stock outstanding immediately prior to such issuance or deemed issuance of Additional Shares of Common Stock (treating for this purpose as outstanding all shares of Common Stock issuable upon exercise of Options outstanding immediately prior to such issuance or deemed issuance or upon conversion or exchange of Convertible Securities (including the Preferred Stock) outstanding (assuming exercise of any outstanding Options therefor) immediately prior to such issue);

(d) "B" shall mean the number of shares of Common Stock that would have been issued if such Additional Shares of Common Stock had been issued or deemed issued at a price per share equal to CP_1 (determined by dividing the aggregate consideration received by the Corporation in respect of such issue by CP_1; and

(e) "C" shall mean the number of such Additional Shares of Common Stock issued in such transaction.

4.4.5 Determination of Consideration. For purposes of this Section 4.4, the consideration received by the Corporation for the issuance or deemed issuance of any Additional Shares of Common Stock shall be computed as follows:

(a) Cash and Property: Such consideration shall:

(i) insofar as it consists of cash, be computed at the aggregate amount of cash received by the Corporation, excluding amounts paid or payable for accrued interest;

(ii) insofar as it consists of property other than cash, be computed at the fair market value thereof at the time of such issue, as determined in good faith by the Board of Directors; and

(iii) in the event Additional Shares of Common Stock are issued together with other shares or securities or other assets of the Corporation for consideration which covers both, be the proportion of such consideration so received, computed as provided in clauses (i) and (ii) above, as determined in good faith by the Board of Directors.

(b) Options and Convertible Securities. The consideration per share received by the Corporation for Additional Shares of Common Stock deemed to have been issued pursuant to Section 4.4.3, relating to Options and Convertible Securities, shall be determined by dividing:

(i) The total amount, if any, received or receivable by the Corporation as consideration for the issue of such Options or Convertible Securities, plus the minimum aggregate amount of additional consideration (as set forth in the instruments relating thereto, without regard to any provision contained therein for a subsequent adjustment of such consideration) payable to the Corporation upon the exercise of such Options or the conversion or exchange of such Convertible Securities, or in the case of Options for Convertible Securities, the exercise of such Options for Convertible Securities and the conversion or exchange of such Convertible Securities, by

(ii) the maximum number of shares of Common Stock (as set forth in the instruments relating thereto, without regard to any provision contained therein for a subsequent adjustment of such number) issuable upon the exercise of such Options or the conversion or exchange of such Convertible Securities, or in the case of Options for Convertible Securities, the exercise of such Options for Convertible Securities and the conversion or exchange of such Convertible Securities.

4.4.6 Multiple Closing Dates. In the event the Corporation shall issue on more than one date Additional Shares of Common Stock that are a part of one transaction or a series of related transactions and that would result in an adjustment to the Conversion Price of a series of Preferred Stock pursuant to the terms of Section 4.4.4, and such issuance dates occur within a period of no more than ninety (90) days from the first such issuance to the final such issuance, then, upon the final such issuance, the Conversion Price shall be readjusted to give effect to all such issuances as if they occurred on the date of the first such issuance (and without giving effect to any additional adjustments as a result of any such subsequent issuances within such period).

4.5 Adjustment for Stock Splits and Combinations. If the Corporation shall at any time or from time to time after the Original Issue Date effect a subdivision of the outstanding Common Stock, the Conversion Price for such series of Preferred Stock in effect immediately before that subdivision shall be proportionately decreased so that the number of shares of Common Stock issuable on conversion of each share of such series shall be increased in proportion to such increase in the aggregate number of shares of Common Stock outstanding. If the Corporation shall at any time or from time to time after the Original Issue Date combine the outstanding shares of Common Stock, the Conversion Price in effect immediately before the combination shall be proportionately increased so that the number of shares of Common Stock issuable on conversion of each share of such series shall be decreased in proportion to such decrease in the aggregate number of shares of Common Stock outstanding. Any adjustment under this Section shall become effective at the close of business on the date the subdivision or combination becomes effective.

4.6 Adjustment for Certain Dividends and Distributions. In the event the Corporation at any time or from time to time after the Original Issue Date shall make or issue, or fix a record date for the determination of holders of Common Stock entitled to receive, a dividend or other distribution payable on the Common Stock in additional shares of Common Stock, then and in each such event the Conversion Price in effect immediately before such event shall be decreased as of the time of such issuance or, in the event such a record date shall have

been fixed, as of the close of business on such record date, by multiplying the Conversion Price then in effect by a fraction:

(1) the numerator of which shall be the total number of shares of Common Stock issued and outstanding immediately prior to the time of such issuance or the close of business on such record date, and

(2) the denominator of which shall be the total number of shares of Common Stock issued and outstanding immediately prior to the time of such issuance or the close of business on such record date plus the number of shares of Common Stock issuable in payment of such dividend or distribution.

Notwithstanding the foregoing (a) if such record date shall have been fixed and such dividend is not fully paid or if such distribution is not fully made on the date fixed therefor, the Conversion Price shall be recomputed accordingly as of the close of business on such record date and thereafter the Conversion Price shall be adjusted pursuant to this Section as of the time of actual payment of such dividends or distributions; and (b) that no such adjustment shall be made if the holders of Preferred Stock simultaneously receive a dividend or other distribution of shares of Common Stock in a number equal to the number of shares of Common Stock as they would have received all outstanding shares of Preferred Stock had been converted into Common Stock on the date of such event.

4.7 Adjustments for Other Dividends and Distributions. In the event the Corporation at any time or from time to time after the Original Issue Date shall make or issue, or fix a record date for the determination of holders of Common Stock entitled to receive, a dividend or other distribution payable in securities of the Corporation (other than a distribution of shares of Common Stock in respect of outstanding shares of Common Stock) or in other property and the provisions of Section 1 do not apply to such dividend or distribution, then and in each such event the holders of Preferred Stock shall receive, simultaneously with the distribution to the holders of Common Stock, a dividend or other distribution of such securities or other property in an amount equal to the amount of such securities or other property as they would have received if all outstanding shares of Preferred Stock had been converted into Common Stock on the date of such event.

4.8 Adjustment for Merger or Reorganization, etc. Subject to the provisions of Section 2.3, if there shall occur any reorganization, recapitalization, reclassification, consolidation or merger involving the Corporation in which the Common Stock (but not the Preferred Stock) is converted into or exchanged for securities, cash or other property (other than a transaction covered by Sections 4.4, 4.6 or 4.7), then, following any such reorganization, recapitalization, reclassification, consolidation or merger, each share of Preferred Stock shall thereafter be convertible in lieu of the Common Stock into which it was convertible prior to such event into the kind and amount of securities, cash or other property which a holder of the number of shares of Common Stock of the Corporation issuable upon conversion of one share of Preferred Stock immediately prior to such reorganization, recapitalization, reclassification, consolidation or merger would have been entitled to receive pursuant to such transaction; and, in such case, appropriate adjustment (as determined in good faith by the Board of Directors) shall be made in the application of the provisions in this Section 4 with respect to

the rights and interests thereafter of the holders of the Preferred Stock, to the end that the provisions set forth in this Section 4 (including provisions with respect to changes in and other adjustments of the Conversion Price) shall thereafter be applicable, as nearly as reasonably may be, in relation to any securities or other property thereafter deliverable upon the conversion of the Preferred Stock.

4.9 Certificate as to Adjustments. Upon the occurrence of each adjustment or readjustment of the Conversion Price pursuant to this Section 4, the Corporation at its expense shall, as promptly as reasonably practicable but in any event not later than twenty (20) days thereafter, compute such adjustment or readjustment in accordance with the terms hereof and furnish to each holder of Preferred Stock a certificate setting forth such adjustment or readjustment (including the kind and amount of securities, cash or other property into which the Preferred Stock is convertible) and showing in detail the facts upon which such adjustment or readjustment is based. The Corporation shall, as promptly as reasonably practicable after the written request at any time of any holder of Preferred Stock (but in any event not later than twenty (20) days thereafter), furnish or cause to be furnished to such holder a certificate setting forth (i) the Conversion Price then in effect, and (ii) the number of shares of Common Stock and the amount, if any, of other securities, cash or property which then would be received upon the conversion of Preferred Stock.

4.10 Notice of Record Date. In the event:

(a) the Corporation shall take a record of the holders of its Common Stock (or other capital stock or securities at the time issuable upon conversion of the Preferred Stock) for the purpose of entitling or enabling them to receive any dividend or other distribution, or to receive any right to subscribe for or purchase any shares of capital stock of any class or any other securities, or to receive any other security; or

(b) of any capital reorganization of the Corporation, any reclassification of the Common Stock of the Corporation, or any Deemed Liquidation Event; or

(c) of the voluntary or involuntary dissolution, liquidation or winding-up of the Corporation,

then, and in each such case, the Corporation will send or cause to be sent to the holders of the Preferred Stock a notice specifying, as the case may be, (i) the record date for such dividend, distribution or right, and the amount and character of such dividend, distribution or right, or (ii) the effective date on which such reorganization, reclassification, consolidation, merger, transfer, dissolution, liquidation or winding-up is proposed to take place, and the time, if any is to be fixed, as of which the holders of record of Common Stock (or such other capital stock or securities at the time issuable upon the conversion of the Preferred Stock) shall be entitled to exchange their shares of Common Stock (or such other capital stock or securities) for securities or other property deliverable upon such reorganization, reclassification, consolidation, merger, transfer, dissolution, liquidation or winding-up, and the amount per share and character of such exchange applicable to the Preferred Stock and the Common Stock. Such notice shall be sent at least ten (10) days prior to the record date or effective date for the event specified in such notice

(the "**Notice Period**"); provided, however, the Notice Period may be waived or shortened by the affirmative written consent or vote of the Requisite Holders.

5. Mandatory Conversion.

5.1 Trigger Events. Upon either (a) the closing of the sale of shares of Common Stock to the public at a price of at least $2.40 per share (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to the Common Stock), in a firm-commitment underwritten public offering pursuant to an effective registration statement under the Securities Act, resulting in at least $40,000,000 of gross proceeds to the Corporation or (b) the date and time, or the occurrence of an event, specified by vote or written consent of the Requisite Holders (the time of such closing or the date and time specified or the time of the event specified in such vote or written consent is referred to herein as the "**Mandatory Conversion Time**"), then (i) all outstanding shares of Preferred Stock shall automatically be converted into shares of Common Stock, at the then effective conversion rate as calculated pursuant to Section 2.FourthB.4.3.1 and (ii) such shares may not be reissued by the Corporation.

5.2 Procedural Requirements. All holders of record of shares of Preferred Stock shall be sent written notice of the Mandatory Conversion Time and the place designated for mandatory conversion of all such shares of Preferred Stock pursuant to this Section 5. Such notice need not be sent in advance of the occurrence of the Mandatory Conversion Time. Upon receipt of such notice, each holder of shares of Preferred Stock in certificated form shall surrender his, her or its certificate or certificates for all such shares (or, if such holder alleges that such certificate has been lost, stolen or destroyed, a lost certificate affidavit and agreement reasonably acceptable to the Corporation to indemnify the Corporation against any claim that may be made against the Corporation on account of the alleged loss, theft or destruction of such certificate) to the Corporation at the place designated in such notice. If so required by the Corporation, any certificates surrendered for conversion shall be endorsed or accompanied by written instrument or instruments of transfer, in form satisfactory to the Corporation, duly executed by the registered holder or by his, her or its attorney duly authorized in writing. All rights with respect to the Preferred Stock converted pursuant to Section 5.1, including the rights, if any, to receive notices and vote (other than as a holder of Common Stock), will terminate at the Mandatory Conversion Time (notwithstanding the failure of the holder or holders thereof to surrender any certificates at or prior to such time), except only the rights of the holders thereof, upon surrender of any certificate or certificates of such holders (or lost certificate affidavit and agreement) therefor, to receive the items provided for in the next sentence of this Section 5.2. As soon as practicable after the Mandatory Conversion Time and, if applicable, the surrender of any certificate or certificates (or lost certificate affidavit and agreement) for Preferred Stock, the Corporation shall (a) issue and deliver to such holder, or to his, her or its nominees, a certificate or certificates for the number of full shares of Common Stock issuable on such conversion in accordance with the provisions hereof and (b)pay cash as provided in Section 4.2 in lieu of any fraction of a share of Common Stock otherwise issuable upon such conversion and the payment of any declared but unpaid dividends on the shares of Preferred Stock converted. Such converted Preferred Stock shall be retired and cancelled and may not be reissued as shares of such series, and the Corporation may thereafter take such

appropriate action (without the need for stockholder action) as may be necessary to reduce the authorized number of shares of Preferred Stock accordingly.

6. Redemption. The shares of Preferred Stock shall not be redeemable at the option of the holders thereof, except as may be otherwise provided herein.

7. Redeemed or Otherwise Acquired Shares. Any shares of Preferred Stock that are redeemed or otherwise acquired by the Corporation or any of its subsidiaries shall be automatically and immediately cancelled and retired and shall not be reissued, sold or transferred. Neither the Corporation nor any of its subsidiaries may exercise any voting or other rights granted to the holders of Preferred Stock following redemption.

8. Waiver. Unless otherwise specific herein, any of the rights, powers, preferences and other terms of the Preferred Stock set forth herein may be waived on behalf of all holders of Preferred Stock by the affirmative written consent or vote of the Requisite Holders. Unless otherwise specific herein, any of the rights, powers, preferences and other terms of any series of Preferred Stock set forth herein may be waived on behalf of all holders of such series of Preferred Stock by the affirmative written consent or vote of the holders of a majority of the outstanding shares of such series of Preferred Stock.

9. Notices. Any notice required or permitted by the provisions of this Article Fourth to be given to a holder of shares of Preferred Stock shall be mailed, postage prepaid, to the post office address last shown on the records of the Corporation, or given by electronic communication in compliance with the provisions of the General Corporation Law, and shall be deemed sent upon such mailing or electronic transmission.

FIFTH: Subject to any additional vote required by this Restated Certificate or Bylaws, in furtherance and not in limitation of the powers conferred by statute, the Board of Directors is expressly authorized to make, repeal, alter, amend and rescind any or all of the Bylaws.

SIXTH: Subject to any additional vote required by this Restated Certificate, the number of directors of the Corporation shall be determined in the manner set forth in the Bylaws of the Corporation. Each director shall be entitled to one vote on each matter presented to the Board of Directors.

SEVENTH: Elections of directors need not be by written ballot unless the Bylaws of the Corporation shall so provide.

EIGHTH: Meetings of stockholders may be held within or without the State of Delaware, as the Bylaws may provide. The books of the Corporation may be kept outside the State of Delaware at such place or places as may be designated from time to time by the Board of Directors or in the Bylaws.

NINTH: To the fullest extent permitted by law, a director of the Corporation shall not be personally liable to the Corporation or its stockholders for monetary damages for breach of fiduciary duty as a director. If the General Corporation Law or any other law of the State of Delaware is amended after approval by the stockholders of this Article Ninth to authorize

corporate action further eliminating or limiting the personal liability of directors, then the liability of a director of the Corporation shall be eliminated or limited to the fullest extent permitted by the General Corporation Law as so amended.

Any repeal or modification of the foregoing provisions of this Article Ninth by the stockholders of the Corporation shall not adversely affect any right or protection of a director of the Corporation existing at the time of, or increase the liability of any director of the Corporation with respect to any acts or omissions of such director occurring prior to, such repeal or modification.

TENTH: To the fullest extent permitted by applicable law, the Corporation is authorized to provide indemnification of (and advancement of expenses to) directors, officers and agents of the Corporation (and any other persons to which General Corporation Law permits the Corporation to provide indemnification) through Bylaw provisions, agreements with such agents or other persons, vote of stockholders or disinterested directors or otherwise, in excess of the indemnification and advancement otherwise permitted by Section 145 of the General Corporation Law.

Any amendment, repeal or modification of the foregoing provisions of this Article Tenth shall not (a) adversely affect any right or protection of any director, officer or other agent of the Corporation existing at the time of such amendment, repeal or modification or (b) increase the liability of any director of the Corporation with respect to any acts or omissions of such director, officer or agent occurring prior to, such amendment, repeal or modification.

ELEVENTH: The Corporation renounces, to the fullest extent permitted by law, any interest or expectancy of the Corporation in, or in being offered an opportunity to participate in, any Excluded Opportunity. An "**Excluded Opportunity**" is any matter, transaction or interest that is presented to, or acquired, created or developed by, or which otherwise comes into the possession of (i) any director of the Corporation who is not an employee of the Corporation or any of its subsidiaries, or (ii) any holder of Preferred Stock or any partner, member, director, stockholder, employee, affiliate or agent of any such holder, other than someone who is an employee of the Corporation or any of its subsidiaries (collectively, the persons referred to in clauses (i) and (ii) are "**Covered Persons**"), unless such matter, transaction or interest is presented to, or acquired, created or developed by, or otherwise comes into the possession of, a Covered Person expressly and solely in such Covered Person's capacity as a director of the Corporation while such Covered Person is performing services in such capacity. Any repeal or modification of this Article Eleventh will only be prospective and will not affect the rights under this Article Eleventh in effect at the time of the occurrence of any actions or omissions to act giving rise to liability. Notwithstanding anything to the contrary contained elsewhere in this Restated Certificate, the affirmative vote of the Requisite Holders, will be required to amend or repeal, or to adopt any provisions inconsistent with this Article Eleventh.

TWELFTH: Unless the Corporation consents in writing to the selection of an alternative forum, the Court of Chancery in the State of Delaware shall be the sole and exclusive forum for any stockholder (including a beneficial owner) to bring (i) any derivative action or proceeding brought on behalf of the Corporation, (ii) any action asserting a claim of breach of fiduciary duty owed by any director, officer or other employee of the Corporation to the

Corporation or the Corporation's stockholders, (iii) any action asserting a claim against the Corporation, its directors, officers or employees arising pursuant to any provision of the Delaware General Corporation Law or the Corporation's certificate of incorporation or bylaws or (iv) any action asserting a claim against the Corporation, its directors, officers or employees governed by the internal affairs doctrine, except for, as to each of (i) through (iv) above, any claim as to which the Court of Chancery determines that there is an indispensable party not subject to the jurisdiction of the Court of Chancery (and the indispensable party does not consent to the personal jurisdiction of the Court of Chancery within ten days following such determination), which is vested in the exclusive jurisdiction of a court or forum other than the Court of Chancery, or for which the Court of Chancery does not have subject matter jurisdiction. If any provision or provisions of this Article Twelfth shall be held to be invalid, illegal or unenforceable as applied to any person or entity or circumstance for any reason whatsoever, then, to the fullest extent permitted by law, the validity, legality and enforceability of such provisions in any other circumstance and of the remaining provisions of this Article Twelfth (including, without limitation, each portion of any sentence of this Article Twelfth containing any such provision held to be invalid, illegal or unenforceable that is not itself held to be invalid, illegal or unenforceable) and the application of such provision to other persons or entities and circumstances shall not in any way be affected or impaired thereby.

THIRTEENTH: For purposes of Section 500 of the California Corporations Code (to the extent applicable), in connection with any repurchase of shares of Common Stock permitted under this Restated Certificate from employees, officers, directors or consultants of the Corporation in connection with a termination of employment or services pursuant to agreements or arrangements approved by the Board of Directors (in addition to any other consent required under this Restated Certificate), such repurchase may be made without regard to any "preferential dividends arrears amount" or "preferential rights amount" (as those terms are defined in Section 500 of the California Corporations Code). Accordingly, for purposes of making any calculation under California Corporations Code Section 500 in connection with such repurchase, the amount of any "preferential dividends arrears amount" or "preferential rights amount" (as those terms are defined therein) shall be deemed to be zero (0).

* * *

3. That the foregoing amendment and restatement was approved by the holders of the requisite number of shares of this corporation in accordance with Section 228 of the General Corporation Law.

4. That this Restated Certificate, which restates and integrates and further amends the provisions of this Corporation's Amended and Restated Certificate of Incorporation, has been duly adopted in accordance with Sections 242 and 245 of the General Corporation Law.

IN WITNESS WHEREOF, this Amended and Restated Certificate of Incorporation has been executed by a duly authorized officer of this corporation on this 19th day of December, 2019.

By: /s/ Todd Nelson

Name: Todd Nelson

Title: Chief Executive Officer

CERTIFICATE OF AMENDMENT
TO THE
AMENDED AND RESTATED CERTIFICATE OF INCORPORATION
OF
SGI-DNA, INC.

The undersigned, for purposes of amending the Amended and Restated Certificate of Incorporation (the "**Certificate**") of SGI-DNA, Inc. (the "**Corporation**"), a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware (the "**DGCL**"), does hereby certify as follows:

1. The date on which the original Certificate of Incorporation of the Corporation was filed with the Secretary of State of Delaware was March 24, 2011, under the name Synthetic Genomics Solutions, Inc.

2. The Board of Directors of the Corporation, acting in accordance with the provisions of Sections 141 and 242 of the DGCL, adopted resolutions to amend the Certificate, in the section noted below, to read in its entirety as follows:

"**FIRST**: The name of the corporation is Codex DNA, Inc. (the "**Corporation**")."

3. This amendment to the Certificate shall be effective on and as of the date of filing of this Certificate of Amendment to the Amended and Restated Certificate of Incorporation (the "**Certificate of Amendment**") with the Secretary of State of the State of Delaware.

* * * * *

IN WITNESS WHEREOF, the Corporation has caused this Certificate of Amendment to be signed by its duly authorized officer this 31st day of March, 2020.

SGI-DNA, INC.

By: /s/ Todd Nelson
Name: Todd Nelson
Title: Chief Executive Officer

CERTIFICATE OF AMENDMENT
TO THE
AMENDED AND RESTATED CERTIFICATE OF INCORPORATION
OF
CODEX DNA INC.

The undersigned, for purposes of amending the Amended and Restated Certificate of Incorporation (as amended, the "**Certificate**") of Codex DNA, Inc. (the "**Corporation**"), a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware (the "**DCGL**"), does hereby certify as follows:

1. The date on which the original Certificate of Incorporation of the Corporation was filed with the Secretary of State of Delaware was March 24, 2011, under the name Synthetic Genomics Solutions, Inc,

2. The Amended and Restated Certificate of Incorporation of the Corporation, as amended, is hereby amended as follows:

Article IV, Section B, Subsection 3.3 of the Certificate is amended and restated in its entirety to read as follows:

"3.3 Preferred Stock Protective Provisions. As long as 7,574,458 shares of Senior Preferred Stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to the Senior Preferred Stock) are outstanding, the Corporation shall not, either directly or indirectly by amendment, merger, consolidation or otherwise, do any of the following without (in addition to any other vote required by law or this Restated Certificate) the written consent or affirmative vote of the Requisite Holders, given in writing or by vote at a meeting, consenting or voting (as the case may be) together as a single class on an as converted basis, and any such act or transaction entered into without such consent or vote shall be null and void *ab initio,* and of no force or effect:

3.3.1 liquidate, dissolve or wind-up the business and affairs of the Corporation, effect any merger or consolidation or any other Deemed Liquidation Event, or consent to any of the foregoing;

3.3.2 amend, alter or repeal any provision of this Restated Certificate or Bylaws of the Corporation (the "**Bylaws**");

3.3.3 alter, change or waive the rights, preferences or privileges of the Preferred Stock;

3.3.4 create, or authorize the creation of, or issue or obligate itself to issue shares of, any additional class or series of capital stock unless the same ranks junior to the Preferred Stock in all respects, including with respect to the distribution of assets upon liquidation the payment of dividends and redemption rights;

3.3.5 increase or decrease the authorized number of shares of Preferred Stock or Common Stock;

3.3.6 create, or hold capital stock in, any subsidiary that is not wholly owned (either directly or through one or more other subsidiaries) by the Corporation, or permit any subsidiary to create, or authorize the creation of, or issue or obligate itself to issue, any shares of any class or series of capital stock, or sell, transfer or otherwise dispose of any capital stock of any direct or indirect subsidiary of the Corporation, or permit any direct or indirect subsidiary to sell, lease, transfer, exclusively license or otherwise dispose (in a single transaction or series of related transactions) of all or substantially all of the assets of such subsidiary; or

3.3.7 increase or decrease the authorized number of directors constituting the Board of Directors."

Article IV, Section B, Subsection 3 of the Certificate is amended by the addition of new Subsection 3.4 to read in its entirety as follows:

"3.4 Preferred Stock Protective Provisions. As long as 7,574,458 shares of Senior Preferred Stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to the Senior Preferred Stock) are outstanding, the Corporation shall not, either directly or indirectly by amendment, merger, consolidation or otherwise, do any of the following without (in addition to any other vote required by law or this Restated Certificate) the written consent or of vote of the holders of at least thirty-five percent (35%) of the outstanding shares of Preferred Stock, given in writing or by vote at a meeting consenting or voting (as the case may be) together as a single class on an as converted basis, and any such act or transaction entered into without such consent or vote shall be null and void *ab initio*, and of no force or effect:

3.4.1 purchase or redeem (or permit any subsidiary to purchase or redeem) or pay or declare any dividend or make any distribution on, any shares of capital stock of the Corporation other than (i) dividends or other distributions payable on the Common Stock solely in the form of additional shares of Common Stock, and (ii) repurchases of stock from former employees, officers, directors, consultants or other persons who performed services for the Corporation or any subsidiary in connection with the cessation of such employment or service at a purchase price no greater than the original purchase price thereof;

3.4.2 increase the number of shares of Common Stock reserved under the Corporation's existing stock option plan or any other employee stock option plan, or create any new stock plan or stock option plan;

3.4.3 effect any transactions with directors, stockholders, senior management, or known affiliates or related parties (other than arm's length

agreements on reasonable terms approved by the Board of Directors, including the Series A Director); or

3.4.4 effect any material change in the activity or industry of the business of the Corporation."

3. This Certificate of Amendment to the Amended and Restated Certificate of Incorporation of the Corporation herein certified has been duly adopted by the directors and stockholders of the Corporation in accordance with the provisions of Sections 141, 242 and 228 of the DGCL.

4. Pursuant to Section 228(a) of the DGCL, the holders of outstanding shares of the Corporation having not less than the minimum number of votes that would be necessary to authorize or take such actions at a meeting at which all shares entitled to vote thereon were present and voted consented to the adoption of the aforesaid amendment without a meeting, without a vote and without prior notice and that written notice of the taking of such actions is being given in accordance with Section 228(e) of the DGCL.

* * * * *

IN WITNESS WHEREOF, the Corporation has caused this Certificate of Amendment to be signed by its duly authorized officer this 20th day of April, 2020.

CODEX DNA, INC.

By: /s/ Todd Nelson
Name: Todd Nelson
Title: Chief Executive Officer

AMENDED AND RESTATED BYLAWS OF

SGI-DNA, INC.

(A DELAWARE CORPORATION)

TABLE OF CONTENTS

AMENDED AND RESTATED BYLAWS OF
SGI-DNA, INC.

ARTICLE I
OFFICES

1.1 **Registered Office.** The registered office shall be in the City of Dover, County of Kent, State of Delaware.

1.2 **Offices**. The corporation may also have offices at such other places both within and without the State of Delaware as the Board of Directors may from time to time determine or the business of the corporation may require.

ARTICLE II
MEETINGS OF STOCKHOLDERS

2.1 **Location**. All meetings of the stockholders for the election of directors shall be held in San Diego, California, at such place as may be fixed from time to time by the Board of Directors, or at such other place either within or without the State of Delaware as shall be designated from time to time by the Board of Directors and stated in the notice of the meeting; provided, however, that the Board of Directors may, in its sole discretion, determine that the meeting shall not be held at any place, but may instead be held solely by means of remote communication as authorized by Section 211 of the Delaware General Corporations Law ("DGCL"). Meetings of stockholders for any other purpose may be held at such time and place, if any, within or without the State of Delaware, as shall be stated in the notice of the meeting or in a duly executed waiver of notice thereof, or a waiver by electronic transmission by the person entitled to notice.

2.2 **Timing**. Annual meetings of stockholders, commencing with the year following the adoption of these bylaws, shall be held at such date and time as shall be designated from time to time by the Board of Directors and stated in the notice of the meeting, at which they shall elect by a plurality vote a Board of Directors, and transact such other business as may properly be brought before the meeting.

2.3 **Notice of Meeting**. Written notice of any stockholder meeting stating the place, if any, date and hour of the meeting, the means of remote communication, if any, by which stockholders and proxyholders may be deemed to be present in person and vote at such meeting, shall be given to each stockholder entitled to vote at such meeting not fewer than ten (10) nor more than sixty (60) days before the date of the meeting.

2.4 **Stockholders' Records**. The officer who has charge of the stock ledger of the corporation shall prepare and make, at least ten (10) days before every meeting of stockholders, a complete list of the stockholders entitled to vote at the meeting, arranged in alphabetical order, and showing the address (but not the electronic address or other electronic contact information) of each stockholder and the number of shares registered in the name of each stockholder. Such list shall be open to the examination of any stockholder, for any purpose germane to the meeting for a period of at least 10 days prior to the meeting: (i) on a reasonably accessible electronic network, provided that the information required to gain access to such list is

provided with the notice of the meeting, or (ii) during ordinary business hours, at the principal place of business of the corporation. In the event that the corporation determines to make the list available on an electronic network, the corporation may take reasonable steps to ensure that such information is available only to stockholders of the corporation. If the meeting is to be held at a place, then the list shall be produced and kept at the time and place of the meeting during the whole time thereof, and may be inspected by any stockholder who is present. If the meeting is to be held solely by means of remote communication, then the list shall also be open to the examination of any stockholder during the whole time of the meeting on a reasonably accessible electronic network, and the information required to access such list shall be provided with the notice of the meeting.

2.5 **Special Meetings**. Special meetings of the stockholders, for any purpose or purposes, unless otherwise prescribed by statute or by the certificate of incorporation, may be called by the Chief Executive Officer and shall be called by the Chief Executive Officer or secretary at the request in writing of a majority of the Board of Directors, or at the request in writing of stockholders owning at least fifty percent (50%) in amount of the entire capital stock of the corporation issued and outstanding and entitled to vote. Such request shall state the purpose or purposes of the proposed meeting.

2.6 **Notice of Meeting**. Written notice of a special meeting stating the place, date and hour of the meeting and the purpose or purposes for which the meeting is called, shall be given not fewer than ten (10) nor more than sixty (60) days before the date of the meeting, to each stockholder entitled to vote at such meeting. The means of remote communication, if any, by which stockholders and proxyholders may be deemed to be present in person and vote at such meeting shall also be provided in the notice.

2.7 **Business Transacted at Special Meeting**. Business transacted at any special meeting of stockholders shall be limited to the purposes stated in the notice.

2.8 **Quorum; Meeting Adjournment; Presence by Remote Means**.

(a) *Quorum; Meeting Adjournment*. The holders of a majority of the stock issued and outstanding and entitled to vote thereat, present in person or represented by proxy, shall constitute a quorum at all meetings of the stockholders for the transaction of business except as otherwise provided by statute or by the certificate of incorporation. If, however, such quorum shall not be present or represented at any meeting of the stockholders, the stockholders entitled to vote thereat, present in person or represented by proxy, shall have power to adjourn the meeting from time to time, without notice other than announcement at the meeting, until a quorum shall be present or represented. At such adjourned meeting at which a quorum shall be present or represented, any business may be transacted that might have been transacted at the meeting as originally notified. If the adjournment is for more than thirty (30) days, or if after the adjournment a new record date is fixed for the adjourned meeting, a notice of the adjourned meeting shall be given to each stockholder of record entitled to vote at the meeting.

(b) *Presence by Remote Means*. If authorized by the Board of Directors in its sole discretion, and subject to such guidelines and procedures as the Board of

Directors may adopt, stockholders and proxyholders not physically present at a meeting of stockholders may, by means of remote communication:

(1) participate in a meeting of stockholders; and

(2) be deemed present in person and vote at a meeting of stockholders whether such meeting is to be held at a designated place or solely by means of remote communication, provided that (i) the corporation shall implement reasonable measures to verify that each person deemed present and permitted to vote at the meeting by means of remote communication is a stockholder or proxyholder, (ii) the corporation shall implement reasonable measures to provide such stockholders and proxyholders a reasonable opportunity to participate in the meeting and to vote on matters submitted to the stockholders, including an opportunity to read or hear the proceedings of the meeting substantially concurrently with such proceedings, and (iii) if any stockholder or proxyholder votes or takes other action at the meeting by means of remote communication, a record of such vote or other action shall be maintained by the corporation.

2.9 **Voting Thresholds**. When a quorum is present at any meeting, the vote of the holders of a majority of the stock having voting power present in person or represented by proxy shall decide any question brought before such meeting, unless the question is one upon which by express provision of the statutes or of the certificate of incorporation, a different vote is required, in which case such express provision shall govern and control the decision of such question.

2.10 **Number of Votes Per Share**. Unless otherwise provided in the certificate of incorporation, each stockholder shall at every meeting of the stockholders be entitled to one vote by such stockholder or by proxy for each share of the capital stock having voting power held by such stockholder, but no proxy shall be voted on after three years from its date, unless the proxy provides for a longer period.

2.11 **Action by Written Consent of Stockholders; Electronic Consent; Notice of Action**.

(a) *Action by Written Consent of Stockholders*. Unless otherwise provided by the certificate of incorporation, any action required or permitted to be taken at any annual or special meeting of the stockholders may be taken without a meeting, without prior notice and without a vote, if a consent in writing setting forth the action so taken, is signed in a manner permitted by law by the holders of outstanding stock having not less than the number of votes that would be necessary to authorize or take such action at a meeting at which all shares entitled to vote thereon were present and voted. Written stockholder consents shall bear the date of signature of each stockholder who signs the consent in the manner permitted by law and shall be delivered to the corporation as provided in subsection (b) below. No written consent shall be effective to take the action set forth therein unless, within sixty (60) days of the earliest dated consent delivered to the corporation in the manner provided above, written consents signed by a sufficient number of stockholders to take the action set forth therein are delivered to the corporation in the manner provided above.

(b) *Electronic Consent*. A telegram, cablegram or other electronic transmission consenting to an action to be taken and transmitted by a stockholder or proxyholder, or a person or persons authorized to act for a stockholder or proxyholder, shall be deemed to be written, signed and dated for the purposes of this section, provided that any such telegram, cablegram or other electronic transmission sets forth or is delivered with information from which the corporation can determine (1) that the telegram, cablegram or other electronic transmission was transmitted by the stockholder or proxyholder or by a person or persons authorized to act for the stockholder or proxyholder and (2) the date on which such stockholder or proxyholder or authorized person or persons transmitted such telegram, cablegram or electronic transmission. The date on which such telegram, cablegram or electronic transmission is transmitted shall be deemed to be the date on which such consent was signed. No consent given by telegram, cablegram or other electronic transmission shall be deemed to have been delivered until such consent is reproduced in paper form and until such paper form is delivered to the corporation by delivery to its registered office in the State of Delaware, its principal place of business or an officer or agent of the corporation having custody of the book in which proceedings of meetings of stockholders are recorded. Delivery made to a corporation's registered office shall be made by hand or by certified or registered mail, return receipt requested. Notwithstanding the foregoing limitations on delivery, consents given by telegram, cablegram or other electronic transmission may be otherwise delivered to the principal place of business of the corporation or to an officer or agent of the corporation having custody of the book in which proceedings of meetings of stockholders are recorded if, to the extent and in the manner provided by resolution of the Board of Directors of the corporation.

(c) *Notice of Action*. Prompt notice of any action taken pursuant to this Section 2.11 shall be provided to the stockholders in accordance with Section 228(e) of the DGCL.

ARTICLE III
DIRECTORS

3.1 **Authorized Directors**. The number of directors that shall constitute the whole Board of Directors shall be determined by resolution of the Board of Directors or by the stockholders at the annual meeting of the stockholders, except as provided in Section 3.2 of this Article, and each director elected shall hold office until his or her successor is elected and qualified. Directors need not be stockholders.

3.2 **Vacancies**. Unless otherwise provided in the corporation's certificate of incorporation, as it may be amended, vacancies and newly created directorships resulting from any increase in the authorized number of directors may be filled by a majority of the directors then in office, though less than a quorum, or by a sole remaining director, and the directors so chosen shall hold office until the next annual election and until their successors are duly elected and shall qualify, unless sooner displaced. If there are no directors in office, then an election of directors may be held in the manner provided by statute. If, at the time of filling any vacancy or any newly created directorship, the directors then in office shall constitute less than a majority of the whole Board of Directors (as constituted immediately prior to any such increase), the Court of Chancery may, upon application of any stockholder or stockholders holding at least ten

percent (10%) of the total number of the shares at the time outstanding having the right to vote for such directors, summarily order an election to be held to fill any such vacancies or newly created directorships, or to replace the directors chosen by the directors then in office.

3.3 **Board Authority**. The business of the corporation shall be managed by or under the direction of its Board of Directors, which may exercise all such powers of the corporation and do all such lawful acts and things as are not by statute or by the certificate of incorporation or by these bylaws directed or required to be exercised or done by the stockholders.

3.4 **Location of Meetings**. The Board of Directors of the corporation may hold meetings, both regular and special, either within or without the State of Delaware.

3.5 **First Meeting**. The first meeting of each newly elected Board of Directors shall be held at such time and place as shall be fixed by the vote of the stockholders at the annual meeting and no notice of such meeting shall be necessary to the newly elected directors in order to legally constitute the meeting, provided a quorum shall be present. In the event of the failure of the stockholders to fix the time or place of such first meeting of the newly elected Board of Directors, or in the event such meeting is not held at the time and place so fixed by the stockholders, the meeting may be held at such time and place as shall be specified in a notice given as hereinafter provided for special meetings of the Board of Directors, or as shall be specified in a written waiver signed by all of the directors.

3.6 **Regular Meetings**. Regular meetings of the Board of Directors may be held without notice at such time and at such place as shall from time to time be determined by the Board of Directors.

3.7 **Special Meetings**. Special meetings of the Board of Directors may be called by the Chief Executive Officer upon notice to each director; special meetings shall be called by the Chief Executive Officer or secretary in like manner and on like notice on the written request of two (2) directors unless the Board of Directors consists of only one director, in which case special meetings shall be called by the Chief Executive Officer or secretary in like manner and on like notice on the written request of the sole director. Notice of any special meeting shall be given to each director at his or her business or residence in writing, or by telegram, facsimile transmission, telephone communication or electronic transmission (provided, with respect to electronic transmission, that the director has consented to receive the form of transmission at the address to which it is directed). If mailed, such notice shall be deemed adequately delivered when deposited in the United States mails so addressed, with postage thereon prepaid, at least five (5) days before such meeting. If by telegram, such notice shall be deemed adequately delivered when the telegram is delivered to the telegraph company at least twenty-four (24) hours before such meeting. If by facsimile transmission or other electronic transmission, such notice shall be transmitted at least twenty-four (24) hours before such meeting. If by telephone, the notice shall be given at least twelve (12) hours prior to the time set for the meeting. Neither the business to be transacted at, nor the purpose of, any regular or special meeting of the Board of Directors need be specified in the notice of such meeting, except for amendments to these bylaws as provided under Section 8.1 of Article VIII hereof. A meeting may be held at any time without notice if all the directors are present (except as otherwise

provided by law) or if those not present waive notice of the meeting in writing, either before or after such meeting.

3.8 **Quorum**. At all meetings of the Board of Directors, the greater of (a) a majority of the directors at any time in office, and (b) one-third of the number of directors fixed by the Board of Directors or by the stockholders pursuant to Section 3.1 of Article III hereof shall constitute a quorum for the transaction of business and any act of a majority of the directors present at any meeting at which there is a quorum shall be an act of the Board of Directors, except as may be otherwise specifically provided by statute or by the certificate of incorporation. If a quorum is not present at any meeting of the Board of Directors, the directors present thereat may adjourn the meeting from time to time, without notice other than announcement at the meeting, until a quorum shall be present.

3.9 **Action Without a Meeting**. Unless otherwise restricted by the certificate of incorporation or these bylaws, any action required or permitted to be taken at any meeting of the Board of Directors or of any committee thereof may be taken without a meeting if all members of the Board of Directors or committee, as the case may be, consent thereto in writing or by electronic transmission, and the writing, writings, electronic transmission or transmissions are filed with the minutes of proceedings of the Board of Directors or committee.

3.10 **Telephonic Meetings**. Unless otherwise restricted by the certificate of incorporation or these bylaws, members of the Board of Directors or any committee designated by the Board of Directors may participate in a meeting of the Board of Directors or any committee, by means of conference telephone or other means of communication by which all persons participating in the meeting can hear each other, and such participation shall constitute presence in person at the meeting.

3.11 **Committees**. The Board of Directors may designate one or more committees, each committee to consist of one or more of the directors of the corporation. The Board of Directors may designate one or more directors as alternate members of any committee, who may replace any absent or disqualified member at any meeting of the committee.

In the absence or disqualification of a member of a committee, the member or members thereof present at any meeting and not disqualified from voting, whether or not he or she or they constitute a quorum, may unanimously appoint another member of the Board of Directors to act at the meeting in the place of any such absent or disqualified member.

Any such committee, to the extent provided in the resolution of the Board of Directors, shall have and may exercise all the powers and authority of the Board of Directors in the management of the business and affairs of the corporation, and may authorize the seal of the corporation to be affixed to all papers which may require it, but no such committee shall have the power or authority in reference to the following matters: (i) approving or adopting, or recommending to the stockholders, any action or matter expressly required by the DGCL to be submitted to stockholders for approval or (ii) adopting, amending or repealing any provision of these bylaws.

3.12 **Minutes of Meetings**. Each committee shall keep regular minutes of its meetings and report the same to the Board of Directors when required.

3.13 **Compensation of Directors**. Unless otherwise restricted by the certificate of incorporation or these bylaws, the Board of Directors shall have the authority to fix the compensation of directors. The directors may be paid their expenses, if any, of attendance at each meeting of the Board of Directors and may be paid a fixed sum for attendance at each meeting of the Board of Directors or a stated salary as director. No such payment shall preclude any director from serving the corporation in any other capacity and receiving compensation therefor. Members of special or standing committees may be allowed like compensation for attending committee meetings.

3.14 **Removal of Directors**. Unless otherwise provided by the certificate of incorporation or these bylaws, any director or the entire Board of Directors may be removed, with or without cause, by the holders of a majority of shares entitled to vote at an election of directors.

ARTICLE IV
NOTICES

4.1 **Notice**. Unless otherwise provided in these bylaws, whenever, under the provisions of the statutes or of the certificate of incorporation or of these bylaws, notice is required to be given to any director or stockholder, it shall not be construed to mean personal notice, but such notice may be given in writing, by mail, addressed to such director or stockholder, at his or her address as it appears on the records of the corporation, with postage thereon prepaid, and such notice shall be deemed to be given at the time when the same shall be deposited in the United States mail. Notice to directors may also be given by telegram.

4.2 **Waiver of Notice**. Whenever any notice is required to be given under the provisions of the statutes or of the certificate of incorporation or of these bylaws, a waiver thereof in writing, signed by the person or persons entitled to said notice, whether before or after the time stated therein, shall be deemed equivalent thereto.

4.3 **Electronic Notice**.

(a) *Electronic Transmission*. Without limiting the manner by which notice otherwise may be given effectively to stockholders and directors, any notice to stockholders or directors given by the corporation under any provision of the DGCL, the certificate of incorporation or these bylaws shall be effective if given by a form of electronic transmission consented to by the stockholder or director to whom the notice is given. Any such consent shall be revocable by the stockholder or director by written notice to the corporation. Any such consent shall be deemed revoked if (1) the corporation is unable to deliver by electronic transmission two consecutive notices given by the corporation in accordance with such consent and (2) such inability becomes known to the secretary or an assistant secretary of the corporation or to the transfer agent, or other person responsible for the giving of notice; provided, however, the inadvertent failure to treat such inability as a revocation shall not invalidate any meeting or other action.

(b) *Effective Date of Notice*. Notice given pursuant to subsection (a) of this section shall be deemed given: (1) if by facsimile telecommunication, when directed to a number at which the stockholder or director has consented to receive notice; (2) if by electronic mail, when directed to an electronic mail address at which the stockholder or director has consented to receive notice; (3) if by a posting on an electronic network together with separate notice to the stockholder or director of such specific posting, upon the later of (i) such posting and (ii) the giving of such separate notice; and (4) if by any other form of electronic transmission, when directed to the stockholder or director. An affidavit of the secretary or an assistant secretary or of the transfer agent or other agent of the corporation that the notice has been given by a form of electronic transmission shall, in the absence of fraud, be prima facie evidence of the facts stated therein.

(c) *Form of Electronic Transmission*. For purposes of these bylaws, "electronic transmission" means any form of communication, not directly involving the physical transmission of paper, that creates a record that may be retained, retrieved, and reviewed by a recipient thereof, and that may be directly reproduced in paper form by such a recipient through an automated process.

ARTICLE V
OFFICERS

5.1 **Required and Permitted Officers**. The officers of the corporation shall be chosen by the Board of Directors and shall be a Chief Executive Officer and/or a president, a treasurer and a secretary. The Board of Directors may elect from among its members a Chairman of the Board and a Vice-Chairman of the Board. The Board of Directors may also choose one or more vice presidents, assistant secretaries and assistant treasurers. Any number of offices may be held by the same person, unless the certificate of incorporation or these bylaws otherwise provide.

5.2 **Appointment of Required Officers**. The Board of Directors at its first meeting after each annual meeting of stockholders shall choose a Chief Executive Officer and/or a president, a treasurer, and a secretary and may choose vice presidents.

5.3 **Appointment of Permitted Officers**. The Board of Directors may appoint such other officers and agents as it shall deem necessary who shall hold their offices for such terms and shall exercise such powers and perform such duties as shall be determined from time to time by the Board of Directors.

5.4 **Officer Compensation**. The salaries of all officers and agents of the corporation shall be fixed by the Board of Directors.

5.5 **Term of Office; Vacancies**. The officers of the corporation shall hold office until their successors are chosen and qualify. Any officer elected or appointed by the Board of Directors may be removed at any time by the affirmative vote of a majority of the Board of Directors. Any vacancy occurring in any office of the corporation shall be filled by the Board of Directors.

THE CHAIRMAN OF THE BOARD

5.6 **Chairman Presides**. Unless the Board of Directors appoints a Chairman of the Board, the Chief Executive Officer shall be the Chairman of the Board, so long as the Chief Executive Officer is a director of the corporation. The Chairman of the Board shall preside at all meetings of the Board of Directors and of the stockholders at which he or she shall be present. He or she shall have and may exercise such powers as are, from time to time, assigned to him or her by the Board of Directors and as may be provided by law.

5.7 **Absence of Chairman**. In the absence of the Chairman of the Board, the Vice-Chairman of the Board, if any, shall preside at all meetings of the Board of Directors and of the stockholders at which he or she shall be present. He or she shall have and may exercise such powers as are, from time to time, assigned to him or her by the Board of Directors and as may be provided by law.

THE CHIEF EXECUTIVE OFFICER

5.8 **Powers of Chief Executive Officer**. The Chief Executive Officer shall have general and active management of the business of the corporation and shall see that all orders and resolutions of the Board of Directors are carried into effect.

5.9 **Chief Executive Officer's Signature Authority**. The Chief Executive Officer shall execute bonds, mortgages and other contracts requiring a seal, under the seal of the corporation, except where required or permitted by law to be otherwise signed and executed and except where the signing and execution thereof shall be expressly delegated by the Board of Directors to some other officer or agent of the corporation. The Chief Executive Officer may sign certificates for shares of stock of the corporation.

5.10 **Absence of Chief Executive Officer**. In the absence of the Chief Executive Officer or in the event of his or her inability or refusal to act, the president shall perform the duties of the Chief Executive Officer, and when so acting, shall have all the powers of and be subject to all the restrictions upon the Chief Executive Officer.

THE PRESIDENT AND VICE PRESIDENTS

5.11 **Powers of President**. Unless the Board of Directors appoints a president of the corporation, the Chief Executive Officer shall be the president of the corporation. The president of the corporation shall have such powers as required by law and shall perform such other duties and have such other powers as the Board of Directors may from time to time prescribe.

5.12 **Absence of President**. In the absence of the president or in the event of his or her inability or refusal to act, the vice president, if any, (or in the event there be more than one vice president, the vice presidents in the order designated by the directors, or in the absence of any designation, then in the order of their election) shall perform the duties of the president, and when so acting, shall have all the powers of and be subject to all the restrictions upon the president. The vice-presidents shall perform such other duties and have such other powers as the Board of Directors may from time to time prescribe.

THE SECRETARY AND ASSISTANT SECRETARY

5.13 **Duties of Secretary**. The secretary shall attend all meetings of the Board of Directors and all meetings of the stockholders and record all the proceedings of the meetings of the corporation and of the Board of Directors in a book to be kept for that purpose and shall perform like duties for the standing committees when required. He or she shall give, or cause to be given, notice of all meetings of the stockholders and special meetings of the Board of Directors, and shall perform such other duties as may be prescribed by the Board of Directors or the Chief Executive Officer, under whose supervision he or she shall be. He or she shall have custody of the corporate seal of the corporation and he or she, or an assistant secretary, shall have authority to affix the same to any instrument requiring it and when so affixed, it may be attested by his or her signature or by the signature of such assistant secretary. The Board of Directors may give general authority to any other officer to affix the seal of the corporation and to attest the affixing by his or her signature.

5.14 **Duties of Assistant Secretary**. The assistant secretary, or if there be more than one, the assistant secretaries in the order determined by the Board of Directors (or if there be no such determination, then in the order of their election) shall, in the absence of the secretary or in the event of his or her inability or refusal to act, perform the duties and exercise the powers of the secretary and shall perform such other duties and have such other powers as the Board of Directors may from time to time prescribe.

THE TREASURER AND ASSISTANT TREASURERS

5.15 **Duties of Treasurer**. The treasurer shall have the custody of the corporate funds and securities and shall keep full and accurate accounts of receipts and disbursements in books belonging to the corporation and shall deposit all moneys and other valuable effects in the name and to the credit of the corporation in such depositories as may be designated by the Board of Directors.

5.16 **Disbursements and Financial Reports**. He or she shall disburse the funds of the corporation as may be ordered by the Board of Directors, taking proper vouchers for such disbursements, and shall render to the Chief Executive Officer and the Board of Directors, at its regular meetings or when the Board of Directors so requires, an account of all his or her transactions as treasurer and of the financial condition of the corporation.

5.17 **Treasurer's Bond**. If required by the Board of Directors, the treasurer shall give the corporation a bond (which shall be renewed every six years) in such sum and with such surety or sureties as shall be satisfactory to the Board of Directors for the faithful performance of the duties of his or her office and for the restoration to the corporation, in case of his or her death, resignation, retirement or removal from office, of all books, papers, vouchers, money and other property of whatever kind in his or her possession or under his or her control belonging to the corporation.

5.18 **Duties of Assistant Treasurer**. The assistant treasurer, or if there shall be more than one, the assistant treasurers in the order determined by the Board of Directors (or if there be no such determination, then in the order of their election) shall, in the absence of the

treasurer or in the event of the treasurer's inability or refusal to act, perform the duties and exercise the powers of the treasurer and shall perform such other duties and have such other powers as the Board of Directors may from time to time prescribe.

ARTICLE VI
CERTIFICATE OF STOCK

6.1 **Stock Certificates**. Every holder of stock in the corporation shall be entitled to have a certificate, signed by or in the name of the corporation by, the Chairman or Vice-Chairman of the Board of Directors, or the president or a vice president and the treasurer or an assistant treasurer, or the secretary or an assistant secretary of the corporation, certifying the number of shares owned by him or her in the corporation.

Certificates may be issued for partly paid shares and in such case upon the face or back of the certificates issued to represent any such partly paid shares, the total amount of the consideration to be paid therefor, and the amount paid thereon shall be specified.

If the corporation shall be authorized to issue more than one class of stock or more than one series of any class, the powers, designations, preferences and relative participating, optional or other special rights of each class of stock or series thereof and the qualification, limitations or restrictions of such preferences and/or rights shall be set forth in full or summarized on the face or back of the certificate which the corporation shall issue to represent such class or series of stock, provided that, except as otherwise provided in Section 202 of the DGCL, in lieu of the foregoing requirements, there may be set forth on the face or back of the certificate which the corporation shall issue to represent such class or series of stock, a statement that the corporation will furnish without charge to each stockholder who so requests the powers, designations, preferences and relative participating, optional or other special rights of each class of stock or series thereof and the qualifications, limitations or restrictions of such preferences and/or rights.

6.2 **Facsimile Signatures**. Any or all of the signatures on the certificate may be facsimile. In the event that any officer, transfer agent or registrar who has signed or whose facsimile signature has been placed upon a certificate shall have ceased to be such officer, transfer agent or registrar before such certificate is issued, the certificate may be issued by the corporation with the same effect as if such officer, transfer agent or registrar were still acting as such at the date of issue.

6.3 **Lost Certificates**. The Board of Directors may direct a new certificate or certificates to be issued in place of any certificate or certificates theretofore issued by the corporation alleged to have been lost, stolen or destroyed upon the making of an affidavit of that fact by the person claiming the certificate to be lost, stolen or destroyed. When authorizing such issuance of a new certificate or certificates, the Board of Directors may, in its discretion and as a condition precedent to the issuance, require the owner of such lost, stolen or destroyed certificate or certificates, or his or her legal representative, to advertise the same in such manner as it shall require and/or to give the corporation a bond in such sum as it may direct as indemnity against any claim that may be made against the corporation with respect to the certificate alleged to have been lost, stolen or destroyed.

6.4 **Transfer of Stock**. Upon surrender to the corporation or the transfer agent of the corporation of a certificate for shares duly endorsed or accompanied by proper evidence of succession, assignation or authority to transfer, it shall be the duty of the corporation to issue a new certificate to the person entitled thereto, cancel the old certificate and record the transaction upon its books.

6.5 **Fixing a Record Date**. In order that the corporation may determine the stockholders entitled to notice of or to vote at any meeting of stockholders or any adjournment thereof, or to express consent to corporate action in writing without a meeting, or entitled to receive payment of any dividend or other distribution or allotment of any rights, or entitled to exercise any rights in respect of any change, conversion or exchange of stock or for the purpose of any other lawful action, the Board of Directors may fix a record date which shall not be more than sixty (60) nor less than ten (10) days before the date of such meeting, nor more than sixty (60) days prior to any other action. A determination of stockholders of record entitled to notice of or to vote at a meeting of stockholders shall apply to any adjournment of the meeting; provided, however, that the Board of Directors may fix a new record date for the adjourned meeting.

6.6 **Registered Stockholders**. The corporation shall be entitled to recognize the exclusive right of a person registered on its books as the owner of shares to receive dividends, to vote as such owner, to hold liable for calls and assessments a person registered on its books as the owner of shares and shall not be bound to recognize any equitable or other claim to or interest in such share or shares on the part of any other person, whether or not it shall have express or other notice thereof, except as otherwise provided by the laws of Delaware.

ARTICLE VII
GENERAL PROVISIONS

7.1 **Dividends**. Dividends upon the capital stock of the corporation, if any, subject to the provisions of the certificate of incorporation, may be declared by the Board of Directors at any regular or special meeting, pursuant to law. Dividends may be paid in cash, in property or in shares of the capital stock, subject to the provisions of the certificate of incorporation.

7.2 **Reserve for Dividends**. Before payment of any dividend, there may be set aside out of any funds of the corporation available for dividends such sum or sums as the directors from time to time, in their sole discretion, think proper as a reserve or reserves to meet contingencies, or for equalizing dividends, or for repairing or maintaining any property of the corporation, or for such other purposes as the directors think conducive to the interests of the corporation, and the directors may modify or abolish any such reserve in the manner in which it was created.

7.3 **Checks**. All checks or demands for money and notes of the corporation shall be signed by such officer or officers or such other person or persons as the Board of Directors may from time to time designate.

7.4 **Fiscal Year**. The fiscal year of the corporation shall be fixed by resolution of the Board of Directors.

7.5 **Corporate Seal**. The Board of Directors may adopt a corporate seal having inscribed thereon the name of the corporation, the year of its organization and the words "Corporate Seal, Delaware." The seal may be used by causing it or a facsimile thereof to be impressed or affixed or otherwise reproduced.

7.6 **Indemnification**. The corporation shall, to the fullest extent authorized under the laws of the State of Delaware, as those laws may be amended and supplemented from time to time, indemnify any director made, or threatened to be made, a party to an action or proceeding, whether criminal, civil, administrative or investigative, by reason of being a director of the corporation or a predecessor corporation or a director or officer of another corporation, if such person served in such position at the request of the corporation; provided, however, that the corporation shall indemnify any such director or officer in connection with a proceeding initiated by such director or officer only if such proceeding was authorized by the Board of Directors of the corporation. The indemnification provided for in this Section 7.6 shall: (i) not be deemed exclusive of any other rights to which those indemnified may be entitled under these bylaws, agreement or vote of stockholders or disinterested directors or otherwise, both as to action in their official capacities and as to action in another capacity while holding such office, (ii) continue as to a person who has ceased to be a director, and (iii) inure to the benefit of the heirs, executors and administrators of a person who has ceased to be a director. The corporation's obligation to provide indemnification under this Section 7.6 shall be offset to the extent of any other source of indemnification or any otherwise applicable insurance coverage under a policy maintained by the corporation or any other person.

Expenses incurred by a director of the corporation in defending a civil or criminal action, suit or proceeding by reason of the fact that he or she is or was a director of the corporation (or was serving at the corporation's request as a director or officer of another corporation) shall be paid by the corporation in advance of the final disposition of such action, suit or proceeding upon receipt of an undertaking by or on behalf of such director to repay such amount if it shall ultimately be determined that he or she is not entitled to be indemnified by the corporation as authorized by relevant sections of the DGCL. Notwithstanding the foregoing, the corporation shall not be required to advance such expenses to an agent who is a party to an action, suit or proceeding brought by the corporation and approved by a majority of the Board of Directors of the corporation that alleges willful misappropriation of corporate assets by such agent, disclosure of confidential information in violation of such agent's fiduciary or contractual obligations to the corporation or any other willful and deliberate breach in bad faith of such agent's duty to the corporation or its stockholders.

The foregoing provisions of this Section 7.6 shall be deemed to be a contract between the corporation and each director who serves in such capacity at any time while this bylaw is in effect, and any repeal or modification thereof shall not affect any rights or obligations then existing with respect to any state of facts then or theretofore existing or any action, suit or proceeding theretofore or thereafter brought based in whole or in part upon any such state of facts.

The Board of Directors in its sole discretion shall have power on behalf of the corporation to indemnify any person, other than a director, made a party to any action, suit or proceeding by reason of the fact that he or she, his or her testator or intestate, is or was an officer or employee of the corporation.

To assure indemnification under this Section 7.6 of all directors, officers and employees who are determined by the corporation or otherwise to be or to have been "fiduciaries" of any employee benefit plan of the corporation that may exist from time to time, Section 145 of the DGCL shall, for the purposes of this Section 7.6, be interpreted as follows: an "other enterprise" shall be deemed to include such an employee benefit plan, including without limitation, any plan of the corporation that is governed by the Act of Congress entitled "Employee Retirement Income Security Act of 1974," as amended from time to time; the corporation shall be deemed to have requested a person to serve the corporation for purposes of Section 145 of the DGCL, as administrator of an employee benefit plan where the performance by such person of his or her duties to the corporation also imposes duties on, or otherwise involves services by, such person to the plan or participants or beneficiaries of the plan; excise taxes assessed on a person with respect to an employee benefit plan pursuant to such Act of Congress shall be deemed "fines."

CERTIFICATE OF INCORPORATION GOVERNS

7.7 **Conflicts with Certificate of Incorporation**. In the event of any conflict between the provisions of the corporation's certificate of incorporation and these bylaws, the provisions of the certificate of incorporation shall govern.

ARTICLE VIII
AMENDMENTS

These bylaws may be altered, amended or repealed, or new bylaws may be adopted by the stockholders or by the Board of Directors, when such power is conferred upon the Board of Directors by the certificate of incorporation at any regular meeting of the stockholders or of the Board of Directors or at any special meeting of the stockholders or of the Board of Directors if notice of such alteration, amendment, repeal or adoption of new bylaws be contained in the notice of such special meeting. If the power to adopt, amend or repeal bylaws is conferred upon the Board of Directors by the certificate of incorporation, it shall not divest or limit the power of the stockholders to adopt, amend or repeal bylaws.

ARTICLE IX
LOANS TO OFFICERS

The corporation may lend money to, or guarantee any obligation of or otherwise assist any officer or other employee of the corporation or of its subsidiaries, including any officer or employee who is a director of the corporation or its subsidiaries, whenever, in the judgment of the Board of Directors, such loan, guarantee or assistance may reasonably be expected to benefit the corporation. The loan, guarantee or other assistance may be with or without interest and may be unsecured or secured in such manner as the Board of Directors shall approve, including, without limitation, a pledge of shares of stock of the corporation. Nothing in these bylaws shall

be deemed to deny, limit or restrict the powers of guaranty or warranty of the corporation at common law or under any statute.

ARTICLE X
RECORDS AND REPORTS

The application and requirements of Section 1501 of the California General Corporation Law are hereby expressly waived to the fullest extent permitted thereunder.

CERTIFICATE OF SECRETARY OF

SGI-DNA, INC.

The undersigned, Robert Cutler, hereby certifies that he or she is the duly elected and acting Secretary of SGI-DNA, Inc., a Delaware corporation (the "Corporation"), and that the bylaws attached hereto constitute the bylaws of said Corporation as duly adopted by Action by Written Consent of the Board of Directors on July 18, 2018.

IN WITNESS WHEREOF, the undersigned has hereunto subscribed his or her name this July 18, 2018.

/s/ Robert Cutler

Robert Cutler, Secretary

AMENDED AND RESTATED INVESTORS' RIGHTS AGREEMENT

THIS AMENDED AND RESTATED INVESTORS' RIGHTS AGREEMENT (this **"Agreement"),** is made as of the 19th day of December, 2019, by and among SGI-DNA, Inc., a Delaware corporation (the **"Company"),** each of the investors listed on Schedule A hereto, each of which is referred to in this Agreement as an **"Investor",** and any Additional Purchaser (as defined in the Purchase Agreement) that becomes a party to this Agreement in accordance with Section 6.9 hereof.

RECITALS

WHEREAS, certain of the Investors (the **"Existing Investors")** hold shares of the Company's Series A Preferred Stock, Series Z Preferred Stock and/or shares of Common Stock and possess registration rights, information rights, rights of first offer, and other rights pursuant to that certain Investors' Rights Agreement, dated as of August 27, 2019, by and among the Company and such Existing Investors (the **"Prior Agreement");**

WHEREAS, the Company and the Existing Investors desire to amend and restate the Prior Agreement in its entirety and to accept the rights and obligations created pursuant to this Agreement in lieu of the rights and obligations set forth in the Prior Agreement; and

WHEREAS, certain of the Investors are parties to that certain Series A-1 Preferred Stock Purchase Agreement of even date herewith by and among the Company and such Investors (as amended from time to time, the **"Purchase Agreement"),** under which certain of the Company's and such Investors' obligations are conditioned upon the execution and delivery of this Agreement by certain of the Investors and the Company.

AGREEMENT

NOW, THEREFORE, effective as of the date hereof, the Company and the Existing Investors hereby agree that the Prior Agreement shall be amended and restated in its entirety by this Agreement, and the Company and the Investors further agree as follows:

1. Definitions. For purposes of this Agreement:

1.1 **"Affiliate"** means, with respect to any specified Person, any other Person who, directly or indirectly, controls, is controlled by, or is under common control with such Person, including without limitation any general partner, managing member, officer, director or trustee of such Person, or any venture capital fund or registered investment company now or hereafter existing that is controlled by one or more general partners, managing members or investment adviser of, or shares the same management company or investment adviser with, such Person.

1.2 **"Board of Directors"** means the board of directors of the Company.

1.3 **"Certificate of Incorporation"** means the Company's Amended and Restated Certificate of Incorporation, as amended and/or restated from time to time.

1.4 **"Common Stock"** means shares of the Company's common stock, par value $0.0001 per share.

1.5 **"Competitor"** means a Person engaged, directly or indirectly (including through any partnership, limited liability company, corporation, joint venture or similar arrangement (whether now existing or formed hereafter)), in a business that is competitive with the Company, as determined in good faith by the Board of Directors, but shall not include Northpond Ventures, LP or any other financial

investment firm or collective investment vehicle that, together with its Affiliates, holds less than twenty percent (20)% of the outstanding equity of any Competitor and does not, nor do any of its Affiliates, have a right to designate any members of the board of directors of any Competitor.

1.6 **"Damages"** means any loss, damage, claim or liability (joint or several) to which a party hereto may become subject under the Securities Act, the Exchange Act, or other federal or state law, insofar as such loss, damage, claim or liability (or any action in respect thereof) arises out of or is based upon: (i) any untrue statement or alleged untrue statement of a material fact contained in any registration statement of the Company, including any preliminary prospectus or final prospectus contained therein or any amendments or supplements thereto; (ii) an omission or alleged omission to state therein a material fact required to be stated therein, or necessary to make the statements therein not misleading; or (iii) any violation or alleged violation by the indemnifying party (or any of its agents or Affiliates) of the Securities Act, the Exchange Act, any state securities law, or any rule or regulation promulgated under the Securities Act, the Exchange Act, or any state securities law.

1.7 **"Derivative Securities"** means any securities or rights convertible into, or exercisable or exchangeable for (in each case, directly or indirectly), Common Stock, including options and warrants.

1.8 **"Exchange Act"** means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

1.9 **"Excluded Registration"** means (i) a registration relating to the sale or grant of securities to employees of the Company or a subsidiary pursuant to a stock option, stock purchase, equity incentive or similar plan; (ii) a registration relating to an SEC Rule 145 transaction; (iii) a registration on any form that does not include substantially the same information as would be required to be included in a registration statement covering the sale of the Registrable Securities; or (iv) a registration in which the only Common Stock being registered is Common Stock issuable upon conversion of debt securities that are also being registered.

1.10 **"FOIA Party"** means a Person that, in the reasonable determination of the Board of Directors, may be subject to, and thereby required to disclose non-public information furnished by or relating to the Company under, the Freedom of Information Act, 5 U.S.C. 552 **("FOIA"),** any state public records access law, any state or other jurisdiction's laws similar in intent or effect to FOIA, or any other similar statutory or regulatory requirement.

1.11 **"Form S-1"** means such form under the Securities Act as in effect on the date hereof or any successor registration form under the Securities Act subsequently adopted by the SEC.

1.12 **"Form S-3"** means such form under the Securities Act as in effect on the date hereof or any registration form under the Securities Act subsequently adopted by the SEC that permits forward incorporation of substantial information by reference to other documents filed by the Company with the SEC.

1.13 **"GAAP"** means generally accepted accounting principles in the United States as in effect from time to time.

1.14 **"Holder"** means any holder of Registrable Securities who is a party to this Agreement.

1.15 **"Immediate Family Member"** means a child, stepchild, grandchild, parent, stepparent, grandparent, spouse, domestic partner, sibling, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother-in-law, or sister-in-law, including, adoptive relationships, of a natural person referred to herein.

1.16 **"Initiating Holders"** means, collectively, Holders who properly initiate a registration request under this Agreement.

1.17 **"IPO"** means the Company's first underwritten public offering of its Common Stock under the Securities Act.

1.18 "**Key Employee**" means any executive-level employee (including, division director and vice president-level positions) as well as any employee who, either alone or in concert with others, develops, invents, programs, or designs any Company Intellectual Property (as defined in the Purchase Agreement).

1.19 **"Major Investor"** means any Investor that, individually or together with such Investor's Affiliates, holds at least 3,000,000 Registrable Securities (as adjusted for any stock split, stock dividend, combination, or other recapitalization or reclassification effected after the date hereof).

1.20 "**New Securities"** means, collectively, equity securities of the Company, whether or not currently authorized, as well as rights, options, or warrants to purchase such equity securities, or securities of any type whatsoever that are, or may become, convertible or exchangeable into or exercisable for such equity securities.

1.21 **"Person"** means any individual, corporation, partnership, trust, limited liability company, association or other entity.

1.22 **"Preferred Stock"** means, collectively, all shares of Series A-1 Preferred Stock, Series A Preferred Stock and Series Z Preferred Stock.

1.23 **"Registrable Securities"** means (i) the Common Stock issuable or issued upon conversion of the Preferred Stock; (ii) any Common Stock, or any Common Stock issued or issuable (directly or indirectly) upon conversion and/or exercise of any other securities of the Company, acquired by the Investors after the date hereof; and (iii) any Common Stock issued as (or issuable upon the conversion or exercise of any warrant, right, or other security that is issued as) a dividend or other distribution with respect to, or in exchange for or in replacement of, the shares referenced in clauses (i) and (ii) above; excluding in all cases, however, any Registrable Securities sold by a Person in a transaction in which the applicable rights under this Agreement are not assigned pursuant to Section 6.1, and excluding for purposes of Section 2 any shares for which registration rights have terminated pursuant to Section 2.13 of this Agreement.

1.24 **"Registrable Securities then outstanding"** means the number of shares determined by adding the number of shares of outstanding Common Stock that are Registrable Securities and the number of shares of Common Stock issuable (directly or indirectly) pursuant to then exercisable and/or convertible securities that are Registrable Securities.

1.25 **"Restricted Securities"** means the securities of the Company required to be notated with the legend set forth in Section 2.12(b) hereof.

1.26 "**SEC**" means the Securities and Exchange Commission.

1.27 **"SEC Rule 144"** means Rule 144 promulgated by the SEC under the Securities Act.

1.28 **"SEC Rule 145"** means Rule 145 promulgated by the SEC under the Securities Act.

1.29 **"Securities Act"** means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

1.30 **"Selling Expenses"** means all underwriting discounts, selling commissions, and stock transfer taxes applicable to the sale of Registrable Securities, and fees and disbursements of counsel for any Holder, except for the fees and disbursements of the Selling Holder Counsel borne and paid by the Company as provided in Section 2.6.

1.31 **"Series A Director"** shall have the meaning set forth in the Certificate of Incorporation.

1.32 **"Series A Preferred Stock"** means shares of the Company's Series A Preferred Stock, par value $0.0001 per share.

1.33 **"Series A-1 Preferred Stock"** means shares of the Company's Series A-1 Preferred Stock, par value $0.0001 per share.

1.34 **"Series Z Preferred Stock"** means shares of the Company's Series Z Preferred Stock, par value $0.0001 per share.

2. Registration Rights. The Company covenants and agrees as follows:

2.1 Demand Registration.

(a) Form S-1 Demand. If at any time after the earlier of (i) five (5) years after the date of this Agreement or (ii) one hundred eighty (180) days after the effective date of the registration statement for the IPO, the Company receives a request from Holders of a majority of the Registrable Securities then outstanding that the Company file a Form S-1 registration statement with respect to the Registrable Securities of such Holders having an aggregate offering price, net of Selling Expenses, of at least $10,000,000, then the Company shall (x) within ten (10) days after the date such request is given, give notice thereof (the **"Demand Notice")** to all Holders other than the Initiating Holders; and (y) as soon as practicable, and in any event within sixty (60) days after the date such request is given by the Initiating Holders, file a Form S-1 registration statement under the Securities Act covering all Registrable Securities that the Initiating Holders requested to be registered and any additional Registrable Securities requested to be included in such registration by any other Holders, as specified by notice given by each such Holder to the Company within twenty (20) days of the date the Demand Notice is given, and in each case, subject to the limitations of Section 2.1(c) and Section 2.3.

(b) Form S-3 Demand. If at any time when it is eligible to use a Form S-3 registration statement, the Company receives a request from Holders of at least twenty percent (20%) of the Registrable Securities then outstanding that the Company file a Form S-3 registration statement with respect to outstanding Registrable Securities of such Holders having an anticipated aggregate offering price, net of Selling Expenses, of at least $3,000,000, then the Company shall (i) within ten (10) days after the date such request is given, give a Demand Notice to all Holders other than the Initiating Holders; and (ii) as soon as practicable, and in any event within forty-five (45) days after the date such request is given by the Initiating Holders, file a Form S-3 registration statement under the Securities Act covering

all Registrable Securities requested to be included in such registration by any other Holders, as specified by notice given by each such Holder to the Company within twenty (20) days of the date the Demand Notice is given, and in each case, subject to the limitations of Section 2.1(c) and Section 2.3.

(c) Notwithstanding the foregoing obligations, if the Company furnishes to Holders requesting a registration pursuant to this Section 2.1 a certificate signed by the Company's chief executive officer stating that in the good faith judgment of the Board of Directors it would be materially detrimental to the Company and its stockholders for such registration statement to either become effective or remain effective for as long as such registration statement otherwise would be required to remain effective , because such action would (i) materially interfere with a significant acquisition, corporate reorganization, or other similar transaction involving the Company; (ii) require premature disclosure of material information that the Company has a bona fide business purpose for preserving as confidential; or (iii) render the Company unable to comply with requirements under the Securities Act or Exchange Act, then the Company shall have the right to defer taking action with respect to such filing, and any time periods with respect to filing or effectiveness thereof shall be tolled correspondingly, for a period of not more than ninety (90) days after the request of the Initiating Holders is given; provided, however, that the Company may not invoke this right more than once in any twelve (12) month period; and provided further that the Company shall not register any securities for its own account or that of any other stockholder during such ninety (90) days period other than an Excluded Registration.

(d) The Company shall not be obligated to effect, or to take any action to effect, any registration pursuant to Section 2.1(a) during the period that is sixty (60) days before the Company's good faith estimate of the date of filing of, and ending on a date that is one hundred eighty (180) days after the effective date of, a Company-initiated registration, provided that the Company is actively employing in good faith commercially reasonable efforts to cause such registration statement to become effective; (ii) after the Company has effected two registrations pursuant to Section 2.1(a); or (iii) if the Initiating Holders propose to dispose of shares of Registrable Securities that may be immediately registered on Form S-3 pursuant to a request made pursuant to Section 2.1(b). The Company shall not be obligated to effect, or to take any action to effect, any registration pursuant to Section 2.1(b)(i) during the period that is thirty (30) days before the Company's good faith estimate of the date of filing of, and ending on a date that is ninety (90) days after the effective date of, a Company-initiated registration, provided that the Company is actively employing in good faith commercially reasonable efforts to cause such registration statement to become effective; or (ii) if the Company has effected two registrations pursuant to Section 2.1(b) within the twelve (12) month period immediately preceding the date of such request. A registration shall not be counted as "effected" for purposes of this Section 2.1(d) until such time as the applicable registration statement has been declared effective by the SEC, unless the Initiating Holders withdraw their request for such registration, elect not to pay the registration expenses therefor, and forfeit their right to one demand registration statement pursuant to Section 2.6, in which case such withdrawn registration statement shall be counted as "effected" for purposes of this Section 2.1(d); provided, that if such withdrawal is during a period the Company has deferred taking action pursuant to Section 2.1(c), then the Initiating Holders may withdraw their request for registration and such registration will not be counted as "effected" for purposes of this Section 2.1(d).

2.2 Company Registration. If the Company proposes to register (including, for this purpose, a registration effected by the Company for stockholders other than the Holders) any of its Common Stock under the Securities Act in connection with the public offering of such securities solely for cash (other than in an Excluded Registration), the Company shall, at such time, promptly give each Holder notice of such registration. Upon the request of each Holder given within twenty (20) days after such notice is given by the Company, the Company shall, subject to the provisions of Section 2.3, cause to be registered all of the Registrable Securities that each such Holder has requested to be included in

such registration. The Company shall have the right to terminate or withdraw any registration initiated by it under this Section 2.2 before the effective date of such registration, whether or not any Holder has elected to include Registrable Securities in such registration. The expenses (other than Selling Expenses) of such withdrawn registration shall be borne by the Company in accordance with Section 2.6.

2.3 Underwriting Requirements.

(a) If, pursuant to Section 2.1, the Initiating Holders intend to distribute the Registrable Securities covered by their request by means of an underwriting, they shall so advise the Company as a part of their request made pursuant to Section 2.1, and the Company shall include such information in the Demand Notice. The underwriter(s) will be selected by the Company and shall be reasonably acceptable to a majority in interest of the Initiating Holders. In such event, the right of any Holder to include such Holder's Registrable Securities in such registration shall be conditioned upon such Holder's participation in such underwriting and the inclusion of such Holder's Registrable Securities in the underwriting to the extent provided herein; provided, however, that the liability of each Holder of Registrable Securities in respect of any indemnification, contribution or other obligation of such Holder arising under such underwriting agreement (i) shall be limited to losses arising out of or based upon an untrue statement or alleged untrue statement or omission or alleged omission made in such registration statement, any such preliminary prospectus, final prospectus, summary prospectus, amendment or supplement, incorporated document or other such disclosure document or other document or report, in reliance upon and in conformity with written information furnished to the Company by or on behalf of, and relating to, such Holder expressly for inclusion therein and (ii) shall not in any event exceed an amount equal to the net proceeds to such Holder (after deduction of all underwriters' discounts and commissions paid by such Holder) from the disposition of the Registrable Securities disposed of by such Holder pursuant to such registration. All Holders proposing to distribute their securities through such underwriting shall (together with the Company as provided in Section 2.4(e)) enter into an underwriting agreement in customary form with the underwriter(s) selected for such underwriting. Notwithstanding any other provision of this Section 2.3, if the managing underwriter(s) advise(s) the Initiating Holders in writing that marketing factors require a limitation on the number of shares to be underwritten, then the Initiating Holders shall so advise all Holders of Registrable Securities that otherwise would be underwritten pursuant hereto, and the number of Registrable Securities that may be included in the underwriting shall be allocated among such Holders of Registrable Securities, including the Initiating Holders, in proportion (as nearly as practicable) to the number of Registrable Securities owned by each Holder or in such other proportion as shall mutually be agreed to by all such selling Holders; provided, however, that the number of Registrable Securities held by the Holders to be included in such underwriting shall not be reduced unless all other securities are first entirely excluded from the underwriting. To facilitate the allocation of shares in accordance with the above provisions, the Company or the underwriters may round the number of shares allocated to any Holder to the nearest one hundred (100) shares.

(b) In connection with any offering involving an underwriting of shares of the Company's capital stock pursuant to Section 2.2, the Company shall not be required to include any of the Holders' Registrable Securities in such underwriting unless the Holders accept the terms of the underwriting as agreed upon between the Company and its underwriters, and then only in such quantity as the underwriters in their sole discretion determine will not jeopardize the success of the offering by the Company; provided, however, that the liability of each Holder of Registrable Securities in respect of any indemnification, contribution or other obligation of such Holder arising under such underwriting agreement (i) shall be limited to losses arising out of or based upon an untrue statement or alleged untrue statement or omission or alleged omission made in such registration statement, any such preliminary prospectus, final prospectus, summary prospectus, amendment or supplement, incorporated document or

other such disclosure document or other document or report, in reliance upon and in conformity with written information furnished to the Company by or on behalf of, and relating to, such Holder expressly for inclusion therein and (ii) shall not in any event exceed an amount equal to the net proceeds to such Holder (after deduction of all underwriters' discounts and commissions) from the disposition of the Registrable Securities disposed of by such Holder pursuant to such registration. If the total number of securities, including Registrable Securities, requested by stockholders to be included in such offering exceeds the number of securities to be sold (other than by the Company) that the underwriters in their reasonable discretion determine is compatible with the success of the offering, then the Company shall be required to include in the offering only that number of such securities, including Registrable Securities, which the underwriters and the Company in their sole discretion determine will not jeopardize the success of the offering. If the underwriters determine that less than all of the Registrable Securities requested to be registered can be included in such offering, then the Registrable Securities that are included in such offering shall be allocated among the selling Holders in proportion (as nearly as practicable to) the number of Registrable Securities owned by each selling Holder or in such other proportions as shall mutually be agreed to by all such selling Holders. To facilitate the allocation of shares in accordance with the above provisions, the Company or the underwriters may round the number of shares allocated to any Holder to the nearest one hundred (100) shares. Notwithstanding the foregoing, in no event shall (i) the number of Registrable Securities included in the offering be reduced unless all other securities (other than securities to be sold by the Company) are first entirely excluded from the offering, or (ii) the number of Registrable Securities included in the offering be reduced below twenty-five percent (25%) of the total number of securities included in such offering, unless such offering is the IPO, in which case the selling Holders may be excluded further if the underwriters make the determination described above and no other stockholder's securities are included in such offering. For purposes of the provision in this Section 2.3(b) concerning apportionment, for any selling Holder that is a partnership, limited liability company, or corporation, the partners, members, retired partners, retired members, stockholders, and Affiliates of such Holder, or the estates and Immediate Family Members of any such partners, retired partners, members, and retired members and any trusts for the benefit of any of the foregoing Persons, shall be deemed to be a single "selling Holder," and any pro rata reduction with respect to such "selling Holder" shall be based upon the aggregate number of Registrable Securities owned by all Persons included in such "selling Holder," as defined in this sentence.

(c) For purposes of Section 2.1, a registration shall not be counted as "effected" if, as a result of an exercise of the underwriter's cutback provisions in Section 2.3(a), fewer than fifty percent (50%) of the total number of Registrable Securities that Holders have requested to be included in such registration statement are actually included.

2.4 Obligations of the Company. Whenever required under this Section 2 to effect the registration of any Registrable Securities, the Company shall, as expeditiously as reasonably possible:

(a) prepare and file with the SEC a registration statement with respect to such Registrable Securities and use its commercially reasonable efforts to cause such registration statement to become effective and, upon the request of the Holders of a majority of the Registrable Securities registered thereunder, keep such registration statement effective for a period of up to one hundred twenty (120) days or, if earlier, until the distribution contemplated in the registration statement has been completed; provided, however, that (i) such one hundred twenty (120) day period shall be extended for a period of time equal to the period the Holder refrains, at the request of an underwriter of Common Stock (or other securities) of the Company, from selling any securities included in such registration, and (ii) in the case of any registration of Registrable Securities on Form S-3 that are intended to be offered on a continuous or delayed basis, subject to compliance with applicable SEC rules, such one

hundred twenty (120) day period shall be extended for up to sixty (60) days, if necessary, to keep the registration statement effective until all such Registrable Securities are sold;

(b) prepare and file with the SEC such amendments and supplements to such registration statement, and the prospectus used in connection with such registration statement, as may be necessary to comply with the Securities Act in order to enable the disposition of all securities covered by such registration statement;

(c) furnish to the selling Holders such numbers of copies of a prospectus, including a preliminary prospectus, as required by the Securities Act, and such other documents as the Holders may reasonably request in order to facilitate their disposition of their Registrable Securities;

(d) use its commercially reasonable efforts to register and qualify the securities covered by such registration statement under such other securities or blue-sky laws of such jurisdictions as shall be reasonably requested by the selling Holders; provided that the Company shall not be required to qualify to do business or to file a general consent to service of process in any such states or jurisdictions, unless the Company is already subject to service in such jurisdiction and except as may be required by the Securities Act;

(e) in the event of any underwritten public offering, enter into and perform its obligations under an underwriting agreement, in usual and customary form, with the underwriter(s) of such offering;

(f) use its commercially reasonable efforts to cause all such Registrable Securities covered by such registration statement to be listed on a national securities exchange or trading system and each securities exchange and trading system (if any) on which similar securities issued by the Company are then listed;

(g) provide a transfer agent and registrar for all Registrable Securities registered pursuant to this Agreement and provide a CUSIP number for all such Registrable Securities, in each case not later than the effective date of such registration;

(h) promptly make available for inspection by the selling Holders, any underwriter(s) participating in any disposition pursuant to such registration statement, and any attorney or accountant or other agent retained by any such underwriter or selected by the selling Holders, all financial and other records, pertinent corporate documents, and properties of the Company, and cause the Company's officers, directors, employees, and independent accountants to supply all information reasonably requested by any such seller, underwriter, attorney, accountant, or agent, in each case, as necessary or advisable to verify the accuracy of the information in such registration statement and to conduct appropriate due diligence in connection therewith;

(i) notify each selling Holder, promptly after the Company receives notice thereof, of the time when such registration statement has been declared effective or a supplement to any prospectus forming a part of such registration statement has been filed; and

(j) after such registration statement becomes effective, notify each selling Holder of any request by the SEC that the Company amend or supplement such registration statement or prospectus.

In addition, the Company shall ensure that, at all times after any registration statement covering a public offering of securities of the Company under the Securities Act shall have become effective, its

insider trading policy shall provide that the Company's directors may implement a trading program under Rule 10b5-1 of the Exchange Act.

2.5 Furnish Information. It shall be a condition precedent to the obligations of the Company to take any action pursuant to this Section 2 with respect to the Registrable Securities of any selling Holder that such Holder shall furnish to the Company such information regarding itself, the Registrable Securities held by it, and the intended method of disposition of such securities as is reasonably required to effect the registration of such Holder's Registrable Securities.

2.6 Expenses of Registration. All expenses (other than Selling Expenses) incurred in connection with registrations, filings, or qualifications pursuant to Section 2, including all registration, filing, and qualification fees; printers' and accounting fees; fees and disbursements of counsel for the Company; and the reasonable fees and disbursements, not to exceed $25,000, of one counsel for the selling Holders **("Selling Holder Counsel"),** shall be borne and paid by the Company; provided, however, that the Company shall not be required to pay for any expenses of any registration proceeding begun pursuant to Section 2.1 if the registration request is subsequently withdrawn at the request of the Holders of a majority of the Registrable Securities to be registered (in which case all selling Holders shall bear such expenses pro rata based upon the number of Registrable Securities that were to be included in the withdrawn registration), unless the Holders of a majority of the Registrable Securities agree to forfeit their right to one registration pursuant to Section 2.1(a) or Section 2.1(b), as the case may be; provided further that if, at the time of such withdrawal, the Holders shall have learned of a material adverse change in the condition, business, or prospects of the Company from that known to the Holders at the time of their request and have withdrawn the request with reasonable promptness after learning of such information then the Holders shall not be required to pay any of such expenses and shall not forfeit their right to one registration pursuant to Section 2.1(a) or Section 2.1(b). All Selling Expenses relating to Registrable Securities registered pursuant to this Section 2 shall be borne and paid by the Holders pro rata on the basis of the number of Registrable Securities registered on their behalf

2.7 Delay of Registration. No Holder shall have any right to obtain or seek an injunction restraining or otherwise delaying any registration pursuant to this Agreement as the result of any controversy that might arise with respect to the interpretation or implementation of this Section 2.

2.8 Indemnification. If any Registrable Securities are included in a registration statement under this Section 2:

(a) To the extent permitted by law, the Company will indemnify and hold harmless each selling Holder, and the partners, members, officers, directors, and stockholders of each such Holder; legal counsel and accountants for each such Holder; any underwriter (as defined in the Securities Act) for each such Holder; and each Person, if any, who controls such Holder or underwriter within the meaning of the Securities Act or the Exchange Act, against any Damages, and the Company will pay to each such Holder, underwriter, controlling Person, or other aforementioned Person any legal or other expenses reasonably incurred thereby in connection with investigating or defending any claim or proceeding from which Damages may result, as such expenses are incurred; provided, however, that the indemnity agreement contained in this Section 2.8(a) shall not apply to amounts paid in settlement of any such claim or proceeding if such settlement is effected without the consent of the Company, which consent shall not be unreasonably withheld, nor shall the Company be liable for any Damages to the extent that they arise out of or are based upon actions or omissions made in reliance upon and in conformity with written information furnished by or on behalf of any such Holder regarding itself or the Registrable Securities held by it, underwriter, controlling Person, or other aforementioned Person expressly for use in connection with such registration.

(b) To the extent permitted by law, each selling Holder, severally and not jointly, will indemnify and hold harmless the Company, and each of its directors, each of its officers who has signed the registration statement, each Person (if any), who controls the Company within the meaning of the Securities Act, legal counsel and accountants for the Company, any underwriter (as defined in the Securities Act), any other Holder selling securities in such registration statement, and any controlling Person of any such underwriter or other Holder, against any Damages, in each case only to the extent that such Damages arise out of or are based upon actions or omissions made in reliance upon and in conformity with written information furnished by or on behalf of such selling Holder regarding itself or the Registrable Securities held by it expressly for use in connection with such registration; and each such selling Holder will pay to the Company and each other aforementioned Person any legal or other expenses reasonably incurred thereby in connection with investigating or defending any claim or proceeding from which Damages may result, as such expenses are incurred; provided, however, that the indemnity agreement contained in this Section 2.8(b) shall not apply to amounts paid in settlement of any such claim or proceeding if such settlement is effected without the consent of the Holder, which consent shall not be unreasonably withheld; and provided further that in no event shall the aggregate amounts payable by any Holder by way of indemnity or contribution under Section 2.8(b) and Section 2.8(d) exceed the proceeds from the offering received by such Holder (net of any Selling Expenses paid by such Holder), except in the case of fraud or willful misconduct by such Holder.

(c) Promptly after receipt by an indemnified party under this Section 2.8 of notice of the commencement of any action (including any governmental action) for which a party may be entitled to indemnification hereunder, such indemnified party will, if a claim in respect thereof is to be made against any indemnifying party under this Section 2.8, give the indemnifying party notice of the commencement thereof The indemnifying party shall have the right to participate in such action and, to the extent the indemnifying party so desires, participate jointly with any other indemnifying party to which notice has been given, and to assume the defense thereof with counsel mutually satisfactory to the parties; provided, however, that an indemnified party (together with all other indemnified parties that may be represented without conflict by one counsel) shall have the right to retain one separate counsel, with the fees and expenses to be paid by the indemnifying party, if representation of such indemnified party by the counsel retained by the indemnifying party would be inappropriate due to actual or potential differing interests between such indemnified party and any other party represented by such counsel in such action. The failure to give notice to the indemnifying party within a reasonable time of the commencement of any such action shall relieve such indemnifying party of any liability to the indemnified party under this Section 2.8, to the extent that such failure materially prejudices the indemnifying party's ability to defend such action. The failure to give notice to the indemnifying party will not relieve it of any liability that it may have to any indemnified party otherwise than under this Section 2.8.

(d) To provide for just and equitable contribution to joint liability under the Securities Act in any case in which either: (i) any party otherwise entitled to indemnification hereunder makes a claim for indemnification pursuant to this Section 2.8 but it is judicially determined (by the entry of a final judgment or decree by a court of competent jurisdiction and the expiration of time to appeal or the denial of the last right of appeal) that such indemnification may not be enforced in such case, notwithstanding the fact that this Section 2.8 provides for indemnification in such case, or (ii) contribution under the Securities Act may be required on the part of any party hereto for which indemnification is provided under this Section 2.8, then, and in each such case, such parties will contribute to the aggregate losses, claims, damages, liabilities, or expenses to which they may be subject (after contribution from others) in such proportion as is appropriate to reflect the relative fault of each of the indemnifying party and the indemnified party in connection with the statements, omissions, or other actions that resulted in such loss, claim, damage, liability, or expense, as well as to reflect any other

relevant equitable considerations. The relative fault of the indemnifying party and of the indemnified party shall be determined by reference to, among other things, whether the untrue or allegedly untrue statement of a material fact, or the omission or alleged omission of a material fact, relates to information supplied by the indemnifying party or by the indemnified party and the parties' relative intent, knowledge, access to information, and opportunity to correct or prevent such statement or omission; provided, however, that, in any such case (x) no Holder will be required to contribute any amount in excess of the public offering price of all such Registrable Securities offered and sold by such Holder pursuant to such registration statement, and (y) no Person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) will be entitled to contribution from any Person who was not guilty of such fraudulent misrepresentation; and provided further that in no event shall a Holder's liability pursuant to this Section 2.8(d), when combined with the amounts paid or payable by such Holder pursuant to Section 2.8(b), exceed the proceeds from the offering received by such Holder (net of any Selling Expenses paid by such Holder), except in the case of willful misconduct or fraud by such Holder.

(e) Unless otherwise superseded by an underwriting agreement entered into in connection with the underwritten public offering, the obligations of the Company and Holders under this Section 2.8 shall survive the completion of any offering of Registrable Securities in a registration under this Section 2, and otherwise shall survive the termination of this Agreement.

2.9 Reports Under Exchange Act. With a view to making available to the Holders the benefits of SEC Rule 144 and any other rule or regulation of the SEC that may at any time permit a Holder to sell securities of the Company to the public without registration or pursuant to a registration on Form S-3, the Company shall:

(a) make and keep available adequate current public information, as those terms are understood and defined in SEC Rule 144, at all times after the effective date of the registration statement filed by the Company for the IPO;

(b) use commercially reasonable efforts to file with the SEC in a timely manner all reports and other documents required of the Company under the Securities Act and the Exchange Act (at any time after the Company has become subject to such reporting requirements); and

(c) furnish to any Holder, so long as the Holder owns any Registrable Securities, forthwith upon request (i) to the extent accurate, a written statement by the Company that it has complied with the reporting requirements of SEC Rule 144 (at any time after ninety (90) days after the effective date of the registration statement filed by the Company for the IPO), the Securities Act, and the Exchange Act (at any time after the Company has become subject to such reporting requirements), or that it qualifies as a registrant whose securities may be resold pursuant to Form S-3 (at any time after the Company so qualifies); and (ii) such other information as may be reasonably requested in availing any Holder of any rule or regulation of the SEC that permits the selling of any such securities without registration (at any time after the Company has become subject to the reporting requirements under the Exchange Act) or pursuant to Form S-3 (at any time after the Company so qualifies to use such form).

2.10 Limitations on Subsequent Registration Rights. From and after the date of this Agreement, the Company shall not, without the prior written consent of the Holders of a majority of the Registrable Securities then outstanding, enter into any agreement with any holder or prospective holder of any securities of the Company, that would (i) allow such holder or prospective holder to include such securities in any registration unless, under the terms of such agreement, such holder or prospective holder may include such securities in any such registration only to the extent that the inclusion of such securities will not reduce the number of the Registrable Securities of the Holders that are included; or (ii) allow such holder or prospective holder to initiate a demand for registration of any securities held by such

holder or prospective holder; provided that this limitation shall not apply to Registrable Securities acquired by any additional Investor that becomes a party to this Agreement in accordance with Section 6.9.

2.11 "Market Stand-off" Agreement. Each Holder hereby agrees that it will not, without the prior written consent of the managing underwriter, during the period commencing on the date of the final prospectus relating to the registration by the Company for its own behalf of shares of its Common Stock or any other equity securities under the Securities Act on a registration statement on Form S-1, and ending on the date specified by the Company and the managing underwriter (such period not to exceed one hundred eighty (180) days, in the case of the IPO, or such other period as may be requested by the Company or an underwriter to accommodate regulatory restrictions on (1) the publication or other distribution of research reports, and (2) analyst recommendations and opinions, including, but not limited to, the restrictions contained in FINRA Rule 2711(f)(4) or NYSE Rule 472(f)(4), or any successor provisions or amendments thereto), (i) lend; offer; pledge; sell; contract to sell; sell any option or contract to purchase; purchase any option or contract to sell; grant any option, right, or warrant to purchase; or otherwise transfer or dispose of, directly or indirectly, any shares of Common Stock or any securities convertible into or exercisable or exchangeable (directly or indirectly) for Common Stock (whether such shares or any such securities are then owned by the Holder or are thereafter acquired) or (ii) enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of such securities, whether any such transaction described in clause (i) or (ii) above is to be settled by delivery of Common Stock or other securities, in cash, or otherwise. The foregoing provisions of this Section 2.11 shall apply only to the IPO, shall not apply to the sale of any shares to an underwriter pursuant to an underwriting agreement, or the transfer of any shares to any trust for the direct or indirect benefit of the Holder or the immediate family of the Holder, provided that the trustee of the trust agrees to be bound in writing by the restrictions set forth herein, and provided further that any such transfer shall not involve a disposition for value, and shall be applicable to the Holders only if all officers and directors are subject to the same restrictions and the Company obtains a similar agreement from all stockholders individually owning more than one percent (1%) of the Company's outstanding Common Stock (after giving effect to conversion into Common Stock of all outstanding Preferred Stock. The underwriters in connection with such registration are intended third-party beneficiaries of this Section 2.11 and shall have the right, power and authority to enforce the provisions hereof as though they were a party hereto. Each Holder further agrees to execute such agreements as may be reasonably requested by the underwriters in connection with such registration that are consistent with this Section 2.11 or that are necessary to give further effect thereto. Any discretionary waiver or termination of the restrictions of any or all of such agreements by the Company or the underwriters shall apply pro rata to all Company stockholders that are subject to such agreements, based on the number of shares subject to such agreements.

2.12 Restrictions on Transfer.

(a) The Preferred Stock and the Registrable Securities shall not be sold, pledged, or otherwise transferred, and the Company shall not recognize and shall issue stop-transfer instructions to its transfer agent with respect to any such sale, pledge, or transfer, except upon the conditions specified in this Agreement, which conditions are intended to ensure compliance with the provisions of the Securities Act. A transferring Holder will cause any proposed purchaser, pledgee, or transferee of the Preferred Stock and the Registrable Securities held by such Holder to agree to take and hold such securities subject to the provisions and upon the conditions specified in this Agreement.

(b) Each certificate, instrument, or book entry representing (i) the Preferred Stock, (ii) the Registrable Securities, and (iii) any other securities issued in respect of the securities referenced in clauses (i) and (ii), upon any stock split, stock dividend, recapitalization, merger, consolidation, or similar event, shall (unless otherwise permitted by the provisions of Section 2.12(c)) be notated with a legend substantially in the following form:

> THE SHARES REPRESENTED HEREBY HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AND HAVE BEEN ACQUIRED FOR INVESTMENT AND NOT WITH A VIEW TO, OR IN CONNECTION WITH, THE SALE OR DISTRIBUTION THEREOF. NO SUCH TRANSFER MAY BE EFFECTED WITHOUT AN EFFECTIVE REGISTRATION STATEMENT RELATED THERETO OR AN OPINION OF COUNSEL IN A FORM SATISFACTORY TO THE COMPANY THAT SUCH REGISTRATION IS NOT REQUIRED UNDER THE SECURITIES ACT OF 1933.
>
> THE SECURITIES REPRESENTED HEREBY MAY BE TRANSFERRED ONLY IN ACCORDANCE WITH THE TERMS OF AN AMENDED AND RESTATED INVESTORS' RIGHTS AGREEMENT BETWEEN THE COMPANY AND THE STOCKHOLDER, A COPY OF WHICH IS ON FILE WITH THE SECRETARY OF THE COMPANY.

The Holders consent to the Company making a notation in its records and giving instructions to any transfer agent of the Restricted Securities in order to implement the restrictions on transfer set forth in this Section 2.12.

The foregoing legend shall be removed from the certificates representing any Restricted Securities, at the request of the holder thereof, at such time as (a) a period of at least one year, as determined in accordance with paragraph (d) of SEC Rule 144, has elapsed since the later of the date the Restricted Securities were acquired from the Company or an affiliate of the Company, and (b) the Restricted Securities become eligible for resale pursuant to SEC Rule 144(b)(1)(i).

(c) The holder of such Restricted Securities, by acceptance of ownership thereof, agrees to comply in all respects with the provisions of this Section 2. Before any proposed sale, pledge, or transfer of any Restricted Securities, unless there is in effect a registration statement under the Securities Act covering the proposed transaction, the Holder thereof shall give notice to the Company of such Holder's intention to effect such sale, pledge, or transfer. Each such notice shall describe the manner and circumstances of the proposed sale, pledge, or transfer in sufficient detail and, if reasonably requested by the Company, shall be accompanied at such Holder's expense by either (i) a written opinion of legal counsel who shall, and whose legal opinion shall, be reasonably satisfactory to the Company, addressed to the Company, to the effect that the proposed transaction may be effected without registration under the Securities Act; (ii) a "no action" letter from the SEC to the effect that the proposed sale, pledge, or transfer of such Restricted Securities without registration will not result in a recommendation by the staff of the SEC that action be taken with respect thereto; or (iii) any other evidence reasonably satisfactory to counsel to the Company to the effect that the proposed sale, pledge, or transfer of the Restricted Securities may be effected without registration under the Securities Act, whereupon the Holder of such Restricted Securities shall be entitled to sell, pledge, or transfer such Restricted Securities in accordance with the terms of the notice given by the Holder to the Company. The Company will not require such a legal opinion or "no action" letter (x) in any transaction in compliance with SEC Rule 144; or (y) in any transaction in which such Holder distributes Restricted Securities to an Affiliate of such Holder for no consideration; provided that each transferee agrees in writing to be subject to the terms of this Section

2.12. Each certificate, instrument, or book entry representing the Restricted Securities transferred as above provided shall be notated with, except if such transfer is made pursuant to SEC Rule 144, the appropriate restrictive legend set forth in Section 2.12(b), except that such certificate instrument, or book entry shall not be notated with such restrictive legend if, in the opinion of counsel for such Holder and the Company, such legend is not required in order to establish compliance with any provisions of the Securities Act.

2.13 Termination of Registration Rights. The right of any Holder to request registration or inclusion of Registrable Securities in any registration pursuant to Section 2.1 or Section 2.2 shall terminate upon the earliest to occur of:

(a) the closing of a Deemed Liquidation Event (as such term is defined in the Certificate of Incorporation);

(b) such time after consummation of the IPO as Rule 144 or another similar exemption under the Securities Act is available for the sale of all of such Holder's shares without limitation during a three-month period without registration;

(c) the fifth (5th) anniversary of the date of the IPO.

3. Information Rights.

3.1 Delivery of Financial Statements. The Company shall deliver to each Major Investor, provided that the Board of Directors has not reasonably determined that such Major Investor is a Competitor of the Company:

(a) as soon as practicable, but in any event within ninety (90) days after the end of each fiscal year of the Company (i) an unaudited balance sheet as of the end of such year, (ii) unaudited statements of income and of cash flows for such year, and (iii) a statement of stockholders' equity as of the end of such year, all prepared in accordance with GAAP (except that such financial statements may (1) be subject to normal year-end audit adjustments; and (2) not contain all notes thereto that may be required in accordance with GAAP;

(b) as soon as practicable, but in any event within forty-five (45) days after the end of each of the first three (3) quarters of each fiscal year of the Company, unaudited statements of income and cash flows for such fiscal quarter, and an unaudited balance sheet as of the end of such fiscal quarter, all prepared in accordance with GAAP (except that such financial statements may (i) be subject to normal year-end audit adjustments; and (ii) not contain all notes thereto that may be required in accordance with GAAP);

(c) as soon as practicable, but in any event within forty-five (45) days after the end of each of the first three (3) quarters of each fiscal year of the Company and solely to the extent requested by such Major Investor, a statement showing the number of shares of each class and series of capital stock and securities convertible into or exercisable for shares of capital stock outstanding at the end of the period, the Common Stock issuable upon conversion or exercise of any outstanding securities convertible or exercisable for Common Stock and the exchange ratio or exercise price applicable thereto, and the number of shares of issued stock options and stock options not yet issued but reserved for issuance, if any, all in sufficient detail as to permit the Major Investors to calculate their respective percentage equity ownership in the Company;

(d) as soon as practicable, but in any event within thirty (30) days of the end of each month, an unaudited income statement for such month, and an unaudited balance sheet as of the end of such month, all prepared in accordance with GAAP (except that such financial statements may (i) be subject to normal year-end audit adjustments and (ii) not contain all notes thereto that may be required in accordance with GAAP);

(e) as soon as practicable, but in any event thirty (30) days before the end of each fiscal year, a budget and business plan for the next fiscal year (collectively, the **"Budget"),** approved by the Board of Directors (including the Series A Director) and prepared on a monthly basis, including balance sheets, income statements, and statements of cash flow for such months and, promptly after prepared, any other budgets or revised budgets prepared by the Company; and

(f) such other information relating to the financial condition, business, prospects, or corporate affairs of the Company as any Major Investor may from time to time reasonably request; provided, however, that the Company shall not be obligated under this Section 3.1 to provide information (i) that the Company reasonably determines in good faith to be a trade secret or confidential information (unless covered by an enforceable confidentiality agreement, in a form acceptable to the Company); or (ii) the disclosure of which would adversely affect the attorney-client privilege between the Company and its counsel.

If, for any period, the Company has any subsidiary whose accounts are consolidated with those of the Company, then in respect of such period the financial statements delivered pursuant to the foregoing sections shall be the consolidated and consolidating financial statements of the Company and all such consolidated subsidiaries.

Notwithstanding anything else in this Section 3.1 to the contrary, the Company may cease providing the information set forth in this Section 3.1 during the period starting with the date sixty (60) days before the Company's good-faith estimate of the date of filing of a registration statement if it reasonably concludes it must do so to comply with the SEC rules applicable to such registration statement and related offering; provided that the Company's covenants under this Section 3.1 shall be reinstated at such time as the Company is no longer actively employing its commercially reasonable efforts to cause such registration statement to become effective.

3.2 Inspection. The Company shall permit each Major Investor (provided that the Board of Directors has not reasonably determined that such Major Investor is a Competitor of the Company), at such Major Investor's expense, to visit and inspect the Company's properties; examine its books of account and records; and discuss the Company's affairs, finances, and accounts with its officers, during normal business hours of the Company as may be reasonably requested by the Major Investor; provided, however, that the Company shall not be obligated pursuant to this Section 3.2 to provide access to any information that it reasonably and in good faith considers to be a trade secret or confidential information (unless covered by an enforceable confidentiality agreement, in form acceptable to the Company) or the disclosure of which would adversely affect the attorney-client privilege between the Company and its counsel.

3.3 Termination of Information Rights. The covenants set forth in Section 3.1 and Section 3.2 shall terminate and be of no further force or effect (i) immediately before the consummation of the IPO, or (ii) when the Company first becomes subject to the periodic reporting requirements of Section 12(g) or 15(d) of the Exchange Act, or (iii) upon the closing of a Deemed Liquidation Event, whichever event occurs first.

3.4 Confidentiality. Each Investor agrees that such Investor will keep confidential and will not disclose, divulge, or use for any purpose (other than to monitor its investment in the Company) any confidential information obtained from the Company pursuant to the terms of this Agreement (including notice of the Company's intention to file a registration statement), unless such confidential information (a) is known or becomes known to the public in general (other than as a result of a breach of this Section 3.4 by such Investor), (b) is or has been independently developed or conceived by such Investor without use of the Company's confidential information, or (c) is or has been made known or disclosed to such Investor by a third party without, to such Investor's knowledge, a breach of any obligation of confidentiality such third party may have to the Company; provided, however, that an Investor may disclose confidential information (i) to its attorneys, accountants, consultants, and other professionals to the extent necessary to obtain their services in connection with monitoring its investment in the Company; (ii) to any prospective purchaser of any Registrable Securities from such Investor, if such prospective purchaser agrees to be bound by the provisions of this Section 3.4; (iii) to any existing or prospective Affiliate, partner, member, stockholder, or wholly owned subsidiary of such Investor in the ordinary course of business, provided that such Investor informs such Person that such information is confidential and directs such Person to maintain the confidentiality of such information; or (iv) as may otherwise be required by law, regulation, rule, court order or subpoena, provided that such Investor promptly notifies the Company of such disclosure and takes reasonable steps to minimize the extent of any such required disclosure.

4. Rights to Future Stock Issuances.

4.1 Right of First Offer. Subject to the terms and conditions of this Section 4.1 and applicable securities laws, if the Company proposes to offer or sell any New Securities, the Company shall first offer such New Securities to each Major Investor. A Major Investor shall be entitled to apportion the right of first offer hereby granted to it in such proportions as it deems appropriate, among (i) itself and (ii) its Affiliates; provided that each such Affiliate (x) is not a Competitor or FOIA Party, unless such party's purchase of New Securities is otherwise consented to by the Board of Directors, (y) agrees to enter into this Agreement and each of the Amended and Restated Voting Agreement and Amended and Restated Right of First Refusal and Co-Sale Agreement of even date herewith among the Company, the Investors and the other parties named therein, as an **"Investor"** under each such agreement (provided that any Competitor or FOIA Party shall not be entitled to any rights as a Major Investor under Section 3.1, Section 3.2 and Section 4.1 hereof).

(a) The Company shall give notice (the **"Offer Notice")** to each Major Investor, stating (i) its bona fide intention to offer such New Securities, (ii) the number of such New Securities to be offered, and (iii) the price and terms, if any, upon which it proposes to offer such New Securities.

(b) By notification to the Company within twenty (20) days after the Offer Notice is given, each Major Investor may elect to purchase or otherwise acquire, at the price and on the terms specified in the Offer Notice, up to that portion of such New Securities which equals the proportion that the Common Stock then held by such Major Investor (including all shares of Common Stock then issuable (directly or indirectly) upon conversion and/or exercise, as applicable, of the Preferred Stock and any other Derivative Securities then held by such Major Investor) bears to the total Common Stock of the Company then outstanding (assuming full conversion and/or exercise, as applicable, of all Preferred Stock and any other Derivative Securities then outstanding). At the expiration of such twenty (20) day period, the Company shall promptly notify each Major Investor that elects to purchase or acquire all the shares available to it (each, a **"Fully Exercising Investor")** of any other Major Investor's failure to do likewise. During the ten (10) day period commencing after the Company has given such notice, each Fully

Exercising Investor may, by giving notice to the Company, elect to purchase or acquire, in addition to the number of shares specified above, up to that portion of the New Securities for which Major Investors were entitled to subscribe but that were not subscribed for by the Major Investors which is equal to the proportion that the Common Stock issued and held, or issuable (directly or indirectly) upon conversion and/or exercise, as applicable, of Preferred Stock and any other Derivative Securities then held, by such Fully Exercising Investor bears to the Common Stock issued and held, or issuable (directly or indirectly) upon conversion and/or exercise, as applicable, of the Preferred Stock and any other Derivative Securities then held, by all Fully Exercising Investors who wish to purchase such unsubscribed shares. The closing of any sale pursuant to this Section 4.1(b) shall occur within the later of ninety (90) days of the date that the Offer Notice is given and the date of initial sale of New Securities pursuant to Section 4.1(c).

(c) If all New Securities referred to in the Offer Notice are not elected to be purchased or acquired as provided in Section 4.1(b), the Company may, during the ninety (90) day period following the expiration of the periods provided in Section 4.1(b), offer and sell the remaining unsubscribed portion of such New Securities to any Person or Persons at a price not less than, and upon terms no more favorable to the offeree than, those specified in the Offer Notice. If the Company does not enter into an agreement for the sale of the New Securities within such period, or if such agreement is not consummated within thirty (30) days of the execution thereof, the right provided hereunder shall be deemed to be revived and such New Securities shall not be offered unless first reoffered to the Major Investors in accordance with this Section 4.1.

(d) The right of first offer in this Section 4.1 shall not be applicable to (i) Exempted Securities (as defined in the Certificate of Incorporation); and (ii) shares of Common Stock issued in the IPO; and (iii) the issuance of shares of Series A-1 Preferred Stock to Additional Purchasers pursuant to Section 1.3 of the Purchase Agreement.

(e) Notwithstanding any provision hereof to the contrary, in lieu of complying with the provisions of this Section 4.1, the Company may elect to give notice to the Major Investors within thirty (30) days after the issuance of New Securities. Such notice shall describe the type, price, and terms of the New Securities. Each Major Investor shall have twenty (20) days from the date notice is given to elect to purchase up to the number of New Securities that would, if purchased by such Major Investor, maintain such Major Investor's percentage-ownership position, calculated as set forth in Section 4.1(b) before giving effect to the issuance of such New Securities.

4.2 Termination. The covenants set forth in Section 4.1 shall terminate and be of no further force or effect (i) immediately before the consummation of the IPO, (ii) when the Company first becomes subject to the periodic reporting requirements of Section 12(g) or 15(d) of the Exchange Act, or (iii) upon the closing of a Deemed Liquidation Event, whichever event occurs first.

5. Additional Covenants.

5.1 Insurance. The Company shall use commercially reasonable efforts to maintain, from financially sound and reputable insurers, its Directors and Officers liability insurance and term "key-person" insurance on Todd Nelson, each in an amount and on terms and conditions satisfactory to the Board of Directors until such time as the Board of Directors determines that such insurance should be discontinued. The key-person policy shall name the Company as loss payee, and no such policy shall be cancelable by the Company without prior approval by the Board of Directors, including the Series A Director. Notwithstanding any other provision of this Section 5.1 to the contrary, for so long as the Series A Director is serving on the Board of Directors, following the Company obtaining Directors and Officers liability insurance policy pursuant to the first sentence of this Section 5.1, the Company shall not cease to

maintain a Directors and Officers liability insurance policy in an amount of at least one (1) million unless approved by the Series A Director.

5.2 Employee Agreements. The Company will cause each Person now or hereafter employed by it or by any subsidiary (or engaged by the Company or any subsidiary as a consultant/independent contractor) with access to confidential information and/or trade secrets to enter into a nondisclosure and proprietary rights assignment agreement in a form approved by the Board of Directors.

5.3 Employee Stock. Unless otherwise approved by the Board of Directors, including the Series A Director, all future employees and consultants of the Company who purchase, receive options to purchase, or receive awards of shares of the Company's capital stock after the date hereof shall be required to execute restricted stock or option agreements, as applicable, providing for (i) vesting of shares over a four (4) year period, with the first twenty-five percent (25%) of such shares vesting following twelve (12) months of continued employment or service, and the remaining shares vesting in equal monthly installments over the following thirty-six (36) months, and (ii) a market stand-off provision substantially similar to that in Section 2.11. Without the prior approval by the Board of Directors, including the Series A Director, the Company shall not amend, modify, terminate, waive or otherwise alter, in whole or in part, any stock purchase, stock restriction or option agreement with any existing employee or service provider if such amendment would cause it to be inconsistent with this Section 5.2. In addition, unless otherwise approved by the Board of Directors, the Company shall retain (and not waive) a "right of first refusal" on employee transfers until the Company's IPO and shall have the right to repurchase unvested shares at cost upon termination of employment of a holder of restricted stock.

5.4 Board Matters. Unless otherwise determined by the vote of a majority of the directors then in office, the Board of Directors shall meet at least quarterly in accordance with an agreed-upon schedule. The Company shall reimburse the nonemployee directors for all reasonable out-of-pocket travel expenses incurred (consistent with the Company's travel policy) in connection with attending meetings of the Board of Directors. The Series A Director shall be entitled in such director's discretion to be a member of any committee of the Board of Directors.

5.5 Successor Indemnification. If the Company or any of its successors or assignees consolidates with or merges into any other Person and is not the continuing or surviving corporation or entity of such consolidation or merger, then to the extent necessary, proper provision shall be made so that the successors and assignees of the Company assume the obligations of the Company with respect to indemnification of members of the Board of Directors as in effect immediately before such transaction, whether such obligations are contained in the Company's Bylaws, the Certificate of Incorporation, or elsewhere, as the case may be.

5.6 Right to Conduct Activities. The Company hereby agrees and acknowledges that certain Investors (together with their respective Affiliates) are professional investment organizations (such Investors, **"Fund Investors"),** and as such reviews the business plans and related proprietary information of many enterprises, some of which may compete directly or indirectly with the Company's business (as currently conducted or as currently propose to be conducted). The Company hereby agrees that, to the extent permitted under applicable law, each Fund Investor (and its respective Affiliates) shall not be liable to the Company for any claim arising out of, or based upon, (i) the investment by such Fund Investor (and its respective Affiliates) in any entity competitive with the Company, or (ii) actions taken by any partner, officer, employee or other representative of such Fund Investor (and its respective Affiliates) to assist any such competitive company, whether or not such action was taken as a member of the board of directors of such competitive company or otherwise, and whether or not such action has a detrimental effect on the Company; provided, however, that the foregoing shall not relieve (x) any of the Investors from liability

associated with the unauthorized disclosure of the Company's confidential information obtained pursuant to this Agreement, or (y) any director or officer of the Company from any liability associated with his or her fiduciary duties to the Company.

5.7 Termination of Covenants. The covenants set forth in this Section 5 shall terminate and be of no further force or effect (i) immediately before the consummation of the IPO,(ii) when the Company first becomes subject to the periodic reporting requirements of Section 12(g) or 15(d) of the Exchange Act, or (iii) upon a Deemed Liquidation Event, whichever event occurs first.

6. Miscellaneous.

6.1 Successors and Assigns. The rights under this Agreement may be assigned (but only with all related obligations) by a Holder to a transferee of Registrable Securities that (i) is an Affiliate of a Holder; (ii) is a Holder's Immediate Family Member or trust for the benefit of an individual Holder or one or more of such Holder's Immediate Family Members; or (iii) after such transfer, holds at least 500,000 shares of Registrable Securities (subject to appropriate adjustment for stock splits, stock dividends, combinations, and other recapitalizations); provided, however, that (x) the Company is, within a reasonable time after such transfer, furnished with written notice of the name and address of such transferee and the Registrable Securities with respect to which such rights are being transferred; and (y) such transferee agrees in a written instrument delivered to the Company to be bound by and subject to the terms and conditions of this Agreement, including the provisions of Section 2.11. For the purposes of determining the number of shares of Registrable Securities held by a transferee, the holdings of a transferee (1) that is an Affiliate or stockholder of a Holder; (2) who is a Holder's Immediate Family Member ; or (3) that is a trust for the benefit of an individual Holder or such Holder's Immediate Family Member shall be aggregated together and with those of the transferring Holder; provided further that all transferees who would not qualify individually for assignment of rights shall, as a condition to the applicable transfer, establish a single attorney-in-fact for the purpose of exercising any rights, receiving notices, or taking any action under this Agreement. The terms and conditions of this Agreement inure to the benefit of and are binding upon the respective successors and permitted assignees of the parties. Nothing in this Agreement, express or implied, is intended to confer upon any party other than the parties hereto or their respective successors and permitted assignees any rights, remedies, obligations or liabilities under or by reason of this Agreement, except as expressly provided herein.

6.2 Governing Law. This Agreement shall be governed by the internal law of the State of Delaware, without regard to conflict of law principles that would result in the application of any law other than the law of the State of Delaware.

6.3 Counterparts. This Agreement may be executed in two (2) or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Counterparts may be delivered via facsimile, electronic mail (including pdf or any electronic signature complying with the U.S. federal ESIGN Act of 2000, *e.g.*, www.docusign.com) or other transmission method and any counterpart so delivered shall be deemed to have been duly and validly delivered and be valid and effective for all purposes.

6.4 Titles and Subtitles. The titles and subtitles used in this Agreement are for convenience only and are not to be considered in construing or interpreting this Agreement.

6.5 Notices.

(a) All notices and other communications given or made pursuant to this Agreement shall be in writing and shall be deemed effectively given upon the earlier of actual receipt or

(i) personal delivery to the party to be notified; (ii) when sent, if sent by electronic mail or facsimile during the recipient's normal business hours, and if not sent during normal business hours, then on the recipient's next business day; (iii) five (5) days after having been sent by registered or certified mail, return receipt requested, postage prepaid; or (iv) one (1) business day after the business day of deposit with a nationally recognized overnight courier, freight prepaid, specifying next-day delivery, with written verification of receipt. All communications shall be sent to the respective parties at their addresses as set forth on Schedule A hereto, or to the principal office of the Company and to the attention of the Chief Executive Officer, in the case of the Company, or to such email address, facsimile number, or address as subsequently modified by written notice given in accordance with this Section 6.5. If notice is given to the Company, a copy shall also be sent to Jeff Baglio, DLA Piper LLP (US), 4365 Executive Drive, Suite 1100, San Diego, CA 92121, E-mail Jeff.Baglio@US.DLAPiper.com. If notice is given to any Investor, a copy (which shall not constitute notice) shall also be given to Ropes & Gray LLP, The Prudential Tower, 800 Boylston Street, Boston, MA 02199, Attention: Joel F. Freedman, Telephone 617- 951-7309, Fax: 617-951-7050.

(b) Consent to Electronic Notice. Each Investor consents to the delivery of any stockholder notice pursuant to the Delaware General Corporation Law (the **"DGCL"),** as amended or superseded from time to time, by electronic transmission pursuant to Section 232 of the DGCL (or any successor thereto) at the electronic mail address or the facsimile number set forth below such Investor's name on the Schedules hereto, as updated from time to time by notice to the Company, or as on the books of the Company. To the extent that any notice given by means of electronic transmission is returned or undeliverable for any reason, the foregoing consent shall be deemed to have been revoked until a new or corrected electronic mail address has been provided, and such attempted Electronic Notice shall be ineffective and deemed to not have been given. Each Investor agrees to promptly notify the Company of any change in such stockholder's electronic mail address, and that failure to do so shall not affect the foregoing.

6.6 Amendments and Waivers. Any term of this Agreement may be amended, modified or terminated and the observance of any term of this Agreement may be waived (either generally or in a particular instance, and either retroactively or prospectively) only with the written consent of (i) the Company and (ii) the Investors holding a majority of the Registrable Securities then outstanding and held by the Investors (voting as a single separate class and on an as-converted basis); provided that the Company may in its sole discretion waive compliance with Section 2.12(c) (and the Company's failure to object promptly in writing after notification of a proposed assignment allegedly in violation of Section 2.12(c) shall be deemed to be a waiver); and provided further that any provision hereof may be waived by any waiving party on such party's own behalf, without the consent of any other party. Notwithstanding the foregoing, (a) this Agreement may not be amended, modified or terminated and the observance of any term hereof may not be waived with respect to any Investor without the written consent of such Investor, unless such amendment, modification, termination, or waiver applies to all Investors in the same fashion (it being agreed that a waiver of the provisions of Section 4 with respect to a particular transaction shall be deemed to apply to all Investors in the same fashion if such waiver does so by its terms, notwithstanding the fact that certain Investors may nonetheless, by agreement with the Company, purchase securities in such transaction); (b) Section 3.1, Section 3.2 and Section 4, and any other section of this Agreement applicable to the Major Investors (including this clause (b) of this Section 6.6) may not be amended, modified, terminated or waived without the written consent of the holders of a majority of the Registrable Securities then outstanding and held by the Major Investors. Notwithstanding the foregoing, Schedule A hereto may be amended by the Company from time to time to add transferees of any Registrable Securities in compliance with the terms of this Agreement without the consent of the other parties; and Schedule A hereto may also be amended by the Company after the date of this

Agreement without the consent of the other parties to add information regarding any additional Investor who becomes a party to this Agreement in accordance with Section 6.9. The Company shall give prompt notice of any amendment, modification or termination hereof or waiver hereunder to any party hereto that did not consent in writing to such amendment, modification, termination, or waiver. Any amendment, modification, termination, or waiver effected in accordance with this Section 6.6 shall be binding on all parties hereto, regardless of whether any such party has consented thereto. No waivers of or exceptions to any term, condition, or provision of this Agreement, in any one or more instances, shall be deemed to be or construed as a further or continuing waiver of any such term, condition, or provision.

6.7 Severability. In case any one or more of the provisions contained in this Agreement is for any reason held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality, or unenforceability shall not affect any other provision of this Agreement, and such invalid, illegal, or unenforceable provision shall be reformed and construed so that it will be valid, legal, and enforceable to the maximum extent permitted by law.

6.8 Aggregation of Stock. All shares of Registrable Securities held or acquired by Affiliates shall be aggregated together for the purpose of determining the availability of any rights under this Agreement and such Affiliated persons may apportion such rights as among themselves in any manner they deem appropriate.

6.9 Additional Investors. Notwithstanding anything to the contrary contained herein, if the Company issues additional shares of the Company's Preferred Stock after the date hereof, any purchaser of such shares of Preferred Stock may become a party to this Agreement by executing and delivering an additional counterpart signature page to this Agreement, and thereafter shall be deemed an "Investor" for all purposes hereunder. No action or consent by the Investors shall be required for such joinder to this Agreement by such additional Investor, so long as such additional Investor has agreed in writing to be bound by all of the obligations as an "Investor" hereunder.

6.10 Entire Agreement. This Agreement (including any Schedules and Exhibits hereto) constitutes the full and entire understanding and agreement among the parties with respect to the subject matter hereof, and any other written or oral agreement relating to the subject matter hereof existing between the parties is expressly canceled. Upon the effectiveness of this Agreement, the Prior Agreement shall be deemed amended and restated and superseded and replaced in its entirety by this Agreement, and shall be of no further force or effect. This Agreement shall be effective as of the date hereof

6.11 Dispute Resolution. The parties (a) hereby irrevocably and unconditionally submit to the jurisdiction of the state courts of San Diego, California and to the jurisdiction of the United States District Court for the Southern District of California for the purpose of any suit, action or other proceeding arising out of or based upon this Agreement, (b) agree not to commence any suit, action or other proceeding arising out of or based upon this Agreement except in the state courts of San Diego, California or the United States District Court for the Southern District of California, and (c) hereby waive, and agree not to assert, by way of motion, as a defense, or otherwise, in any such suit, action or proceeding, any claim that it is not subject personally to the jurisdiction of the above-named courts, that its property is exempt or immune from attachment or execution, that the suit, action or proceeding is brought in an inconvenient forum, that the venue of the suit, action or proceeding is improper or that this Agreement or the subject matter hereof may not be enforced in or by such court.

WAIVER OF JURY TRIAL: EACH PARTY HEREBY WAIVES ITS RIGHTS TO A JURY TRIAL OF ANY CLAIM OR CAUSE OF ACTION BASED UPON OR ARISING OUT OF THIS AGREEMENT, THE OTHER TRANSACTION DOCUMENTS, THE SECURITIES OR THE SUBJECT MATTER HEREOF OR THEREOF. THE SCOPE OF THIS WAIVER IS INTENDED TO BE ALL-ENCOMPASSING OF ANY AND ALL DISPUTES THAT MAY BE FILED IN ANY COURT AND THAT RELATE TO THE SUBJECT MATTER OF THIS TRANSACTION, INCLUDING, WITHOUT LIMITATION, CONTRACT CLAIMS, TORT CLAIMS (INCLUDING NEGLIGENCE), BREACH OF DUTY CLAIMS, AND ALL OTHER COMMON LAW AND STATUTORY CLAIMS. THIS SECTION HAS BEEN FULLY DISCUSSED BY EACH OF THE PARTIES HERETO AND THESE PROVISIONS WILL NOT BE SUBJECT TO ANY EXCEPTIONS. EACH PARTY HERETO HEREBY FURTHER WARRANTS AND REPRESENTS THAT SUCH PARTY HAS REVIEWED THIS WAIVER WITH ITS LEGAL COUNSEL, AND THAT SUCH PARTY KNOWINGLY AND VOLUNTARILY WAIVES ITS JURY TRIAL RIGHTS FOLLOWING CONSULTATION WITH LEGAL COUNSEL.

Each party will bear its own costs in respect of any disputes arising under this Agreement. Each of the parties to this Agreement consents to personal jurisdiction for any equitable action sought in the U.S. District Court for the Southern District of California or any court of the State of California having subject matter jurisdiction.

6.12 Delays or Omissions. No delay or omission to exercise any right, power, or remedy accruing to any party under this Agreement, upon any breach or default of any other party under this Agreement, shall impair any such right, power, or remedy of such nonbreaching or nondefaulting party, nor shall it be construed to be a waiver of or acquiescence to any such breach or default, or to any similar breach or default thereafter occurring, nor shall any waiver of any single breach or default be deemed a waiver of any other breach or default theretofore or thereafter occurring. All remedies, whether under this Agreement or by law or otherwise afforded to any party, shall be cumulative and not alternative.

Remainder of Page Intentionally Left Blank.

IN WITNESS WHEREOF, the parties have executed this Amended and Restated Investors' Rights Agreement as of the date first written above.

COMPANY

SGI-DNA, INC.

By: /s/ Todd Nelson

Name: Todd Nelson

Title: Chief Executive Officer

Address: 9535 Waples Street, Suite 100
San Diego, Ca 92121
TNelson@sgidna.com

IN WITNESS WHEREOF, the parties have executed this Amended and Restated Investors' Rights Agreement as of the date first written above.

INVESTOR

NORTHPOND VENTURES, LP

By: Northpond Ventures GP
its general partner:

By: /s/ Patrick Smerkers
Name: Patrick Smerkers
Title: Director of Finance and Operations

IN WITNESS WHEREOF, the parties have executed this Amended and Restated Investors' Rights Agreement as of the date first written above.

INVESTOR

DH LIFE SCIENCES LLC

By: /s/ Michael Egholm

Name: Michael Egholm

Title: Chief Technology Officer

IN WITNESS WHEREOF, the parties have executed this Amended and Restated Investors' Rights Agreement as of the date first written above.

INVESTOR

BROADOAK FUND 1V, LLC

By: /s/ William Snider

Name: William Snider

Title: Authorized Signatory

IN WITNESS WHEREOF, the parties have executed this Amended and Restated Investors' Rights Agreement as of the date first written above.

INVESTOR

GATTACA MINING LLC

By: /s/ Todd Nelson

Name: Todd Nelson

Title: Chief Executive Officer

IN WITNESS WHEREOF, the parties have executed this Amended and Restated Investors' Rights Agreement as of the date first written above.

INVESTOR

TODD NELSON

/s/ Todd Nelson

SCHEDULE A
INVESTORS

Name and Address

NORTHPOND VENTURES, LP
7500 Old Georgetown Rd, Suite 850
Bethesda, MD 20814

GATTACA MINING LLC
9535 Waples Street, Suite 100 San Diego, Ca 92121
TNelson@sgidna.com

DH LIFE SCIENCES LLC
2200 Pennsylvania Avenue N.W., Suite 800W Washington, D.C. 20037

BROADOAK FUND IV, LLC
4800 Montgomery Lane, Suite 230
Bethesda, MD 20814
bsnider@broadoak.com

TODD NELSON
9535 Waples Street, Suite 100
San Diego, Ca 92121
TNelson@sgidna.com

SGI-DNA, INC.

2019 STOCK PLAN

ADOPTED ON MARCH 08, 2019

TABLE OF CONTENTS

SGI-DNA, INC. 2019 STOCK PLAN

SECTION 1. ESTABLISHMENT AND PURPOSE.

The purpose of this Plan is to attract, incentivize and retain Employees, Outside Directors and Consultants through the grant of Awards. The Plan provides for the direct award or sale of Shares, the grant of Options to purchase Shares and the grant of Restricted Stock Units to acquire Shares. Options granted under the Plan may be ISOs intended to qualify under Code Section 422 or NSOs which are not intended to so qualify.

Capitalized terms are defined in Section 12.

SECTION 2. ADMINISTRATION.

(a) **Committees of the Board of Directors**. The Plan may be administered by one or more Committees. Each Committee shall consist, as required by applicable law, of one or more members of the Board of Directors who have been appointed by the Board of Directors. Each Committee shall have such authority and be responsible for such functions as the Board of Directors has assigned to it. If no Committee has been appointed, the entire Board of Directors shall administer the Plan. Any reference to the Board of Directors in the Plan or an Award Agreement shall be construed as a reference to the Committee (if any) to whom the Board of Directors has assigned a particular function.

(b) **Authority of the Board of Directors**. Subject to the provisions of the Plan, the Board of Directors shall have full authority and discretion to take any actions it deems necessary or advisable for the administration of the Plan. Notwithstanding anything to the contrary in the Plan, with respect to the terms and conditions of awards granted to Participants outside the United States, the Board of Directors may vary from the provisions of the Plan to the extent it determines it necessary and appropriate to do so; provided that it may not vary from those Plan terms requiring stockholder approval pursuant to Section 11(d) below. All decisions, interpretations and other actions of the Board of Directors shall be final and binding on all Participants and all persons deriving their rights from a Participant.

SECTION 3. ELIGIBILITY.

(a) **General Rule**. Employees, Outside Directors and Consultants shall be eligible for the grant of Awards under the Plan. However, only Employees shall be eligible for the grant of ISOs.

(b) **Ten-Percent Stockholders**. A person who owns more than 10% of the total combined voting power of all classes of outstanding stock of the Company, its Parent or any of its Subsidiaries shall not be eligible for the grant of an ISO unless (i) the Exercise Price is at least 110% of the Fair Market Value of a Share on the Date of Grant and (ii) such ISO by its terms is not exercisable after the expiration of five years from the Date of Grant. For purposes of this Subsection (b), in determining stock ownership, the attribution rules of Code Section 424(d) shall be applied.

SECTION 4. STOCK SUBJECT TO PLAN.

(a) **Basic Limitation**. Not more than _____ Shares may be issued under the Plan, subject to Subsection (b) below and Section 9(a).[1] All of these Shares may be issued upon the exercise of ISOs. The Company, during the term of the Plan, shall at all times reserve and keep available sufficient Shares to satisfy the requirements of the Plan. Shares offered under the Plan may be authorized but unissued Shares or treasury Shares.

(b) **Additional Shares**. In the event that Shares previously issued under the Plan are forfeited to or repurchased by the Company due to failure to vest, such Shares shall be added to the number of Shares then available for issuance under the Plan. In the event that Shares that otherwise would have been issuable under the Plan are withheld by the Company in payment of the Purchase Price, Exercise Price or withholding taxes, such Shares shall remain available for issuance under the Plan. In the event that an outstanding Option, Restricted Stock Unit or other right for any reason expires or is canceled, the Shares allocable to the unexercised or unsettled portion of such Option, Restricted Stock Unit or other right shall remain available for issuance under the Plan. To the extent an Award is settled in cash, the cash settlement shall not reduce the number of Shares remaining available for issuance under the Plan. Notwithstanding the foregoing, in the case of ISOs, this Subsection (b) shall be subject to any limitations imposed under Section 422 of the Code and the treasury regulations thereunder.

SECTION 5. TERMS AND CONDITIONS OF AWARDS OR SALES.

(a) **Stock Grant or Purchase Agreement**. Each award of Shares under the Plan shall be evidenced by a Stock Grant Agreement between the Grantee and the Company. Each sale of Shares under the Plan (other than upon exercise of an Option) shall be evidenced by a Stock Purchase Agreement between the Purchaser and the Company. Such award or sale shall be subject to all applicable terms and conditions of the Plan and may be subject to any other terms and conditions which are not inconsistent with the Plan and which the Board of Directors deems appropriate for inclusion in a Stock Grant Agreement or Stock Purchase Agreement. The provisions of the various Stock Grant Agreements and Stock Purchase Agreements entered into under the Plan need not be identical.

(b) **Duration of Offers and Nontransferability of Rights**. Any right to purchase Shares under the Plan (other than an Option) shall automatically expire if not exercised by the Purchaser within 30 days (or such other period as may be specified in the Award Agreement) after the grant of such right was communicated to the Purchaser by the Company. Such right is not transferable and may be exercised only by the Purchaser to whom such right was granted.

(c) **Purchase Price**. The Board of Directors shall determine the Purchase Price of Shares to be offered under the Plan at its sole discretion. The Purchase Price shall be payable in a form described in Section 8.

[1] Please refer to Exhibit A for a schedule of the initial share reserve and any subsequent increases in the reserve.

SECTION 6. TERMS AND CONDITIONS OF OPTIONS.

(a) **Stock Option Agreement**. Each grant of an Option under the Plan shall be evidenced by a Stock Option Agreement between the Optionee and the Company. The Option shall be subject to all applicable terms and conditions of the Plan and may be subject to any other terms and conditions that are not inconsistent with the Plan and that the Board of Directors deems appropriate for inclusion in a Stock Option Agreement. The provisions of the various Stock Option Agreements entered into under the Plan need not be identical.

(b) **Number of Shares**. Each Stock Option Agreement shall specify the number of Shares that are subject to the Option and shall provide for the adjustment of such number in accordance with Section 9. The Stock Option Agreement shall also specify whether the Option is an ISO or an NSO.

(c) **Exercise Price**.

(i) **General**. Each Stock Option Agreement shall specify the Exercise Price, which shall be payable in a form described in Section 8. Subject to the remaining provisions of this Subsection (c), the Exercise Price shall be determined by the Board of Directors in its sole discretion.

(ii) **ISOs**. The Exercise Price of an ISO shall not be less than 100% of the Fair Market Value of a Share on the Date of Grant, and a higher percentage may be required by Section 3(b). This Subsection (c)(ii) shall not apply to an ISO granted pursuant to an assumption of, or substitution for, another incentive stock option in a manner that complies with Code Section 424(a).

(iii) **NSOs**. Except as specifically set forth in this Subsection (c)(iii), the Exercise Price of an NSO shall not be less than 100% of the Fair Market Value of a Share on the Date of Grant. This Subsection (c)(iii) shall not apply to an NSO granted to a person who is not a U.S. taxpayer on the Date of Grant or to an NSO that is intended either to be exempt from Code Section 409A as a "short-term deferral" or to comply with the requirements of Code Section 409A. In addition, this Subsection (c)(iii) shall not apply to an NSO granted pursuant to an assumption of, or substitution for, another stock option in a manner that complies with Code Section 409A.

(d) **Vesting and Exercisability**. Each Stock Option Agreement shall specify the date when all or any installment of the Option is to become vested and exercisable. No Option shall be exercisable unless the Optionee (i) has delivered an executed copy of the Stock Option Agreement to the Company or (ii) otherwise agrees to be bound by the terms of the Stock Option Agreement. The Board of Directors shall determine the vesting and exercisability provisions of the Stock Option Agreement at its sole discretion.

(e) **Basic Term**. The Stock Option Agreement shall specify the term of the Option. The term shall not exceed 10 years from the Date of Grant, and in the case of an ISO, a shorter term may be required by Section 3(b). Subject to the preceding sentence, the Board of Directors at its sole discretion shall determine when an Option is to expire.

(f) **Termination of Service (Except by Death)**. If an Optionee's Service terminates for any reason other than the Optionee's death, then the Optionee's Options shall expire on the earliest of the following dates:

(i) The expiration date determined pursuant to Subsection (e) above;

(ii) The date three months after the termination of the Optionee's Service for any reason other than Disability, or such earlier or later date as the Board of Directors may determine (but in no event earlier than 30 days after the termination of the Optionee's Service); or

(iii) The date six months after the termination of the Optionee's Service by reason of Disability, or such later date as the Board of Directors may determine.

The Optionee may exercise all or part of the Optionee's Options at any time before the expiration of such Options under the preceding sentence, but only to the extent that such Options had become exercisable before the Optionee's Service terminated (or became exercisable as a result of the termination) and the underlying Shares had vested before the Optionee's Service terminated (or vested as a result of the termination). In the event that the Optionee dies after the termination of the Optionee's Service but before the expiration of the Optionee's Options, all or part of such Options may be exercised (prior to expiration) by the executors or administrators of the Optionee's estate or by any person who has acquired such Options directly from the Optionee by beneficiary designation, bequest or inheritance, but only to the extent that such Options had become exercisable before the Optionee's Service terminated (or became exercisable as a result of the termination) and the underlying Shares had vested before the Optionee's Service terminated (or vested as a result of the termination). In no event will an Option, or the Shares underlying an Option, become vested and/or exercisable after termination of the Optionee's Service unless the Board of Directors takes affirmative action or unless expressly provided in a written agreement between the Company and the Optionee.

(g) **Leaves of Absence**. For purposes of Subsection (f) above, Service shall be deemed to continue while the Optionee is on a bona fide leave of absence approved by the Company in writing.

(h) **Death of Optionee**. If an Optionee dies while the Optionee is in Service, then the Optionee's Options shall expire on the earlier of the following dates:

(i) The expiration date determined pursuant to Subsection (e) above; or

(ii) The date 12 months after the Optionee's death, or such earlier or later date as the Board of Directors may determine (but in no event earlier than six months after the Optionee's death).

All or part of the Optionee's Options may be exercised at any time before the expiration of such Options under the preceding sentence by the executors or administrators of the Optionee's estate

or by any person who has acquired such Options directly from the Optionee by beneficiary designation, bequest or inheritance, but only to the extent that such Options had become exercisable before the Optionee's death (or became exercisable as a result of the death) and the underlying Shares had vested before the Optionee's death (or vested as a result of the Optionee's death). In no event will an Option, or the Shares underlying an Option, become vested and/or exercisable after the Optionee's death unless the Board of Directors takes affirmative action or unless expressly provided in a written agreement between the Company and the Optionee.

(i) **Restrictions on Transfer of Options**. An Option shall be transferable by the Optionee only by (i) a beneficiary designation, (ii) a will or (iii) the laws of descent and distribution, except as provided in the next sentence. If the Board of Directors so provides, in a Stock Option Agreement or otherwise, an NSO may be transferable to the extent permitted by Rule 701 under the Securities Act. An ISO may be exercised during the lifetime of the Optionee only by the Optionee or by the Optionee's guardian or legal representative.

(j) **No Rights as a Stockholder**. An Optionee, or a transferee of an Optionee, shall have no rights as a stockholder with respect to any Shares covered by the Optionee's Option until such person submits a notice of exercise, pays the Exercise Price and satisfies all applicable withholding taxes pursuant to the terms of such Option.

(k) **Modification, Extension and Assumption of Options**. Within the limitations of the Plan, the Board of Directors may modify, reprice, extend or assume outstanding Options or may accept the cancellation of outstanding options (whether granted by the Company or another issuer) in return for the grant of new Options or a different type of award for the same or a different number of Shares and at the same or a different Exercise Price (if applicable). The foregoing notwithstanding, no modification of an Option shall, without the consent of the Optionee, impair the Optionee's rights or increase the Optionee's obligations under such Option; provided, however, that a modification of an Option that is otherwise favorable to the Optionee (for example, providing the Optionee with additional time to exercise the Option after termination of employment or providing for additional forms of payment) but causes the Option to lose its tax-favored status (for example, as an ISO) shall not require the consent of the Optionee.

(l) **Company's Right to Cancel Certain Options**. Any other provision of the Plan or a Stock Option Agreement notwithstanding, the Company shall have the right at any time to cancel an Option that was not granted in compliance with Rule 701 under the Securities Act. Prior to canceling such Option, the Company shall give the Optionee not less than 30 days' notice in writing. If the Company elects to cancel such Option, it shall deliver to the Optionee consideration with an aggregate value equal to the excess of (i) the Fair Market Value of the Shares subject to such Option as of the time of the cancellation over (ii) the Exercise Price of such Option. The consideration may be delivered in the form of cash or cash equivalents, in the form of Shares, or a combination of both. If the consideration would be a negative amount, such Option may be cancelled without the delivery of any consideration.

SECTION 7. TERMS AND CONDITIONS OF RESTRICTED STOCK UNITS

(a) **Restricted Stock Unit Agreement**. Each grant of Restricted Stock Units under the Plan shall be evidenced by a Restricted Stock Unit Agreement between the recipient and the Company. Such Restricted Stock Units shall be subject to all applicable terms and conditions of the Plan and may be subject to any other terms and conditions that are not inconsistent with the Plan and which the Board of Directors deems appropriate for inclusion in a Restricted Stock Unit Agreement. The provisions of the various Restricted Stock Unit Agreements entered into under the Plan need not be identical.

(b) **Payment for Restricted Stock Units**. No cash consideration shall be required of the recipient in connection with the grant of Restricted Stock Units.

(c) **Vesting Conditions**. Each Restricted Stock Unit Agreement shall specify the vesting requirements applicable to the Restricted Stock Units subject thereto, which the Board of Directors shall determine in its sole discretion.

(d) **Forfeiture**. Unless a Restricted Stock Unit Agreement provides otherwise, upon termination of the recipient's Service and upon such other times specified in the Restricted Stock Unit Agreement, any unvested Restricted Stock Units shall be forfeited to the Company.

(e) **Voting and Dividend Rights**. The holders of Restricted Stock Units shall have no voting rights. Prior to settlement or forfeiture, any Restricted Stock Unit granted under the Plan may, at the discretion of the Board of Directors, carry with it a right to dividend equivalents. Such right entitles the holder to be credited with an amount equal to all cash dividends paid on one Share while the Restricted Stock Unit is outstanding. Dividend equivalents may be converted into additional Restricted Stock Units. Settlement of dividend equivalents may be made in the form of cash, in the form of Shares, or in a combination of both. Prior to distribution, any dividend equivalents that are not paid shall be subject to the same conditions and restrictions as the Restricted Stock Units to which they attach.

(f) **Form and Time of Settlement of Restricted Stock Units**. Settlement of vested Restricted Stock Units may be made in the form of (i) cash, (ii) Shares or (iii) any combination of both, as determined by the Board of Directors. The actual number of Restricted Stock Units eligible for settlement may be larger or smaller than the number included in the original award, based on predetermined performance factors. Vested Restricted Stock Units shall be settled in such manner and at such time(s) as specified in the Restricted Stock Unit Agreement. Until Restricted Stock Units are settled, the number of Shares represented by such Restricted Stock Units shall be subject to adjustment pursuant to Section 9.

(g) **Death of Recipient**. Any Restricted Stock Units that become distributable after the Participant's death shall be distributed to the Participant's estate or to any person who has acquired such Restricted Stock Units directly from the recipient by beneficiary designation, bequest or inheritance.

(h) **Creditors' Rights**. A holder of Restricted Stock Units shall have no rights other than those of a general creditor of the Company. Restricted Stock Units represent an

unfunded and unsecured obligation of the Company, subject to the terms and conditions of the applicable Restricted Stock Unit Agreement.

(i) **Modification, Extension and Assumption of Restricted Stock Units**. Within the limitations of the Plan, the Board of Directors may modify, extend or assume outstanding restricted stock units (whether granted by the Company or a different issuer). The foregoing notwithstanding, no modification of a Restricted Stock Unit shall, without the consent of the Participant, impair the Participant's rights or increase the Participant's obligations under such Restricted Stock Unit.

(j) **Restrictions on Transfer of Restricted Stock Units**. A Restricted Stock Unit shall be transferable by the Participant only by (i) a beneficiary designation, (ii) a will or (iii) the laws of descent and distribution, except as provided in the next sentence. In addition, if the Board of Directors so provides, in a Restricted Stock Unit Agreement or otherwise, a Restricted Stock Unit shall also be transferable to the extent permitted by Rule 701 under the Securities Act.

SECTION 8. PAYMENT FOR SHARES.

(a) **General Rule**. The entire Purchase Price or Exercise Price of Shares issued under the Plan shall be payable in cash or cash equivalents at the time when such Shares are purchased, except as otherwise provided in this Section 8. In addition, the Board of Directors in its sole discretion may also permit payment through any of the methods described in (b) through (g) below.

(b) **Services Rendered**. Shares may be awarded under the Plan in consideration of services rendered to the Company, a Parent or a Subsidiary prior to the award.

(c) **Promissory Note**. All or a portion of the Purchase Price or Exercise Price (as the case may be) of Shares issued under the Plan may be paid with a promissory note. The Shares shall be pledged as security for payment of the principal amount of the promissory note and interest thereon. The interest rate payable under the terms of the promissory note shall not be less than the minimum rate (if any) required to avoid the imputation of additional interest under the Code. Subject to the foregoing, the Board of Directors in its sole discretion shall specify the term, interest rate, recourse, amortization requirements (if any) and other provisions of such note.

(d) **Surrender of Stock**. All or any part of the Exercise Price may be paid by surrendering, or attesting to the ownership of, Shares that are already owned by the Optionee. Such Shares shall be surrendered to the Company in good form for transfer and shall be valued at their Fair Market Value as of the date when the Option is exercised.

(e) **Cashless Exercise**. All or part of the Exercise Price and any withholding taxes may be paid pursuant to a cashless exercise arrangement (whether through a securities broker or otherwise) established by the Company whereby Shares subject to an Option are sold and all or part of the sale proceeds are delivered to the Company.

(f) **Net Exercise**. An Option may permit exercise through a "net exercise" arrangement pursuant to which the Company will reduce the number of Shares issued upon exercise by the largest whole number of Shares having an aggregate Fair Market Value (determined by the Board of Directors as of the exercise date) that does not exceed the aggregate Exercise Price or the sum of the aggregate Exercise Price and any withholding taxes (with the Company accepting from the Optionee payment of cash or cash equivalents to satisfy any remaining balance of the aggregate Exercise Price and, if applicable, any additional withholding taxes not satisfied through such reduction in Shares); *provided* that to the extent Shares subject to an Option are withheld in this manner, the number of Shares subject to the Option following the net exercise will be reduced by the sum of the number of Shares withheld and the number of Shares delivered to the Optionee as a result of the exercise.

(g) **Other Forms of Payment**. To the extent that an Award Agreement so provides, the Purchase Price or Exercise Price of Shares issued under the Plan may be paid in any other form permitted by the Delaware General Corporation Law, as amended.

SECTION 9. ADJUSTMENT OF SHARES.

(a) **General**. In the event of a subdivision of the outstanding Stock, a declaration of a dividend payable in Shares, a combination or consolidation of the outstanding Stock into a lesser number of Shares, a reclassification, or any other increase or decrease in the number of issued shares of Stock effected without receipt of consideration by the Company, proportionate adjustments shall automatically be made, as applicable, in each of (i) the number and kind of Shares available under Section 4, (ii) the number and kind of Shares covered by each outstanding Option, Award of Restricted Stock Units and any outstanding and unexercised right to purchase Shares that has not yet expired pursuant to Section 5(b), (iii) the Exercise Price under each outstanding Option and the Purchase Price applicable to any unexercised stock purchase right described in clause (ii) above, and (iv) any repurchase price that applies to Shares granted under the Plan pursuant to the terms of a Company repurchase right under the applicable Award Agreement. In the event of a declaration of an extraordinary dividend payable in a form other than Shares in an amount that has a material effect on the Fair Market Value of the Stock, a recapitalization, a spin-off, or a similar occurrence, the Board of Directors at its sole discretion may make appropriate adjustments in one or more of the items listed in clauses (i) through (iv) above; provided, however, that the Board of Directors shall in any event make such adjustments as may be required by Section 25102(o) of the California Corporations Code to the extent the Company is relying on the exemption afforded thereunder with respect to an Award. No fractional Shares shall be issued under the Plan as a result of an adjustment under this Section 9(a), although the Board of Directors in its sole discretion may make a cash payment in lieu of fractional Shares.

(b) **Corporate Transactions**. In the event that the Company is a party to a merger or consolidation, or in the event of a sale of all or substantially all of the Company's stock or assets, all Shares acquired under the Plan and all Awards outstanding on the effective date of the transaction shall be treated in the manner described in the definitive transaction agreement (or, in the event the transaction does not entail a definitive agreement to which the Company is party, in the manner determined by the Board of Directors in its capacity as

administrator of the Plan, with such determination having final and binding effect on all parties), which agreement or determination need not treat all Awards (or all portions of an Award) in an identical manner. The treatment specified in the transaction agreement or as determined by the Board of Directors may include (without limitation) one or more of the following with respect to each outstanding Award:

(i) The Company, the surviving corporation or a parent thereof may continue or assume the Award or substitute a comparable award for the Award (including, but not limited to, an award to acquire the same consideration paid to the holders of Shares in the transaction). For avoidance of doubt, a comparable award need not be the same type of award as the Award for which it is substituted, and, in the case of an Option, need not have the same tax-status (e.g., an NSO may be substituted for an ISO).

(ii) The cancellation of the Award and a payment to the Participant with respect to each Share subject to the portion of the Award that is vested as of the transaction date equal to the excess of (A) the value, as determined by the Board of Directors in its absolute discretion, of the property (including cash) received by the holder of a share of Stock as a result of the transaction, over (if applicable) (B) the per-Share Exercise Price of the Award (such excess, the "**Spread**"). Such payment shall be made in the form of cash, cash equivalents, or securities of the surviving corporation or its parent having a value equal to the Spread. In addition, any escrow, indemnification, holdback, earn-out or similar provisions in the transaction agreement may apply to such payment to the same extent and in the same manner as such provisions apply to the holders of Stock. Receipt of the payment described in this Subsection (b)(ii) may be conditioned upon the Participant acknowledging such escrow, indemnification, holdback, earn-out or other provisions on a form prescribed by the Company. If the Spread applicable to an Award is zero or a negative number, then the Award may be cancelled without making a payment to the Participant.

(iii) Even if the Spread applicable to an Option is a positive number, the Option may be cancelled without the payment of any consideration; provided that the Optionee shall be notified of such treatment and given an opportunity to exercise the Option (to the extent the Option is vested or becomes vested as of the effective date of the transaction) during a period of not less than five (5) business days preceding the effective date of the transaction, unless (A) a shorter period is required to permit a timely closing of the transaction and (B) such shorter period still offers the Optionee a reasonable opportunity to exercise the Option.

(iv) In the case of an Option: (A) suspension of the Optionee's right to exercise the Option during a limited period of time preceding the closing of the transaction if such suspension is administratively necessary to facilitate the closing of the transaction and/or (B) termination of any right the Optionee has to exercise the Option prior to vesting in the Shares subject to the Option (i.e., "early

exercise"), such that following the closing of the transaction the Option may only be exercised to the extent it is vested.

For the avoidance of doubt, the Board of Directors has discretion to accelerate, in whole or part, the vesting and exercisability of an Award in connection with a corporate transaction covered by this Section 9(b).

(c) **Dissolution or Liquidation**. To the extent not previously exercised or settled, Options, Restricted Stock Units and other rights to purchase Shares shall terminate immediately prior to the liquidation or dissolution of the Company.

(d) **Reservation of Rights**. Except as provided in Section 7(e) or this Section 9, a Participant shall have no rights by reason of (i) any subdivision or consolidation of shares of stock of any class, (ii) the payment of any dividend or (iii) any other increase or decrease in the number of shares of stock of any class. Any issuance by the Company of shares of stock of any class, or securities convertible into shares of stock of any class, shall not affect, and no adjustment by reason thereof shall be made with respect to, the number or Exercise Price of Shares subject to an Award. The grant of an Award pursuant to the Plan shall not affect in any way the right or power of the Company to make adjustments, reclassifications, reorganizations or changes of its capital or business structure, to merge or consolidate or to dissolve, liquidate, sell or transfer all or any part of its business or assets.

SECTION 10.MISCELLANEOUS PROVISIONS.

(a) **Securities Law Requirements**. Shares shall not be issued under the Plan unless, in the opinion of counsel acceptable to the Board of Directors, the issuance and delivery of such Shares complies with (or is exempt from) all applicable requirements of law, including (without limitation) the Securities Act, the rules and regulations promulgated thereunder, state securities laws and regulations, and the regulations of any stock exchange or other securities market on which the Company's securities may then be traded. The Company shall not be liable for a failure to issue Shares as a result of such requirements. Without limiting the foregoing, the Company may suspend the exercise of some or all outstanding Options for a period of up to 60 days in order to facilitate compliance with Securities Act Rule 701(e).

(b) **No Retention Rights**. Nothing in the Plan or in any right or Award granted under the Plan shall confer upon the Participant any right to continue in Service for any period of specific duration or interfere with or otherwise restrict in any way the rights of the Company (or any Parent or Subsidiary employing or retaining the Participant) or of the Participant, which rights are hereby expressly reserved by each, to terminate his or her Service at any time and for any reason, with or without cause.

(c) **Treatment as Compensation**. Any compensation that an individual earns or is deemed to earn under this Plan shall not be considered a part of his or her compensation for purposes of calculating contributions, accruals or benefits under any other plan or program that is maintained or funded by the Company, a Parent or a Subsidiary.

(d) **Governing Law**. The Plan and all awards, sales and grants under the Plan shall be governed by, and construed in accordance with, the laws of the State of Delaware

(except its choice-of-law provisions), as such laws are applied to contracts entered into and performed in such State.

(e) **Conditions and Restrictions on Shares**. Shares issued under the Plan shall be subject to such forfeiture conditions, rights of repurchase, rights of first refusal, other transfer restrictions and such other terms and conditions as the Board of Directors may determine. Such conditions and restrictions shall be set forth in the applicable Award Agreement and shall apply in addition to any restrictions that may apply to holders of Shares generally. In addition, Shares issued under the Plan shall be subject to conditions and restrictions imposed either by applicable law or by Company policy, as adopted from time to time, designed to ensure compliance with applicable law or laws with which the Company determines in its sole discretion to comply including in order to maintain any statutory, regulatory or tax advantage, which (for avoidance of doubt) need not be set forth in the applicable Award Agreement.

(f) **Tax Matters**.

(i) As a condition to the award, grant, issuance, vesting, purchase, exercise, settlement or transfer of any Award, or Shares issued pursuant to any Award, granted under this Plan, the Participant shall make such arrangements as the Board of Directors may require or permit for the satisfaction of any federal, state, local or foreign withholding tax obligations that may arise in connection with such event.

(ii) Unless otherwise expressly set forth in an Award Agreement, it is intended that Awards shall be exempt from Code Section 409A, and any ambiguity in the terms of an Award Agreement and the Plan shall be interpreted consistently with this intent. To the extent an Award is not exempt from Code Section 409A (any such award, a "**409A Award**"), any ambiguity in the terms of such Award and the Plan shall be interpreted in a manner that to the maximum extent permissible supports the Award's compliance with the requirements of that statute. Notwithstanding anything to the contrary permitted under the Plan, in no event shall a modification of an Award not already subject to Code Section 409A, or any subsequent action taken with respect to such Award, be given effect if such modification or action would cause the Award to become subject to Code Section 409A unless the parties explicitly acknowledge and consent to the modification or action as one having that effect. A 409A Award shall be subject to such additional rules and requirements as specified by the Board of Directors from time to time in order for it to comply with the requirements of Code Section 409A. In this regard, if any amount under a 409A Award is payable upon a "separation from service" to an individual who is considered a "specified employee" (as each term is defined under Code Section 409A), then no such payment shall be made prior to the date that is the earlier of (i) six months and one day after the Participant's separation from service or (ii) the Participant's death, but only to the extent such delay is necessary to prevent such payment from being subject to Section 409A(a)(1). In addition, if a transaction subject to Section 9(b) constitutes a payment event with respect to any

409A Award, then the transaction with respect to such award must also constitute a "change in control event" as defined in Treasury Regulation Section 1.409A-3(i)(5) to the extent required by Code Section 409A.

(iii) Neither the Company nor any member of the Board of Directors shall have any liability to a Participant in the event an Award held by the Participant fails to achieve its intended characterization under applicable tax law.

SECTION 11.DURATION AND AMENDMENTS; STOCKHOLDER APPROVAL.

(a) **Term of the Plan**. The Plan, as set forth herein, shall become effective on the date of its adoption by the Board of Directors, subject to approval of the Company's stockholders under Subsection (d) below. The Plan shall terminate automatically 10 years after the later of (i) the date when the Board of Directors adopted the Plan or (ii) the date when the Board of Directors approved the most recent increase in the number of Shares reserved under Section 4 that was also approved by the Company's stockholders. The Plan may be terminated on any earlier date pursuant to Subsection (b) below.

(b) **Right to Amend or Terminate the Plan**. Subject to Subsection (d) below, the Board of Directors may amend, suspend or terminate the Plan at any time and for any reason.

(c) **Effect of Amendment or Termination**. No Shares shall be issued or sold and no Award granted under the Plan after the termination thereof, except upon exercise or settlement of an Award granted under the Plan prior to such termination. Except as expressly provided in Section 6(k) above, the termination of the Plan, or any amendment thereof, shall not affect any Share previously issued or any Award previously granted under the Plan.

(d) **Stockholder Approval**. To the extent required by applicable law, the Plan will be subject to approval of the Company's stockholders within 12 months of its adoption date. An amendment of the Plan will be subject to the approval of the Company's stockholders only to the extent required by applicable laws, regulations or rules.

SECTION 12.DEFINITIONS.

(a) "**Award**" means any award granted under the Plan, including as an Option, an award of Restricted Stock Units or the grant or sale of Shares pursuant to Section 5 of the Plan.

(b) "**Award Agreement**" means a Restricted Stock Unit Agreement, Stock Grant Agreement, Stock Option Agreement or Stock Purchase Agreement or such other agreement evidencing an Award under the Plan.

(c) "**Board of Directors**" means the Board of Directors of the Company, as constituted from time to time.

(d) "**Code**" means the Internal Revenue Code of 1986, as amended.

(e) "**Committee**" means a committee of the Board of Directors, as described in Section 2(a).

(f) "**Company**" means SGI-DNA, Inc., a Delaware corporation.

(g) "**Consultant**" means a person, excluding Employees and Outside Directors, who performs bona fide services for the Company, a Parent or a Subsidiary as a consultant or advisor and who qualifies as a consultant or advisor under Rule 701(c)(1) of the Securities Act or under Instruction A.1.(a)(1) of Form S-8 under the Securities Act.

(h) "**Date of Grant**" means the date of grant specified in the Award Agreement, which date shall be the later of (i) the date on which the Board of Directors resolved to grant the Award or (ii) the first day of the Participant's Service.

(i) "**Disability**" means that the Optionee is unable to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment.

(j) "**Employee**" means any individual who is a common-law employee of the Company, a Parent or a Subsidiary.

(k) "**Exchange Act**" means the Securities Exchange Act of 1934, as amended.

(l) "**Exercise Price**" means the amount for which one Share may be purchased upon exercise of an Option, as specified by the Board of Directors in the applicable Stock Option Agreement.

(m) "**Fair Market Value**" means the fair market value of a Share, as determined by the Board of Directors in good faith. Such determination shall be conclusive and binding on all persons.

(n) "**Grantee**" means a person to whom the Board of Directors has awarded Shares under the Plan.

(o) "**ISO**" means an Option that qualifies as an incentive stock option as described in Code Section 422(b). Notwithstanding its designation as an ISO, an Option that does not qualify as an ISO under applicable law shall be treated for all purposes as an NSO.

(p) "**NSO**" means an Option that does not qualify as an incentive stock option as described in Code Section 422(b) or 423(b).

(q) "**Option**" means an ISO or NSO granted under the Plan and entitling the holder to purchase Shares.

(r) "**Optionee**" means a person who holds an Option.

(s) "**Outside Director**" means a member of the Board of Directors who is not an Employee.

(t) "**Parent**" means any corporation (other than the Company) in an unbroken chain of corporations ending with the Company, if each of the corporations other than the Company owns stock possessing 50% or more of the total combined voting power of all classes of stock in one of the other corporations in such chain. A corporation that attains the status of a Parent on a date after the adoption of the Plan shall be considered a Parent commencing as of such date.

(u) "**Participant**" means the holder of an outstanding Award.

(v) "**Plan**" means this SGI-DNA, Inc. 2019 Stock Plan.

(w) "**Purchase Price**" means the consideration for which one Share may be acquired under the Plan (other than upon exercise of an Option), as specified by the Board of Directors.

(x) "**Purchaser**" means a person to whom the Board of Directors has offered the right to purchase Shares under the Plan (other than upon exercise of an Option).

(y) "**Restricted Stock Unit**" means a bookkeeping entry representing the equivalent of one Share, as awarded under the Plan.

(z) "**Restricted Stock Unit Agreement**" means the agreement between the Company and the recipient of a Restricted Stock Unit that contains the terms, conditions and restrictions pertaining to such Restricted Stock Unit.

(aa) "**Securities Act**" means the Securities Act of 1933, as amended.

(bb) "**Service**" means service as an Employee, Outside Director or Consultant. In case of any dispute as to whether and when Service has terminated, the Board of Directors shall have sole discretion to determine whether such termination has occurred and the effective date of such termination.

(cc) "**Share**" means one share of Stock, as adjusted in accordance with Section 9 (if applicable).

(dd) "**Stock**" means the Common Stock of the Company.

(ae) "**Stock Grant Agreement**" means the agreement between the Company and a Grantee who is awarded Shares under the Plan that contains the terms, conditions and restrictions pertaining to the award of such Shares.

(ff) "**Stock Option Agreement**" means the agreement between the Company and an Optionee that contains the terms, conditions and restrictions pertaining to the Optionee's Option.

(gg) "**Stock Purchase Agreement**" means the agreement between the Company and a Purchaser who purchases Shares under the Plan that contains the terms, conditions and restrictions pertaining to the purchase of such Shares.

(hh) "**Subsidiary**" means any corporation (other than the Company) in an unbroken chain of corporations beginning with the Company, if each of the corporations other than the last corporation in the unbroken chain owns stock possessing 50% or more of the total combined voting power of all classes of stock in one of the other corporations in such chain. A corporation that attains the status of a Subsidiary on a date after the adoption of the Plan shall be considered a Subsidiary commencing as of such date.

EXHIBIT A

SCHEDULE OF SHARES RESERVED FOR ISSUANCE UNDER THE PLAN

Date of Board Approval	Date of Stockholder Approval	Number of Shares Added	Cumulative Number of Shares
March 08, 2019		2,500,000	

SUMMARY OF MODIFICATIONS AND AMENDMENTS TO THE PLAN

The following is a summary of material modifications made to the Plan (including any material deviations from the Gunderson Dettmer precedent form used to create the Plan):

Subsidiaries of the Registrant

Subsidiary Name	**Jurisdiction**
SGI-DNA Limited	United Kingdom