UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2020

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from _____ to _____

Commission File Number 001-38915

IDEAYA Biosciences, Inc.

(Exact name of Registrant as specified in its Charter)

Delaware	**47-4268251**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
7000 Shoreline Court, Suite 350	
South San Francisco, California	**94080**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (650) 443-6209

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	**Trading Symbol(s)**	**Name of each exchange on which registered**
Common Stock, $0.0001 par value per share	**IDYA**	**Nasdaq Global Select Market**

Securities registered pursuant to Section 12(g) of the Act: **None**

Indicate by check mark if the Registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. YES ☐ NO ☒

Indicate by check mark if the Registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act. YES ☐ NO ☒

Indicate by check mark whether the Registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the Registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. YES ☒ NO ☐

Indicate by check mark whether the Registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the Registrant was required to submit such files). YES ☒ NO ☐

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 13(a) of the Exchange Act. ☒

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☐

Indicate by check mark whether the Registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). YES ☐ NO ☒

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the Registrant, based on the closing price of the shares of common stock on The NASDAQ Stock Market on June 30, 2020, was $343.0 million. Shares of common stock held by each executive officer and director and by each other person who may be deemed to be an affiliate of the registrant, have been excluded from this computation. The determination of affiliate status for this purpose is not necessarily a conclusive determination for other purposes.

As of March 15, 2021, the registrant had 32,259,988 shares of common stock, $0.0001 par value per share, outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive Proxy Statement relating to the 2020 Annual Meeting of Stockholders are incorporated herein by reference in Part III of this Annual Report on Form 10-K to the extent stated herein. The proxy statement will be filed with the Securities and Exchange Commission within 120 days of the registrant's fiscal year ended December 31, 2020.

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FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains forward-looking statements. We intend such forward-looking statements to be covered by the safe harbor provisions for forward-looking statements contained in Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. All statements other than statements of historical facts contained in this Form 10-K, including statements regarding our future results of operations and financial position, business strategy, prospective products, product approvals, research and development costs, timing and likelihood of success, plans and objectives of management for future operations and future results of anticipated products, are forward-looking statements. These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements.

In some cases, you can identify forward-looking statements by terms such as “may,” “will,” “should,” “expect,” “plan,” “anticipate,” “could,” “intend,” “target,” “project,” “contemplate,” “believe,” “estimate,” “predict,” “potential” or “continue” or the negative of these terms or other similar expressions. The forward-looking statements in this Annual Report on Form 10-K are only predictions. We have based these forward-looking statements largely on our current expectations and projections about future events and financial trends that we believe may affect our business, financial condition and results of operations. These forward-looking statements speak only as of the date of this Annual Report on Form 10-K and are subject to a number of risks, uncertainties and assumptions described under the sections in this Annual Report on Form 10-K entitled “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and elsewhere in this Annual Report on Form 10-K. These forward-looking statements are subject to numerous risks, including, without limitation, the following:

- the scope, progress, results and costs of developing our product candidates or any other future product candidates, and conducting preclinical studies and clinical trials, including our IDE397 Phase 1 and IDE196 Phase 1/2 clinical trials;
- our clinical and regulatory development plans;
- the scope, progress, results and costs related to the research and development of our precision medicine target and biomarker discovery platform, including costs related to the development of our proprietary libraries and database of tumor genetic information and specific cancer-target dependency networks;
- our expectations about the impact of the COVID-19 pandemic on our business, and operations, including clinical trials, manufacturing suppliers and collaborators, and on our results of operations and financial condition;
- the availability of companion diagnostics for biomarkers associated with our product candidates and any future product candidates, or the cost of coordinating and/or collaborating with certain diagnostic companies for the manufacture and supply of companion diagnostics;
- the timing of and costs involved in obtaining and maintaining regulatory approval for any of current or future product candidates and companion diagnostics, and any related restrictions, limitations, and/or warnings in the label of an approved product candidate;
- our expectations regarding the potential market size and size of the potential patient populations for IDE397, IDE196, our other product candidates and any future product candidates, if approved for commercial use;
- the timing and amount of any option exercised, milestone, royalty or other payments we may or may not receive pursuant to any current or future collaboration or license agreement, including under the Collaboration, Option and License Agreement with GSK;
- our ability to maintain existing, and establish new, strategic collaborations, licensing or other arrangements and the financial terms of any such agreements, including our Collaboration, Option and License Agreement with GSK, our Clinical Trial Collaboration and Supply Agreement with Pfizer Inc., our License Agreement with Novartis and our Option and License Agreement with Cancer Research United Kingdom, or CRUK, and University of Manchester;
- the timing of commencement of future nonclinical studies and clinical trials and research and development programs;
- our ability to acquire, discover, develop and advance product candidates into, and successfully complete, clinical trials;

- our intentions and our ability to establish collaborations and/or partnerships;
- the timing or likelihood of regulatory filings and approvals for our product candidates;
- our commercialization, marketing and manufacturing capabilities and expectations;
- our intentions with respect to the commercialization of our product candidates;
- the pricing and reimbursement of our product candidates, if approved;
- the implementation of our business model and strategic plans for our business, product candidates and technology platforms, including additional indications for which we may pursue;
- the scope of protection we are able to establish and maintain for intellectual property rights covering our product candidates, including the projected terms of patent protection;
- estimates of our expenses, future revenue, capital requirements, our needs for additional financing and our ability to obtain additional capital;
- our future financial performance; and
- developments and projections relating to our competitors and our industry, including competing therapies and procedures.

Moreover, we operate in an evolving environment. New risk factors and uncertainties may emerge from time to time, and it is not possible for management to predict all risk factors and uncertainties.

Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified and some of which are beyond our control, 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 occur or be achieved, and actual results could differ materially from those projected in the forward-looking statements. We qualify all of our forward-looking statements by these cautionary statements. Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained herein, whether as a result of any new information, future events, changed circumstances or otherwise.

PART I

Item 1. Business.

Company Overview

We are a synthetic lethality-focused precision medicine oncology company committed to the discovery and development of targeted therapeutics for patient populations selected using molecular diagnostics. Our approach integrates small molecule drug discovery with extensive capabilities in identifying and validating translational biomarkers to develop targeted therapies for select patient populations most likely to benefit. We are applying these capabilities to develop a robust pipeline in precision medicine oncology, with a research and development focus in synthetic lethality—which represents an emerging class of precision medicine targets.

We believe synthetic lethality, as an emerging class of precision medicine, represents one of the most exciting, potentially impactful new areas of development in oncology, and we are investing a significant portion of our resources to become a leader in this emerging field. We are establishing a broad pipeline of clinical and preclinical programs directed to synthetic lethality targets. We are also investing in and enhance our capabilities for identification and validation of new synthetic lethality targets. For targets of interest, we plan to discover therapeutic drugs and relevant biomarkers.

Our most advanced synthetic lethality product candidate is IDE397, a clinical-stage methionine adenosyltransferase 2a, or MAT2A, inhibitor for patients with solid tumors having methylthioadenosine phosphorylase, or MTAP, deletions – a patient population estimated to represent approximately 15% of solid tumors. We have clearance from the U.S. Food and Drug Administration, or FDA, to initiate a Phase 1 clinical trial designated as IDE397-001 to evaluate IDE397 under an investigational new drug application, or IND, and are targeting initial dosing of our first patient in the first quarter of 2021. We are leading research and development of IDE397 through early clinical development, in collaboration with GlaxoSmithKline pursuant to the Collaboration, Option and License Agreement, or the GSK Collaboration Agreement, with an affiliate of GlaxoSmithKline, GLAXOSMITHKLINE INTELLECTUAL PROPERTY (NO. 4), Limited, or GSK.

We have several preclinical synthetic lethality research programs in our pipeline advancing toward the clinic. We are targeting poly (ADP-ribose) glycohydrolase, or PARG, for patients having tumors with a defined biomarker based on genetic mutations and/or molecular signatures. We own or control all commercial rights in our PARG program, and are targeting to designate a development candidate in 2021. We are targeting DNA Polymerase Theta, or Pol Theta or POLQ, in collaboration with GSK, for solid tumors with homologous recombination deficiency, or HRD, including BRCA mutations. We are targeting to designate a development candidate for Pol Theta in 2021. We are also targeting Werner Helicase, or WRN, in collaboration with GSK, in tumors with high microsatellite instability, or MSI high. Additionally, we have multiple wholly-owned early preclinical research programs targeting distinct DNA Damage Targets, or DDTs, for patients with solid tumors characterized by a proprietary biomarker or a gene signature.

Our product candidate IDE196 is a clinical-stage protein kinase C, or PKC, inhibitor for genetically-defined cancers having GNAQ or GNA11 gene mutations, which we in-licensed from Novartis and are clinically evaluating in a Phase 1/2 clinical trial designated as IDE196-001. Our clinical trial strategy in metastatic uveal melanoma, or MUM, is to pursue IDE196 combination therapies, including with binimetinib, a MEK inhibitor, and independently with crizotinib, a cMET inhibitor, each pursuant to our Clinical Trial Collaboration and Supply Agreement, or Pfizer Agreement, with Pfizer. We are continuing patient enrollment in the IDE196/binimetinib combination arm, which initiated Phase 1 dose escalation in June 2020. We have initiated dose expansion in the IDE196/binimetinib Phase 1/2 study in MUM, based on an observation of early clinical activity of the combination in MUM. We anticipate interim data from the IDE196/binimetinib combination arm Phase 1/2 portion of the clinical trial in MUM patients in 2021. We initiated the IDE196/crizotinib combination arm in December 2020, and enrollment in this arm of the clinical trial is ongoing. Additionally, we are continuing to evaluate IDE196 as monotherapy in non-MUM cancers, including in skin melanoma, where we have met the clinical protocol criteria for an expansion cohort, based on observing one confirmed partial response in an initial four evaluable patients.

We have assembled a team of cancer biologists, drug discovery chemists, translational biologists and drug development professionals with broad experience at leading oncology organizations. Our team is led by our Chief Executive Officer, Yujiro S Hata. We are also guided by a renowned scientific advisory board made up of key scientific and clinical thought leaders.

Strategy

Our objective is to develop and commercialize innovative precision medicine drugs that indirectly or directly target the genetic drivers of cancer in order to provide solutions for defined patient populations. The principal components of our strategy are to:

Continue to efficiently develop our clinical-stage product candidates, IDE397, an orally available small molecule inhibitor of MAT2A, and IDE196, an orally available small molecule inhibitor of PKC. We are currently conducting a Phase 1 clinical trial evaluating IDE397 in patients with tumors having MTAP-deletion. We are conducting a Phase 1/2 tissue-type agnostic basket trial evaluating IDE196 in patients with solid tumors harboring GNAQ or GNA11 hotspot mutations, including metastatic uveal melanoma and other solid tumors such as cutaneous melanoma.

Advance our preclinical pipeline of small molecule product candidates in synthetic lethality into clinical development. Our synthetic lethality pipeline includes multiple preclinical research programs, including our PARG and Pol Theta programs, for which in each case we are targeting to identify a development candidate in 2021. We are also continuing to invest in our broader portfolio of synthetic lethality programs, including programs targeting WRN and certain DNA Damage Targets.

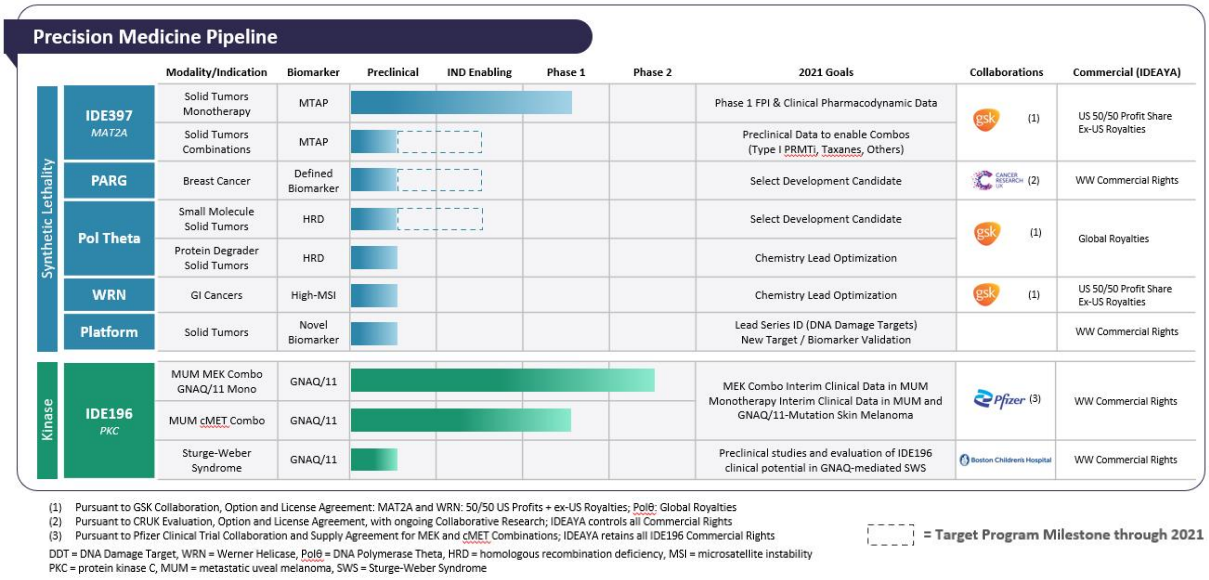
Broaden our pipeline of targeted therapies and apply our core capabilities to establish a leading franchise in the field of synthetic lethality. We are continuing our target identification and validation activities for advancing new synthetic lethality targets and associated biomarkers.

Collaborate with leaders in the field of diagnostics to enable the identification of defined patient populations for our product candidates. Our precision medicine approach leverages the availability or development of companion diagnostics to identify patients for which our product candidates will be most effective.

Collaborate under our existing strategic partnerships and identify additional strategic collaborations to accelerate development timelines and maximize the commercial potential of our targeted product candidates. We have entered into a strategic partnership and collaboration with GSK for our synthetic lethality programs targeting MAT2A, Pol Theta and Werner Helicase pursuant to the GSK Collaboration Agreement. We have also entered into the Pfizer Agreement for evaluation of IDE196 combinations with each of binimetinib and crizotinib. We will selectively evaluate strategic collaborations for our targeted product candidates with biopharmaceutical partners whose research, development, commercial, marketing, and geographic capabilities complement our own.

Pipeline

We are applying our capabilities and approach to develop a portfolio of targeted therapeutics for defined patient populations, with a focus in synthetic lethality.



Our precision medicine pipeline includes clinical-stage assets IDE397, a MAT2A inhibitor being evaluated in a Phase 1 clinical trial in patients with solid tumors having MTAP deletion, and IDE196, a PKC inhibitor being evaluated in a Phase 1/2 clinical trial in patients harboring GNAQ/11 hotspot mutations. Our pipeline also includes preclinical research programs directed to synthetic lethality targets PARG, Pol Theta, Werner Helicase, and certain DNA Damage Targets, the profiles of which are summarized below. All data and status are as of March 15, 2021, unless otherwise noted.

IDE397 (MTAP Gene Deletion)

- We are developing our synthetic lethality product candidate, IDE397, a clinical stage MAT2A inhibitor for patients with solid tumors having MTAP deletions, which represents approximately 15% of all solid tumors.
- We have clearance from the FDA to initiate a Phase 1 clinical trial designated as IDE397-001 to evaluate IDE397 under an IND and are targeting initial dosing of our first patient in the first quarter of 2021.
- We have a program objective to obtain preliminary clinical pharmacodynamic, or PD, data from the dose-escalation portion of the IDE397 monotherapy Phase 1 clinical trial in the second half of 2021.
- We are leading research and development of IDE397 through early clinical development, in collaboration with GSK pursuant to the GSK Collaboration Agreement.

PARG Program (Defined Biomarker)

- We are advancing our preclinical-stage synthetic lethality PARG program for patients having tumors with a defined biomarker based on genetic mutations and/or molecular signatures.
- Subject to further preclinical studies, we are targeting to designate a development candidate for our PARG program in 2021.
- We own or control all commercial rights in our PARG program, subject to certain economic obligations pursuant to our exclusive, worldwide license to certain PARG inhibitors, including IDB-PARG, with Cancer Research UK / University of Manchester.

Pol Theta Program (HRD, including BRCA)

- We are also pursuing our preclinical synthetic lethality Pol Theta program, in collaboration with GSK, for solid tumors with homologous recombination deficiency, or HRD, including BRCA mutations.
- Subject to further preclinical studies, we are targeting to designate a development candidate for our Pol Theta program in 2021.
- We plan to continue further research and development of our Pol Theta program in collaboration with GSK pursuant to the GSK Collaboration Agreement.

WRN Program (MSI-High)

- We are also progressing our synthetic lethality Werner Helicase program, in collaboration with GSK, for patients with tumors having high microsatellite instability, or MSI high.
- We plan to continue further research and development of our Werner Helicase program in collaboration with GSK pursuant to the GSK Collaboration Agreement.

DNA Damage Targets (Defined Biomarkers)

- We have initiated early preclinical research programs targeting multiple distinct DNA Damage Targets, or DDTs, for patients with solid tumors characterized by a defined biomarker based on genetic mutations and/or molecular signatures.
- We own or control all commercial rights in our DNA Damage Target programs.

Synthetic Lethality Target and Biomarker Discovery Platform

- We have established a comprehensive platform to computationally and empirically identify synthetic lethality target and biomarker pairs in defined patient populations.

- We own or control all commercial rights in programs directed to targets identified in on our synthetic lethality and biomarker discovery platform.

IDE196 (GNAQ or GNA11 Mutations)

- We are evaluating IDE196, a clinical stage PKC inhibitor, in our ongoing Phase 1/2 clinical basket trial in patients having tumors harboring GNAQ or GNA11 mutations.
- In metastatic uveal melanoma, or MUM, we are pursuing IDE196 combination therapies, including with binimetinib, a MEK inhibitor, and independently with crizotinib, a cMET inhibitor, each pursuant to the Pfizer Agreement. In the IDE196/binimetinib combination arm, we continue to enroll patients and have initiated dose expansion in the IDE196/binimetinib Phase 1/2 study in MUM. We are targeting interim data from the IDE196/binimetinib combination arm of the Phase 1/2 clinical trial in MUM patients in 2021.
- We are also evaluating IDE196 as monotherapy in non-MUM solid tumor indications, such as skin melanoma. We are targeting interim data from the IDE196 monotherapy arm in solid tumors, including in MUM and GNAQ/11-mutation skin melanoma, in 2021.
- We currently own or control all commercial rights in our IDE196 program, subject to certain economic obligations pursuant to our exclusive, worldwide license to IDE196 with Novartis.

Therapies Based on Synthetic Lethality

Synthetic Lethality Pipeline Overview

We are actively pursuing the discovery and development of small molecule inhibitors of selected targets based on synthetic lethality. Our pipeline in synthetic lethality comprises our clinical stage product candidate, IDE397, and multiple preclinical programs targeting PARG, Pol Theta, Werner Helicase and DNA Damage Targets, designated as DDT1 and DDT2. Our synthetic lethality pipeline is complemented by a robust target and biomarker discovery platform. For each synthetic lethality target, we are simultaneously pursuing identification and validation of both a therapeutic and tumor-associated biomarker(s) for patient selection.

In addition to these programs, we are actively identifying and validating novel synthetic lethality targets through our internal research as well as through collaborations with academic and clinical institutions, including the University of California, San Diego, the Broad Institute of MIT and Harvard, or Broad Institute, and Cancer Research UK.

Scientific Rationale

Synthetic lethality is emerging as an important therapeutic paradigm in the treatment of cancer. It was first defined by Calvin Bridges in 1922 based on the observation that certain combinations of gene mutations resulted in lethality despite the fact the single mutations in either gene were viable.

Cancer cells often contain genetic changes that lead to alterations in pathways such as DNA repair and metabolism. These changes endow the cancer cells with certain properties such as the ability to replicate by bypassing normal control mechanisms. However, removing these important regulators of cell function may also make these cancer cells more dependent on backup pathways that can then be targeted to achieve a therapeutic effect. We are using small molecule inhibitors against targets in DNA damage repair, or DDR, pathways or in tumor metabolism pathways, that have potentially less effects on the viability of normal cells, but are designed to result in lethality in cancer cells having specific underlying genetic alterations. Cancer targets based on synthetic lethality are ideal for precision medicine approaches because each product candidate inherently has a tumor-associated genetic biomarker to facilitate patient selection.

MAT2A Inhibitors in Tumors Containing MTAP Deletion – Program Update

Our most advanced synthetic lethality product candidate is IDE397, a clinical stage MAT2A inhibitor for patients with solid tumors having MTAP deletions.

MTAP-null cells lack the ability to metabolize 5-methylthioadenosine, or MTA, which is an essential step in a biochemical pathway involved in salvaging metabolite S-adenosyl methionine, or SAM. Increased levels of MTA partially inhibit the methyltransferase PRMT5 for which SAM is the methyl-donor substrate for methylation of various proteins. This partial inhibition of PRMT5 by increased levels of MTA renders MTAP-null cells more dependent on the activity of methionine adenosyltransferase II alpha or MAT2A, an enzyme that is responsible for the synthesis of SAM. Because of this enhanced dependence, loss of MTAP results in synthetic lethality when MAT2A is pharmacologically inhibited.

The prevalence of MTAP deletions is estimated to be approximately 15% of all human tumors, translating to an estimated addressable population in major market countries, consisting of the US, EU5 and Japan, for patients having solid tumors with MTAP deletion to be approximately 75,000 annually. In China, the estimated addressable population for esophageal cancer with MTAP deletion is about 30,000 annually, and for NSCLC with MTAP deletion is about 20,000 annually.

We have clearance from the FDA, to initiate a Phase 1 clinical trial designated as IDE397-001 to evaluate IDE397 under an IND. We are targeting initial dosing of our first patient in the first quarter of 2021.

Initial clinical development plans to evaluate IDE397 include a dose escalation portion of the Phase 1 clinical trial in which we plan to enroll patients having solid tumors with MTAP deletion identified by commercial or institutional next generation sequencing, or NGS, panels or by MTAP immunohistochemistry, or IHC, assay with confirmation by NGS. Following and subject to satisfactory completion of the dose escalation portion of the Phase 1 clinical trial, we plan to enroll patients having solid tumors with MTAP deletion into one or more expansion arms focused on one or more selected solid tumor indications. We plan to obtain patient biopsies from the dose escalation and expansion portions of the clinical trial for translational research, including evaluation of certain pharmacodynamic, or PD, biomarkers, such as peripheral S-adenosyl methionine, or SAM, and tumor SAM as determined by liquid chromatography / mass spectroscopy, or LCMS, assays, and tumor symmetric dimethylarginine, or SDMA, as determined by enzyme linked immunosorbent assay, or ELISA, IHC assay and/or LCMS assay. We have a program objective to obtain preliminary clinical PD data from the dose-escalation portion of the IDE397 monotherapy Phase 1 clinical trial in the second half of 2021.

We are continuing to advance certain preclinical activities to support IDE397 as a clinical candidate. We are evaluating the efficacy of monotherapy IDE397 in over forty solid tumor patient derived xenograft, or PDX, models with homozygous MTAP deletions across a range of solid tumor types. Preliminary results of this IDE397 MTAP-deletion PDX Panel Study show *in vivo* efficacy in multiple MTAP-null xenograft models, demonstrating tumor growth inhibition when MAT2A is pharmacologically inhibited with IDE397 as monotherapy, including in non-small cell lung cancer. In this study, we observed $\geq$ 75% Tumor Growth Inhibition, or TGI, in ~ 50% of models and across major solid tumor types. We also observed tumor regressions, with > 100% TGI, in multiple PDX models and across multiple solid tumor types.

We are planning to present data summarizing the results of the IDE397 MTAP-deletion PDX Panel Study at the 2021 Annual Meeting of the American Association for Cancer Research, or AACR in April 2021. We also plan to present preclinical data at AACR in April 2021 evaluating the effects of pharmacological inhibition of MAT2A, including analyses of genomic and metabolic effects in an isogenic cell pair and of proliferation effects in a panel of MTAP wild type and MTAP-deleted cell lines.

We have completed the good laboratory practice, or GLP, compliant toxicology studies with IDE397 in multiple species.

Preclinical combination tolerability and efficacy studies are ongoing to evaluate IDE397 in combination with GSK oncology assets, as well as other potential oncology agents, such as taxanes.

We plan to lead research and development of IDE397 through early clinical development, in collaboration with GSK pursuant to the GSK Collaboration Agreement.

PARG Inhibitors in Tumors with Defined Biomarker – Program Update

We are advancing our preclinical research for an inhibitor of poly (ADP-ribose) glycohydrolase, or PARG, for patients having tumors with a defined biomarker based on genetic mutations and/or molecular signatures.

PARG is a novel target in a clinically validated biological pathway. PARG functions as a regulator of DNA repair in the same biochemical pathway as PARP. In particular, PARG hydrolyzes poly (ADP-ribose), or PAR, chains that are polymerized by PARP enzymes, completing the PAR cycle. Small molecule inhibitors of PARG result in a dose dependent increase in cellular PAR after DNA damage. Depletion of certain base-excision repair components sensitizes cancer cells to pharmacological PARG inhibition *in vitro*.

We own or control all commercial rights in our PARG program, subject to certain economic obligations pursuant to our exclusive, worldwide license with Cancer Research UK / University of Manchester.

Subject to further preclinical studies, we are targeting to identify a PARG inhibitor development candidate in 2021.

One of our PARG inhibitor compounds, designated as IDB-PARG, has demonstrated dose-dependent *in vivo* efficacy as monotherapy with tumor regression or stasis in multiple PDX models and in multiple cell-derived xenograft, or CDX, models. We observed tumor regressions (> 100% TGI) in multiple breast cancer PDX models with defined genetic and subtyping profiles. We also observed tumor regressions and enhanced TGI relative to niraparib in multiple CDX models, including *in vivo* efficacy in a niraparib-resistant resistant CDX model. We are continuing to evaluate the efficacy of IDB-PARG as monotherapy across a panel of additional solid tumor PDX models with specific genetic alterations.

We plan to present data at AACR in April 2021 summarizing the results of our preclinical studies evaluating the effects of pharmacological inhibition of PARG in a panel of homologous recombination deficient cell lines and in CDX and PDX models.

We are preclinically evaluating our PARG inhibitors as monotherapy in *in vivo* efficacy studies ongoing in multiple genetic settings. We are also evaluating cell panel studies to validate and potentially identify new biomarker hypotheses, and supplementing our data set for indications and patient settings which are sensitive to pharmacological inhibition of our PARG inhibitors. Among other efforts, we are collaborating with several academic and research institute investigators, including UCSF (S. Bandyopadhyay), the Broad Institute of MIT and Harvard, or Broad Institute, and Cancer Research UK / University of Manchester (C. Springer, S. Taylor), to evaluate cellular sensitivity in cell panels and to evaluate *in vivo* efficacy in relevant animal models.

We amended the Evaluation, Option and License Agreement between IDEAYA and Cancer Research Technologies, also known as Cancer Research United Kingdom, or Cancer Research UK, and the University of Manchester, in March 2020 to expand our research collaboration with Cancer Research UK / University of Manchester. The expanded collaborative research includes evaluation of an IDEAYA proprietary small molecule PARG inhibitor in multiple *in vitro* and *in vivo* ovarian cancer xenograft models. This research is also evaluating replication stress signature as a potential patient selection biomarker.

We entered into a strategic collaboration with the Broad Institute of MIT and Harvard, or Broad Institute, focused on synthetic lethality target and biomarker discovery. Under our collaboration with the Broad Institute, we are evaluating pharmacological inhibition across a panel of cell lines using the Broad Institute's PRISM platform to inform patient selection for potential clinical development of a PARG inhibitor. PRISM is a high-throughput, multiplexed screening platform which we are using to evaluate our proprietary small molecule PARG inhibitor for activity against a curated panel of more than 750 genomically-characterized human cancer cell lines representing > 45 lineages.

We are also collaborating with the Broad Institute to evaluate paralogous CRISPR knockdown in selected cell lines in conjunction with pharmacological inhibition of PARG to inform patient selection and combination strategies in ovarian and breast cancer.

Pol Theta Inhibitors in Tumors with Homologous Recombination Deficiency – Program Update

We are progressing our program targeting DNA Polymerase Theta, or Pol Theta or POLQ, in collaboration with GSK for patients having solid tumors with BRCA or other homologous recombination deficiency, or HRD, mutations.

Pol Theta is involved in a DNA repair process called microhomology mediated end joining, or MMEJ, that is utilized when homologous recombination mediated repair is compromised, as happens in the case of BRCA1 or BRCA2 mutations. The expression of Pol Theta is largely absent in normal cells, but tumor cells harboring double strand break repair defects, such as BRCA1 or BRCA2, show synthetic lethality when Pol Theta is knocked down with siRNA.

Pol Theta is a large protein with two functional domains: a DNA polymerase domain and an ATP-dependent DNA helicase domain, sometimes referred to as an ATPase domain, linked by a RAD51 binding domain. We have established independent research programs to discover small molecule inhibitors of each of the Pol Theta polymerase domain and helicase or ATPase domain. We also have established an independent research approach based on a protein degradation.

We have shown combination activity with multiple PARP inhibitors, including niraparib. We have demonstrated synergistic *in vivo* efficacy of a Pol Theta inhibitor with niraparib: the combination of our Pol Theta inhibitor with niraparib enhanced the activity of niraparib in the DLD1 BRCA2-/- xenograft model. Tumor regressions were observed for all animals in the study which were administered the combination, which was well tolerated.

We plan to continue further development of our POLQ program, including both protein degraders and small molecule inhibitors in collaboration with GSK pursuant to the GSK Collaboration Agreement, and are targeting selecting a development candidate for a Pol Theta small molecule inhibitor in 2021.

WRN Inhibitors in Tumors with High Microsatellite Instability – Program Update

We are also continuing to advance our preclinical research in collaboration with GSK for an inhibitor targeting Werner Helicase protein, or WRN, for patients having tumors with high microsatellite instability, or MSI.

WRN protein is a RecQ enzyme involved in the maintenance of genome integrity. Germline loss of function mutations in WRN lead to premature aging and pre-disposition to cancer. MSI is a change in the DNA content of a tumor cell in which the number of repeats of microsatellites, short repeated sequences of DNA, differ as cells divide. High MSI is present in about 15% of gastrointestinal tumor cancers, including in approximately 22% of stomach adenocarcinoma and 16% of colorectal cancer. Tumors with high MSI are routinely assessed in multiple diagnostic profiling tests.

WRN is a protein having several functional domains, and we have shown that the helicase functional domain of WRN is responsible for this synthetic lethal interaction, as reflected in our publication in Cell Press - iScience, *Werner Syndrome Helicase is Required for the Survival of Cancer Cells with Microsatellite Instability* (March 2019).

We have observed dose-dependent cellular viability effect and a dose-dependent cellular pharmacodynamic, or PD, response in multiple endogenous MSI high cell lines. We have also demonstrated preliminary *in vivo* efficacy and PD response in a relevant MSI high model.

For this program, we plan to continue further development in collaboration with GSK pursuant to the GSK Collaboration Agreement.

DNA Damage Targets

We have initiated early preclinical research programs to identify small molecule inhibitors for two distinct DNA Damage Targets, or DDTs, for patients with solid tumors characterized by a proprietary biomarker or a gene signature.

Synthetic Lethality Target and Biomarker Discovery Platform

Synthetic lethality has been since inception of our company, and continues to be, our core research focus. We have invested significantly and continue to invest in capabilities for identification and validation of new synthetic lethality targets and biomarkers for patient selection. For targets of interest, we advance our research to discover therapeutic drugs and to further qualify relevant biomarkers.

Our synthetic lethality research platform integrates a broad set of computational and functional capabilities. These capabilities collectively reflect the convergence of advancements in biology, molecular biology, chemistry and information technologies. For example, molecular biology approaches such as gene knockdown using siRNA, gene editing using CRISPR, quantitative DNA/RNA analysis, protein expression profiling and genomic sequencing can be applied across broad cell lines to create substantial data sets. Data analytics and computational approaches are used to mine such data sets to identify novel targets and biomarker hypotheses. These hypotheses are experimentally validated by developing and applying relevant biological assays.

We have established a comprehensive platform to computationally and empirically identify high value synthetic lethal pairs in defined patient populations. This platform integrates across parallel data sets, each including orthogonal content based on particular screening efforts. These screens include evaluation of curated, genetically defined and preselected model cell sets indicative of targeted patient populations. Our platform includes a proprietary library and data set resulting from our DECIPHER™ Dual CRISPR Synthetic Lethality library constructed in collaboration with University of California, San Diego. The platform will also include data from our recently announced proprietary PAGEO™, or Paralogous Gene Evaluation in Ovarian cancer, library being developed in collaboration with the Broad Institute utilizing the Sellers laboratory CRISPR paralog screening platform to evaluate functionally redundant paralogous genes across ovarian cancer subtypes. Additionally, we are members of the DepMap (Cancer Dependency Map) consortium led by the Broad Institute, through which we have access to a comprehensive data set of genome-wide cell-based screens, including isogenic screens, conducted by the Broad Institute and other contributing institutes, including pre-publication access to new data releases. As a further component of our synthetic lethality platform, we are conducting computational data mining and analysis of relevant public databases, such as The Cancer Genome Atlas, or TCGA, cBioPortal, and Cancer Cell Line Encyclopedia, or CCLE, among others. Such computational approaches include our proprietary algorithms which enable us to determine synthetic lethality targets and biomarkers enabling patient stratification.

We have established internal bioinformatics capabilities, which are supplemented by external resources. We are applying these capabilities and resources to integrate using proprietary algorithms and unsupervised machine learning across each of the orthogonal data sets in our platform. These integrated, comprehensive analysis efforts allow us to determine synthetic lethality target / biomarker pairs with the strongest signals across the data sets. Potential therapeutic targets are ranked based on several factors, including the strength of the synthetic lethal interaction, potential drugability, potential clinical development path, and potential market opportunity. The most promising therapeutic targets are validated empirically.

DECIPHER™ Dual CRISPER Synthetic Lethality Library – UCSD

We have constructed our DECIPHER Dual CRISPR library for synthetic lethality target and biomarker discovery in collaboration with the University of California, San Diego, and bioinformatics analysis and validation are ongoing. The DECIPHER 1.0 library is focused on DNA Damage Repair targets across various tumor suppressor genes and oncogenes of interest that were selected based on their known prevalence and role in solid tumors, enabling evaluation of approximately 50,000 independent gene knockout combinations of DDR pathway related drug targets across known tumor suppressor genes.

PAGEO™ Paralogous Gene Evaluation in Ovarian Cancer and Dep Map Consortium – Broad Institute

On October 21, 2020, we entered into a strategic collaboration with the Broad Institute of MIT and Harvard focused on synthetic lethality target and biomarker discovery. This collaboration will use the large-scale CRISPR paralog screening platform developed at the laboratory of William R. Sellers, M.D., Core Institute Member, Broad Institute, to evaluate functionally redundant paralogous genes across ovarian cancer subtypes and to generate novel target and biomarker hypotheses. Dr. Sellers, who also serves on our Scientific Advisory Board, is the principal investigator for the strategic collaboration. We have also become a member of the Broad DepMap (Cancer Dependency Map) consortium led by the Broad Institute to further enhance our efforts in bioinformatics and cell-based screening for synthetic lethality target and biomarker discovery and validation.

We are also continuing to invest in our capabilities to advance our research on newly identified synthetic lethality targets of interest, including to enable discovery of therapeutic drugs and relevant biomarkers. These investments include both additional research personnel and capital investments, which will enhance our capabilities broadly, including in target validation, biological assay development, protein synthesis, structural biology, computational chemistry, and analytical chemistry, among other core functional areas.

Therapies Directly Targeting Oncogenic Pathways

IDE196 Overview – PKC Inhibitor for Patients having Tumors with GNAQ or GNA11 Mutations

IDE196 is a potent and selective small molecule inhibitor of protein kinase C, or PKC, for genetically-defined cancers having GNAQ or GNA11 gene mutations. PKC is a protein kinase that functions downstream of the GTPases GNAQ and GNA11.

We initiated a Phase 1/2 clinical trial IDE196-001 in June 2019 to evaluate IDE196 in solid tumors harboring GNAQ or GNA11 hotspot mutations in a basket trial design, including in metastatic uveal melanoma, or MUM, and other solid tumor indications such as skin (cutaneous) melanoma or colorectal cancer.

Our clinical trial strategy is to pursue IDE196 combination therapies in MUM, including with binimetinib, a MEK inhibitor, and independently with crizotinib, a cMET inhibitor, each pursuant to the Pfizer Agreement. We have formed a joint development committee with Pfizer responsible for coordinating all regulatory and other activities under the Pfizer Agreement, including for both the IDE196/binimetinib combination arm of the clinical trial and the IDE196/crizotinib combination arm of the clinical trial. If the clinical data from either or both of these combination studies is positive, we plan to enter into good faith negotiations with Pfizer to determine a regulatory submission strategy.

We are continuing to evaluate IDE196 as monotherapy in non-MUM cancers, including in skin melanoma, where we have met the clinical protocol criteria for an expansion cohort, based on observing one confirmed partial response in an initial four evaluable patients.

Based on preliminary IDE196 monotherapy clinical data and its mechanism of action, we anticipate IDE196 clinical activity independent of Human Leukocyte Antigen (HLA) status in GNAQ/11-mutation cancers.

Scientific Rationale and Opportunity

PKC belongs to a family of closely related protein kinases that are involved in various aspects of signal transduction, such as transmitting extracellular growth factor or cytokine signals to other protein kinases involved in cellular proliferation or transcription regulation. PKC is important for signal transduction and survival of cells with constitutively active mutations in GNAQ or GNA11. Inactivation of PKC by specific inhibitors or reduction in protein expression using RNA all highlight the essential role of PKC in cells with GNAQ or GNA11 mutations.

Activating mutations in GNAQ or GNA11 are found in approximately 90% of uveal melanoma patients, resulting in a dependency on PKC activity which we believe may sensitize these tumors to the effects of IDE196. Uveal melanoma is a cancer of the eye and the most common primary intraocular malignancy in adults. Treatment of the primary lesion involves radiation therapy, laser therapy and/or removal of the affected eye, and is effective in preventing local recurrence in over 80% of cases. However, approximately 50% of uveal melanoma patients treated in this manner will eventually develop metastatic disease, most commonly in the liver. We have estimated the addressable population in major market countries, consisting of the US, the five major countries in Europe, or EU5, and Japan, for patients having solid tumors with GNAQ or GNA11 mutations to include an annual incidence of about 3,500 in metastatic uveal melanoma. For solid tumor indications other than metastatic uveal melanoma, we believe about 2,500 patients annually have tumors with GNAQ or GNA11 “hotspot” mutations that are potentially pathogenic, based on the loci of such mutations relative to the loci of mutations in uveal melanoma. Thus, the addressable population in such major market countries is estimated to be about 6,000 patients having metastatic uveal melanoma or other solid tumors with potentially pathogenic GNAQ or GNA11 “hotspot” mutations.

Patients with metastatic uveal melanoma have a very poor prognosis, and there are no FDA-approved therapies for this disease. Metastases are most frequently localized to the liver where curative surgical approaches are rare, and chemotherapy or immunotherapy has limited efficacy. Without treatment, median overall survival of patients with metastatic uveal melanoma is approximately two to eight months. Historical response rates for uveal melanoma generally range from 0% to 10% across treatment types. A meta-analysis of 29 Phase 2 clinical trials of various therapies in metastatic uveal melanoma from 1988 to 2015 demonstrated no improvement in clinical response, with a medium progression free survival of 3.29 months, median overall survival of 10.2 months, and a 1-year overall survival rate of only 43%. The poor prognosis associated with metastatic disease and the lack of effective therapies highlight the need for novel therapeutic approaches that specifically target metastatic uveal melanoma.

IDE196 / Binimetinib Combination Therapy

In June 2020, we initiated a combination arm of our Phase 1/2 clinical trial to evaluate IDE196 in combination with binimetinib in patients having tumors harboring activating GNAQ or GNA11 hotspot mutations. An initial dose escalation portion of this arm of the clinical trial is evaluating the safety and efficacy of IDE196 in combination with binimetinib at various dose combinations, initially in patients with MUM. Following our evaluation of tolerability and preliminary efficacy from the IDE196 / binimetinib combination arm of the clinical trial in MUM, we may also evaluate IDE196 / binimetinib combination therapy in patients having other solid tumors with activating GNAQ/11 hotspot mutations outside of uveal melanoma, such as skin melanoma.

We are continuing patient enrollment into the IDE196 / binimetinib combination arm under the Pfizer Agreement. We initiated dose expansion in the IDE196 / binimetinib Phase 1/2 study in MUM, based on an observation of early clinical activity of the combination in MUM. We are targeting to enroll a total of approximately 40 patients in the IDE196 / binimetinib combination arm in MUM. We anticipate interim data from the IDE196 / binimetinib combination therapy arm of the Phase 1/2 clinical trial in MUM patients in 2021.

IDE196 / Crizotinib Combination Therapy

In September 2020, we expanded the scope of our Pfizer Agreement to evaluate IDE196 and crizotinib as a combination therapy in patients having tumors harboring activating GNAQ or GNA11 hotspot mutations.

In December 2020, we initiated a combination arm of our Phase 1/2 clinical trial to evaluate IDE196 in combination with crizotinib in patients having tumors harboring activating GNAQ or GNA11 hotspot mutations. An initial dose escalation portion of this arm of the clinical trial will be evaluating the safety and efficacy of IDE196 in combination with crizotinib at various dose combinations, initially in patients with MUM. Following our evaluation of tolerability and preliminary efficacy from the IDE196 / crizotinib combination arm of the clinical trial in MUM, we may also evaluate IDE196 / crizotinib combination therapy in patients having other solid tumors with activating GNAQ/11 hotspot mutations outside of uveal melanoma, such as skin melanoma.

We are continuing patient enrollment into the IDE196 / crizotinib combination arm.

We identified cMET as a potential biomarker and a cMET inhibitor as potential combination agent though our translational research studies, or IDE196 cMET Translational Studies. In these studies, we observed preclinical synergies between IDE196 and crizotinib in relevant cellular models under conditions simulating a tumor microenvironment in the liver, the site of approximately 90% of uveal melanoma metastases. Additionally, we conducted a retrospective analysis of human clinical samples from the Novartis IDE196 Phase 1 clinical trial, which also independently supported cMET expression / activation as potential biomarker / combination agent.

We are planning to present data summarizing the results of the IDE196 cMET Translational Studies at AACR in April 2021.

IDE196 Monotherapy

Our ongoing monotherapy arm of the Phase 1/2 clinical trial was initiated in June 2019 to evaluate IDE196 in solid tumors harboring GNAQ or GNA11 hotspot mutations in a basket trial design. We have completed enrollment in the monotherapy arm of the Phase 1/2 clinical trial in MUM. We are continuing enrollment of patients having other, non-MUM solid tumors harboring GNAQ or GNA11 hotspot mutations, such as skin melanoma into the monotherapy Phase 2 basket arm of the clinical trial.

The company's development strategy in the monotherapy non-MUM GNAQ/11 arm of the clinical trial is focused on skin melanoma. In the Phase 2 basket arm evaluating IDE196 as monotherapy in non-MUM solid tumors harboring GNAQ or GNA11 hotspot mutations (GNAQ/11), the clinical protocol criteria have been met for cohort expansion in cutaneous melanoma, or skin melanoma. We are actively enrolling for this Phase 2 cohort expansion in skin melanoma. Of 4 evaluable skin melanoma patients harboring GNAQ/11 hotspot mutations (excluding 1 non-evaluable) as of August 1, 2020, a 100% Disease Control Rate was observed, and one confirmed partial response (cPR) was determined by RECIST, or Response Evaluation Criteria in Solid Tumors, 1.1 guidelines, satisfying the protocol requirement of at least one RECIST response in the first Stage 1 cohort (n=9) in order to expand into a second Stage 2 cohort (n=15). Following satisfaction of the clinical protocol criteria, we can enroll an additional 15 skin melanoma patients harboring GNAQ/11 mutations into the Stage 2 cohort expansion, for a total planned enrollment of 24 patients in the skin melanoma cohort.

As of March 15, 2021, we have enrolled a total of nine patients with solid tumors other than MUM, including seven patients with skin melanoma, into the Phase 2 monotherapy basket arm.

We have added and are continuing to assess potential additional clinical trial sites to supplement enrollment into the Phase 2 basket arm of the IDE196 clinical trial. We have established a relationship with Tempus and with CARIS, in each case through which we are accessing their network of clinical trial sites into which we can enroll qualifying patients having tumors harboring GNAQ/11 hotspot mutations.

We anticipate disclosing interim data from the monotherapy arm of our ongoing IDE196-001 Phase 1/2 basket trial in 2021, including in MUM and in GNAQ/11-mutation skin melanoma. Preliminary clinical data from IDE196 monotherapy arm shows that IDE196 activity is independent of HLA status.

IDE196 Tolerability

IDE196 has been generally well tolerated in the Phase 1/2 clinical trial. We plan to update further on tolerability in connection with an interim data updates for IDE196 / binimetinib combination therapy in MUM and for IDE196 monotherapy in MUM and in GNAQ/11 mutant skin melanoma.

IDE196 was initially developed by Novartis, and we obtained an exclusive, worldwide license to IDE196 from Novartis in September 2018. Pursuant to our license agreement with Novartis, except for Novartis' ongoing Phase 1 clinical trial, we control all future clinical development, and all commercial rights to IDE196, and may rely on and incorporate data previously submitted to the FDA by Novartis into our own regulatory submissions. Novartis has completed enrollment in a Phase 1 clinical trial it is conducting to evaluate IDE196 in metastatic uveal melanoma. Phase 1 monotherapy data from Novartis was presented at the American Association for Cancer Research, or AACR, in April 2019.

Regulatory / Potentially Registration-Enabling Clinical Trial

In an end of Phase 1 meeting with the FDA in the fourth quarter of 2019, the FDA indicated that our proposed single-arm Phase 2 portion of the IDE196 001 Phase 1/2 clinical trial may be adequate to support a new drug application, or NDA, seeking Accelerated Approval for IDE196 monotherapy in MUM. The FDA indicated that such a single-arm, potentially registration enabling part of the Phase 1/2 clinical trial could target enrollment of 60 evaluable MUM patients with the primary endpoint of overall response rate, or ORR, as determined by blinded independent central review, or BICR, supported by BICR determined duration of response, or DOR, as a secondary endpoint.

We initiated 13-week good laboratory practice-, or GLP-, compliant toxicology studies in two species in November 2019, in support of an FDA requirement that results of these studies be submitted prior to enrollment of more than approximately 50 patients in the potentially registrational arm that will support a marketing application. We have completed the 13-week preclinical toxicology studies of IDE196 in two species.

We plan to evaluate clinical tolerability and efficacy data from each of the ongoing IDE196 monotherapy Phase 1 portion of the clinical trial in MUM patients and the IDE196 combination therapy Phase 1/2 portions of the clinical trial in MUM patients, as well as potential strategic partnering of the IDE196 program, prior to initiation of a potentially registrational clinical trial in MUM. We will provide updated guidance on timing for a potential NDA submission for IDE196 in MUM after making such decision on a potential registrational pathway in MUM.

Other Potential Indications

We are continuing our preclinical evaluation and are evaluating the potential for clinical evaluation of IDE196 in Sturge-Weber Syndrome, or SWS, a rare neurocutaneous disorder characterized by capillary malformations and associated with mutations in GNAQ. Our preclinical evaluation will include potential feasibility for pediatric use.

SWS is associated with a somatic, activating hotspot mutation in GNAQ through which PKC may mediate disease pathology, as reported by Shirley et al., NEJM (2013). SWS is physiologically characterized by facial birthmark (e.g., a port-wine stain), neurological abnormalities (e.g., seizures) and glaucoma. SWS, also known as encephalofacial angiomatosis, is a neurocutaneous disorder that occurs as a sporadic congenital condition. It is understood to affect the skin in the distribution of the ophthalmic branch of the trigeminal nerve and is associated with venous-capillary abnormalities of the leptomeninges.

In January 2020, we entered into a Sponsored Research Agreement with Boston Children's Hospital for preclinical evaluation of the role of PKC in SWS. Under the agreement, we are collaborating with and support research at Boston Children's Hospital in the laboratory of Dr. Joyce Bischoff, Ph.D., Research Associate, Department of Surgery and Professor, Harvard Medical School, who is Principal Investigator of the research studies. The preclinical research is evaluating IDE196 *in vitro* to assess whether pharmacological inhibition of PKC in endothelial cells having GNAQ mutations will restore normal cell function, as well as *in vivo* to assess whether pharmacological inhibition of PKC can regulate blood vessel size in murine models that recapitulate enlarged vessels seen in SWS capillary malformations.

Impact of COVID-19 Pandemic on IDE397-001 Phase 1 Clinical Trial and IDE196-001 Phase 1/2 Clinical Trial

We continue to monitor the COVID-19 pandemic and its potential impact on the ongoing IDE397 and IDE196 clinical programs and timing of clinical data results. Generally, initiation of clinical trial sites, patient enrollment and ongoing monitoring of enrolled patients, including obtaining patient computed tomography (CT) scans, may be impacted for IDEAYA clinical trials evaluating IDE397 and IDE196; the specific impacts are currently uncertain.

For the IDE196 clinical program, GNAQ/11 patients enrolled in the ongoing Phase 1/2 clinical trial and sites affected by COVID-19 restrictions are adapting to logistical constraints on activities, such as travel and site visits. For example, patients are continuing on IDE196 therapy, which is an oral drug and is being shipped to and self-administered by patients at home. Patients are being monitored through a combination of telemedicine visits and local visits. COVID-19 infection rates have fluctuated over the course of the pandemic in several states in which our clinical trial sites are located.

Additionally, enrollment into the IDE397 and/or IDE196 clinical trials, including the Phase 1 dose escalation arm for IDE397 as monotherapy or the Phase 2 expansion arm for IDE196 as a monotherapy in non-MUM solid tumors having GNAQ or GNA11 hotspot mutations, may be delayed by circumstances resulting from the COVID-19 pandemic, including for example, as a result of increases in COVID-19 infection rates in several states in which our clinical trial sites are located, and by clinical site-specific policies and practices related to COVID-19. The specific impact on enrollment into these clinical trials is currently uncertain.

Enrollment into the combination arm evaluating IDE196 and binimetinib and/or the combination arm of IDE196 and crizotinib, in each case as combination therapy in MUM and non-MUM solid tumors having GNAQ or GNA11 hotspot mutations, may be delayed by circumstances resulting from the COVID-19 pandemic, including for example, by clinical site-specific policies and practices related to COVID-19. The specific impact on enrollment into these combination arms of the Phase 1/2 clinical trial is currently uncertain.

We plan to continue to use third-party service providers, including clinical research organizations, or CROs, and clinical manufacturing organizations, or CMOs, to carry out our preclinical and clinical development and manufacture and supply of our preclinical and clinical materials to be used during the development of our product candidates. To date, the COVID-19 pandemic has not materially affected our supply chain or development schedule, but further escalation of the health crisis has the potential to cause delays in our supply chain and manufacturing operations, which could materially adversely impact our business.

Competition

Our industry is very competitive and subject to change based on ongoing advances in technology. Although we believe that our approach, strategy, scientific capabilities, knowledge and experience provide us with competitive advantages, we expect to have substantial competition from major pharmaceutical companies, specialty pharmaceutical companies and biotechnology companies worldwide. Many of our competitors have significantly greater financial, technical and human resources. Smaller and early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies.

As a result, our competitors may discover, develop, license or commercialize products before or more successfully than we do. We face competition with respect to product candidates in our pipeline, and will face competition with respect to future product candidates, from segments of the pharmaceutical, biotechnology and other related markets that pursue targeted approaches to addressing activating genetic and other molecular alterations in cancer.

For IDE397, our MAT2A inhibitor for patients with solid tumors having MTAP deletions, Agios Pharmaceuticals, or Agios, is clinically evaluating a small molecule MAT2A inhibitor designated as AG270 in patients having tumors with MTAP deletion. Agios presented initial data from its Phase 1 clinical trial evaluating AG270 in patients having tumors with MTAP deletion at the AACR/NCI/EORTC conference in October 2019. We believe that Agios has no current ongoing clinical trials to evaluate AG270 as monotherapy; their current clinical development efforts include evaluation of AG270 in combination with taxanes in selected tumor indications. We believe that IDE397 is more potent, more selective and has enhanced physical properties, collectively contributing to a differentiated target product profile relative to an Agios compound AGI-25696, which we believe to be representative of a series of Agios compounds including AG270. Agios has entered into an agreement with Servier Pharmaceuticals, LLC, or Servier, to sell its commercial, clinical and research-stage oncology portfolio, including AG270, to Servier. Agios has announced that it currently expects to complete the transaction at the end of the first quarter or in the beginning of the second quarter of 2021.

For our preclinical pipeline of synthetic lethality therapeutics, potential competition includes established companies as well as earlier-stage emerging biotechnology companies. Multiple companies have been involved with research and development of PARP inhibitors, such as Lynparza, Rubraca, Zejula, and Talzenna. Additionally, several other early-stage companies, including Anticancer Bioscience, Artios, Cyteir, FoRx Therapeutics, KSQ, MetaboMed, NeoMed, Repare, Ribon, and Tango are performing research in synthetic lethality.

For IDE196, our small molecule inhibitor targeting PKC in genetically-defined solid tumors having GNAQ or GNA11 mutations, we are not aware of other companies actively developing clinical-stage therapeutics directed to PKC as a target. Also, we are not aware of any approved therapies for metastatic uveal melanoma. Some companies are conducting research and development of potential therapies for metastatic uveal melanoma based on other targets and approaches. For example, Immunocore is developing IMCgp100, or tebentafusp, as monotherapy for metastatic uveal melanoma in a current Phase 3 clinical trial for patients with the HLA-A2 allele. Immunocore has disclosed in regulatory filings that of the approximately 5,000 to 6,000 estimated new cases of primary uveal melanoma per annum, there is an estimated addressable patient population of 1,000 patients per annum which have metastatic uveal melanoma that are HLA-A*02:01-positive and will be eligible for treatment with tebentafusp. Immunocore recently announced that a Phase 3 clinical trial of tebentafusp in MUM has met the predefined boundaries for statistical significance of the primary endpoint of overall survival in an interim analysis conducted by an independent data monitoring committee. Immunocore also announced that the FDA granted Breakthrough Therapy Designation, or BTD, to tebentafusp for the treatment of HLA-A*02:01-positive adult patients with unresectable uveal melanoma or MUM.

Intellectual Property

Intellectual property, including patents, trade secrets, trademarks and copyrights, is important to our business. We endeavor to establish, maintain and enforce intellectual property rights that protect our business interests.

Our patent portfolio, including patents owned by or exclusively licensed to us, is built on a program-by-program basis with a goal of establishing broad protection that generally includes, for each product candidate compound and for selected alternative back-up compounds, claims directed to composition of matter, pharmaceutical compositions, and methods of treatment using such pharmaceutical compositions. For some programs, our portfolio may also include claims directed to methods of treatment involving biomarker-enabled patient identification or selection, methods of treatment involving particular dosing approaches, polymorphs, formulations and/or methods of synthesis. We are seeking and maintaining patent protection in the United States and key foreign jurisdictions.

As of January 15, 2021, we own or exclusively in-license patents and patent applications, comprising approximately 32 distinct patent families, protecting our technology across our pipeline. Excluding applications that we are not currently prosecuting, our portfolio consists of six issued U.S. patents, approximately 22 pending U.S. applications, 11 pending applications under the Patent Cooperation Treaty, or PCT, 19 issued foreign patents and approximately 48 pending foreign applications in approximately 29 foreign jurisdictions, including without limitation countries included in major markets in North America, Europe, and Asia, each having a nominal expiration ranging from 2035 to 2040. Of these, we own approximately 29 distinct patent families, including approximately 19 pending U.S. patent applications and 11 PCT applications, nominally expiring in 2038 to 2041. The nominal expiration of our patents and patent applications does not account for any applicable patent term adjustments or extensions.

As of January 15, 2021, the portion of our portfolio for IDE196, which we have in-licensed from Novartis, consists of four issued U.S. patents, approximately 15 issued foreign patents, approximately two pending U.S. applications and approximately 29 pending applications in approximately 26 foreign jurisdictions which we are currently prosecuting, including without limitation countries included in major markets in North America, Europe, and Asia. These in-licensed patents and applications are directed to composition of matter, pharmaceutical compositions and methods of treatment, including treatment of uveal melanoma. These in-licensed patents nominally expire from 2035 to 2038, without taking into account any applicable patent term adjustments or extensions. In addition, the IDE196 portfolio also includes one pending U.S. patent application and three PCT applications solely owned by IDEAYA directed to methods of treatment for certain dosing regimens, for certain solid tumors having mutations in GNAQ or GNA11, or for certain EGFR mutant tumors in NSCLC. These solely owned patents nominally expire in 2040, without taking into account any applicable patent term adjustments or extensions.

As of February 1, 2021, the portion of our portfolio for programs in our synthetic lethality pipeline consists of U.S. patent applications directed to composition of matter, pharmaceutical compositions and/or methods of treatment of cancer for each of our MAT2A (MTAP), PARG (BER), POLQ (HR) and WRN (high MSI) programs, which we own. This portion of our portfolio also includes pending U.S. and foreign applications directed to composition of matter, pharmaceutical compositions and methods of treatment of cancer for our PARG (BER) program, which are owned by Cancer Research UK and University of Manchester, for which we have the exclusive option to obtain an exclusive in-license.

Strategic Relationships

We have established a strategic partnership and collaboration with GSK for IDE397, our clinical stage synthetic lethality program targeting MAT2A, as well as for our preclinical synthetic lethality programs targeting Pol Theta and Werner Helicase. We have an in-license agreement for our PARG program with Cancer Research UK and University of Manchester. For IDE196, our clinical stage PKC program, we have an in-license agreement with Novartis, and have established a clinical trial and supply agreement in support of our clinical evaluation of IDE196 in combination with binimetinib, and independently, in combination with crizotinib. For our PARG, DDT1 and DDT2 programs, our small molecule compounds are being discovered and/or developed internally with our own resources, as supplemented by certain service providers such as CROs.

We have established collaborative relationships with other companies for access to their proprietary database of patient samples, and/or for their genetic screening services on their proprietary platform. We have also established a collaborative relationship with Ventana (Roche Diagnostics) for development of molecular diagnostics for various research programs.

We have established certain development manufacturing and service relationships with CMOs for IDE397 and IDE196. We have an agreement with STA Pharmaceutical Hong Kong Limited for the synthesis of the API and formulation for IDE397, and with Bioduro for the manufacturing of IDE397 drug product. We have an agreement with STA Pharmaceutical Hong Kong Limited for the synthesis of the API and formulation for IDE196, and for the manufacturing of IDE196 drug product. We have established arrangements with CMOs as well for packaging, labeling and distribution of IDE397 and IDE196. We also have established clinical services relationship with Parexel International (IRL) Limited as a CRO to support our conduct of clinical trials for our IDE397 program, and with Icon Clinical Research Limited as a CRO to support our conduct of clinical trials for our IDE196 program.

In addition to these existing strategic license relationships, existing and planned development manufacturing and service arrangements, and existing and planned clinical services arrangements, we have various existing agreements and relationships with service providers, such as CROs, which are enabling execution of various research and development activities for each of our pipeline programs. In particular, such agreements are directed to chemistry and compound synthesis, compound analysis and characterization, structural biology, computational biology, biological assay and model development, *in vitro* screening, *in vivo* screening, translational biomarker diagnostic development, bioinformatics, toxicology and formulation, among other activities.

We may also evaluate future strategic opportunities to accelerate development timelines and maximize the commercial potential of our product candidates. We plan to selectively evaluate strategic collaborations with biopharmaceutical partners whose research, development, commercial, marketing, and geographic capabilities complement our own.

Agreements

Collaboration, Option and License Agreement with GSK for Synthetic Lethality Programs IDE397(MAT2A), Pol Theta and Werner Helicase

On June 15, 2020, we entered into the GSK Collaboration Agreement with GSK, pursuant to which we and GSK have entered into a strategic partnership and collaboration for our synthetic lethality programs targeting MAT2A, Pol Theta and Werner Helicase. On July 27, 2020, or the Effective Date, the GSK Collaboration Agreement became effective upon the parties' receipt of Hart-Scott-Rodino Antitrust Improvements Act clearance, or HSR Clearance. We received from GSK an up-front payment of $100.0 million in cash following the Effective Date.

GSK Collaboration – MAT2A Program

For the MAT2A program, we will continue to lead research and development through early clinical development. GSK has an exclusive option to obtain an exclusive license to continue development of and commercialize MAT2A products arising out of the MAT2A program, or the Option, exercisable within a specified time period after we deliver to GSK a data package resulting from our conduct of a MAT2A Phase 1 monotherapy clinical trial. GSK's exercise of the Option may be subject to HSR Clearance therefor at such time of exercise, and following exercise and HSR Clearance, GSK has agreed to pay us an option exercise payment of $50.0 million.

GSK may initiate, or request that we initiate, a Phase 1 combination clinical trial for a MAT2A product and GSK's Type I PRMT inhibitor (GSK3368715) product, or the MAT2A Combination Trial, prior to GSK's exercise of the Option. We will be responsible for the costs of research and early clinical development activities that we conduct for the MAT2A program prior to GSK's exercise of the Option (including during any interim waiting period for HSR Clearance for such Option exercise, if applicable), excluding the costs of conducting the MAT2A Combination Trial. GSK will be solely responsible for costs of the conduct of the MAT2A Combination Trial, except for supply of the MAT2A product therefor, to be provided by us at our own cost.

Subject to GSK's exercise of the Option (and HSR Clearance thereof, if applicable), GSK will lead later stage global clinical development for the MAT2A program, with IDEAYA responsible for 20% and GSK responsible for 80% of further development costs. The cost-sharing percentages will be adjusted based on the actual ratio of U.S. to global profits for MAT2A products, as measured three and six years after global commercial launch thereof.

Subject to GSK's exercise of the Option (and HSR Clearance thereof, if applicable), we will be eligible to receive future development and regulatory milestones of up to $465.0 million, and commercial milestones of up to $475.0 million, with respect to each MAT2A product. Additionally, we are entitled to receive 50% of U.S. net profits and tiered royalties on global non-U.S. net sales of MAT2A products by GSK, its affiliates and their sublicensees ranging from high single digit to sub-teen double digit percentages, subject to certain customary reductions. We have a right to opt-out of the 50% U.S. net profit share and corresponding development cost share for the MAT2A program, in which case we would be eligible to receive tiered royalties on U.S. net sales of MAT2A products by GSK, its affiliates and their sublicensees at the same royalty rates as for global non-U.S. net sales thereafter, with economic adjustments based on the stage of the MAT2A program at the time of opt-out.

GSK Collaboration - Pol Theta Program

Pursuant to the GSK Collaboration Agreement, GSK holds a global, exclusive license to develop and commercialize POLQ products arising out of the POLQ program. GSK and we will collaborate on ongoing preclinical research for the POLQ program, and GSK will lead clinical development for the POLQ program. GSK will be responsible for all research and development costs for the POLQ program, including those incurred by us.

We will be eligible to receive future development and regulatory milestones of up to $485.0 million, with respect to each POLQ product, including as applicable, for multiple POLQ products that target certain alternative protein domains or are based on alternative modalities. Additionally, we are eligible to receive up to $475.0 million of commercial milestones with respect to each POLQ product. We are also entitled to receive tiered royalties on global net sales of POLQ products by GSK, its affiliates and their sublicensees ranging from high single digit to sub-teen double digit percentages, subject to certain customary reductions.

We believe there are potential synergies to evaluate a combination between our Pol Theta program and GSK's approved PARP inhibitor, Zejula™, targeting the BRCA and HRD patient population.

GSK Collaboration - Werner Helicase Program

Pursuant to the GSK Collaboration Agreement, GSK holds a global, exclusive license to develop and commercialize WRN products arising out of the WRN program. We and GSK will collaborate on ongoing preclinical research for the WRN program, and GSK will lead clinical development for the WRN program, with IDEAYA responsible for 20% and GSK responsible for 80% of such global research and development costs. The cost-sharing percentages will be adjusted based on the actual ratio of U.S. to global profits for WRN products, as measured three and six years after global commercial launch thereof.

We will be eligible to receive future development milestones of up to $485.0 million, with respect to each WRN product, including as applicable, for multiple WRN products that are based on alternative modalities. Additionally, we will be eligible to receive up to $475.0 million of commercial milestones with respect to each WRN product. We will be entitled to receive 50% of U.S. net profits and tiered royalties on global non-U.S. net sales of WRN products by GSK, its affiliates and their sublicensees ranging from high single digit to sub-teen double digit percentages, subject to certain customary reductions. We will have a right to opt-out of the 50% U.S. net profit share and corresponding research and development cost share for the WRN program, and would be eligible to receive tiered royalties on U.S. net sales of WRN products by GSK, its affiliates and their sublicensees at the same royalty rates as for global non-U.S. net sales thereafter, with economic adjustments based on the stage of the WRN program at the time of opt-out.

GSK Collaboration - General

Under the terms of the GSK Collaboration Agreement, subject to certain exceptions, we and GSK will not, directly or through third parties, develop or commercialize other products whose primary and intended mechanism of action is the modulation of WRN, POLQ, or MAT2A (unless GSK does not exercise the Option or HSR Clearance does not occur with respect thereto, in which case such restriction shall cease to apply with respect to MAT2A) for an agreed upon period of time. We and GSK will form a joint steering committee, joint development committees, and joint commercialization committees responsible for coordinating all activities under the GSK Collaboration Agreement.

GSK's royalty obligations continue with respect to each country and each product until the later of (i) the date on which such product is no longer covered by certain intellectual property rights in such country and (ii) the 10th anniversary of the first commercial sale of such product in such country.

Each party has the right to sublicense its rights under the GSK Collaboration Agreement subject to certain conditions.

The GSK Collaboration Agreement will continue in effect on a product-by-product and country-by-country basis until the expiration of the obligation to make payments under the GSK Collaboration Agreement with respect to such product in each country, unless earlier terminated by either party pursuant to its terms. Either we or GSK may terminate the GSK Collaboration Agreement for the other party's insolvency or certain uncured breaches. We may terminate the GSK Collaboration Agreement if GSK or any of its sublicensees or affiliates challenge certain patents of the Company. GSK may terminate the GSK Collaboration Agreement in its entirety or on a target-by-target basis upon 90-day notice to us.

The GSK Collaboration Agreement contains various representations, warranties, covenants, dispute resolution mechanisms, indemnities and other provisions generally customary for transactions of this nature.

Exclusive License Agreement with Novartis for IDE196 (PKC)

On September 19, 2018, we entered into a license agreement with Novartis to develop products based on Novartis' small molecule PKC inhibitors, including Novartis' LXS196 oncology product candidate, which we have renamed as IDE196.

Under the license agreement, Novartis granted to us a worldwide, exclusive, sublicensable license to research, develop, manufacture, and commercialize certain defined compounds and products, including IDE196 and certain other PKC inhibitors as well as companion diagnostic products, collectively referred to as the licensed products, for any purpose. The license grant is subject to Novartis' retained rights to complete its ongoing Phase 1 clinical trial of IDE196. Novartis also agreed to transfer to us certain materials and know-how relating to the licensed products or arising from the ongoing Phase 1 clinical trial of IDE196.

We are solely responsible for the manufacturing and commercialization of the licensed products, subject to Novartis' rights under the ongoing clinical trial of IDE196. We have certain obligations to supply IDE196 and licensed products for compassionate use, named patient and similar programs in connection with the ongoing clinical trial. We are obligated to use commercially reasonable efforts to develop one licensed product and to commercialize and obtain regulatory approval for at least one licensed product in the United States and in specified European countries.

All inventions, know-how, data and results resulting from our activities under the license agreement, including activities relating to our own clinical trials, will be exclusively owned by us. All inventions, know-how, data and results resulting from Novartis' activities connected with Novartis' ongoing Phase 1 clinical trial for IDE196 will be exclusively owned by Novartis, and subject to the license to us. Ownership of all other inventions and know-how will be determined according to U.S. patent law, with Novartis' interest subject to the license to us.

We control the prosecution and maintenance of the patents exclusively licensed to us, with Novartis retaining step-in rights if we do not continue such prosecution and maintenance. If we fail to maintain or prosecute any exclusively licensed patent and Novartis exercises this step-in right, our license to the relevant patents will terminate in the relevant country. We have the first right to enforce any exclusively licensed patents, while Novartis retains the right to representation. If we do not bring an action to enforce any exclusively licensed patent, Novartis has the right to bring such action, and we will have the right to representation.

We paid Novartis an upfront payment of $2.5 million and issued 263,615 shares of our Series B redeemable convertible preferred stock concurrently with the execution of the license agreement. Subject to completion of certain clinical and regulatory development milestones, we agreed to make milestone payments in the aggregate of up to $9.0 million, and subject to achievement of certain commercial sales milestones, we agreed to make milestone payments in the aggregate of up to $20.0 million. We also agreed to pay mid to high single-digit tiered royalty payments based on annual worldwide net sales of licensed products, payable on a licensed product-by-licensed product and country by country basis until the latest of the expiration of the last to expire exclusively licensed patent, the expiration of regulatory exclusivity, and the ten year anniversary of the first commercial sale of such product in such country. The royalty payments are subject to reductions for lack of patent coverage, loss of market exclusivity, and payment obligations for third-party licenses.

The license agreement continues in force on a licensed product-by-licensed product and country by country basis until the latest of the expiration of the last to expire exclusively licensed patent, the expiration of regulatory exclusivity, and the ten year anniversary of the first commercial sale of such product in such country.

We may terminate the license agreement in its entirety or on a licensed product-by-licensed product basis without cause on 60 days' prior written notice. Either party may terminate the license agreement for the other party's material breach that remains uncured for 90 days. In addition, Novartis has the right to terminate the license agreement immediately upon our insolvency.

Upon termination by Novartis for material breach or for our insolvency, or upon termination by us without cause, at Novartis' written request and in return for consideration that will be negotiated at such time, we will grant to Novartis a perpetual, irrevocable, worldwide, sublicensable, nonexclusive or exclusive license, under all patent rights and know-how controlled by us that are related to and actually used as of the date of termination in the development, manufacture, and commercialization of licensed products, for Novartis to develop, manufacture, and commercialize the licensed products.

Clinical Trial Collaboration and Supply Agreement with Pfizer for IDE196 (PKC)

In March 2020, we entered into the Pfizer Agreement, pursuant to which the parties will work on combination studies, as portions of the Company's Phase 1/2 clinical trial in MUM and other solid tumors harboring activating GNAQ or GNA11 hotspot mutations. The combination study specifically pertains to the clinical evaluation of our IDE196 clinical candidate in combination with Pfizer's MEK inhibitor, binimetinib. In September 2020, we expanded the scope of our Pfizer Agreement to also evaluate IDE196 and Pfizer's cMET inhibitor, crizotinib, as an additional, independent combination therapy. Under the agreement, we are sponsor of the combination studies, and will provide IDE196 and pay for the costs of the combination studies. Pfizer will provide binimetinib and crizotinib for the combination studies at no cost to us. We and Pfizer will jointly own clinical data from the combination studies and will also jointly own inventions, if any, relating to the combined use of IDE196 and binimetinib, or independently, to the combined use of IDE196 and crizotinib. We and Pfizer have formed a joint development committee responsible for coordinating all regulatory and other activities under the agreement.

Pfizer may terminate the agreement if Pfizer believes binimetinib or crizotinib is being used in an unsafe manner. Either party may terminate the agreement for patient safety reasons, if any regulatory action prevents the supply of its drug or if a party ceases development of its drug. Either party may terminate the agreement for the other party's material breach that remains uncured for thirty days. If the agreement is terminated, we must return any unused binimetinib or unused crizotinib, as applicable, to Pfizer. If Pfizer terminates the agreement because of our material breach, we will be required to reimburse Pfizer certain manufacturing costs for the binimetinib or crizotinib supplied under the agreement.

Exclusive Option and License Agreement with Cancer Research UK

On April 28, 2017, we entered into an evaluation, option and license agreement with Cancer Research UK and University of Manchester, which was amended on April 24, 2019 and on March 3, 2020, for the development and commercialization of licensed products comprising pharmaceutical preparations of PARG inhibitors for all therapeutic uses.

Under this agreement, Cancer Research UK and University of Manchester have granted to us, and we have in turn granted to Cancer Research UK and University of Manchester, non-exclusive, sublicensable, royalty-free licenses to carry out non-clinical research during the research term, currently ending in March 2021. The non-clinical research is to be governed by a joint research committee comprised of representatives from each party. During the research term, no party is to undertake a drug discovery program in PARG inhibitors other than under this agreement.

Cancer Research UK also granted us the exclusive option to obtain an exclusive, sublicensable, worldwide, royalty-bearing license, under certain Cancer Research UK background intellectual property and Cancer Research UK's interest in any intellectual property jointly developed under the agreement, to research, develop, manufacture, and commercialize licensed products, as well as a non-exclusive, sublicensable, royalty-free, freedom-to-operate license under related intellectual property. Cancer Research UK and University of Manchester retain certain rights under the licensed intellectual property for academic, non-commercial research and teaching.

In the March 2020 second amendment to the evaluation, option and license agreement, the parties reduced the license fee due at exercise of our option, extended the research period to March 2021, and also extended the option period, during which IDEAYA has rights to exercise an option to certain license rights. The expanded collaborative research includes evaluation of an IDEAYA proprietary small molecule PARG inhibitor in multiple *in vitro* and *in vivo* ovarian cancer xenograft models. This research is also evaluating replication stress signature as a potential patient selection biomarker. The extended option period was for up to four additional years from March 2020, including an initial one year period to March 2021 and an additional eighteen month extension to September 2022, which has now been elected pursuant to our certification of ongoing program research activities. Thereafter, we can elect three additional six-month extensions, contingent upon both our certification of ongoing research activities and payment of certain extension fees, which together with the reduced license fee would equal the original license fee.

During the option period, no party shall grant to any third party any rights or licenses under Cancer Research UK background intellectual property that specifically relate to PARG or under our intellectual property covering inventions made in the performance of the research program. Upon option exercise, we will gain sole control and responsibility for the research, development, manufacture, and commercialization of the licensed PARG inhibitors. Cancer Research UK has also agreed to transfer its know how relating to the research, development or manufacturing of the licensed PARG inhibitors to us.

We are obligated to use reasonable efforts to research a PARG inhibitor during the research term, and to develop a PARG inhibitor for the treatment of a cancer indication if we exercise the option.

Each party is the sole owner of any intellectual property it develops solely under the agreement, and the parties will be joint owners of any jointly developed intellectual property. Each party grants the other a non-exclusive, fully-paid, royalty free, irrevocable, sublicensable, perpetual license to its rights in such jointly created intellectual property to make, use and sell inventions claimed in the joint patents, except for those joint patents exclusively licensed to us under the agreement if we exercise our option.

Before our exercise of the option, Cancer Research UK is responsible for the prosecution and maintenance of Cancer Research UK background patents specifically relating to PARG, while we are responsible for the prosecution and maintenance of patents covering inventions developed under the agreement as project intellectual property. Cancer Research UK and University of Manchester have the first right to enforce the patents covering inventions developed under the agreement as project intellectual property and we have the right to participate in such actions. In the event we exercise the option, we will assume Cancer Research UK's prosecution and maintenance responsibilities for the Cancer Research UK background patents specifically relating to PARG and we obtain the first right to enforce such patents as well as the patents covering inventions developed under the agreement as project intellectual property, and Cancer Research UK will have the right to participate. In either case, we pay all expenses associated with prosecution and maintenance and each party bears its own costs for enforcement. If we choose not to exercise the option, or if we abandon the patents covering inventions developed under the agreement as project intellectual property, Cancer Research UK will thereafter be responsible for prosecuting and maintaining such patents. If we abandon such patents, Cancer Research UK and University of Manchester will be responsible for paying the expenses associated with the prosecution and maintenance of such patents.

In addition to paying an upfront fee of £100,000, if we exercise the option we additionally agree to pay Cancer Research UK (a) a one-time fee of £250,000, (b) subject to completion of certain clinical and regulatory milestones, payments of up to £19.5 million per indication, (c) subject to certain sales milestones, payments of up to £9 million per indication, and (d) low single-digit tiered royalty payments based on aggregate worldwide net sales of all products, payable on a product-by-product and country-by-country basis until the later of the last-to-expire patent covering such product in such country and the ten year anniversary of the first commercial sale of such licensed product in such country. The royalty payments are subject to reductions for payment obligations in the event third-party licenses are required to develop or commercialize the product or if the product is not covered by certain patents. If we exercise the option, we also agreed to pay to Cancer Research UK percentages in the low to mid-teens of sublicense revenue we receive for a sublicense of intellectual property derived from certain intellectual property developed under the agreement or Cancer Research UK background patents specifically relating to PARG. If the agreement expires because we do not exercise the option or if the agreement is terminated due to our material breach, then we are eligible to receive a percentage of sublicensing revenue that Cancer Research UK receives for licensing such intellectual property.

The agreement will expire at the end of the Option Period if we do not exercise the option, or upon expiration of all payment obligations if we do exercise the option. Either party may terminate the agreement for the other party's insolvency or material breach that remains uncured for thirty days. In addition, Cancer Research UK and University of Manchester may terminate the agreement with thirty days advance written notice if we become an affiliate of or transfer rights to a party with a business in tobacco products.

If we elect not to exercise the option, or if the agreement is terminated by Cancer Research UK and University of Manchester pursuant to any of their termination rights, then Cancer Research UK and University of Manchester will have exclusive, worldwide rights to project intellectual property. If we terminate the agreement for material breach, then the licenses we receive upon exercise of the option survive, and our payment obligations will be reduced. If we exercise the option, the licenses we receive upon exercise of the option survive expiration of the agreement.

Sales and Marketing

We intend to become a fully-integrated biopharmaceutical company. This will enable us to realize our goal of delivering transformative drugs to patients. We currently hold worldwide commercialization rights to each of our product candidates, and intend to retain significant rights in key markets. In light of our stage of development, we have not yet established sales and marketing capabilities.

We plan to build our own sales force to commercialize approved products, if any, in the United States and potentially in Europe and other selected foreign countries, and we expect to initiate commercial readiness activities in anticipation of receiving marketing approvals. We believe a moderately sized specialty sales force would enable us to reach oncologists who specialize in treating the patient populations for our product candidates. We may enter into distribution and other marketing arrangements with third parties for any of our product candidates that obtain marketing approval.

We also plan to build a marketing and sales management organization to create and implement marketing strategies for any products that we market through our own sales organization and to oversee and support our sales force.

Manufacturing

We currently rely, and expect to continue to rely, on third parties for the manufacture of our product candidates and our biomarker diagnostics for preclinical and clinical testing, as well as for future commercial manufacture of any drugs and diagnostics that we may commercialize. We do not own or operate, and currently have no plans to establish, any manufacturing facilities.

In general, we plan to establish agreements with contract manufacturing organizations, or CMOs, for synthesis of the active pharmaceutical ingredient, or API, manufacturing of drug product comprising such API, as well as packaging, labeling and distribution.

We have also established supply arrangements with one or more CMOs for IDE397 in support of our current clinical development needs.

We have also established our own supply arrangements with one or more CMOs for IDE196 in support of our current clinical development needs.

Our lead product candidates IDE397 and IDE196 are each small molecules that can be manufactured in reliable and reproducible synthetic processes from readily available starting materials. We believe the synthetic chemistry is amenable to scale-up using standard manufacturing equipment and processes. We expect that the compounds being discovered and developed for our other pipeline programs, including PARG, Pol Theta, and WRN, and other future programs, will also be small molecule product candidates that can be produced at contract manufacturing facilities.

In many cases, we anticipate that the biomarker diagnostic may be commercially available on an existing third-party diagnostic panel or assay. In cases where such biomarker diagnostic is not already commercially available, we generally expect to establish agreements with strategic partners for clinical supply of companion diagnostics for biomarkers associated with the targeted therapeutics we are developing.

Government Regulation

Government authorities in the United States, at the federal, state and local level, and other countries extensively regulate, among other things, the research, development, testing, manufacture, quality control, approval, labeling, packaging, storage, record-keeping, promotion, advertising, distribution, marketing and export and import of products such as those we are developing. A new drug must be approved by the FDA through the new drug application, or NDA, process before it may be legally marketed in the United States.

U.S. Drug Development Process

In the United States, the FDA regulates drugs under the Federal Food, Drug, and Cosmetic Act, or the FDCA, and its implementing regulations. The process of obtaining regulatory approvals and the subsequent compliance with appropriate federal, state, local and foreign statutes and regulations require the expenditure of substantial time and financial resources. Failure to comply with the applicable U.S. requirements at any time during the product development process, approval process or after approval may subject an applicant to administrative or judicial sanctions. These sanctions could include the FDA's refusal to approve pending applications, withdrawal of an approval, a clinical hold, warning letters, product recalls, product seizures, total or partial suspension of production or distribution, injunctions, fines, refusals of government contracts, restitution, disgorgement or civil or criminal penalties. Any agency or judicial enforcement action could have a material adverse effect on us.

The process required by the FDA before a drug may be marketed in the United States generally involves the following:

- completion of preclinical laboratory tests, animal studies and formulation studies in accordance with good laboratory practice, or GLP, regulations and other applicable regulations;
- submission to the FDA of an IND, which must become effective before clinical trials in humans may begin;
- approval by an independent institutional review board, or IRB, at each clinical site before each clinical trial may be initiated;
- performance of adequate and well-controlled human clinical trials in accordance with good clinical practice, or GCP, regulations to establish the safety and efficacy of the proposed drug for its intended use;
- submission to the FDA of an NDA;
- satisfactory completion of an FDA advisory committee review, if applicable;

- satisfactory completion of an FDA inspection of the manufacturing facility or facilities at which the drug is produced to assess compliance with current good manufacturing process, or cGMP, requirements to assure that the facilities, methods and controls are adequate to preserve the drug's identity, strength, quality and purity; and
- FDA review and approval of the NDA.

Once a pharmaceutical product candidate is identified for development, it enters the preclinical testing stage. Preclinical tests include laboratory evaluations of product chemistry, toxicity and formulation, as well as animal studies. An IND sponsor must submit the results of the preclinical tests, together with manufacturing information and analytical data, to the FDA as part of the IND. The sponsor will also include a protocol detailing, among other things, the objectives of the first phase of the clinical trial, the parameters to be used in monitoring safety, and the effectiveness criteria to be evaluated, if the first phase lends itself to an efficacy evaluation. Some preclinical testing may continue even after the IND is submitted. The IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA, within the 30-day time period, places the clinical trial on a clinical hold. In such a case, the IND sponsor and the FDA must resolve any outstanding concerns before the clinical trial can begin. Clinical holds also may be imposed by the FDA at any time before or during clinical trials due to safety concerns about on-going or proposed clinical trials or non-compliance with specific FDA requirements, and the clinical trials may not begin or continue until the FDA notifies the sponsor that the hold has been lifted.

All clinical trials must be conducted under the supervision of one or more qualified investigators in accordance with GCP regulations, which include the requirement that all research subjects provide their informed consent in writing for their participation in any clinical trial. They must be conducted under protocols detailing the objectives of the clinical trial, dosing procedures, subject selection and exclusion criteria and the safety and effectiveness criteria to be evaluated. Each protocol must be submitted to the FDA as part of the IND, and timely safety reports must be submitted to the FDA and the investigators for serious and unexpected adverse events. An IRB at each institution participating in the clinical trial must review and approve each protocol before a clinical trial commences at that institution and must also approve the information regarding the clinical trial and the consent form that must be provided to each clinical trial subject or his or her legal representative, monitor the clinical trial until completed and otherwise comply with IRB regulations.

Human clinical trials are typically conducted in three sequential phases that may overlap or be combined:

- *Phase 1:* The product candidate is initially introduced into healthy human subjects and tested for safety, dosage tolerance, absorption, metabolism, distribution and excretion and, if possible, to gain an early indication of its effectiveness. In the case of some products for severe or life-threatening diseases, such as cancer, especially when the product may be too inherently toxic to ethically administer to healthy volunteers, the initial human testing is often conducted in patients. Sponsors sometimes designate their Phase 1 clinical trials as Phase 1a or Phase 1b. Phase 1b clinical trials are typically aimed at confirming dosing, pharmacokinetics and safety in a larger number of patients. Some Phase 1b studies evaluate biomarkers or surrogate markers that may be associated with efficacy in patients with specific types of diseases.
- *Phase 2:* This phase involves clinical trials in a limited patient population to identify possible adverse effects and safety risks, to preliminarily evaluate the efficacy of the product for specific targeted diseases and to determine dosage tolerance and appropriate dosage.
- *Phase 3:* Clinical trials are undertaken to further evaluate dosage, clinical efficacy and safety in an expanded patient population, generally at geographically dispersed clinical trial sites. These clinical trials are intended to establish the overall risk-benefit ratio of the product candidate and provide, if appropriate, an adequate basis for product labeling.

Post-approval trials, sometimes referred to as Phase 4 clinical trials, may be conducted after initial marketing approval. These clinical trials are used to gain additional experience from the treatment of patients in the intended therapeutic indication. In certain instances, the FDA may mandate the performance of Phase 4 clinical trials as a condition of approval of an NDA.

The FDA or the sponsor may suspend a clinical trial at any time on various grounds, including a finding that the research subjects or patients are being exposed to an unacceptable health risk. Similarly, an IRB can suspend or terminate approval of a clinical trial at its institution if the clinical trial is not being conducted in accordance with the IRB's requirements or if the drug has been associated with unexpected serious harm to patients. In addition, some clinical trials are overseen by an independent group of qualified experts organized by the sponsor, known as a data safety monitoring board or committee. Depending on its charter, this group may determine whether a clinical trial may move forward at designated check points based on access to certain data from the clinical trial.

During the development of a new drug, sponsors are given opportunities to meet with the FDA at certain points. These points may be prior to submission of an IND, at the end of Phase 2, and before an NDA is submitted. Meetings at other times may

be requested. These meetings can provide an opportunity for the sponsor to share information about the data gathered to date, for the FDA to provide advice, and for the sponsor and the FDA to reach agreement on the next phase of development. Sponsors typically use the meetings at the end of the Phase 2 clinical trial to discuss Phase 2 clinical results and present plans for the pivotal Phase 3 clinical trials that they believe will support approval of the new drug.

Concurrent with clinical trials, companies may conduct additional *in vivo* studies and also develop additional information about the chemistry and physical characteristics of the drug and finalize a process for manufacturing the product in commercial quantities in accordance with cGMP requirements. The manufacturing process must be capable of consistently producing quality batches of the product candidate and, among other things, the manufacturer must develop methods for testing the identity, strength, quality and purity of the final drug. In addition, appropriate packaging must be selected and tested, and stability studies must be conducted to demonstrate that the product candidate does not undergo unacceptable deterioration over its shelf life.

While the IND is active and before approval, progress reports summarizing the results of the clinical trials and nonclinical studies performed since the last progress report must be submitted at least annually to the FDA, and written IND safety reports must be submitted to the FDA and investigators for serious and unexpected suspected adverse events, findings from other studies suggesting a significant risk to humans exposed to the same or similar drugs, findings from animal or *in vitro* testing suggesting a significant risk to humans, and any clinically important increased incidence of a serious suspected adverse reaction compared to that listed in the protocol or investigator brochure.

There are also requirements governing the reporting of ongoing clinical trials and completed clinical trial results to public registries. Sponsors of certain clinical trials of FDA-regulated products are required to register and disclose specified clinical trial information, which is publicly available at www.clinicaltrials.gov. Information related to the product, patient population, phase of investigation, clinical trial sites and investigators and other aspects of the clinical trial is then made public as part of the registration. Sponsors are also obligated to discuss the results of their clinical trials after completion. Disclosure of the results of these clinical trials can be delayed until the new product or new indication being studied has been approved.

U.S. Review and Approval Process

The results of product development, preclinical and other non-clinical studies and clinical trials, along with descriptions of the manufacturing process, analytical tests conducted on the chemistry of the drug, proposed labeling and other relevant information are submitted to the FDA as part of an NDA requesting approval to market the product. The submission of an NDA is subject to the payment of substantial user fees; a waiver of such fees may be obtained under certain limited circumstances. The FDA reviews an NDA to determine, among other things, whether a product is safe and effective for its intended use and whether its manufacturing is cGMP-compliant to assure and preserve the product's identity, strength, quality and purity. Under the Prescription Drug User Fee Act, or PDUFA, guidelines that are currently in effect, the FDA has a goal of ten months from the date of "filing" of a standard NDA for a new molecular entity to review and act on the submission. This review typically takes twelve months from the date the NDA is submitted to FDA because the FDA has approximately two months to make a "filing" decision after it the application is submitted. The FDA conducts a preliminary review of all NDAs within the first 60 days after submission, before accepting them for filing, to determine whether they are sufficiently complete to permit substantive review. The FDA may request additional information rather than accept an NDA for filing. In this event, the NDA must be resubmitted with the additional information. The resubmitted application also is subject to review before the FDA accepts it for filing.

The FDA may refer an application for a novel drug to an advisory committee. An advisory committee is a panel of independent experts, including clinicians and other scientific experts, that reviews, evaluates and provides a recommendation as to whether the application should be approved and under what conditions. The FDA is not bound by the recommendations of an advisory committee, but it considers such recommendations carefully when making decisions. Before approving an NDA, the FDA will inspect the facility or facilities where the product is manufactured. The FDA will not approve an application unless it determines that the manufacturing processes and facilities are in compliance with cGMP requirements and adequate to assure consistent production of the product within required specifications. Additionally, before approving an NDA, the FDA may inspect one or more clinical trial sites to assure compliance with GCP requirements.

After the FDA evaluates an NDA, it will issue an approval letter or a Complete Response Letter. An approval letter authorizes commercial marketing of the drug with prescribing information for specific indications. A Complete Response Letter indicates that the review cycle of the application is complete and the application will not be approved in its present form. A Complete Response Letter usually describes the specific deficiencies in the NDA identified by the FDA and may require additional clinical data, such as an additional pivotal Phase 3 clinical trial or other significant and time-consuming

requirements related to clinical trials, nonclinical studies or manufacturing. If a Complete Response Letter is issued, the sponsor must resubmit the NDA, addressing all of the deficiencies identified in the letter, or withdraw the application. Even if such data and information are submitted, the FDA may decide that the NDA does not satisfy the criteria for approval.

If a product receives regulatory approval, the approval may be significantly limited to specific diseases and dosages or the indications for use may otherwise be limited, which could restrict the commercial value of the product. In addition, the FDA may require a sponsor to conduct Phase 4 testing, which involves clinical trials designed to further assess a drug's safety and effectiveness after NDA approval, and may require testing and surveillance programs to monitor the safety of approved products which have been commercialized. The FDA may also place other conditions on approval including the requirement for a risk evaluation and mitigation strategy, or REMS, to assure the safe use of the drug. If the FDA concludes a REMS is needed, the sponsor of the NDA must submit a proposed REMS. The FDA will not approve the NDA without an approved REMS, if required. A REMS could include medication guides, physician communication plans or elements to assure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. Any of these limitations on approval or marketing could restrict the commercial promotion, distribution, prescription or dispensing of products. Marketing approval may be withdrawn for non-compliance with regulatory requirements or if problems occur following initial marketing.

The Pediatric Research Equity Act, or PREA, requires a sponsor to conduct pediatric clinical trials for most drugs, for a new active ingredient, new indication, new dosage form, new dosing regimen or new route of administration. Under PREA, original NDAs and supplements must contain a pediatric assessment unless the sponsor has received a deferral or waiver. The required assessment must evaluate the safety and effectiveness of the product for the claimed indications in all relevant pediatric subpopulations and support dosing and administration for each pediatric subpopulation for which the product is safe and effective. The sponsor or FDA may request a deferral of pediatric clinical trials for some or all of the pediatric subpopulations. A deferral may be granted for several reasons, including a finding that the drug is ready for approval for use in adults before pediatric clinical trials are complete or that additional safety or effectiveness data needs to be collected before the pediatric clinical trials begin. The FDA must send a non-compliance letter to any sponsor that fails to submit the required assessment or keep a deferral current, or fails to submit a request for approval of a pediatric formulation.

U.S. Orphan Drug Designation

Under the Orphan Drug Act, the FDA may grant orphan designation to a drug intended to treat a rare disease or condition, which is a disease or condition that affects fewer than 200,000 individuals in the United States or, if it affects more than 200,000 individuals in the United States, there is no reasonable expectation that the cost of developing and making a drug product available in the United States for this type of disease or condition will be recovered from sales of the product. Orphan designation must be requested before submitting an NDA. After the FDA grants orphan designation, the identity of the therapeutic agent and its potential orphan use are disclosed publicly by the FDA. Orphan designation does not convey any advantage in or shorten the duration of the regulatory review and approval process.

If a product that has orphan designation subsequently receives the first FDA approval for the disease or condition for which it has such designation, the product is entitled to orphan product exclusivity, which means that the FDA may not approve any other applications to market the same drug for the same indication for seven years, except in limited circumstances, such as a showing of clinical superiority to the product with orphan exclusivity or inability to manufacture the product in sufficient quantities. The designation of such drug also entitles a party to financial incentives such as opportunities for grant funding towards clinical trial costs, tax advantages and user-fee waivers. However, competitors, may receive approval of different products for the indication for which the orphan product has exclusivity or obtain approval for the same product but for a different indication for which the orphan product has exclusivity. Orphan exclusivity also could block the approval of one of our product candidates for seven years if a competitor obtains approval of the same drug as defined by the FDA or if our product candidate is determined to be contained within the competitor's product for the same indication or disease. In addition, if an orphan designated product receives marketing approval for an indication broader than what is designated, it may not be entitled to orphan exclusivity.

U.S. Expedited Development and Review Programs

The FDA has a fast track designation program that is intended to expedite or facilitate the process for reviewing new drug products that meet certain criteria. Specifically, new drugs are eligible for Fast Track designation if they are intended to treat a serious or life-threatening disease or condition and demonstrate the potential to address unmet medical needs for the disease or condition. Unique to a fast track product, the FDA may consider for review sections of the NDA on a rolling basis before the complete application is submitted, if the sponsor provides a schedule for the submission of the sections of the NDA, the FDA agrees to accept sections of the NDA and determines that the schedule is acceptable, and the sponsor pays any required user fees upon submission of the first section of the NDA.

Any product submitted to the FDA for approval, including a product with a fast track designation, may also be eligible for other types of FDA programs intended to expedite development and review, such as priority review and accelerated approval. A product is eligible for priority review if it has the potential to provide safe and effective therapy where no satisfactory alternative therapy exists or a significant improvement in the treatment, diagnosis or prevention of a disease compared to marketed products. The FDA will attempt to direct additional resources to the evaluation of an application for a new drug designated for priority review in an effort to facilitate the review. The FDA endeavors to review applications with priority review designations within six months of the filing date as compared to ten months for review of new molecular entity NDAs under its current PDUFA review goals.

In addition, a product may be eligible for accelerated approval. Drug products intended to treat serious or life-threatening diseases or conditions may be eligible for accelerated approval upon a determination that the product has an effect on a surrogate endpoint that is reasonably likely to predict clinical benefit, or on a clinical endpoint that can be measured earlier than irreversible morbidity or mortality, that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit, taking into account the severity, rarity, or prevalence of the condition and the availability or lack of alternative treatments. As a condition of approval, the FDA may require that a sponsor of a drug receiving accelerated approval perform adequate and well-controlled post-marketing clinical trials. In addition, the FDA currently requires as a condition for accelerated approval pre-approval of promotional materials, which could adversely impact the timing of the commercial launch of the product. Fast track designation, priority review and accelerated approval do not change the standards for approval but may expedite the development or approval process.

The Food and Drug Administration Safety and Innovation Act, or FDASIA, established a category of drugs referred to as “breakthrough therapies” that may be eligible to receive breakthrough therapy designation. A sponsor may seek FDA designation of a product candidate as a “breakthrough therapy” if the product is intended, alone or in combination with one or more other products, to treat a serious or life-threatening disease or condition and preliminary clinical evidence indicates that the product may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. The designation includes all of the fast track program features, as well as more intensive FDA interaction and guidance. The breakthrough therapy designation is a distinct status from both accelerated approval and priority review, which can also be granted to the same drug if relevant criteria are met. If a product is designated as breakthrough therapy, the FDA will work to expedite the development and review of such drug.

Even if a product qualifies for one or more of these programs, the FDA may later decide that the product no longer meets the conditions for qualification or decide that the time period for FDA review or approval will not be shortened. We expect to pursue breakthrough therapy designation for IDE196 and may explore some of these opportunities for our other product candidates as appropriate.

U.S. Post-approval Requirements

Once an approval is granted, the FDA may withdraw the approval if compliance with regulatory standards is not maintained or if problems occur after the product reaches the market. Later discovery of previously unknown problems with a product may result in restrictions on the product or even complete withdrawal of the product from the market. After approval, some types of changes to the approved product, such as adding new indications, certain manufacturing changes and additional labeling claims, are subject to further FDA review and approval. Drug manufacturers and other entities involved in the manufacture and distribution of approved drugs are required to register their establishments with the FDA and certain state agencies, and are subject to periodic unannounced inspections by the FDA and certain state agencies for compliance with cGMP regulations and other laws and regulations. In addition, the FDA may impose a number of post-approval requirements as a condition of approval of an NDA. For example, the FDA may require post-marketing testing, including Phase 4 clinical trials, and surveillance to further assess and monitor the product’s safety and effectiveness after commercialization.

Any drug products manufactured or distributed by us or our partners pursuant to FDA approvals will be subject to continuing regulation by the FDA, including, among other things, record-keeping requirements, reporting of adverse experiences with the drug, providing the FDA with updated safety and efficacy information, drug sampling and distribution requirements, complying with certain electronic records and signature requirements, and complying with FDA promotion and advertising requirements. The FDA strictly regulates labeling, advertising, promotion and other types of information on products that are placed on the market and imposes requirements and restrictions on drug manufacturers, such as those related to direct-to-consumer advertising, the prohibition on promoting products for uses or in patient populations that are not described in the product’s approved labeling (known as “off-label use”), industry-sponsored scientific and educational activities, and promotional activities involving the internet. Discovery of previously unknown problems or the failure to comply with the applicable regulatory requirements may result in restrictions on the marketing of a product or withdrawal of the product from the market as well as possible civil or criminal sanctions. Failure to comply with the applicable U.S. requirements at any time during the product development process, approval process or after approval, may subject an applicant or manufacturer to

administrative or judicial civil or criminal sanctions and adverse publicity. FDA sanctions could include refusal to approve pending applications, withdrawal of an approval, clinical holds on post-approval clinical trials, warning or untitled letters, product recalls, product seizures, total or partial suspension of production or distribution, injunctions, fines, refusals of government contracts, mandated corrective advertising or communications with doctors, debarment, restitution, disgorgement of profits, or civil or criminal penalties.

U.S. Marketing Exclusivity

Market exclusivity provisions under the FDCA can delay the submission or the approval of certain marketing applications. The FDCA provides a five-year period of non-patent marketing exclusivity within the United States to the first applicant to obtain approval of an NDA for a new chemical entity. A drug is a new chemical entity if the FDA has not previously approved any other new drug containing the same active moiety, which is the molecule or ion responsible for the action of the drug substance. During the exclusivity period, the FDA may not approve or even accept for review an abbreviated new drug application, or ANDA, or an NDA submitted under Section 505(b)(2), or 505(b)(2) NDA, submitted by another company for another drug based on the same active moiety, regardless of whether the drug is intended for the same indication as the original innovative drug or for another indication, where the applicant does not own or have a legal right of reference to all the data required for approval. However, an application may be submitted after four years if it contains a certification of patent invalidity or non-infringement to one of the patents listed with the FDA by the innovator NDA holder.

The FDCA alternatively provides three years of marketing exclusivity for an NDA, or supplement to an existing NDA if new clinical investigations, other than bioavailability studies, that were conducted or sponsored by the applicant are deemed by the FDA to be essential to the approval of the application, for example new indications, dosages or strengths of an existing drug. This three-year exclusivity covers only the modification for which the drug received approval on the basis of the new clinical investigations and does not prohibit the FDA from approving ANDAs or 505(b)(2) NDAs for drugs containing the active agent for the original indication or condition of use. Five-year and three-year exclusivity will not delay the submission or approval of a full NDA. However, an applicant submitting a full NDA would be required to conduct or obtain a right of reference to all of the preclinical studies and adequate and well-controlled clinical trials necessary to demonstrate safety and effectiveness.

Pediatric exclusivity is another type of marketing exclusivity available in the United States. Pediatric exclusivity provides for an additional six months of marketing exclusivity attached to another period of exclusivity if a sponsor conducts clinical trials in children in response to a written request from the FDA. The issuance of a written request does not require the sponsor to undertake the described clinical trials. In addition, orphan drug exclusivity, as described above, may offer a seven-year period of marketing exclusivity, except in certain circumstances.

FDA Regulation of Companion Diagnostics

We are collaborating or expect to collaborate with strategic partners or CROs to manufacture and supply *in vitro* diagnostics to identify patients with biomarkers associated with the targeted therapeutics we are developing. These diagnostics, often referred to as companion diagnostics, are regulated as medical devices. In the United States, the FDCA and its implementing regulations, and other federal and state statutes and regulations govern, among other things, medical device design and development, preclinical and clinical testing, premarket clearance or approval, registration and listing, manufacturing, labeling, storage, advertising and promotion, sales and distribution, export and import, and post-market surveillance.

Under the FDCA, medical devices are classified into one of three classes – Class I, Class II or Class III – depending on the degree of risk associated with each medical device and the extent of control needed to provide reasonable assurances with respect to safety and effectiveness. Class I devices are those for which safety and effectiveness can be reasonably assured by adherence to a set of regulations, referred to as General Controls, which require compliance with the applicable portions of the FDA's Quality System Regulation, or QSR, facility registration and product listing, reporting of adverse events and malfunctions, and appropriate, truthful and non-misleading labeling and promotional materials. Class II devices are those that are subject to the General Controls, as well as Special Controls, which can include performance standards, guidelines and postmarket surveillance. Most Class II devices are subject to premarket review and clearance by the FDA. Premarket review and clearance by the FDA is accomplished through the 510(k) premarket notification process. Under the 510(k) process, the manufacturer must submit to the FDA a premarket notification, demonstrating that the device is "substantially equivalent" to a predicate device. To be "substantially equivalent," the proposed device must have the same intended use as the predicate device, and either have the same technological characteristics as the predicate device or have different technological characteristics and not raise different questions of safety or effectiveness than the predicate device. Class III devices include devices deemed by the FDA to pose the greatest risk such as life-supporting or life-sustaining devices, or implantable devices, in addition to new devices deemed not substantially equivalent following the 510(k) process. The safety and

effectiveness of Class III devices cannot be reasonably assured solely by the General Controls and Special Controls. Therefore, these devices are generally subject to the premarket approval, or PMA, application process, which is generally more costly and time-consuming than the 510(k) process.

Alternatively, a device might be the subject of a *de novo* classification request, which seeks marketing authorization and reclassification as a lower-risk Class I or Class II device for a new device that otherwise would automatically be regulated as a Class III device requiring a PMA approval. Specifically, medical device types that the FDA has not previously classified as Class I, II or III are automatically classified into Class III regardless of the level of risk they pose. The Food and Drug Administration Modernization Act of 1997 established a new route to market for low to moderate risk medical devices that are automatically placed into Class III due to the absence of a predicate device, called the "Request for Evaluation of Automatic Class III Designation," or the *de novo* classification procedure. This procedure allows a manufacturer whose novel device is automatically classified into Class III to request down-classification of its medical device into Class I or Class II on the basis that the device presents low or moderate risk, rather than requiring the submission and approval of a PMA application.

If the use of a companion diagnostic is essential to the safe and effective use of a drug or biologic product, then the FDA generally will require approval or clearance of the diagnostic contemporaneously with the approval of the therapeutic product. On August 6, 2014, the FDA issued a final guidance document addressing the development and approval process for "In Vitro Companion Diagnostic Devices." According to the guidance, for novel product candidates such as ours, a companion diagnostic device and its corresponding drug or biologic candidate should be approved or cleared contemporaneously by the FDA for the use indicated in the therapeutic product labeling. The guidance also explains that a companion diagnostic device used to make treatment decisions in clinical trials of a drug generally will be considered an investigational device, unless it is employed for an intended use for which the device is already approved or cleared. If used to make critical treatment decisions, such as patient selection, the diagnostic device generally will be considered a significant risk device under the FDA's Investigational Device Exemption, or IDE, regulations. Thus, the sponsor of the diagnostic device will be required to comply with the IDE regulations. According to the guidance, if a diagnostic device and a drug are to be studied together to support their respective approvals, both products can be studied in the same investigational study, if the study meets both the requirements of the IDE regulations and the IND regulations. The guidance provides that depending on the details of the study plan and subjects, a sponsor may seek to submit an IND alone, or both an IND and an IDE. In July 2016, the FDA issued a draft guidance document intended to further assist sponsors of therapeutic products and sponsors of *in vitro* companion diagnostic devices on issues related to co-development of these products.

The FDA generally requires companion diagnostics intended to select the patients who will respond to cancer treatment to obtain approval of a PMA for that diagnostic contemporaneously with approval of the therapeutic, though 510(k) clearance or grant of a *de novo* classification request are also possible. The review of these *in vitro* companion diagnostics in conjunction with the review of a cancer therapeutic involves coordination of review by the FDA's Center for Biologics Evaluation and Research or Center for Drug Evaluation and Research and by the FDA's Center for Devices and Radiological Health. The PMA process, including the gathering of clinical and preclinical data and the submission to and review by the FDA, can take several years or longer. It involves a rigorous premarket review during which the applicant must prepare and provide the FDA with reasonable assurance of the device's safety and effectiveness and information about the device and its components regarding, among other things, device design, manufacturing and labeling. PMA applications are subject to an application fee. In addition, PMAs for certain devices must generally include the results from extensive preclinical and adequate and well-controlled clinical trials to establish the safety and effectiveness of the device for each indication for which FDA approval is sought. In particular, for a diagnostic, the applicant must demonstrate that the diagnostic produces reproducible results when the same sample is tested multiple times by multiple users at multiple laboratories. As part of the PMA review, the FDA will typically inspect the manufacturer's facilities for compliance with the QSR, which imposes elaborate testing, control, documentation and other quality assurance requirements.

If the FDA evaluations of both the PMA application and the manufacturing facilities are favorable, the FDA will either issue an approval letter or an approvable letter, which usually contains a number of conditions that must be met in order to secure the final approval of the PMA, such as changes in labeling, or specific additional information, such as submission of final labeling, in order to secure final approval of the PMA. If the FDA concludes that the applicable criteria have been met, the FDA will issue a PMA for the approved indications, which can be more limited than those originally sought by the applicant. The PMA can include post-approval conditions that the FDA believes necessary to ensure the safety and effectiveness of the device, including, among other things, restrictions on labeling, promotion, sale and distribution.

If the FDA's evaluation of the PMA or manufacturing facilities is not favorable, the FDA will deny approval of the PMA or issue a not approvable letter. A not approvable letter will outline the deficiencies in the application and, where practical, will identify what is necessary to make the PMA approvable. The FDA may also determine that additional clinical trials are necessary, in which case the PMA approval may be delayed for several months or years while the clinical trials are conducted and then the data submitted in an amendment to the PMA. Once granted, PMA approval may be withdrawn by the FDA if compliance with post approval requirements, conditions of approval or other regulatory standards is not maintained or problems are identified following initial marketing. PMA approval is not guaranteed, and the FDA may ultimately respond to

a PMA submission with a not approvable determination based on deficiencies in the application and require additional clinical trials or other data that may be expensive and time-consuming to generate and that can substantially delay approval.

If a companion diagnostic is the subject of a *de novo* classification request in lieu of a PMA, the FDA is required to classify the device within 120 days following receipt of the *de novo* submission. If the manufacturer seeks reclassification into Class II, the manufacturer must include a draft proposal for special controls that are necessary to provide a reasonable assurance of the safety and effectiveness of the medical device. The FDA may reject the reclassification petition if it identifies a legally marketed predicate device that would be appropriate for a 510(k) or determines that the device is not low to moderate risk or that general controls would be inadequate to control the risks and special controls cannot be developed. If the *de novo* request is granted, the new device may be legally marketed (in compliance with applicable regulatory controls), a new classification regulation for the device type will be established, and the device may serve as a predicate device for 510(k) submissions for future devices of the same type.

After a device is placed on the market, it remains subject to significant regulatory requirements. Medical devices may be marketed only for the uses and indications for which they are cleared or approved. Device manufacturers must also establish registration and device listings with the FDA. A medical device manufacturer's manufacturing processes and those of its suppliers are required to comply with the applicable portions of the QSR, which cover the methods and documentation of the design, testing, production, processes, controls, quality assurance, labeling, packaging and shipping of medical devices. Domestic facility records and manufacturing processes are subject to periodic unscheduled inspections by the FDA. The FDA also may inspect foreign facilities that export products to the United States.

Regulation Outside the United States

To the extent that any of our product candidates, once approved, are sold in a foreign country, we may be subject to similar foreign laws and regulations, which may include, for instance, applicable post-marketing requirements, including safety surveillance, anti-fraud and abuse laws and implementation of corporate compliance programs and reporting of payments or other transfers of value to healthcare professionals.

In order to market our future products in the European Economic Area, or EEA, (which is comprised of the 28 Member States of the European Union, or EU, plus Norway, Iceland and Liechtenstein) and many other foreign jurisdictions, we must obtain separate regulatory approvals. More concretely, in the EEA, medicinal products can only be commercialized after obtaining a Marketing Authorization, or MA. There are two types of marketing authorizations:

- the Community MA, which is issued by the European Commission through the Centralized Procedure, based on the opinion of the Committee for Medicinal Products for Human Use of the European Medicines Agency, or EMA, and which is valid throughout the entire territory of the EEA. The Centralized Procedure is mandatory for certain types of products, such as biotechnology medicinal products, orphan medicinal products and medicinal products indicated for the treatment of AIDS, cancer, neurodegenerative disorders, diabetes, auto-immune and viral diseases. The Centralized Procedure is optional for products containing a new active substance not yet authorized in the EEA, or for products that constitute a significant therapeutic, scientific or technical innovation or which are in the interest of public health in the EU; and
- National MAs, which are issued by the competent authorities of the Member States of the EEA and only cover their respective territory, are available for products not falling within the mandatory scope of the Centralized Procedure. Where a product has already been authorized for marketing in a Member State of the EEA, this National MA can be recognized in another Member State through the Mutual Recognition Procedure. If the product has not received a National MA in any Member State at the time of application, it can be approved simultaneously in various Member States through the Decentralized Procedure.

Under the above described procedures, before granting the MA, the EMA or the competent authorities of the Member States of the EEA make an assessment of the risk-benefit balance of the product on the basis of scientific criteria concerning its quality, safety and efficacy.

Data and Marketing Exclusivity

In the EEA, new products authorized for marketing, or reference products, qualify for eight years of data exclusivity and an additional two years of market exclusivity upon marketing authorization. The data exclusivity period prevents generic or biosimilar applicants from relying on the preclinical and clinical trial data contained in the dossier of the reference product when applying for a generic or biosimilar marketing authorization in the EU during a period of eight years from the date on which the reference product was first authorized in the EU. The market exclusivity period prevents a successful generic or biosimilar applicant from commercializing its product in the EU until 10 years have elapsed from the initial authorization of the reference product in the EU. The 10-year market exclusivity period can be extended to a maximum of eleven years if, during the first eight years of those 10 years, the marketing authorization holder obtains an authorization for one or more new

therapeutic indications which, during the scientific evaluation prior to their authorization, are held to bring a significant clinical benefit in comparison with existing therapies.

Pediatric Investigation Plan

In the EEA, marketing authorization applications for new medicinal products not authorized have to include the results of studies conducted in the pediatric population, in compliance with a pediatric investigation plan, or PIP, agreed with the EMA's Pediatric Committee, or PDCO. The PIP sets out the timing and measures proposed to generate data to support a pediatric indication of the drug for which marketing authorization is being sought. The PDCO can grant a deferral of the obligation to implement some or all of the measures of the PIP until there are sufficient data to demonstrate the efficacy and safety of the product in adults. Further, the obligation to provide pediatric clinical trial data can be waived by the PDCO when these data are not needed or appropriate because the product is likely to be ineffective or unsafe in children, the disease or condition for which the product is intended occurs only in adult populations, or when the product does not represent a significant therapeutic benefit over existing treatments for pediatric patients. Once the marketing authorization is obtained in all Member States of the EU and study results are included in the product information, even when negative, the product is eligible for six months' supplementary protection certificate extension.

Orphan Drug Designation

In the EEA, a medicinal product can be designated as an orphan drug if its sponsor can establish that the product is intended for the diagnosis, prevention or treatment of a life-threatening or chronically debilitating condition affecting not more than five in ten thousand persons in the EU when the application is made, or that the product is intended for the diagnosis, prevention or treatment of a life-threatening, seriously debilitating or serious and chronic condition in the European Community and that without incentives it is unlikely that the marketing of the drug in the EU would generate sufficient return to justify the necessary investment. For either of these conditions, the applicant must demonstrate that there exists no satisfactory method of diagnosis, prevention or treatment of the condition in question that has been authorized in the EU or, if such method exists, the drug will be of significant benefit to those affected by that condition.

In the EEA, an application for designation as an orphan product can be made any time prior to the filing of an application for approval to market the product. Marketing authorization for an orphan drug leads to a ten-year period of market exclusivity. During this market exclusivity period, the EMA or the member state competent authorities, cannot accept another application for a marketing authorization, or grant a marketing authorization, for a similar medicinal product for the same indication. The period of market exclusivity is extended by two years for medicines that have also complied with an agreed PIP.

This period may, however, be reduced to six years if, at the end of the fifth year, it is established that the product no longer meets the criteria for orphan drug designation, for example because the product is sufficiently profitable not to justify market exclusivity. Market exclusivity can be revoked only in very selected cases, such as consent from the marketing authorization holder, inability to supply sufficient quantities of the product, demonstration of "clinical superiority" by a similar medicinal product, or, after a review by the Committee for Orphan Medicinal Products, requested by a member state in the fifth year of the marketing exclusivity period (if the designation criteria are believed to no longer apply). Medicinal products designated as orphan drugs pursuant are eligible for incentives made available by the EU and its Member States to support research into, and the development and availability of, orphan drugs.

Companion Diagnostics

In the EEA, in vitro medical devices are required to conform with the essential requirements of the EU Directive on in vitro diagnostic medical devices (Directive No. 98/79/EC, as amended). To demonstrate compliance with the essential requirements, the manufacturer must undergo a conformity assessment procedure. The conformity assessment varies according to the type of in vitro diagnostic medical device and its classification. The conformity assessment of in vitro diagnostic medical devices can require the intervention of an accredited EEA Notified Body. If successful, the conformity assessment concludes with the drawing up by the manufacturer of an

EC Declaration of Conformity entitling the manufacturer to affix the CE mark to its products and to sell them throughout the EEA. On April 5, 2017, the European Parliament passed the In Vitro Device Regulation, or IVDR, which repeals and replaces Directive No 98/79/EC. Unlike directives, which must be implemented into the national laws of the EU member states, a regulation is directly applicable, i.e., without the need for adoption of EU member state laws implementing them, in all EEA member states. The IVDR, among other things, is intended to establish a uniform, transparent, predictable and sustainable regulatory framework across the EU for in vitro diagnostic medical devices and ensure a high level of safety and health while supporting innovation. The IVDR will not become fully applicable until five years following its entry into force. Once applicable, the IVDR will among other things:

- strengthen the rules on placing devices on the market and reinforce surveillance once they are available;
- establish explicit provisions on manufacturers' responsibilities for the follow-up of the quality, performance and safety of devices placed on the market;
- improve the traceability of medical devices throughout the supply chain to the end-user or patient through a unique identification number; and
- set up a central database to provide patients, healthcare professionals and the public with comprehensive information on products available in the EU.

Healthcare Reform

In the United States and certain foreign jurisdictions, there have been, and we expect there will continue to be, a number of legislative and regulatory changes to the healthcare system that could affect our future results of operations as we begin to directly commercialize our products. In March 2010, the Patient Protection and Affordable Care Act, or ACA, was signed into law which substantially changed the way healthcare is financed by both governmental and private insurers in the United States and significantly affected the pharmaceutical industry. The ACA contains a number of provisions, including those governing enrollment in federal healthcare programs, reimbursement adjustments and fraud and abuse changes. Additionally, the ACA increases the minimum level of Medicaid rebates payable by manufacturers of brand name drugs from 15.1% to 23.1%; requires collection of rebates for drugs paid by Medicaid managed care organizations; requires manufacturers to participate in a coverage gap discount program, under which they must agree to offer 70 percent point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer's outpatient drugs to be covered under Medicare Part D; imposes a non-deductible annual fee on pharmaceutical manufacturers or importers who sell "branded prescription drugs" to specified federal government programs, implemented a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted, or injected, expands of eligibility criteria for Medicaid programs, creates a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research and establishes of a Center for Medicare Innovation at CMS to test innovative payment and service delivery models to lower Medicare and Medicaid spending, potentially including prescription drug spending.

Since its enactment, there have been judicial, executive and Congressional challenges to certain aspects of the ACA. For example, the Tax Cuts and Jobs Acts of 2017, or the Tax Act, included a provision, effective January 1, 2019, that repealed the tax-based share responsibility payment imposed by the ACA on certain individuals who fail to maintain qualifying health coverage for all of part of a year that is common referred to the "individual mandate." On December 14, 2018, a U.S. District Court Judge in the Northern District of Texas ruled that the individual mandate is a critical and inseverable feature of the ACA, and therefore, because it was repealed as part of the Tax Act, the remaining provisions of the ACA are invalid as well. On December 18, 2019, the U.S. Court of Appeals for the 5th Circuit upheld the District Court's decision that the individual mandate was unconstitutional but remanded the case back to the District Court to determine whether the remaining provisions of the ACA are invalid as well. The U.S. Supreme Court is currently reviewing the case, although it is unclear how the Supreme Court will rule. It is also unclear how other efforts, if any, to challenge, repeal or replace the ACA will impact the law.

Other legislative changes have been proposed and adopted since the ACA was enacted, including aggregate reductions of Medicare payments to providers of 2% per fiscal year, which was temporarily suspended from May 1, 2020 through March 31, 2021, and reduced payments to several types of Medicare providers. Moreover, there has recently been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products, which has resulted in several Congressional inquiries and proposed and enacted legislation designed, among other things, to bring more transparency to product pricing, review the relationship between pricing and manufacturer patient programs and reform government program reimbursement methodologies for drug products. Individual states in the United States have also

become increasingly active in implementing regulations designed to control pharmaceutical product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures and, in some cases, mechanisms to encourage importation from other countries and bulk purchasing.

Other Healthcare Laws

Pharmaceutical companies are subject to additional healthcare regulation and enforcement by the federal government and by authorities in the states and foreign jurisdictions in which they conduct their business. Such laws include, without limitation, state and federal anti-kickback, fraud and abuse, false claims, and transparency laws and regulations with respect to drug pricing and payments and other transfers of value to physicians and other healthcare providers, as well as similar foreign laws in the jurisdictions outside the United States. If their operations are found to be in violation of any of such laws or any other governmental regulations that apply, they may be subject to penalties, including, without limitation, civil and criminal penalties, damages, fines, additional reporting obligations and oversight if we become subject to a corporate integrity agreement or other agreement to resolve allegations of non-compliance with these laws, the curtailment or restructuring of operations, exclusion from participation in governmental healthcare programs and imprisonment.

Data Privacy and Security Laws

Pharmaceutical companies may be subject to U.S. federal and state health information privacy, security and data breach notification laws, which may govern the collection, use, disclosure and protection of health-related and other personal information. Entities that are found to be in violation of the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, as the result of a breach of unsecured protected health information, or PHI, a complaint about privacy practices or an audit by the United States Department of Health and Human Services, or HHS, may be subject to significant civil, criminal and administrative fines and penalties and/or additional reporting and oversight obligations if required to enter into a resolution agreement and corrective action plan with HHS to settle allegations of HIPAA non-compliance.

State laws may be more stringent, broader in scope or offer greater individual rights with respect to protected health information, or PHI, than HIPAA, and state laws may differ from each other, which may complicate compliance efforts. For example, the California Consumer Privacy Act, or CCPA, effective January 1, 2020, gives California residents expanded rights to access and delete their personal information, opt out of certain personal information sharing, and receive detailed information about how their personal information is used. The CCPA provides for civil penalties for violations, as well as a private right of action for data breaches that is expected to increase data breach litigation. The CCPA may increase our compliance costs and potential liability. Some observers have noted that the CCPA could mark the beginning of a trend toward more stringent privacy legislation in the United States, which could increase our potential liability and adversely affect our business. Further, the California Privacy Rights Act, or CPRA, recently passed in California. The CPRA will impose additional data protection obligations on covered businesses, including additional consumer rights processes, limitations on data uses, new audit requirements for higher risk data, and opt outs for certain uses of sensitive data. It will also create a new California data protection agency authorized to issue substantive regulations and could result in increased privacy and information security enforcement. The majority of the provisions will go into effect on January 1, 2023, and additional compliance investment and potential business process changes may be required.

In Europe, EU and European Economic Area, or EEA, member states, Switzerland and other countries have also adopted data protection laws and regulations, which impose significant compliance obligations. In the EEA, the collection and use of personal health data is governed by the provisions of the General Data Protection Regulation, or GDPR. The GDPR became effective on May 25, 2018, and, together with the national legislation of EU or EEA member states governing the processing of personal data, imposes strict obligations and restrictions on the ability to collect, analyze and transfer personal data, including health data from clinical trials and adverse event reporting. In particular, these obligations and restrictions impose stringent requirements relating to individual consent, the information that must be provided to the individuals, the transfer of personal data out of the EU and EEA, security and data breach notifications, as well as security and confidentiality of the personal data. The GDPR allows for the imposition of substantial fines of up to €20 million or 4% of the annual global revenues of the noncompliant company, whichever is greater, as well as other corrective measures for breaches of the data protection obligations. Data protection authorities from the different EU member states may interpret the GDPR and national laws differently and impose additional requirements, which add to the complexity of processing personal data in the EU. Guidance on implementation and compliance practices are often updated or otherwise revised, and the efficacy and longevity of current transfer mechanisms between the EU and the United States remains uncertain. For example, in 2016, the EU and United States agreed to a transfer framework for data transferred from the EU to the United States, called the Privacy Shield, but the Privacy Shield was invalidated in July 2020 by the Court of Justice of the European Union. Further, from January 1, 2021, companies have to comply with the GDPR and also the United Kingdom GDPR, or UK GDPR, which, together with the amended UK Data Protection Act 2018, retains the GDPR in UK national law. The UK GDPR mirrors the fines under the GDPR, e.g. fines up to the greater of €20 million (£17.5 million) or 4% of global turnover. The relationship between the United Kingdom and the EU in relation to certain aspects of data protection law remains unclear, and it is unclear how United Kingdom data protection laws and regulations will develop in the medium to longer term, and how data transfers to and from the United Kingdom will be regulated in the long term. Currently there is a four to six-month grace period agreed in the EU

and United Kingdom Trade and Cooperation Agreement, ending June 30, 2021 at the latest, while the parties discuss an adequacy decision. However, it is not clear whether (and when) an adequacy decision may be granted by the European Commission enabling data transfers from EU member states to the United Kingdom long term without additional measures. These changes may lead to additional costs and increase our overall risk exposure.

Coverage and Reimbursement

Sales of any product depend, in part, on the extent to which such product will be covered by third-party payors, such as federal, state and foreign government healthcare programs, commercial insurance and managed healthcare organizations, and the level of reimbursement for such product by third-party payors. Decisions regarding the extent of coverage and amount of reimbursement to be provided are made on a plan-by-plan basis. These third-party payors are increasingly reducing reimbursements for medical products, drugs and services. In addition, the U.S. government, state legislatures and foreign governments have continued implementing cost-containment programs, including price controls, restrictions on coverage and reimbursement and requirements for substitution of generic products. Adoption of price controls and cost-containment measures, and adoption of more restrictive policies in jurisdictions with existing controls and measures, could further limit sales of any product. Decreases in third-party reimbursement for any product or a decision by a third-party payor not to cover a product could reduce physician usage and patient demand for the product and also have a material adverse effect on sales.

In international markets, reimbursement and healthcare payment systems vary significantly by country, and many countries have instituted price ceilings on specific products and therapies. For example, the EU provides options for its member states to restrict the range of medicinal products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. A member state may approve a specific price for the medicinal product or it may instead adopt a system of direct or indirect controls on the profitability of the company placing the medicinal product on the market. We may face competition for our product candidates from lower-priced products in foreign countries that have placed price controls on pharmaceutical products. In addition, there may be importation of foreign products that compete with our own products, which could negatively impact our profitability. Furthermore, there can be no assurance that our products will be considered medically reasonable and necessary for a specific indication, that our products will be considered cost-effective by third-party payors, that an adequate level of reimbursement will be established even if coverage is available or that the third-party payors' reimbursement policies will not adversely affect our ability to sell our products profitably.

Human Capital

At IDEAYA, we view our employees as among our most valuable assets. Our ability to hire and retain highly skilled professionals remains an important element to our success in discovering and developing targeted therapeutics. Our employees are at the heart of our values of passionate commitment, fearless innovation, courageous integrity, respectful teamwork, objective decision-making and empowered accountability. We offer our employees a challenging work environment, ongoing skills development, attractive career advancement, and a culture that rewards entrepreneurial initiative and exceptional execution.

In 2020, we established an internal human resources department, including hiring a Vice President, Human Resources, as part of our commitment to our human resources programs and our employee work experience.

We believe our employees and our company benefit from and excel in a diverse, inclusive and safe work environment. Our employees come from numerous countries and bring diversity to our workplace across many critical categories. We believe the variety of experiences, backgrounds and perspectives of our employees bring to their work every day makes IDEAYA stronger and more successful. Currently, females make up 37% of our workforce, 17% of our executive team, and 25% of our board of directors.

As of December 31, 2020, we had a total of 62 employees. Of these employees, 47 were primarily engaged in research and development activities and 15 were primarily engaged in general and administrative activities. Of our total employees, 51 hold biology, chemistry or other relevant scientific degrees, including 33 Ph.D.'s. None of our employees are represented by labor unions or covered by collective bargaining agreements. We consider our relationship with our employees to be good.

Item 1A. 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 Annual Report on Form 10-K, including our financial statements and the related notes and "Management's Discussion and Analysis of Financial Condition and Results of Operations," 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, growth prospects and stock price. In such an event, the market price of our common stock could decline, and you may lose all or part of your investment. Many of the following risks and uncertainties are, and will be, exacerbated by the COVID-19 pandemic and any worsening of the global business and economic environment as a result. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also impair our business operations.

Summary of Principal Risks Associated with Our Business

- We are an early-stage biopharmaceutical company with a limited operating history and no products approved for commercial sale. We have incurred significant losses since our inception, and we anticipate that we will continue to incur significant losses for the foreseeable future, which, together with our limited operating history, makes it difficult to assess our future viability;
- We are very early in our development efforts. Our business is dependent on the successful development of our product candidates, future product candidates, and companion diagnostics for biomarkers associated with our product candidates and future product candidates;
- In connection with the Collaboration, Option and License Agreement with GSK, if GSK does not exercise its option or if it terminates any development program under its collaborations with us, whether as a result of our inability to meet milestones or otherwise, any potential revenue from those collaborations will be significantly reduced or eliminated, and our results of operations and financial condition will be materially and adversely affected;
- As an organization, we have never completed a clinical trial, and may be unable to do so for any of our product candidates;
- The successful development of targeted therapeutics, including therapeutics involving direct targeting of an oncogenic pathway and synthetic lethality therapeutics, including our portfolio of synthetic lethality small molecule inhibitors, as well as any related diagnostics, is highly uncertain;
- Preclinical and clinical drug development is a lengthy and expensive process with an uncertain outcome. We may incur additional costs or experience delays in completing, or ultimately be unable to complete, the development and commercialization of any product candidates, which could result in increased costs to us, delay or limit our ability to generate revenue and adversely affect our business, financial condition, results of operations and prospects. Furthermore, results of earlier studies and trials may not be predictive of future trial results;
- We may find it difficult to enroll patients in our clinical trials given the limited number of patients who have the diseases for which our product candidates are being developed. If we encounter difficulties enrolling patients in our clinical trials, our clinical development activities could be delayed or otherwise adversely affected;
- If we are unable to successfully develop molecular diagnostics for biomarkers that enable patient selection and/or that demonstrate drug-target interaction, or experience significant delays in doing so, we may not realize the full commercial potential of our product candidates;
- We rely on third parties for the manufacture of our product candidates for preclinical and clinical development and expect to continue to do so for the foreseeable future. This reliance on third parties increases the risk that we will not have sufficient quantities of our product candidates or products or such quantities at an acceptable cost, which could delay, prevent or impair our development or commercialization efforts;
- We face significant competition in an environment of rapid technological and scientific change, and our failure to effectively compete may prevent us from achieving significant market penetration. Most of our competitors have significantly greater resources than we do and we may not be able to successfully compete;
- If we fail to attract and retain senior management and key scientific personnel, our business may be materially and adversely affected;
- The COVID-19 pandemic, or any other pandemic, epidemic or outbreak of an infectious disease may materially and adversely affect our business and operations, including the pace of enrollment in current or future clinical trials;

- Our success depends on our ability to obtain and maintain protection for our intellectual property and our proprietary technologies and to avoid infringing the rights of others; and
- Our stock price has been and may continue to be volatile and you may not be able to resell shares of our common stock at or above the price you paid.

Risks Related to Our Limited Operating History, Financial Condition and Capital Requirements

We are an early-stage biopharmaceutical company with a limited operating history and no products approved for commercial sale. We have incurred significant losses since our inception, and we anticipate that we will continue to incur significant losses for the foreseeable future, which, together with our limited operating history, makes it difficult to assess our future viability.

Biopharmaceutical product development is a highly speculative undertaking and involves a substantial degree of risk. We are an early-stage biopharmaceutical company, and we have only a limited operating history upon which you can evaluate our business and prospects. We currently have no products approved for commercial sale, have not generated any revenue from sales of products and have incurred losses in each year since our inception in June 2015. In addition, we have limited experience as a company and have not yet demonstrated an ability to successfully overcome many of the risks and uncertainties frequently encountered by companies in new and rapidly evolving fields, particularly in the biopharmaceutical industry. Only two of our product candidates, IDE397 and IDE196, are currently in ongoing or authorized clinical trials – one Phase 1 clinical trial to evaluate IDE397 for the treatment of patients having solid tumors with MTAP deletion that has been authorized to proceed by the FDA and in which we are targeting initial dosing of our first patient in the first quarter of 2021, one ongoing Phase 1 clinical trial for IDE196 conducted and controlled by Novartis and one ongoing Phase 1/2 clinical trial that we initiated in June 2019 to evaluate IDE196 in solid tumors harboring GNAQ or GNA11 hotspot mutations.

We have had significant operating losses since our inception. Our net losses for the twelve months ended December 31, 2020 and December 31, 2019 were $34.5 million and $42.0 million, respectively. As of December 31, 2020, we had an accumulated deficit of $127.0 million. Substantially all of our losses have resulted from expenses incurred in connection with our research and development programs and from general and administrative costs associated with our operations. One of our product candidates, IDE196, is currently in a Phase 1 clinical trial being conducted by Novartis and in a Phase 1/2 clinical trial we are conducting. Our product candidate IDE397 is the subject of an IND, for a Phase 1 clinical trial that has been authorized to proceed by the FDA and targeting initial dosing of our first patient in the first quarter of 2021. We have multiple other product candidates in preclinical development, as well as early-stage research programs. Our product candidates will require substantial additional development time and resources before we will be able to apply for or receive regulatory approvals and, if approved, begin generating revenue from product sales. Furthermore, we expect to continue to incur additional costs associated with operating as a public company. We also do not yet have a sales organization or commercial infrastructure and, accordingly, we will incur significant expenses to develop a sales organization or commercial infrastructure in advance of regulatory approval and generating any commercial product sales. We expect to continue to incur losses for the foreseeable future, and we anticipate these losses will increase as we continue to develop IDE397, IDE196, our other product candidates and any future product candidates, conduct clinical trials and pursue research and development activities. Even if we achieve profitability in the future, we may not be able to sustain profitability in subsequent periods. Our prior losses, combined with expected future losses, have had and will continue to have an adverse effect on our stockholders' deficit and working capital.

Our operating results may fluctuate significantly, which will make our future results difficult to predict and could cause our results to fall below expectations.

Our quarterly and annual operating results may fluctuate significantly, which will make it difficult for us to predict our future results. These fluctuations may occur due to a variety of factors, many of which are outside of our control and may be difficult to predict, including:

- the timing and cost of, and level of investment in, research, development and commercialization activities, which may change from time to time;
- the timing and status of enrollment for our clinical trials;
- the timing of regulatory approvals, if any, in the United States and internationally;
- the cost of manufacturing, as well as building out our supply chain, which may vary depending on the quantity of productions, and the terms of any agreements we enter into with third-party suppliers;

- timing and amount of any option exercise, milestone, royalty or other payments we may or may not receive pursuant to any current or future collaboration or license agreement, including under the Collaboration, Option and License Agreement with GSK;
- timing and amount of any milestone, royalty or other payments due under any current or future collaboration or license agreement, including the License Agreement with Novartis or the Option and License Agreement with Cancer Research UK and University of Manchester;
- coverage and reimbursement policies with respect to any future approved products, and potential future drugs that compete with our products;
- expenditures that we may incur to acquire, develop or commercialize additional products and technologies;
- the level of demand for any future approved products, which may vary significantly over time;
- future accounting pronouncements or changes in our accounting policies; and
- the timing and success or failure of preclinical studies and clinical trials for our product candidates or competing product candidates, or any other change in the competitive landscape of our industry, including consolidation among our competitors or collaboration partners.

The cumulative effects of these factors 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. If our revenue or operating results fall below the expectations of analysts or investors or below any forecasts we may provide to the market, or if the forecasts we provide to the market are below the expectations of analysts or investors, the price of our common stock could decline substantially. Such a stock price decline could occur even when we have met any previously publicly stated revenue or earnings guidance we may provide.

We will require substantial additional financing to achieve our goals, and failure to obtain additional capital when needed on acceptable terms, or at all, could force us to delay, limit, reduce or terminate our product development programs, commercialization efforts or other operations.

Since our inception, we have invested a significant portion of our efforts and financial resources in research and development activities for our precision medicine target and biomarker discovery platform and our initial preclinical and clinical product candidates. Preclinical studies and clinical trials and additional research and development activities will require substantial funds to complete. As of December 31, 2020, we had cash, cash equivalents and marketable securities of $283.6 million. We believe that we will continue to expend substantial resources for the foreseeable future in connection with the research and development of our precision medicine target and biomarker discovery platform, clinical and preclinical product candidates, and any other future product candidates we may choose to pursue, as well as other corporate uses. Specifically, in the near term, we expect to incur substantial expenses as we advance our synthetic lethality product candidates through preclinical studies, advance IDE196 through clinical development, begin clinical development for IDE397, seek regulatory approval, prepare for and, if approved, proceed to commercialization, and continue our research and development efforts. These expenses will include our cost sharing obligations with GSK for research and development for our WRN program and MAT2A program (if GSK exercises its exclusive option to obtain an exclusive license to continue development of and commercialize MAT2A products). These expenditures will include costs associated with conducting preclinical studies and clinical trials, obtaining regulatory approvals, and manufacturing and supply, as well as marketing and selling any products approved for sale. In addition, other unanticipated costs may arise. Because the outcome of any preclinical study or clinical trial is highly uncertain, we cannot reasonably estimate the actual amounts necessary to successfully develop and commercialize our product candidates or any future product candidates.

We believe that our existing cash, cash equivalents and marketable securities will allow us to fund our planned operations for at least 12 months from the date of the issuance of the financial statements included in this Form 10-K. However, our operating plans and other demands on our capital resources may change as a result of many factors currently unknown to us, and we may need to seek additional funds sooner than planned, through public or private equity or debt financings or other sources, such as strategic collaborations. In addition, we may seek additional capital due to favorable market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. Such financing may result in dilution to stockholders, imposition of burdensome debt covenants and repayment obligations, or other restrictions that may adversely affect our business. If we raise additional funds through licensing or collaboration arrangements with third parties, we may have to relinquish valuable rights to our product candidates, or grant licenses on terms that are not favorable to us. Attempting to secure additional financing may also divert our management from our day-to-day activities, which may adversely affect our ability to develop our product candidates. In addition, we cannot guarantee that future financing will be available in sufficient amounts or on terms acceptable to us, if at all.

Our future capital requirements will depend on many factors, including:

- the scope, progress, results and costs of developing our product candidates or any other future product candidates, and conducting preclinical studies and clinical trials, including our IDE397 Phase 1 clinical trial for the treatment of patients having solid tumors with MTAP deletion, in which we are targeting initial dosing of our first patient in the first quarter of 2021, and our ongoing IDE196 Phase 1/2 clinical trial in solid tumors harboring GNAQ or GNA11 mutations;
- the scope, progress, results and costs related to the research and development of our precision medicine target and biomarker discovery platform, including costs related to the development of our proprietary libraries and database of tumor genetic information and specific cancer-target dependency networks;
- the timing of, and the costs involved in, obtaining regulatory approvals for our product candidates or any future product candidates, or any applicable diagnostics;
- the number and characteristics of any additional product candidates we develop or acquire;
- the scope, progress, results and costs of developing, in collaboration with certain diagnostic companies, diagnostics for biomarkers associated with our product candidates or any other future product candidates in support of our preclinical studies and clinical trials, including our IDE397 Phase 1 clinical trial for the treatment of patients having solid tumors with MTAP deletion, in which we are targeting initial dosing of our first patient in the first quarter of 2021, and our ongoing Phase 1/2 clinical trial for IDE196 in solid tumors harboring GNAQ or GNA11 mutations;
- the cost of coordinating and/or collaborating with certain diagnostic companies for manufacturing and supply of companion diagnostics for biomarkers associated with our product candidates and any future product candidates;
- our ability to maintain existing, and establish new, strategic collaborations, licensing or other arrangements and the financial terms of any such agreements, including the Collaboration, Option and License Agreement with GSK, the License Agreement with Novartis and the Option and License Agreement with Cancer Research United Kingdom, or Cancer Research UK, and University of Manchester;
- the timing and amount of any option exercise, milestone, royalty or other payments we may or may not receive pursuant to any current or future collaboration or license agreement, including under the Collaboration, Option and License Agreement with GSK;
- the timing and amount of any milestone, royalty or other payments we are required to make pursuant to any current or future collaboration or license agreement, including under the License Agreement with Novartis or the Option and License Agreement with Cancer Research UK and University of Manchester;
- potential delays in our ongoing clinical programs as a result of the COVID-19 pandemic;
- the cost of manufacturing our product candidates and any future products we successfully commercialize;
- the cost of commercialization activities, including the cost of building a sales force in anticipation of product commercialization and distribution costs;
- any product liability or other lawsuits related to our product candidates or future approved products;
- the expenses needed to attract, hire and retain skilled personnel;
- the costs associated with being a public company;
- the costs involved in preparing, filing, prosecuting, maintaining, defending and enforcing our intellectual property portfolio; and
- the timing, receipt and amount of sales of any future approved products, if any.

Our ability to raise additional funds will depend on financial, economic and other factors, including the ongoing effects of the COVID-19 pandemic, many of which are beyond our control. Additional funds may not be available when we need them, on terms that are acceptable to us, or at all. If adequate funds are not available to us on a timely basis, we may be required to:

- delay, limit, reduce or terminate preclinical studies, clinical trials or other research and development activities or eliminate one or more of our development programs altogether; or

- delay, limit, reduce or terminate our efforts to establish manufacturing and sales and marketing capabilities or other activities that may be necessary to commercialize IDE196, if approved, IDE397, if approved and GSK does not exercise its option, or any other future approved products, or reduce our flexibility in developing or maintaining our sales and marketing strategy.

Raising additional capital may cause dilution to our stockholders, restrict our operations or require us to relinquish rights to our technologies.

To date, we have primarily financed our operations through the sale of equity securities and payments received under our collaboration agreements. We will be required to seek additional funding in the future and currently intend to do so through collaborations, public or private equity offerings or debt financings, credit or loan facilities or a combination of one or more of these funding sources. If we raise additional funds by issuing equity securities, our stockholders may suffer dilution and the terms of any financing may adversely affect the rights of our stockholders. In addition, as a condition to providing additional funds to us, future investors may demand, and may be granted, rights superior to those of existing stockholders. Debt financing, if available, is likely to involve restrictive covenants limiting our flexibility in conducting future business activities, and, in the event of insolvency, debt holders would be repaid before holders of our equity securities received any distribution of our corporate assets. We also could be required to seek funds through arrangements with collaborators or others that may require us to relinquish rights or jointly own some aspects of our technologies or product candidates that we would otherwise pursue on our own.

Risks Related to Our Business

We are early in our development efforts. Our business is dependent on the successful development of our product candidates, future product candidates, and companion diagnostics for biomarkers associated with our product candidates and future product candidates.

Our current product candidates are in early stages of development and we are further developing our precision medicine target and biomarker discovery platform. We have no products approved for sale and our two most advanced product candidates, IDE397 and IDE196, are in the early stages of clinical development and will require additional clinical development, regulatory review and approval in each jurisdiction in which we intend to market them, access to sufficient commercial manufacturing capacity, and significant sales and marketing efforts before we can generate any revenue from product sales. IDE397 is the subject of an IND for a Phase 1 clinical trial to evaluate IDE397 for the treatment of patients with MTAP deletion that has been authorized to proceed by the FDA, and targeting initial dosing of our first patient in the first quarter of 2021. IDE196 is currently being evaluated in an ongoing Phase 1/2 clinical trial in patients having tumors with GNAQ or GNA11 hotspot mutations, that we initiated in June 2019, including the combination arm with binimetinib that we initiated in June 2020. IDE196 is also being tested in an earlier-initiated, ongoing Phase 1 clinical trial conducted by Novartis in patients with metastatic uveal melanoma. Our other product candidates have not been tested in clinical trials. The success of our business, including our ability to finance our company and generate revenue in the future, will primarily depend on the successful development, regulatory approval and commercialization of our product candidates, which may never occur. In the future, we may also become dependent on other product candidates that we may develop or acquire; however, given our early stage of development, it may be many years, if at all, before we have demonstrated the safety and efficacy of a product candidate sufficient to support approval for commercialization.

We have not previously submitted a new drug application, or NDA, to the FDA or similar approval filings to a comparable foreign regulatory authority, for any product candidate. An NDA or other relevant regulatory filing must include extensive preclinical and clinical data and supporting information to establish that the product candidate is safe and effective for each desired indication. The NDA or other relevant regulatory filing must also include significant information regarding the chemistry, manufacturing and controls for the product. We cannot be certain that our current or future product candidates will be successful in clinical trials or receive regulatory approval. Further, even if they are successful in clinical trials, our product candidates or any future product candidates may not receive regulatory approval. If we do not receive regulatory approvals for current or future product candidates, we may not be able to continue our operations. Even if we successfully obtain regulatory approval to market a product candidate, our revenue will depend, in part, upon the size of the markets in the territories for which we gain regulatory approval and have commercial rights, as well as the availability of competitive products, whether there is sufficient third-party reimbursement and adoption by physicians.

We plan to seek regulatory approval to commercialize our product candidates both in the United States and in select foreign countries. While the scope of regulatory approval generally is similar in other countries, in order to obtain separate regulatory approval in other countries we must comply with numerous and varying regulatory requirements of such countries regarding safety and efficacy. Other countries also have their own regulations governing, among other things, clinical trials and commercial sales, as well as pricing and distribution of drugs, and we may be required to expend significant resources to obtain regulatory approval and to comply with ongoing regulations in these jurisdictions.

The clinical and commercial success of our current and any future product candidates will depend on a number of factors, including the following:

- our ability to raise any additional required capital on acceptable terms, or at all;
- our ability to develop and successfully utilize our precision medicine target and biomarker discovery platform;
- timely and successful completion of our preclinical studies and clinical trials, which may be significantly slower or cost more than we currently anticipate and will depend substantially upon the performance of third-party contractors;
- acceptance of INDs, by the FDA, or similar regulatory filing by a comparable foreign regulatory authority for the conduct of clinical trials of our product candidates and our proposed design of future clinical trials;
- whether we are required by the FDA or a comparable foreign regulatory agency to conduct additional clinical trials or other studies beyond those planned to support approval of our product candidates;
- our ability to timely execute our ongoing clinical trials and enroll a sufficient number of patients on a timely basis, particularly in light of the effects of the COVID-19 pandemic, to evaluate our product candidates in clinical development;
- acceptance of our proposed indications and primary endpoint assessments of our product candidates by the FDA and comparable foreign regulatory authorities;
- the availability or successful development of companion diagnostics for biomarkers associated with our product candidates or any other future product candidates;
- our ability to make arrangements with third-party manufacturers for, or establish, commercial manufacturing capabilities, and to consistently manufacture our product candidates on a timely basis;
- our ability, and the ability of any third parties with whom we contract, to remain in good standing with regulatory agencies and develop, validate and maintain commercially viable manufacturing processes that are compliant with current good manufacturing practices, or cGMPs;
- our ability to demonstrate to the satisfaction of the FDA and comparable foreign regulatory authorities the safety, efficacy and acceptable risk-benefit profile of our product candidates;
- the prevalence, duration and severity of potential side effects or other safety issues experienced with our product candidates, either as monotherapy or in combination with other drugs, or future approved products, if any;
- the timely receipt of necessary marketing approvals from the FDA and comparable foreign regulatory authorities;
- achieving and maintaining, and, where applicable, ensuring that our third-party contractors achieve and maintain, compliance with our contractual obligations and with all regulatory requirements applicable to our current product candidates or any future product candidates or approved products, if any;
- the willingness of physicians, operators of hospitals and clinics and patients to use or adopt any approved products, as well as the willingness of physicians and other health-care providers to incorporate molecular diagnostics or genetic sequencing into their clinical practice;
- our ability to successfully develop a commercial strategy and thereafter commercialize any approved products in the United States and internationally, whether alone or in collaboration with others;
- the availability and level of coverage and adequate reimbursement from managed care plans, private insurers, government payors, such as Medicare and Medicaid, and other third-party payors for any of our product candidates that may be approved;
- the convenience of our treatment or dosing regimen;
- our ability to compete with other approved therapies, if any;
- acceptance by physicians, payors and patients of the benefits, safety and efficacy of our product candidates or any future product candidates, if approved, including relative to alternative and competing treatments;
- patient demand for any approved products;

- our ability to establish and enforce intellectual property rights in and to our product candidates; and
- our ability to avoid third-party patent interference, intellectual property challenges or intellectual property infringement claims.

These factors, many of which are beyond our control, could cause us to experience significant delays or an inability to obtain regulatory approvals or commercialize our current or future product candidates. Even if regulatory approvals are obtained, we may never be able to successfully commercialize any products. Accordingly, we cannot provide assurances that we will be able to generate sufficient revenue through the sale of products to continue our business or achieve profitability.

In connection with the Collaboration, Option and License Agreement with GSK, if GSK does not exercise its option or if it terminates any development program under its collaborations with us, whether as a result of our inability to meet milestones or otherwise, any potential revenue from those collaborations will be significantly reduced or non-existent, and our results of operations and financial condition will be materially and adversely affected.

We have invested a significant portion of our time and financial resources in the development of multiple product candidates that are included in our strategic partnership and collaboration with GSK, under the Collaboration, Option and License Agreement entered into on June 15, 2020, or the GSK Collaboration Agreement. The programs included in the GSK Collaboration Agreement are the MAT2A, Pol Theta (POLQ) and Werner Helicase (WRN) programs. Our ability to continue to advance these synthetic lethality programs in development, in particular prior to the exercise by GSK of its exclusive option to obtain an exclusive license to continue development of and commercialize MAT2A products, is highly dependent on achieving certain development milestones in these programs and triggering related milestone fee payments to us.

Under the GSK Collaboration Agreement, within a specified time period after we deliver to GSK a data package from our MAT2A Phase 1 monotherapy clinical trial, GSK is entitled to exercise an option to obtain an exclusive license for continued development and commercialization of MAT2A products arising out of the MAT2A program on a worldwide basis, which we refer to as the Option. GSK's exercise of the Option may be subject to Hart-Scott-Rodino clearance, or HSR Clearance, therefor at such time of exercise. After GSK exercises the Option and, if required, HSR Clearance is obtained, GSK must pay us an option exercise payment of $50.0 million.

Under the GSK Collaboration Agreement, we are eligible to receive from GSK future development and regulatory milestones of up to $465.0 million for each MAT2A product, and up to $485.0 million for each POLQ and WRN product, and commercial milestones of up to $475.0 million, with respect to each MAT2A (if GSK exercises the Option and receives HSR Clearance with respect thereto), POLQ and WRN product. Additionally, we are entitled to receive 50% of U.S. net profits and tiered royalties on global non-U.S. net sales of MAT2A (if GSK exercises the Option and receives HSR Clearance with respect thereto) and WRN products by GSK, its affiliates and their sublicensees ranging from high single digit to sub-teen double digit percentages, subject to certain customary reductions. We are entitled to receive tiered royalties on global net sales of POLQ products by GSK, its affiliates and their sublicensees ranging from high single digit to sub-teen double digit percentages, subject to certain customary reductions. We have a right to opt-out of the 50% U.S. net profit share and corresponding development cost share for either or both the MAT2A and WRN programs, and would be eligible to receive tiered royalties on U.S. net sales of MAT2A or WRN products, as applicable, by GSK, its affiliates and their sublicensees at the same royalty rates as for global non-U.S. net sales thereafter, with potential positive economic adjustments based on the stage of the MAT2A or WRN program, as applicable, at the time of opt-out. There is no guarantee that we will be able to successfully continue to advance the POLQ and WRN programs and receive regulatory filing milestone payments related to any POLQ or WRN product. There is no guarantee that we will be able to successfully conduct the MAT2A Phase 1 monotherapy clinical trial. Even if we successfully conduct the MAT2A Phase 1 monotherapy clinical trial, GSK is under no obligation to exercise the Option. Further, in the event that GSK is required to obtain HSR Clearance after exercising the Option, and such HSR Clearance is not obtained, GSK will not participate in further development of any MAT2A products and the product rights would revert to us. We would then have worldwide rights to those assets and be responsible for funding the development of the assets. GSK may terminate the entire GSK Collaboration Agreement or any collaboration program on a target-by-target basis for any or no reason upon written notice to us after expiration of a defined notice period. The GSK Collaboration Agreement or any program under the GSK Collaboration Agreement may also be terminated by either party for the other party's insolvency or certain uncured breaches. We may terminate the GSK Collaboration Agreement if GSK or any of its sublicensees or affiliates challenge certain of our patents. Depending on the timing of any such termination we may not be entitled to receive the option exercise fees, or potential milestone payments, as these payments terminate with termination of the GSK Collaboration Agreement.

If GSK does not exercise the Option with respect to any MAT2A product (or HSR Clearance thereof is not obtained), or terminates its rights and obligations with respect to a program or the entire GSK Collaboration Agreement, then depending on the timing of such event:

- the development of our product candidates subject to the GSK Collaboration Agreement may be terminated or significantly delayed;
- our cash expenditures could increase significantly if it is necessary for us to hire additional employees and allocate scarce resources to the development and commercialization of product candidates that were previously funded by GSK;
- we would bear all of the risks and costs related to the further development and commercialization of product candidates that were previously the subject of the GSK Collaboration Agreement, including the reimbursement of third parties; and
- in order to fund further development and commercialization, we may need to seek out and establish alternative collaboration arrangements with third-party collaboration partners; this may not be possible, or we may not be able to do so on terms which are acceptable to us, in which case it may be necessary for us to limit the size or scope of one or more of our programs or increase our expenditures and seek additional funding by other means.

Any of these events would have a material adverse effect on our results of operations and financial condition.

Clinical development of one of our product candidates, IDE196, depends, in part, on data from Novartis' ongoing Phase 1 clinical trial of IDE196 in patients with metastatic uveal melanoma. We have no control over the execution of Novartis' trial.

Our most advanced product candidate, IDE196, is currently being evaluated in a Phase 1 clinical trial conducted by Novartis. Novartis' ongoing clinical trial has two arms – a monotherapy arm, and a combination arm evaluating IDE196 in combination with Novartis' p53-MDM2 inhibitor, HDM201. Our license agreement with Novartis provides that we may reference clinical data from the monotherapy arm and safety data from both arms of Novartis' ongoing clinical trial in our regulatory filings. Updated monotherapy data from Novartis was presented at AACR in April 2019.

We have no control or oversight over the design or implementation of Novartis' clinical trial. The license agreement does not impose obligations on Novartis with respect to the conduct of the ongoing Phase 1 clinical trial, its timing, or whether Novartis must complete it. Novartis may delay or discontinue the monotherapy arm and/or the combination arm of their ongoing clinical trial at their own discretion as the trial progresses. Failure on behalf of Novartis, or any third parties with which Novartis has separately contracted with respect to the trial, to adhere to the trial protocols, GCP, or applicable regulations may delay Novartis' clinical trial, lead to Novartis' discontinuation of the trial, or cause the results of the trial to be unacceptable for use in a submission by us to the FDA or a comparable regulatory authority. Furthermore, HDM201 is still in clinical development and has not been approved. If Novartis encounters any clinical or regulatory difficulty with regard to HDM201, it may result in the delay or the complete discontinuation of the combination arm of the trial. If Novartis' clinical trial is delayed or discontinued for any reason, or if we identify another issue with Novartis' data, it may delay our development of IDE196, or make it difficult or impossible for us to rely on Novartis' clinical data in regulatory filings as planned. Furthermore, although the agreement requires Novartis to provide us with certain data at specified intervals, if Novartis does not make data available to us, our IDE196 development program may be significantly delayed and we may need to conduct additional studies or trials independently. As a result, we may not be able to obtain regulatory approval for IDE196 in a timely fashion, at the expected cost to us, or at all, and our business, financial position, results of operations and prospects may be adversely affected.

As an organization, we have never completed a clinical trial, and may be unable to do so for any of our product candidates.

We will need to successfully initiate and complete our own Phase 1 clinical trials and later-stage and pivotal clinical trials in order to obtain FDA or a comparable foreign regulatory body's approval to market our product candidates. Carrying out clinical trials and the submission of regulatory filings is a complicated process. As an organization, we have not yet completed any clinical trials for any of our product candidates. One of our product candidates, IDE196, is in a Phase 1/2 clinical trial that we are conducting. Another of our product candidates, IDE397, is the subject of an IND for a Phase 1 clinical trial that has been authorized to proceed by the FDA, and targeting initial dosing of our first patient in the first quarter of 2021. We have limited experience in preparing, submitting and prosecuting regulatory filings, and have not previously submitted any NDA or other comparable foreign regulatory submission for any product candidate. In addition, we have had

limited interactions with the FDA and cannot be certain how many additional clinical trials of IDE196 or IDE397 or how many clinical trials of any of our other product candidates will be required or whether the FDA will agree with the design or implementation of our clinical trials. We are required to comply with certain regulatory requirements, and the FDA may identify specific clinical or other development-related requirements that we must satisfy, as a condition to initiating or continuing our clinical trials; if we fail to meet such a requirement, the FDA may issue a clinical hold or designate other conditions on our clinical trials. Consequently, we may be unable to successfully and efficiently execute and complete necessary clinical trials in a way that leads to regulatory submission of a marketing application for, and approval of, IDE196, IDE397, or any of our other product candidates. We may require more time and incur greater costs than our competitors and may not succeed in obtaining regulatory approvals of product candidates that we develop. Failure to commence or complete, or delays in, our planned clinical trials, could prevent or delay GSK's exercise of the Option with respect to any MAT2A product, or prevent us from or delay us in commercializing IDE196 or any other product candidate.

The successful development of targeted therapeutics, including therapeutics involving direct targeting of an oncogenic pathway and synthetic lethality therapeutics, including our portfolio of synthetic lethality small molecule inhibitors, as well as any related diagnostics, is highly uncertain.

Successful development of targeted therapeutics, including therapeutics involving direct targeting oncogenic pathways and synthetic lethality therapeutics, such as our portfolio of synthetic lethality small molecule inhibitors, as well as any related diagnostics, is highly uncertain and is dependent on numerous factors, many of which are beyond our control. Our precision medicine target and biomarker discovery platform is based on new technologies and methods relating to drug target and biomarker identification, screening and validation, including Dual CRISPR genetic screening and bioinformatics and we have not, to date, sought regulatory approval for any therapeutics developed through our precision medicine target and biomarker discovery platform. As such, it is difficult to accurately predict the developmental challenges we or our collaboration partners, such as GSK, may incur for our current and future product candidates as we proceed through product discovery, identification, preclinical studies and clinical trials.

Our precision medicine target and biomarker discovery platform is novel and may not be effective at identifying targets and/or biomarkers for product candidates. We therefore cannot provide any assurance that we will be able to successfully identify additional product candidates or biomarkers, advance any of these additional product candidates or diagnostics for their associated biomarkers through the development process.

Additionally, particular patient genetic alterations, such as mutations, deletions or fusions may not be functionally active genetic drivers of the disease. Further, whether a genetic alteration is functionally active may be difficult to ascertain from preclinical cancer models, may be tissue-type dependent and may vary from patient to patient within a specific indication. If that was the case, we would need to functionally validate such genetic alterations, for example, using in vitro and in vivo models, potentially across more than one tumor-tissue type and across multiple cell lines. If some of the genetic alterations are not functionally validated, this would reduce the size of our addressable patient population. Even if genetic alterations are preclinically validated, the relevance of these alterations may not translate into a human clinical setting, which could adversely impact our clinical trial results and our commercial opportunities.

Targeted therapeutics that appear promising in the early phases of development may fail to reach the market for several reasons, including:

- research or preclinical studies may show our targeted small molecule inhibitors or antagonists to be less effective than desired or to have harmful or problematic side effects or toxicities;
- failure to accurately identify, validate or develop clinically relevant biomarkers for our targeted therapeutic product candidates;
- clinical trial results may show our targeted therapeutic small molecule inhibitors to be less effective than expected based on preclinical studies (e.g., a clinical trial could fail to meet its primary endpoint(s)) or to have unacceptable side effects or toxicities;
- failure to receive the necessary regulatory approvals or a delay in receiving such approvals. Among other things, such delays may be caused by slow enrollment in clinical trials, patients dropping out of trials, length of time to achieve trial endpoints, additional time requirements for data analysis, IND preparation, discussions with the FDA, an FDA request for additional preclinical or clinical data, or unexpected safety or manufacturing issues;
- manufacturing costs, formulation issues, pricing or reimbursement issues, or other factors that may make our targeted therapeutic small molecule inhibitors uneconomical; and

- proprietary rights of others and their competing products and technologies that may prevent our targeted therapeutic small molecule inhibitors, or the diagnostics for biomarkers associated with such small molecule inhibitors, from being commercialized.

As a result of these factors, it is more difficult for us to predict the time and cost of product candidate development, and we cannot predict whether the application of our precision medicine target and biomarker discovery platform will result in the identification, development, and regulatory approval of any products. The length of time necessary to complete clinical trials and to submit an application for marketing approval for a decision by a regulatory authority may be difficult to predict for targeted therapeutic small molecule inhibitors, in large part because of the limited regulatory history associated with them. The clinical trial requirements of the FDA and other comparable foreign regulatory authorities and the criteria these regulators use to determine the safety and efficacy of a product candidate vary substantially according to the type, complexity, novelty and intended use and market of the product candidate. Except for certain PARP inhibitors, no products based on synthetic lethality have been approved to date by regulators. As a result, the regulatory approval process for product candidates such as ours is uncertain and may be more expensive and take longer than the approval process for product candidates based on other, better known or more extensively studied technologies. It is difficult to determine how long it will take or how much it will cost to obtain regulatory approvals for our product candidates in either the United States or other comparable regions of the world or how long it will take to commercialize our product candidates. Delay or failure to obtain, or unexpected costs in obtaining, the regulatory approval necessary to bring a potential product candidate to market would adversely affect our business, financial condition, results of operations and prospects.

Even if we are successful in obtaining regulatory approval, commercial success of any approved products will also depend in large part on the availability of insurance coverage and adequate reimbursement from third-party payors, including government payors, such as the Medicare and Medicaid programs, and managed care organizations, which may be affected by existing and future healthcare reform measures designed to reduce the cost of healthcare. Third-party payors could require us to conduct additional studies, including post-marketing studies related to the cost-effectiveness of a product, to qualify for reimbursement, which could be costly and divert our resources. If government and other healthcare payors were not to provide adequate insurance coverage and reimbursement levels for one any of our products once approved, market acceptance and commercial success would be limited.

In addition, if any of our products is approved for marketing, we will be subject to significant regulatory obligations regarding the submission of safety and other post-marketing information and reports and registration, and will need to continue to comply (or ensure that our third-party providers comply) with cGMPs and GCPs for any clinical trials that we conduct post-approval. In addition, there is always the risk that we or a regulatory authority might identify previously unknown problems with a product post-approval, such as adverse events, or AEs, of unanticipated severity or frequency. Compliance with these requirements is costly and any failure to comply or other post-approval issues with our product candidates could have a material adverse effect on our business, financial condition, results of operations and prospects.

Preclinical and clinical drug development is a lengthy and expensive process with an uncertain outcome. We may incur additional costs or experience delays in completing, or ultimately be unable to complete, the development and commercialization of any product candidates, which could result in increased costs to us, delay or limit our ability to generate revenue and adversely affect our business, financial condition, results of operations and prospects. Furthermore, results of earlier studies and trials may not be predictive of future trial results.

Before we can initiate clinical trials for our product candidates, we must submit the results of preclinical studies to the FDA or a comparable foreign regulatory authority along with other information, including information about product candidate chemistry, manufacturing and controls, diagnostics for biomarkers for our product candidates and our proposed clinical trial protocol, as part of an IND application or similar regulatory filing.

Before obtaining marketing approval from regulatory authorities for the sale of any products, we, or our collaboration partners, such as GSK, must conduct extensive clinical trials to demonstrate the safety and efficacy of the product candidates in humans. Clinical trials are expensive and can take many years to complete, and their outcome is inherently uncertain. Failure can occur at any time during the clinical trial process. In addition, we may rely in part on preclinical, clinical and quality data generated by contract research organizations, or CROs, and other third parties for regulatory submissions for our product candidates. While we have or will have agreements governing these third parties' services, we have limited influence over their actual performance. Further, pursuant to our license agreement with Novartis, we have a right of reference to certain data from Novartis' ongoing Phase 1 clinical trial data for our regulatory filings for IDE196.

If these third parties, including Novartis, fail to make data available to us, or, if applicable, make regulatory submissions in a timely manner, in each case pursuant to our agreements with them, our development programs may be significantly delayed and we may need to conduct additional studies or trials or collect additional data independently. In either case, our development costs would increase.

Our clinical trial collaboration and supply agreement with Pfizer for the supply of their MEK inhibitor, binimetinib, and their cMET inhibitor, crizotinib, supports our plans to evaluate the safety and efficacy of IDE196 in combination with binimetinib and in combination with crizotinib in Phase 1/2 clinical trial arms that we initiated in June 2020 and December 2020, respectively. If Pfizer delays or fails to supply binimetinib or crizotinib in support of the combination arms of the IDE196 clinical trial, the development program as pertaining to combination of IDE196 with either a MEK inhibitor or a cMET inhibitor may be significantly delayed, and our development costs may increase. Subject to completion of and satisfactory results from preclinical studies, we may evaluate IDE196 in combination with one or more anti-cancer agent(s) in addition to binimetinib and crizotinib, such as a different inhibitor of MEK or cMET or an inhibitor of FAK, mTOR and/or CDK4/6, in a Phase 1/2 clinical trial in patients with metastatic uveal melanoma. This may require us to establish additional supply agreements and rely upon third parties for supply of such combination agents, or if such combination agents are commercially available, in the absence of a supply agreement, we may incur the cost of purchasing such combination agents and may be at risk of having insufficient supply. We may initiate clinical trials in which our product candidates, including IDE196 or IDE397, are combined with one or more other pharmaceutical agents that have not yet been approved by the FDA or comparable foreign regulatory authorities; in such situations, we may be relying on third parties for obtaining appropriate regulatory approvals and we may have no or limited influence over whether or not such regulatory approvals are achieved for such combination agents.

We and our strategic collaborators, such as GSK, also may experience numerous unforeseen events during, or as a result of, any preclinical studies or clinical trials that could delay or prevent us or our strategic collaborators from successfully developing our product candidates, including:

- we may be unable to generate sufficient preclinical, toxicology, or other in vivo or in vitro data to support the initiation of clinical trials;
- the FDA or a comparable foreign regulatory authority disagreeing as to the design or implementation of our clinical trials;
- delays in obtaining regulatory authorization to commence a clinical trial;
- reaching agreement on acceptable terms with prospective CROs and clinical trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and clinical trial sites;
- obtaining IRB approval at each clinical trial site;
- recruiting an adequate number of suitable patients to participate in a clinical trial, particularly in light of the potential impact of the COVID-19 pandemic on patient enrollment and clinical site closures;
- having patients complete a clinical trial or return for post-treatment follow-up;
- clinical sites deviating from clinical trial protocol or dropping out of a clinical trial;
- addressing subject safety concerns that arise during the course of a clinical trial;
- adding a sufficient number of clinical trial sites;
- obtaining sufficient quantities of product candidate for use in preclinical studies or clinical trials from third-party suppliers; or
- accessing third-party products or product candidates for use in combination with our product candidates in preclinical studies or clinical trials, including third-party product candidates that have not yet been approved by the FDA.

We and our strategic collaborators, such as GSK, may experience numerous adverse or unforeseen events during, or as a result of, preclinical studies and clinical trials that could delay or prevent our ability to receive marketing approval or commercialize our product candidates, including:

- we may receive feedback from regulatory authorities that requires us to modify the design of our clinical trials;

- clinical trials of our product candidates may produce negative or inconclusive results, and we may decide, or regulators may require us, to conduct additional clinical trials or abandon our development programs;
- the number of patients required for clinical trials of our product candidates may be larger than we anticipate, enrollment in these clinical trials may be slower than we anticipate or participants may drop out of these clinical trials at a higher rate than we anticipate;
- we or our third-party contractors may fail to comply with regulatory requirements, fail to maintain adequate quality controls, or be unable to produce sufficient product supply to conduct and complete preclinical studies or clinical trials of our product candidates in a timely manner, or at all;
- we or our investigators might have to suspend or terminate clinical trials of our product candidates for various reasons, including non-compliance with regulatory requirements, a finding that our product candidates have undesirable side effects or other unexpected characteristics, or a finding that the participants are being exposed to unacceptable health risks;
- the cost of clinical trials of our product candidates may be greater than we anticipate;
- the quality of our product candidates or other materials necessary to conduct preclinical studies or clinical trials of our product candidates may be insufficient or inadequate;
- regulators may revise the requirements for approving our product candidates, or such requirements may not be as we anticipate; and
- collaborators, such as GSK, may conduct clinical trials in ways they view as advantageous to them but that are suboptimal for us.

If we or our strategic collaborators, such as GSK, are required to conduct additional clinical trials or other testing of our product candidates beyond those that we currently contemplate, if we are unable to successfully complete clinical trials of our product candidates or other testing, if the results of these trials or tests are not positive or are only moderately positive or if there are safety concerns, we may:

- incur unplanned costs;
- be delayed in obtaining marketing approval for our product candidates or not obtain marketing approval at all;
- obtain marketing approval in some countries and not in others;
- obtain marketing approval for indications or patient populations that are not as broad as intended or desired;
- obtain marketing approval with labeling that includes significant use or distribution restrictions or safety warnings, including boxed warnings;
- be subject to additional post-marketing testing requirements, which could be expensive and time-consuming; or
- have the treatment removed from the market after obtaining marketing approval.

We and our strategic collaborators, such as GSK, could also encounter delays if a clinical trial is suspended or terminated by us, by the IRBs of the institutions in which such trials are being conducted, by the Data Safety Monitoring Board, or DSMB, for such trial or by the FDA or another comparable foreign regulatory authority. Such authorities may suspend or terminate a clinical trial due to a number of factors, including failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols, inspection of the clinical trial operations or trial site by the FDA or other regulatory authorities resulting in the imposition of a clinical hold, unforeseen safety issues or adverse side effects, failure to demonstrate a benefit from using a product candidate, changes in governmental regulations or administrative actions or lack of adequate funding to continue the clinical trial. In addition, changes in regulatory requirements and policies may occur, and we may need to amend clinical trial protocols to comply with these changes. Amendments may require us to resubmit our clinical trial protocols to IRBs for reexamination, which may impact the costs, timing or successful completion of a clinical trial.

Further, conducting clinical trials in foreign countries, as we may do for certain of our product candidates, presents additional risks that may delay completion of our clinical trials. These risks include the possibility that we could be required to conduct additional preclinical studies before initiating any clinical trials, the failure of enrolled patients in foreign countries to adhere to clinical protocol as a result of differences in healthcare services or cultural customs, managing additional administrative burdens associated with comparable foreign regulatory schemes, as well as political and economic risks relevant to such foreign countries.

Principal investigators for our clinical trials may serve as scientific advisors or consultants to us from time to time and may receive cash or equity compensation in connection with such services. If these relationships and any related compensation result in perceived or actual conflicts of interest, or a regulatory authority concludes that the financial relationship may have affected the interpretation of the clinical trial, the integrity of the data generated at the applicable clinical trial site may be questioned and the utility of the clinical trial itself may be jeopardized, which could result in the delay or rejection of the marketing application we submit. Any such delay or rejection could prevent or delay us from commercializing our current or future product candidates.

If any of our preclinical studies or clinical trials of our product candidates are delayed or terminated, the commercial prospects of our product candidates may be harmed, and our ability to ultimately generate revenues from any of these product candidates will be delayed or not realized at all. In addition, any delays in completing our clinical trials may increase our costs, slow down our product candidate development and regulatory approval process and jeopardize our ability to commence product sales and generate revenues. Any of these occurrences may significantly harm our business, financial condition, results of operations and prospects. In addition, many of the factors that cause, or lead to, a delay in the commencement or completion of clinical trials may also ultimately lead to the denial of regulatory approval of our product candidates. If our product candidates and any future product candidates prove to be ineffective, unsafe or commercially unviable, our entire platform and approach would have little, if any, value, which would have a material adverse effect on our business, financial condition, results of operations and prospects.

Furthermore, the results of preclinical studies and clinical trials of our product candidates may not be predictive of the results of later-stage clinical trials. Product candidates in later stages of clinical trials may fail to show the desired safety and efficacy despite having progressed through preclinical studies and initial clinical trials. Furthermore, for some of our programs, in the future we intend to conduct basket trials, which will be designed to include multiple clinically defined populations under one investigational protocol, although each population is enrolled and analyzed separately. A basket trial design could potentially decrease the time to study new populations by decreasing administrative burden, however, these trials may not provide opportunities for accelerated regulatory pathways, and do not overcome limitations to extrapolating data from the experience in one disease to other diseases, because safety and efficacy results in each indication are analyzed separately. Accordingly, clinical success in a basket trial, or any trial in one indication, may not predict success in another indication. In contrast, in the event of an adverse safety issue, clinical hold, or other adverse finding in one or more indications being tested, such event could adversely affect our trials in the other indications and may delay or prevent completion of the clinical trials. A number of companies in the pharmaceutical, biopharmaceutical and biotechnology industries have suffered significant setbacks in advanced clinical trials for similar indications that we are pursuing due to lack of efficacy or adverse safety profiles, notwithstanding promising results in earlier studies, and we cannot be certain that we will not face similar setbacks. Even if our clinical trials are completed, the results may not be sufficient to obtain regulatory approval of any products.

Synthetic lethality represents an emerging class of precision medicine targets, and negative perceptions of the efficacy, safety or tolerability of this class of targets, including any that we develop, could adversely affect our ability to conduct our business, advance our product candidates or obtain regulatory approvals.

Aside from PARP inhibitors, such as Lynparza, Rubraca, Zejula and Talzenna, no synthetic lethality small molecule inhibitor therapeutics have been approved to date by the FDA or other comparable regulators. AEs in future clinical trials of our product candidates or in clinical trials of others developing similar products and the resulting publicity, as well as any other AEs in the field of synthetic lethality, or other products that are perceived to be similar to synthetic lethality, such as those related to gene therapy or gene editing, could result in a decrease in the perceived benefit of one or more of our programs, increased regulatory scrutiny, decreased confidence by patients and CROs in our product candidates, and less demand for any product that we may develop. Our substantial pipeline of synthetic lethality small molecule inhibitor product candidates could result in a greater quantity of reportable AEs or other reportable negative clinical outcomes, manufacturing reportable events or material clinical events that could lead to clinical delays or holds by the FDA or applicable regulatory authority or other clinical delays, any of which could negatively impact the perception of one or more of our synthetic lethality programs, as well as our business as a whole. In addition, responses by U.S. federal, state or foreign governments to negative public perception may result in new legislation or regulations that could limit our ability to develop any product candidates or commercialize any approved products, obtain or maintain regulatory approval, or otherwise achieve profitability. More restrictive statutory regimes, government regulations, or negative public opinion would have an adverse effect on our business, financial condition, results of operations, and prospects, and may delay or impair the development of our product candidates and commercialization of any approved products or demand for any products we may develop.

Tissue-type agnostic basket trials are an emerging clinical approach, that may result in delays in clinical development, additional regulatory requirements and delays in, or the prevention of, our ability to obtain regulatory approval or commercialize our product candidates.

We initiated a Phase 1/2 tissue-type agnostic basket trial with IDE196 in June 2019, and may also utilize a basket trial approach in clinical trials for other product candidates. Basket trials allow us to evaluate the safety and efficacy of a product candidate in a variety of tumor types with a specific molecular profile. We believe that this clinical approach provides many benefits, however, there are limited precedents, and as a result, there a number of inherent risks.

There is limited precedent for the FDA and foreign regulatory authorities to review and grant tissue-type agnostic approvals. Furthermore, as clinical trials increasingly use classification of tumors by molecular profiling, the FDA or other regulatory authority may change or issue guidance or adopt a policy that adversely affects requirements for basket trials. In the event that such guidance or policy has an effect on any of our protocols or trials, as the case may be, it may result in the delay of clinical development, or require us to conduct additional preclinical studies or clinical trials.

Even if we obtain a tissue-type agnostic approval for one or more of our product candidates, there is limited precedent for obtaining reimbursement. Third-party payors may reimburse at different levels across tumor tissue types and indicates, or not at all.

We may find it difficult to enroll patients in our clinical trials given the limited number of patients who have the diseases for which our product candidates are being developed. If we encounter difficulties enrolling patients in our clinical trials, our clinical development activities could be delayed or otherwise adversely affected.

The timely completion of clinical trials in accordance with their protocols depends, among other things, on our and our collaboration partners', such as GSK, ability to enroll a sufficient number of patients who remain in the clinical trial until its conclusion. We may experience difficulties in patient enrollment in our clinical trials for a variety of reasons. The enrollment of patients depends on many factors, including:

- the patient eligibility and exclusion criteria defined in the protocol;
- the size and nature of the patient population required for analysis of the clinical trial's primary endpoints;
- the proximity of patients to clinical trial sites;
- the design of the clinical trial;
- the risk that enrolled patients will not complete a clinical trial;
- our ability to recruit clinical trial investigators with the appropriate competencies and experience;
- clinical trial investigators' willingness to continue enrolling patients and patients' willingness to complete protocol assessments during the COVID-19 pandemic;
- clinicians' and patients' perceptions as to the safety of the product candidate;
- clinicians' and patients' perceptions as to the potential advantages of the product candidate being studied in relation to other available therapies, including any new therapies that may be approved for the indications we are investigating as well as any drugs under development; and
- our ability to obtain and maintain patient consents.

We will be required to identify and enroll a sufficient number of patients for each of our clinical trials. Potential patients for any planned clinical trials may not be adequately diagnosed or identified with the diseases which we are targeting or may not meet the entry criteria for such trials. We also may encounter difficulties in identifying and enrolling patients with a stage of disease appropriate for our planned clinical trials and monitoring such patients adequately during and after treatment. We may not be able to initiate or continue clinical trials if we are unable to locate a sufficient number of eligible patients to participate in the clinical trials required by the FDA or a comparable foreign regulatory authority. In addition, the process of finding and diagnosing patients may prove costly.

In addition, our clinical trials may compete with other clinical trials for product candidates that are in the same therapeutic areas as our product candidates, and this competition will reduce the number and types of patients available to us, because some patients who might have opted to enroll in our trials may instead opt to enroll in a trial being conducted by one of our competitors. As a result of the COVID-19 pandemic, competition for potential patients in our trials is further exacerbated as a result of multiple clinical site closures. Since the number of qualified clinical investigators is already limited, we may conduct some of our clinical trials at the same clinical trial sites that some of our competitors use, which will reduce the number of patients who are available for our clinical trials in such clinical trial site.

Furthermore, certain conditions for which we plan to evaluate our current development candidates are rare diseases, such as metastatic uveal melanoma, with limited patient pools from which to draw for clinical trials. For example, one of our product candidates, IDE196, is currently being evaluated in a Phase 1/2 basket trial that we initiated in June 2019 to evaluate IDE196 in solid tumors harboring GNAQ/GNA11 hotspot mutations in metastatic uveal melanoma, and potentially in other solid tumors such as cutaneous melanoma and colorectal cancer. The timing of our clinical trials depends, in part, on the speed at which we can recruit patients to participate in our trials, as well as completion of required follow-up periods. The eligibility criteria of our clinical trials, once established, will further limit the pool of available trial participants.

In addition, our clinical trials may be affected by the COVID-19 pandemic. Clinical site initiation and patient enrollment may be delayed. Several of our sites halted new enrollment for several months in 2020 before resuming enrollment. Some patients may not be able or willing to comply with clinical trial protocols, and data collected may be incomplete, if quarantines impede patient movement or interrupt healthcare services. Similarly, the ability to recruit and retain patients, and principal investigators and site staff who, as healthcare providers, may have heightened exposure to COVID-19, may be delayed or disrupted, which may adversely impact our clinical trial operations.

If patients are unwilling to participate in our clinical trials for any reason, including the existence of other approved therapies or concurrent clinical trials for similar patient populations, if they are unwilling to enroll in a clinical trial with a placebo-controlled design, or we otherwise have difficulty enrolling a sufficient number of patients, the timeline for recruiting patients, conducting studies and obtaining regulatory approval of our product candidates may be delayed. Our inability to enroll a sufficient number of patients for any of our future clinical trials would result in significant delays or may require us to abandon one or more clinical trials altogether. In addition, we expect to rely on CROs and clinical trial sites to ensure proper and timely conduct of our future clinical trials and, while we intend to enter into agreements governing their services, we will have limited influence over their actual performance.

We cannot assure you that we will not experience delays in enrollment, which would result in the delay of completion of such trials beyond our expected timelines.

Our product candidates or any future product candidates may be associated with undesirable side effects or AEs that could delay or prevent their regulatory approval, limit the commercial profile of an approved label, or result in significant negative consequences following marketing approval, if any.

As with most pharmaceutical products, use of our product candidates could be associated with side effects or AEs which can vary in severity from minor reactions to death and in frequency from infrequent to prevalent. Undesirable side effects or unacceptable toxicities caused by our product candidates could cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA or a comparable foreign regulatory authority. Results of our clinical trials could reveal a high and unacceptable severity and prevalence of these or other side effects. Furthermore, certain of our product candidates, such as IDE196, may be co-administered with third-party approved or experimental therapies, such as binimetinib or crizotinib in the combination arms of our Phase 1/2 clinical trial. These combinations may have additional side effects. The uncertainty resulting from the use of our product candidates in combination with other therapies may make it difficult to accurately predict side effects in future clinical trials.

To date, only one of our product candidates, IDE196, has been tested in clinical trials, including an ongoing Phase 1 clinical trial and an ongoing Phase 1/2 clinical trial, and has been observed to be generally well tolerated, with the most common AEs reported being hypotension, GI toxicities, and fatigue. If unacceptable side effects arise in the further development of IDE196, including in combination with binimetinib or crizotinib, or in the development of any of our other product candidates, we, the FDA, or the IRBs at the institutions in which the clinical trials are being conducted could suspend or terminate our clinical trials or the FDA or a comparable foreign regulatory authority could order us to cease clinical trials or deny approval of our product candidates for any or all targeted indications. Treatment-related side effects could also affect patient recruitment or the ability of enrolled patients to complete any of our clinical trials or result in potential product

liability claims. In addition, these side effects may not be appropriately recognized or managed by the treating medical staff. We expect to have to train medical personnel using our product candidates to understand the side effect profiles for our clinical trials and upon any commercialization of any of our product candidates. Inadequate training in recognizing or managing the potential side effects of our product candidates could result in patient injury or death. Any of these occurrences may harm our business, financial condition, results of operations and prospects significantly.

In addition, even if we successfully advance our product candidates or any future product candidates into and through clinical trials, such trials will likely only include a limited number of patients and limited duration of exposure to our product candidates. As a result, we cannot be assured that adverse effects of our product candidates will not be uncovered when a significantly larger number of patients are exposed to the product candidate. Further, any clinical trials may not be sufficient to determine the effect and safety consequences of taking our product candidates over a multi-year period.

If any of our product candidates receives marketing approval and we or others later identify undesirable side effects caused by such products, a number of potentially significant negative consequences could result, including:

- regulatory authorities may withdraw their approval of the product;
- we may be required to recall a product or change the way such product is administered to patients;
- additional restrictions may be imposed on the marketing of the particular product or the manufacturing processes for the product or any component thereof;
- regulatory authorities may require the addition of labeling statements, such as a “black box” warning or a contraindication;
- we may be required to implement a Risk Evaluation and Mitigation Strategy, or REMS, or create a Medication Guide outlining the risks of such side effects for distribution to patients;
- we could be sued and held liable for harm caused to patients;
- the product may become less competitive; and
- our reputation may suffer.

Any of the foregoing events could prevent us from achieving or maintaining market acceptance of the particular product candidate, if approved, and result in the loss of significant revenues to us, which would adversely affect our business, financial condition, results of operations and prospects. In addition, if one or more of our product candidates prove to be unsafe, our entire technology platform and pipeline could be affected, which would have a material adverse effect on our business, financial condition, results of operations and prospects.

If we are unable to successfully develop molecular diagnostics for biomarkers that enable patient selection and/or that demonstrate drug-target interaction, or experience significant delays in doing so, we may not realize the full commercial potential of our product candidates.

A key component of our strategy includes the use of molecular diagnostics to guide patient selection and/or to confirm target engagement of our product candidates. In some cases, a diagnostic may be commercially available, for example, on a tumor-profiling panel. If not already commercially available, we may collaborate with diagnostic companies for the development of biomarkers associated with our product candidates. We may have difficulty in establishing or maintaining such development relationships, and we will face competition from other companies in establishing these collaborations.

There are also several risks associated with biomarker identification and validation. We, in collaboration with any diagnostic partners, may not be able to identify predictive biomarkers or pharmacodynamic biomarkers for one or more of our programs. We may not be able to validate potential biomarkers (e.g., certain genetic mutations) or their functional relevance preclinically in relevant in vitro or in vivo models. Data analytics and information from databases that we rely on for identifying or validating some of our biomarker-target relationships may not accurately reflect potential patient populations. Potential biomarkers, even if validated preclinically, may not be functionally effective or validated in human clinical trials.

If we, in collaboration with these parties, are unable to successfully develop companion diagnostics for our product candidates, or experience delays in doing so, the development of our product candidates may be adversely affected. The development of companion diagnostic products requires a significant investment of working capital, and may not result in any future income. This could require us to raise additional funds, which could dilute our current investors or impact our ability to continue our operations in the future.

There are also risks associated with diagnostics that are commercially available, including that we may not have access to reliable supply for such diagnostics.

The failure to obtain required regulatory approvals for any companion diagnostic tests that we may pursue may prevent or delay approval of our product candidates. Moreover, the commercial success of any of our product candidates may be tied to the regulatory approval, market acceptance and continued availability of a companion diagnostic.

The FDA regulates in vitro companion diagnostics as medical devices that will likely be subject to and require prospective validation in clinical trials in conjunction with the clinical trials for our product candidates, and which will require regulatory clearance or approval prior to commercialization. We plan to collaborate with third parties for the development, testing and manufacturing of these companion diagnostics, the application for and receipt of any required regulatory clearances or approvals, and the commercial supply of these companion diagnostics. Our third-party collaborators may fail to obtain the required regulatory clearances or approvals, which could prevent or delay approval of our product candidates. In addition, the commercial success of any of our product candidates may be tied to and dependent upon the receipt of required regulatory clearances or approvals of the companion diagnostic.

Even if a companion diagnostic is approved, we will rely on the continued ability of any third-party collaborator to make the companion diagnostic commercially available to us on reasonable terms in the relevant geographies. Furthermore, if commercial tumor profiling panels are not able to be updated to include additional tumor-associated genes, or if clinical oncologists do not incorporate molecular or genetic sequencing into their clinical practice, we may not be successful in developing or commercializing our existing product candidates or any future product candidates.

Interim, "topline" and preliminary data from our clinical trials may differ materially from the final data.

From time to time, we may publicly disclose preliminary or "topline" data from our clinical trials, which are based on a preliminary analysis of then-available data, and the results and related findings and conclusions are subject to change following a more comprehensive review of the data related to the particular study or trial. We also make assumptions, estimations, calculations and conclusions as part of our analyses of data, and we may not have received or had the opportunity to fully and carefully evaluate all data. As a result, the topline results that we report may differ from future results of the same clinical trials, or different conclusions or considerations may qualify such topline results, once additional data have been received and fully evaluated. Topline data also remain subject to audit and verification procedures that may result in the final data being materially different from the preliminary data we previously published. As a result, topline data should be viewed with caution until the final data are available. From time to time, we may also disclose interim data from our clinical trials. Interim data from clinical trials are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues and more patient data become available. Adverse differences between preliminary or interim data and final data could significantly harm our business, financial condition, results of operations and prospects.

Others, including regulatory agencies, may not accept or agree with our assumptions, estimates, calculations, conclusions or analyses or may interpret or weigh the importance of data differently, which could impact the value of the particular program, the approvability or commercialization of the particular product candidate or product and the value of our company in general. In addition, the information we choose to publicly disclose regarding a particular study or clinical trial is typically a summary of extensive information, and you or others may not agree with what we determine is the material or otherwise appropriate information to include in our disclosure, and any information we determine not to disclose may ultimately be deemed significant with respect to future decisions, conclusions, views, activities or otherwise regarding a particular product, product candidate or our business. If the topline data that we report differ from actual results, or if others, including regulatory authorities, disagree with the conclusions reached, our ability to obtain approval for, and commercialize, our product candidates may be harmed, which could harm our business, financial condition, operating results and prospects.

We may be unable to obtain regulatory approval for our product candidates or any future product candidates. The denial or delay of such approval would prevent or delay commercialization of our product candidates and adversely impact our business, financial condition, operating results and prospects.

The process of obtaining regulatory approval is expensive, often takes many years following the commencement of clinical trials and can vary substantially based upon the type, complexity and novelty of the product candidates involved, as well as the target indications and patient population. Approval policies or regulations may change, and the FDA has substantial discretion in the drug approval process, including the ability to delay, limit or deny approval of a product candidate for many reasons. Despite the time and expense invested in clinical development of product candidates, regulatory approval is never guaranteed. Neither we nor any collaborator, such as GSK or any future collaborator, is permitted to market any of our product candidates in the United States until we receive approval of an NDA from the FDA.

Prior to obtaining approval to commercialize a product candidate in the United States, we or our collaborators must demonstrate with substantial evidence from adequate and well-controlled clinical trials, and to the satisfaction of the FDA, that such product candidates are safe and effective for their intended uses. Foreign regulatory authorities may require a similar demonstration before we can obtain approval to commercialize a product candidate abroad. Results from preclinical studies and clinical trials can be interpreted in different ways. Even if we believe the preclinical or clinical data for our product candidates are promising, such data may not be sufficient to support approval by the FDA or comparable foreign regulatory authorities. The FDA or a comparable foreign regulatory authority, as the case may be, may also require us to conduct additional preclinical studies or clinical trials for our product candidates either prior to or post-approval, or may object to elements of our clinical development program.

The FDA or a comparable foreign regulatory authority can delay, limit or deny approval of a product candidate for many reasons, including:

- such authorities may disagree with the design or implementation of our clinical trials;
- negative or ambiguous results from our clinical trials, or results may not meet the level of statistical significance required by the FDA or a comparable foreign regulatory agency for approval;
- serious and unexpected drug-related side effects may be experienced by participants in our clinical trials or by individuals using drugs similar to our product candidates;
- the population studied in the clinical trial may not be sufficiently broad or representative to assure safety in the full population for which we seek approval;
- such authorities may not accept clinical data from trials which are conducted at clinical facilities or in countries where the standard of care is potentially different from that of the United States;
- we are unable to demonstrate that a product candidate's clinical and other benefits outweigh its safety risks;
- the FDA's or the applicable comparable foreign regulatory agency's non-approval of the formulation, labeling or specifications of our product candidates or any of our future product candidates;
- such authorities may disagree with our interpretation of data from preclinical studies or clinical trials;
- such authorities could question the integrity of data obtained in our current or future clinical trials, for example, due to missed protocol procedures due to the impact of the COVID-19 pandemic;
- such authorities may not agree that the data collected from clinical trials of our product candidates are acceptable or sufficient to support the submission of an NDA or other submission or to obtain regulatory approval in the United States or elsewhere, and such authorities may impose requirements for additional preclinical studies or clinical trials;
- such authorities may disagree regarding the formulation, labeling and/or the specifications of our product candidates;
- such authorities may only approve indications that are significantly more limited than what we apply for and/or with other significant restrictions on distribution and use;
- such authorities may find deficiencies in the manufacturing processes or facilities of our third-party manufacturers with which we or any of our collaborators, such as GSK or any potential future collaborators, contract for clinical and commercial supplies; and
- the approval policies or regulations of such authorities may significantly change in a manner rendering our or any of our collaborators' clinical data insufficient for approval.

With respect to foreign markets, approval procedures vary among countries and, in addition to the foregoing risks, may involve additional product testing, administrative review periods and agreements with pricing authorities. In addition, events raising questions about the safety of certain marketed pharmaceuticals may result in increased cautiousness by the FDA and comparable foreign regulatory authorities in reviewing new drugs based on safety, efficacy or other regulatory considerations and may result in significant delays in obtaining regulatory approvals. Any delay in obtaining, or inability to obtain, applicable regulatory approvals would prevent us or any of our collaborators, such as GSK or any potential future collaborators, from commercializing any products.

Of the large number of drugs in development, only a small percentage successfully complete the FDA or comparable foreign regulatory approval processes and are commercialized. The lengthy approval process as well as the unpredictability of future clinical trial results may result in our failing to obtain regulatory approval to market our product candidates, which would significantly harm our business, financial condition, results of operations and prospects.

Even if we eventually complete clinical trials and receive approval of an NDA or foreign marketing application for a product, the FDA or a comparable foreign regulatory authority may grant approval contingent on the performance of costly additional clinical trials, including Phase 4 clinical trials, and/or the implementation of a REMS, which may be required to ensure safe use of the drug after approval. The FDA or a comparable foreign regulatory authority also may approve a product candidate for a more limited indication or patient population than we originally requested, and the FDA or a comparable foreign regulatory authority may not approve the labeling that we believe is necessary or desirable for the successful commercialization of a product candidate. Any delay in obtaining, or inability to obtain, applicable regulatory approval would delay or prevent commercialization of that product candidate and would materially adversely impact our business and prospects.

We may develop our product candidates and future product candidates in combination with other therapies, and safety or supply issues with combination-use products may delay or prevent development and approval of our product candidates.

We may develop our product candidates in combination with one or more cancer therapies, both approved and unapproved. Even if any product candidate we develop were to receive marketing approval or be commercialized for use in combination with other existing therapies, we would continue to be subject to the risks that the FDA or similar regulatory authorities outside of the United States could revoke approval of the therapy used in combination with our product candidates or that safety, efficacy, manufacturing or supply issues could arise with these existing therapies. Combination therapies are commonly used for the treatment of cancer, and we would be subject to similar risks if we develop any of our product candidates for use in combination with other drugs or for indications other than cancer. Similarly, if the therapies we use in combination with our product candidates are replaced as the standard of care for the indications we choose for any of our product candidates, the FDA or similar regulatory authorities outside of the United States may require us to conduct additional clinical trials. The occurrence of any of these risks could result in our own products, if approved, being removed from the market or being less successful commercially.

We may also evaluate our product candidates in combination with one or more cancer therapies that have not yet been approved for marketing by the FDA or a similar regulatory authority outside of the United States. We may be unable to effectively identify and collaborate with third parties for the evaluation of our product candidates in combination with their therapies. We will not be able to market and sell any product candidate we develop in combination with any such unapproved cancer therapies that do not ultimately obtain marketing approval. The regulations prohibiting the promotion of products for unapproved uses are complex and subject to substantial interpretation by the FDA and other government agencies. In addition, there are additional risks similar to the ones described for our products currently in development and clinical trials that result from the fact that such cancer therapies are unapproved, such as the potential for serious adverse effects, delay in their clinical trials and lack of FDA approval.

If the FDA or a similar regulatory authority outside of the United States does not approve these other drugs or revokes approval of, or if safety, efficacy, manufacturing, or supply issues arise with, the drugs we choose to evaluate in combination with any product candidate we develop, we may be unable to obtain approval of or market such product.

A breakthrough therapy designation by the FDA for our product candidates may not lead to a faster development or regulatory review or approval process, and it does not increase the likelihood that our product candidates will obtain marketing approval.

We may seek a breakthrough therapy designation for some of our product candidates. A breakthrough therapy is defined as a drug that is intended, alone or in combination with one or more other drugs, to treat a serious or life-threatening disease or condition, and preliminary clinical evidence indicates that the drug may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. For drugs and biologics that have been designated as breakthrough therapies, interaction and communication between the FDA and the sponsor of the clinical trial can help to identify the most efficient path for clinical development while minimizing the number of patients placed in ineffective control regimens. Drugs designated as breakthrough therapies by the FDA are also eligible for accelerated approval. For some of our programs for which we intend to conduct basket trials, which will be designed to include multiple clinically defined populations under one investigational protocol though each population is enrolled and analyzed separately, we may not be eligible for accelerated approval.

Designation as a breakthrough therapy is within the discretion of the FDA. Accordingly, even if we believe one of our product candidates meets the criteria for designation as a breakthrough therapy, the FDA may disagree and instead determine not to make such designation. In any event, the receipt of a breakthrough therapy designation for a product candidate may not result in a faster development process, review or approval compared to drugs considered for approval under conventional FDA procedures and does not assure ultimate approval by the FDA. In addition, even if one or more of our drug candidates qualify as breakthrough therapies, the FDA may later decide that the products no longer meet the conditions for qualification or decide that the time period for FDA review or approval will not be shortened.

We face significant competition in an environment of rapid technological and scientific change, and our failure to effectively compete may prevent us from achieving significant market penetration. Most of our competitors have significantly greater resources than we do and we may not be able to successfully compete.

The biotechnology and pharmaceutical industries in particular are characterized by rapidly advancing technologies, intense competition and a strong emphasis on developing proprietary therapeutics. We compete with a variety of multinational biopharmaceutical companies and specialized biotechnology companies, as well as technology being developed at universities and other research institutions. Our competitors have developed, are developing or will likely develop product candidates and processes competitive with our product candidates. Competitive therapeutic treatments include those that have already been approved and accepted by the medical community and any new treatments that enter the market. We believe that a significant number of product candidates are currently under development, and may become commercially available in the future, for the treatment of diseases and other conditions for which we may try to develop product candidates. Our competitors may obtain regulatory approval of their products more rapidly than we may or may obtain patent protection or other intellectual property rights that limit our ability to develop or commercialize our product candidates. We believe that while our precision medicine target and biomarker discovery platform and our scientific and technical know-how give us a competitive advantage in this space, competition from many sources remains. Our competitors include larger and better funded biopharmaceutical, biotechnological and oncology therapeutics companies, as well as universities and other research institutions.

Our commercial opportunity and success will be reduced or eliminated if competing products emerge that are safer, more effective, or less expensive than the therapeutics we develop. Our competitors may develop drugs that are more effective, more convenient, more widely used and less costly or have a better safety profile than our products and these competitors may also be more successful than us in manufacturing and marketing their products.

Although we believe that IDE196 is currently the most advanced small molecule PKC inhibitor for genetically-defined cancers having GNAQ or GNA11 gene mutations in clinical trials, others may receive approval for competitive products before we do. If any of our product candidates are approved, they will compete with a range of therapeutic treatments that are either in development or currently marketed. For IDE196, our small molecule inhibitor targeting PKC in genetically-defined solid tumors having GNAQ or GNA11 mutations or other genetic alterations that activate the PKC signaling pathway, other companies are conducting research and development of potential therapies for metastatic uveal melanoma based on other targets and approaches. For example, Immunocore is developing IMCgp100 as monotherapy for metastatic uveal melanoma in a current Phase 3 clinical trial for patients with the HLA-A2 allele – which represents between 30% to 50% of metastatic uveal melanoma patients. For our pipeline of small molecule therapeutics based on synthetic lethality, potential competition includes established companies as well as earlier-stage emerging biotechnology companies. Multiple companies have been involved with research and development of PARP inhibitors, including AstraZeneca (Lynparza), Clovis (Rubraca), Tesaro (Zejula), and Pfizer (Talzenna). With respect to our MAT2A inhibitor for solid tumors having MTAP gene deletion, Agios is developing AG-270 in a Phase 1 clinical trial for certain advanced solid tumors or lymphoma. Additionally, several other early-stage companies, including Artios, Cyteir, KSQ, MetaboMed, NeoMed, Repare and Tango are performing research in synthetic lethality. Development decisions and data from clinical trials of our competitors may adversely impact clinical development of our product candidates, and may additionally or alternatively have a material adverse impact on our financial condition or business prospects.

Furthermore, we also face competition more broadly across the market for cost-effective and reimbursable cancer treatments. The most common methods of treating patients with cancer are surgery, radiation and drug therapy, including chemotherapy, hormone therapy and targeted drug therapy or a combination of such methods. There are a variety of available drug therapies marketed for cancer. In many cases, these drugs are administered in combination to enhance efficacy. Some of these drugs are branded and subject to patent protection, and others are available on a generic basis. Insurers and other third-party payors may also encourage the use of generic products or specific branded products. We expect that if our product candidates are approved, they will be priced at a significant premium over competitive generic, including branded generic, products. As a result, obtaining market acceptance of, and a gaining significant share of the market for, any of our product candidates that we successfully introduce to the market will pose challenges. In addition, many companies are developing new therapeutics, and we cannot predict what the standard of care will be as our product candidates progress through clinical development.

In some cases we may also develop diagnostics to enable relevant biomarker screening for clinical and commercial purposes in connection with our product candidates. If not already commercially available, we anticipate working in collaboration with diagnostic companies for this development, and we will face competition from other companies in establishing these collaborations. Our competitors will also compete with us in recruiting and retaining qualified scientific, management and commercial personnel, establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs.

Many of our competitors have significantly greater financial, technical, manufacturing, marketing, sales and supply resources or experience than we do. If we successfully obtain approval for any product candidate, we will face competition based on many different factors, including the safety and effectiveness of our products, the ease with which our products can be administered and the extent to which patients accept relatively new routes of administration, the timing and scope of regulatory approvals for these products, the availability and cost of manufacturing, marketing and sales capabilities, price, coverage, reimbursement and patent position. Competing products could present superior treatment alternatives, including by being more effective, safer, less expensive or marketed and sold more effectively than any products we may develop. Competing products may make any products we develop obsolete or noncompetitive before we recover the expense of developing and commercializing our product candidates. Such competitors could also recruit our employees, which could negatively impact our level of expertise and our ability to execute our business plan.

We expect to expand our development and regulatory capabilities and potentially implement sales and distribution capabilities, and as a result, we will need to increase the size of our organization, and we may experience difficulties in managing growth.

As of December 31, 2020, we had 62 employees. We will need to continue to expand our managerial, operational, finance and other resources in order to manage our operations and clinical trials, continue our development activities, submit for regulatory approval and, if approved, commercialize our product candidates or any future product candidates. Our management and personnel, systems and facilities currently in place may not be adequate to support this future growth. Our need to effectively execute our growth strategy requires that we:

- manage our preclinical studies and clinical trials effectively;
- identify, recruit, retain, incentivize and integrate additional employees, including sales personnel;
- manage our internal development and operational efforts effectively while carrying out our contractual obligations to third parties; and
- continue to improve our operational, financial and management controls, reports systems and procedures.

There is no assurance that any of these increases in scale, expansion of personnel, equipment, software and computing capacities, or process enhancements will be successfully implemented, or that we will have adequate space in our laboratory facilities to accommodate such required expansion.

We currently have no sales organization. If we are unable to establish sales capabilities on our own or through third parties, we may not be able to market and sell any products effectively, if approved, or generate product revenue.

We currently do not have a marketing or sales organization. In order to commercialize any product, if approved, in the United States and foreign jurisdictions, we must build our marketing, sales, distribution, managerial and other non-technical capabilities or make arrangements with third parties to perform these services, and we may not be successful in doing so. In advance of any of our product candidates receiving regulatory approval, we expect to establish a sales organization with technical expertise and supporting distribution capabilities to commercialize each such product candidate, which will be expensive and time-consuming. We have no prior experience in the marketing, sale and distribution of pharmaceutical products, and there are significant risks involved in building and managing a sales organization, including our ability to hire, retain, and incentivize qualified individuals, generate sufficient sales leads, provide adequate training to sales and marketing personnel, and effectively manage a geographically dispersed sales and marketing team. Any failure or delay in the development of our internal sales, marketing and distribution capabilities would adversely impact the commercialization of these products. Under our GSK Collaboration Agreement, GSK will be responsible for commercialization of any MAT2A (if GSK exercises the Option and obtains HSR Clearance thereof), POLQ, or WRN products. We may choose to collaborate with additional third parties that have direct sales forces and established distribution systems, either to augment our own sales force and distribution systems or in lieu of our own sales force and distribution systems. If we are unable to enter into such arrangements on acceptable terms or at all, we may not be able to successfully commercialize our product candidates. If we are not successful in commercializing products, either on our own or through arrangements with one or more third parties, we may not be able to generate any future product revenue and we would incur significant additional losses.

If we fail to attract and retain senior management and key scientific personnel, our business may be materially and adversely affected.

Our success depends in part on our continued ability to attract, retain and motivate highly qualified management, clinical and scientific personnel. We are highly dependent upon our senior management, particularly our President and Chief Executive Officer, as well as our senior scientists and other members of our senior management team. The loss of services of any of these individuals could delay or prevent the successful development of any products, initiation or completion of our planned clinical trials or the commercialization of our product candidates or any other product candidates.

Competition for qualified personnel in the biotechnology and biopharmaceutical fields is intense due to the limited number of individuals who possess the skills and experience required by our industry. We will need to hire additional personnel as we expand our clinical development and if we initiate commercial activities. We may not be able to attract and retain quality personnel on acceptable terms, or at all. In addition, to the extent we hire personnel from competitors, we may be subject to allegations that they have been improperly solicited or that they have divulged proprietary or other confidential information, or that their former employers own their research output.

Our employees and independent contractors, including principal investigators, consultants, collaborators, service providers and other vendors may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements, which could have an adverse effect on our results of operations.

We are exposed to the risk that our employees and independent contractors, including principal investigators, consultants, collaborators, service providers and other vendors may engage in misconduct or other illegal activity. Misconduct by these parties could include intentional, reckless and/or negligent conduct or other unauthorized activities that violate: the laws and regulations of the FDA and other similar regulatory bodies, including those laws that require the reporting of true, complete and accurate information to such regulatory bodies; manufacturing standards; U.S. federal and state healthcare fraud and abuse laws, data privacy and security laws and other similar non-U.S. laws; or laws that require the true, complete and accurate reporting of financial information or data. Activities subject to these laws also involve the improper use or misrepresentation of information obtained in the course of clinical trials, the creation of fraudulent data in our preclinical studies or clinical trials, or illegal misappropriation of product, which could result in regulatory sanctions and cause serious harm to our reputation. It is not always possible to identify and deter misconduct by employees and other third-parties, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws or regulations. In addition, we are subject to the risk that a person or government could allege such fraud or other misconduct, even if none occurred. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business and financial results, including, without limitation, the imposition of significant civil, criminal and administrative penalties, damages, monetary fines, disgorgement, possible exclusion from participation in Medicare, Medicaid and other U.S. federal healthcare programs or healthcare programs in other jurisdictions, integrity oversight and reporting obligations to resolve allegations of non-compliance, individual imprisonment, other sanctions, contractual damages, reputational harm, diminished profits and future earnings and curtailment of our operations, any of which could adversely affect our business, financial condition, results of operations and prospects.

Our business involves the use of hazardous materials and we and our third-party manufacturers and suppliers must comply with environmental laws and regulations, which can be expensive and restrict how we do business.

Our research and development activities and our third-party manufacturers' and suppliers' activities involve the controlled storage, use and disposal of hazardous materials owned by us, including the components of our product candidates and other hazardous compounds. We and any third-party manufacturers and suppliers we engage are subject to numerous federal, state and local environmental, health and safety laws, regulations and permitting requirements, including those governing laboratory procedures; the generation, handling, use, storage, treatment, and disposal of hazardous and regulated materials and wastes; the emission and discharge of hazardous materials into the ground, air and water; and employee health and safety. Our operations involve the use of hazardous and flammable materials, including chemicals and biological and radioactive materials. Our operations also produce hazardous waste. In some cases, these hazardous materials and various wastes resulting from their use are stored at our and our manufacturers' facilities pending their use and disposal. We generally contract with third parties for the disposal of these materials and wastes. We cannot eliminate the risk of contamination, which could cause an interruption of our research and development efforts, commercialization efforts and business operations, environmental damage resulting in costly clean-up and liabilities under applicable laws and regulations governing the use, storage, handling and disposal of these materials and specified waste products.

Although we believe that the safety procedures utilized by our third-party manufacturers for handling and disposing of these materials generally comply with the standards prescribed by these laws and regulations, we cannot guarantee that this is the case or eliminate the risk of accidental contamination or injury from these materials. Under certain environmental laws, we could be held responsible for costs relating to any contamination at our current or past facilities and at third-party facilities. In such an event, we may be held liable for any resulting damages and such liability could exceed our resources and state or federal or other applicable authorities may curtail our use of certain materials and/or interrupt our business operations. 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.

Compliance with applicable environmental laws and regulations may be expensive, and current or future environmental laws and regulations may impair our research, product development and manufacturing efforts. In addition, we cannot entirely eliminate the risk of accidental injury or contamination from these materials or wastes. Although we maintain workers' compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials and pollution insurance to cover us for certain biological or hazardous waste exposure and contamination situations, this insurance may not provide adequate coverage against potential liabilities. Accordingly, in the event of contamination or injury, we could be held liable for damages or be penalized with fines in an amount exceeding our resources, and our clinical trials or regulatory approvals could be suspended, which could have a material adverse effect on our business, financial condition, results of operations and prospects.

We attempt to distribute our technology, biology, execution and financing risks across a range of therapeutic classes, disease states, programs and technologies. Due to the significant resources required for the development of our broad portfolio of programs, and depending on our ability to access capital, we must make certain risk assessments and prioritize development of certain product candidates. Moreover, we may expend our limited resources to pursue a particular product candidate and fail to capitalize on product candidates or indications that may be more profitable or for which there is a greater likelihood of success.

Our organization is committed to a broad approach to precision medicine that seeks to maximize our integrated biomarker and small molecule drug discovery capabilities. Our current portfolio consists of multiple programs, extending across multiple classes of precision medicine, including direct targeting of oncogenic pathways and synthetic lethality. Together, these programs require significant capital investment. The directly targeted therapy programs are at various stages of preclinical and early clinical development, and our synthetic lethality programs are in the target identification, validation, lead optimization, and early clinical stages of development. We seek to maintain a process of prioritization and resource allocation to maintain an optimal balance between advancing and expanding our synthetic lethality and direct targeting programs. Because we have limited financial and managerial resources, we focus on specific product candidates, indications and discovery programs. As a result, we may forgo or delay pursuit of opportunities with other product candidates that could have had greater commercial potential. Our resource allocation decisions may cause us to fail to capitalize on viable commercial products or profitable market opportunities. Our spending on current and future research and development programs and product candidates for specific indications may not yield any commercially viable products. If we do not accurately evaluate the commercial potential or target market for a particular product candidate, we may relinquish valuable rights to that product candidate through collaborations, licenses and other similar arrangements in cases in which it would have been more advantageous for us to retain sole development and commercialization rights to such product candidate.

Furthermore, as our programs progress, we or others may determine: that certain of our risk allocation decisions were incorrect or insufficient; that we made platform level technology mistakes; that individual programs or our approach to synthetic lethality or precision medicine in general has technology or biology risks that were unknown or underappreciated; that our choices on how to build our organizational infrastructure to drive our expansion will result in an inability to manufacture our products for clinical trials or otherwise impede our manufacturing capabilities; or that we have allocated resources in such a way that large investments are not recovered and capital allocation is not subject to rapid re-direction. All of these risks may relate to our current or future precision medicine programs or companion diagnostics, and in the event material decisions in any of these areas turn out to have been incorrect or under-optimized, we may experience a material adverse impact on our business, financial condition, results of operations and prospects.

The COVID-19 pandemic, or any other pandemic, epidemic or outbreak of an infectious disease may materially and adversely affect our business and operations, including the pace of enrollment in current or future clinical trials.

Outbreaks of epidemic, pandemic, or contagious diseases, such as the current novel coronavirus or, historically, the Ebola virus, Middle East Respiratory Syndrome, Severe Acute Respiratory Syndrome, or the H1N1 virus, could disrupt our business. For example, beginning in late 2019, the outbreak of a novel strain of virus named SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2), or coronavirus, which causes coronavirus disease 2019, or COVID-19, has evolved into a global pandemic. On January 30, 2020, the World Health Organization declared the outbreak of COVID-19 a "Public Health Emergency of International Concern," and on March 11, 2020, the World Health Organization characterized the outbreak as a "pandemic". The governors of California and over forty other states, as well as mayors of many cities, ordered their residents to cease traveling to non-essential jobs and to curtail all unnecessary travel, and to stay in their homes as much as possible. As of February 2021, the coronavirus has spread to most regions of the world and the United States continues to experience significant COVID-19 outbreaks, particularly in certain states, such as California. If the current economic conditions worsen or last for an extended period of time, we will be forced to significantly scale back our business and growth plans, which could have a material adverse effect on our business, results of operations and financial condition.

The COVID-19 pandemic is affecting the United States and global economies and may affect our operations and those of third parties on which we rely. Some of these third parties have experienced shut-downs, supply chain and experimental study interruptions or slow-downs, and more third parties could experience such shut-downs, interruptions or slow-downs. Individuals at our company or at such third parties could become ill, quarantined, or otherwise unable to work and/or travel due to health reasons or governmental restrictions. In response to the COVID-19 pandemic, San Mateo County, California, in which our primary office is located, has issued a "regional stay at home order" pursuant to a state order issued by the Governor of California. We have requested that most of our personnel, including all of our administrative employees, work remotely, restricted on-site staff to only those personnel and contractors who must perform essential activities that must be completed on-site and limited the number of staff in any given research and development laboratory. The COVID-19 pandemic could disrupt our ability to secure supplies for our facilities and to provide personal protective equipment for our employees. The safety, health and well-being of our workforce is of primary concern and we may need to enact further precautionary measures to help minimize the risk of our employees being exposed to the novel coronavirus.

Additionally, in response to the COVID-19 pandemic, on March 10, 2020, the FDA announced its intention to postpone most inspections of foreign manufacturing facilities and products through April 2020, and on March 18, 2020, the FDA temporarily postponed routine surveillance inspections of domestic manufacturing facilities. Subsequently, on July 10, 2020, the FDA announced its intention to resume certain on-site inspections of domestic manufacturing facilities subject to a risk-based prioritization system. The FDA intends to use this risk-based assessment system to identify the categories of regulatory activity that can occur within a given geographic area, ranging from mission critical inspections to resumption of all regulatory activities. Regulatory authorities outside the United States may adopt similar restrictions or other policy measures in response to the COVID-19 pandemic, including providing guidance regarding the conduct of clinical trials. If global health concerns continue to prevent the FDA or other regulatory authorities from conducting their regular inspections, reviews or other regulatory activities, it could significantly impact the ability of the FDA or other regulatory authorities to timely review and process our regulatory submissions, which could have a material adverse effect on our business.

The evolving COVID-19 pandemic may also, directly or indirectly, impact the pace of enrollment and impose logistical constraints in current or future clinical trials. Site initiation and patient enrollment may be delayed due to prioritization of hospital resources toward the COVID-19 pandemic, and potential or enrolled patients may not be able or willing to comply with clinical trial protocols, whether due to quarantines impeding patient movement or interrupting healthcare services, or due to potential or enrolled patient concerns regarding interactions with medical facilities or staff. Similarly, our ability to recruit and retain principal investigators and site staff who, as healthcare providers, may have heightened exposure to COVID-19, may be delayed or disrupted, which may adversely impact our clinical trial operations.

While the COVID-19 pandemic did not materially adversely affect our business operations in the year ended December 31, 2020, economic and health conditions in the United States and across most of the globe continue to change rapidly and may materially affect us economically. While the potential economic impact brought by, and the duration of, COVID-19 may be difficult to assess or predict, a continuing widespread pandemic could result in significant disruption of global financial markets, reducing our ability to access capital, which could in the future negatively affect our liquidity. In addition, a recession or market correction resulting from the spread of COVID-19 could materially affect our business and the value of our common stock. The global pandemic of COVID-19 continues to rapidly evolve. The ultimate impact of the COVID-19 pandemic or a similar health epidemic is highly uncertain and subject to change. We do not yet know the full extent of potential delays or impacts on our business, our clinical trials, healthcare systems or the global economy as a whole. However, these effects could have a material impact on our operations, and we will continue to monitor the COVID-19 situation closely.

We or the third parties upon whom we depend may be adversely affected by earthquakes or other natural disasters and our business continuity and disaster recovery plans may not adequately protect us from a serious disaster.

Our corporate headquarters is located in the San Francisco Bay Area, which in the past has experienced both severe earthquakes and wildfires. We do not carry earthquake insurance. Earthquakes, wildfires or other natural disasters could severely disrupt our operations, and have a material adverse effect on our business, results of operations, financial condition and prospects.

If a natural disaster, power outage or other event, such as the COVID-19 pandemic, occurred that prevented us from using all or a significant portion of our headquarters or other facilities, that damaged critical infrastructure, such as our enterprise financial systems or manufacturing resource planning and enterprise quality systems, or that otherwise disrupted operations, it may be difficult or, in certain cases, impossible, for us to continue our business for a substantial period of time. The disaster recovery and business continuity plans we have in place currently are limited and are unlikely to prove adequate in the event of a serious disaster or similar event. We may incur substantial expenses as a result of the limited nature of our disaster recovery and business continuity plans, which, particularly when taken together with our lack of earthquake insurance, could have a material adverse effect on our business.

Furthermore, the third parties on which we depend, including suppliers, contract manufacturers and CROs are similarly vulnerable to natural disasters or other sudden, unforeseen and serious adverse events. If such an event were to affect our supply chain, manufacturing arrangements or interfere with a preclinical study or clinical trial, it could have a material adverse effect on our business.

Risks Related to Our Dependence on Third Parties

The commercial success of our partnered product candidates in our MAT2A (if GSK successfully exercises the Option and obtains HSR Clearance thereof), POLQ and WRN programs, which are part of the GSK Collaboration Agreement, will depend in large part on the development and marketing efforts of GSK. If GSK is unable to perform in accordance with the terms of the GSK Collaboration Agreement, our potential to generate future revenue from these programs would be significantly reduced and our business would be materially and adversely harmed.

We will have limited influence and/or control over GSK's approaches to development and commercialization of any MAT2A (if GSK exercises the Option and obtains HSR Clearance thereof), POLQ or WRN products. While we will have the right to receive potential milestone, profit share and royalty streams payable as GSK or its sublicensees advance development of such MAT2A, POLQ, or WRN products, we are likely to have limited ability to influence GSK's development and commercialization efforts. If GSK does not perform in the manner that we expect or fulfill its responsibilities in a timely manner, or at all, the clinical development, regulatory approval and commercialization efforts related to product candidates we have licensed to GSK could be delayed or terminated. Furthermore, GSK or its licensees may elect to devote greater resources to other programs that do not relate to us or our collaboration.

If we terminate the GSK Collaboration Agreement, or any program thereunder due to a material breach by GSK, we have the right to assume the responsibility at our own expense for the development of the applicable product candidates. Assumption of sole responsibility for further development will greatly increase our expenditures, and may mean we need to limit the size and scope of one or more of our programs, seek additional funding and/or choose to stop work altogether on one or more of the affected product candidates. This could result in a limited potential to generate future revenue from such product candidates, and our business could be materially and adversely affected.

We rely on third parties to conduct certain of our preclinical studies and all of our clinical trials and intend to rely on third parties in the conduct of all of our future clinical trials. If these third parties do not successfully carry out their contractual duties, fail to comply with applicable regulatory requirements or meet expected deadlines, it may delay or prevent us from seeking or obtaining regulatory approval or commercializing our current or future product candidates.

We currently do not have the ability to independently conduct preclinical studies that comply with the regulatory requirements known as good laboratory practice, or GLP, requirements. We also do not currently have the ability to independently conduct any clinical trials. The FDA and regulatory authorities in other jurisdictions require us to comply with regulations and standards, commonly referred to as GCP, requirements for conducting, monitoring, recording and reporting the results of clinical trials, in order to ensure that the data and results are scientifically credible and accurate and that the clinical trial patients are adequately informed of the potential risks of participating in clinical trials. We rely on medical institutions, clinical investigators, contract laboratories and other third parties, such as CROs, to conduct GLP-compliant preclinical studies and GCP-compliant clinical trials on our product candidates properly and on time. The third parties with

whom we contract for execution of our GLP-compliant preclinical studies and our GCP-compliant clinical trials play a significant role in the conduct of these studies and trials and the subsequent collection and analysis of data. These third parties are not our employees and, except for restrictions imposed by our contracts with such third parties, we have limited ability to control the amount or timing of resources that they devote to our programs. Although we rely on these third parties to conduct our GLP-compliant preclinical studies and GCP-compliant clinical trials, we remain responsible for ensuring that each of our GLP preclinical studies and clinical trials is conducted in accordance with its investigational plan and protocol and applicable laws and regulations, and our reliance on the CROs does not relieve us of our regulatory responsibilities.

Many of the third parties with whom we contract may also have relationships with other commercial entities, including our competitors, for whom they may also be conducting clinical trials or other drug development activities that could harm our competitive position. Further, some of these agreements may also be terminated by such third parties on short notice, or under certain circumstances, including our insolvency. If the third parties conducting our preclinical studies or our clinical trials do not adequately perform their contractual duties or obligations, experience significant business challenges, disruptions or failures, do not meet expected deadlines, terminate their agreements with us or need to be replaced, or if the quality or accuracy of the data they obtain is compromised due to their failure to adhere to our protocols or to GCPs, or for any other reason, we may need to enter into new arrangements with alternative third parties. This could be difficult, costly or impossible, and our preclinical studies or clinical trials may need to be extended, delayed, terminated or repeated. As a result, we may not be able to obtain regulatory approval in a timely fashion, or at all, for the applicable product candidate, and our business, financial position, results of operations and prospects may be adversely affected.

We rely on third parties for the manufacture of our product candidates for preclinical and clinical development and expect to continue to do so for the foreseeable future. This reliance on third parties increases the risk that we will not have sufficient quantities of our product candidates or products or such quantities at an acceptable cost, which could delay, prevent or impair our development or commercialization efforts.

We do not own or operate manufacturing facilities and have no plans to build our own clinical or commercial scale manufacturing capabilities. We rely, and expect to continue to rely, on third parties for the manufacture of our product candidates and related raw materials for preclinical and clinical development, as well as for commercial manufacture of any future approved products. The facilities used by third-party manufacturers to manufacture our product candidates must be approved by the FDA pursuant to inspections that will be conducted after we submit our NDA to the FDA. We do not control the manufacturing process of, and are completely dependent on, third-party manufacturers for compliance with cGMP requirements for manufacture of drug products. If these third-party manufacturers cannot successfully manufacture material that conforms to our specifications and the strict regulatory requirements of the FDA or others, including requirements related to the manufacturing of high potency compounds, they will not be able to secure and/or maintain regulatory approval for their manufacturing facilities. These third-party manufacturers may be delayed in their manufacture or shipment of our product candidates due to the COVID-19 pandemic. Additionally, our ability to audit these third-party manufacturers for compliance with cGMP requirements and our specifications may be hindered or delayed due to the COVID-19 pandemic.

In addition, we have no control over the ability of third-party manufacturers to maintain adequate quality control, quality assurance and qualified personnel. If the FDA or a comparable foreign regulatory authority does not approve these facilities for the manufacture of our product candidates or if it withdraws any such approval in the future, we may need to find alternative manufacturing facilities, which would significantly impact our ability to develop, obtain regulatory approval for or market our product candidates, if approved. Our failure, or the failure of our third-party manufacturers, to comply with applicable regulations could result in sanctions being imposed on us, including clinical holds, fines, injunctions, civil penalties, delays, suspension or withdrawal of approvals, seizures or recalls of product candidates or products, operating restrictions and criminal prosecutions, any of which could significantly and adversely affect supplies of our products.

In addition, we may be unable to establish or renew any agreements with third-party manufacturers or to do so on acceptable terms. Even if we are able to establish agreements with third-party manufacturers, reliance on third-party manufacturers entails additional risks, including:

- failure of third-party manufacturers to comply with regulatory requirements and maintain quality assurance;
- breach of the manufacturing agreement by the third party;
- failure to manufacture our product according to our specifications;
- failure to manufacture our product according to our schedule or at all;
- misappropriation of our proprietary information, including our trade secrets and know-how; and
- termination or nonrenewal of the agreement by the third party at a time that is costly or inconvenient for us.

Our product candidates and any products that we may develop may compete with other product candidates and products for access to manufacturing facilities. There are a limited number of manufacturers that operate under cGMP regulations and that might be capable of manufacturing for us, particularly if the COVID-19 pandemic continues or worsens.

Any performance failure on the part of our existing or future manufacturers could delay clinical development or marketing approval, and any related remedial measures may be costly or time-consuming to implement. We do not currently have arrangements in place for redundant supply or a second source for all required raw materials used in the manufacture of our product candidates. If our current third-party manufacturers cannot perform as agreed, we may be required to replace such manufacturers and we may be unable to replace them on a timely basis or at all.

We rely on, and in the future may rely on, third-party databases and collaborations with third parties to inform patient selection and drug target identification for our existing product candidates and any future product candidates and for the supply of biomarker companion diagnostics.

We are using bioinformatics, including data analytics, biostatistics, and computational biology, to identify new target and biomarker opportunities. As part of this approach, we interrogate public and proprietary databases comprising human tumor genetic information and specific cancer-target dependency networks. We rely on these databases and data analytics for identifying or validating some of our biomarker-target relationships and access to these databases may not continue to be available publicly or through a proprietary subscription on acceptable terms.

Many of our precision medicine targeted therapeutic product candidates also rely on the availability and use of commercially available tumor diagnostics panels or data on the prevalence of our target patient population to inform the patient selection and drug target identification for our product candidates. In cases where such biomarker diagnostic is not already commercially available, we expect to establish strategic collaborations for the clinical supply and development of companion diagnostics. If these diagnostics are not able to be developed, or if commercial tumor profiling panels are not able to be updated to include additional tumor-associated genes, or if clinical oncologists do not incorporate molecular or genetic sequencing into their clinical practice, we may not be successful in developing our existing product candidates or any future product candidates.

We depend on third-party suppliers for key materials required for the production of our product candidates, and the loss of these third-party suppliers or their inability to supply us with adequate materials could harm our business.

We rely on third-party suppliers for certain materials, such as starting reagents, required for the production of our product candidates and/or for certain materials and assays, such as diagnostics, for clinical and commercial use of our product candidates. Our dependence on these third-party suppliers and the challenges we may face in obtaining adequate supplies of materials involve several risks, including limited control over pricing, availability, quality and delivery schedules. As a small company, our negotiation leverage is limited and we are likely to get lower priority than our competitors that are larger than we are. We cannot be certain that our suppliers will continue to provide us with the quantities of these raw materials that we require or satisfy our anticipated specifications and quality requirements. Any supply interruption in limited or sole sourced raw materials could materially harm our ability to manufacture our product candidates until a new source of supply, if any, could be identified and qualified. We may be unable to find a sufficient alternative supply channel in a reasonable time or on commercially reasonable terms. Any performance failure on the part of our suppliers could delay the development and potential commercialization of our product candidates, including limiting supplies necessary for clinical trials and regulatory approvals, which would have a material adverse effect on our business.

Additionally, the facilities to manufacture our product candidates must be the subject of a satisfactory inspection before the FDA or other regulatory authorities approve an NDA or grant a marketing authorization for the product candidate manufactured at that facility. We will depend on these third-party manufacturing partners for compliance with the FDA's requirements for the manufacture of our finished products. If our manufacturers cannot successfully manufacture material that conforms to our specifications and the FDA's and other regulatory authorities' cGMP requirements, our product candidates will not be approved or, if already approved, may be subject to recalls.

Furthermore, certain of the third-party suppliers on which we rely are based in the PRC. The evolving trade dispute between the PRC and the United States has resulted in the imposition of significant tariffs on certain imports from the PRC. Any deterioration of the relationship between the United States and the PRC, or the imposition of more stringent export controls or tariffs applicable to our suppliers in the PRC, could adversely affect our ability to obtain the raw materials required for the manufacture of our product candidates, and therefore adversely affect our business, financial condition, results of operations and prospects.

Reliance on third-party manufacturers entails risks to which we would not be subject if we manufactured the product candidates ourselves, including:

- the possibility of a breach of the manufacturing agreements by the third parties because of factors beyond our control;
- the possibility of termination or nonrenewal of the agreements by the third parties before we are able to arrange for a qualified replacement third-party manufacturer; and
- the possibility that we may not be able to secure a manufacturer or manufacturing capacity in a timely manner and on satisfactory terms in order to meet our manufacturing needs.

Any of these factors could cause the delay of approval or commercialization of any products, cause us to incur higher costs or prevent us from commercializing any products successfully. Furthermore, if any of our product candidates are approved and contract manufacturers fail to deliver the required commercial quantities of finished product on a timely basis and at commercially reasonable prices, and we are unable to find one or more replacement manufacturers capable of production at a substantially equivalent cost, in substantially equivalent volumes and quality and on a timely basis, we would likely be unable to meet demand for our products and could lose potential revenue. It may take several years to establish an alternative source of supply for our product candidates and to have any such new source approved by the FDA or any other relevant regulatory authority.

If we fail to comply with our obligations under our license agreement with Novartis, we could lose license rights that are important to our business.

Our license agreement with Novartis provides that we must use commercially reasonable efforts to obtain regulatory approval for a product candidate using the licensed compound. The agreement further imposes an obligation to make various milestone payments and royalty payments as well as other obligations on us. If we materially breach the terms of the license agreement and fail to cure such breach within 90 days of being notified of the breach, then Novartis may terminate the license agreement. In addition, Novartis has the right to terminate on our insolvency. If the agreement is terminated, then we will not be able to further develop or commercialize, as the case may be, IDE196 or any future related product candidates.

Furthermore, any dispute with Novartis may result in the delay or termination of the research, development or commercialization of IDE196 or any future related product candidates, and may result in costly litigation or arbitration that diverts management attention and resources away from our day-to-day activities, which may adversely affect our business, financial condition, results of operations and prospects.

Our existing collaboration arrangements and any collaboration arrangements that we may enter into in the future may not be successful, which could adversely affect our ability to develop and commercialize our product candidates or diagnostics associated with such product candidates.

In the future, we may seek to enter into additional collaboration arrangements for the development or commercialization of certain of our product candidates or diagnostics for biomarkers associated with our product candidates. To the extent that we decide to enter into additional collaboration agreements in the future, we may face significant competition in seeking appropriate collaborators. Moreover, collaboration arrangements are complex and time-consuming to negotiate, document, implement and maintain and challenging to manage. We may not be successful in our efforts to prudently manage our existing collaborations or to enter new ones should we chose to do so. The terms of new collaborations or other arrangements that we may establish may not be favorable to us.

The success of our collaboration arrangements, including our GSK Collaboration Agreement, will depend heavily on the efforts and activities of our collaborators. Collaborations are subject to numerous risks, which may include risks that:

- collaborators may have significant discretion in determining the efforts and resources that they will apply to collaborations;
- collaborators may not pursue development and commercialization of our product candidates or may elect not to continue or renew development or commercialization programs based on clinical trial results, changes in their strategic focus due to their acquisition of competitive products or their internal development of competitive products, availability of funding or other external factors, such as a business combination that diverts resources or creates competing priorities;

- collaborators may delay clinical trials, provide insufficient funding for a clinical trial program, stop a clinical trial, abandon a product candidate, repeat or conduct new clinical trials or require a new formulation of a product candidate for clinical testing;
- collaborators could independently develop, or develop with third parties, products that compete directly or indirectly with our products or product candidates;
- a collaborator with marketing, manufacturing and distribution rights to one or more products may not commit sufficient resources to or otherwise not perform satisfactorily in carrying out these activities;
- we could grant exclusive rights to our collaborators that would prevent us from collaborating with others;
- collaborators may not properly maintain or defend our intellectual property rights or may use our intellectual property or proprietary information in a way that gives rise to actual or threatened litigation that could jeopardize or invalidate our intellectual property or proprietary information or expose us to potential liability;
- disputes may arise between us and a collaborator that cause the delay or termination of the research, development or commercialization of our current or future product candidates or that results in costly litigation or arbitration that diverts management attention and resources;
- collaborations may be terminated, which may result in a need for additional capital to pursue further development or commercialization of the applicable current or future product candidates;
- collaborators may own or co-own intellectual property covering products that result from our collaboration with them, and in such cases, we would not have the exclusive right to develop or commercialize such intellectual property;
- disputes may arise with respect to the ownership of any intellectual property developed pursuant to our collaborations; and
- a collaborator's sales and marketing activities or other operations may not be in compliance with applicable laws resulting in civil or criminal proceedings.

Risks Related to Commercialization of Our Product Candidates

Even if we receive regulatory approval for any product candidate, we will be subject to ongoing regulatory obligations and continued regulatory review, which may result in significant additional expense. Additionally, our product candidates, if approved, could be subject to labeling and other restrictions on marketing or withdrawal from the market, and we may be subject to penalties if we fail to comply with regulatory requirements or if we experience unanticipated problems with our product candidates, when and if any of them are approved.

If one of our product candidates is approved, it will be subject to ongoing regulatory requirements for manufacturing, labeling, packaging, storage, advertising, promotion, sampling, record-keeping, conduct of post-marketing studies, and submission of safety, efficacy, and other post-market information, including both federal and state requirements in the United States and requirements of comparable foreign regulatory authorities.

For example, the FDA may impose significant restrictions on a product's indicated uses or marketing or impose ongoing requirements for potentially costly and time-consuming post-approval studies, post-market surveillance or clinical trials to monitor the safety and efficacy of the product candidate. The FDA may also require a REMS as a condition of approval of our product candidates, which could include requirements for a medication guide, physician communication plans or additional elements to ensure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. In addition, if the FDA or a comparable foreign regulatory authority approves our product candidates, the manufacturing processes, labeling, packaging, distribution, AE reporting, storage, advertising, promotion, import, export and recordkeeping for our product candidates will be subject to extensive and ongoing regulatory requirements. These requirements include submissions of safety and other post-marketing information and reports, registration, as well as continued compliance with cGMPs and GCP requirements for any clinical trials that we conduct post-approval. Later discovery of previously unknown problems with our product candidates, including AEs of unanticipated severity or frequency, or with our third-party manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may result in, among other things:

- suspension or withdrawal of regulatory approval, restrictions on the marketing or manufacturing of our product candidates, withdrawal of the product from the market, or voluntary or mandatory product recalls;
- restrictions on product distribution or use, or requirements to conduct post-marketing studies or additional clinical trials;

- suspension of any of our ongoing clinical trials;
- fines, restitutions, disgorgement of profits or revenues, warning letters, untitled letters or holds on clinical trials;
- refusal by the FDA to approve pending applications or supplements to approved applications filed by us or suspension or revocation of approvals;
- product seizure or detention, or refusal to permit the import or export of our product candidates; and
- injunctions or the imposition of civil or criminal penalties.

The occurrence of any event or penalty described above may inhibit our ability to commercialize any future approved product and generate revenue and could require us to expend significant time and resources in response and could generate negative publicity.

In addition, if any of our product candidates is approved, our product labeling, advertising and promotion will be subject to regulatory requirements and continuing regulatory review. The FDA strictly regulates the promotional claims that may be made about drug products. In particular, a product may not be promoted for uses that are not approved by the FDA as reflected in the product's approved labeling. If we receive marketing approval for a product, physicians may nevertheless prescribe it to their patients in a manner that is inconsistent with the approved label. If we are found to have promoted such off-label uses, we may become subject to significant liability. The FDA and other agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses, and a company that is found to have improperly promoted off-label uses may be subject to significant sanctions. The federal government has levied large civil and criminal fines against companies for alleged improper promotion and has enjoined several companies from engaging in off-label promotion. The FDA has also requested that companies enter into consent decrees or permanent injunctions under which specified promotional conduct is changed or curtailed.

The FDA's and other regulatory authorities' policies may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained and we may not achieve or sustain profitability.

We also cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative or executive action, either in the United States or abroad. For example, the results of the 2020 U.S. presidential election may impact our business and industry. Namely, the Trump Administration took several executive actions, including the issuance of a number of Executive Orders, that could impose significant burdens on, or otherwise materially delay, the FDA's ability to engage in routine regulatory and oversight activities such as implementing statutes through rulemaking, issuance of guidance, and review and approval of marketing applications. It is difficult to predict whether or how these requirements will be implemented and whether or how they will be rescinded or replaced under the Biden administration. The policies and priorities of the new administration are unknown and could materially impact the regulation of our product candidates. If executive actions impose constraints on FDA's ability to engage in oversight and implementation activities in the normal course, our business may be negatively impacted.

The incidence and prevalence of our target patient populations are estimations. If the market opportunities for our product candidates are smaller than we estimate, our business, financial position, results of operations and prospects may be harmed.

We rely on various sources, including published literature and public or proprietary databases, to ascertain an estimate of the number of patients having particular genetic alterations, such as mutations, deletions or fusions, across various tissue-type specific indications. The determinable prevalence may vary depending on the source and quality of the underlying data and in some cases, insufficient data or poorly curated data may impact our ability to accurately estimate the prevalence of our target patient populations for each indication and in the aggregate across multiple indications both in the clinical trial setting, as well as in the commercial setting, if our product is approved. If the market opportunities for our product candidates are smaller than we estimate, our business, financial position, results of operations and prospects may be harmed. In addition, upon treatment with our product candidates, patients may have or develop resistance to our product candidates, reducing the addressable patient population and the duration of treatment.

Even if our product candidates or any future product candidate obtains regulatory approval, they may fail to achieve the broad degree of physician and patient adoption and use necessary for commercial success.

Even if our product candidates or any future product candidate receives FDA or other regulatory approvals, the commercial success of any product will depend significantly on the broad adoption and use of the resulting product by physicians and patients for approved indications. For a variety of reasons, including among other things, competitive factors, pricing or physician preference, reimbursement by insurers, the degree and rate of physician and patient adoption of any products, if approved, will depend on a number of factors, including:

- the clinical indications for which the product is approved and patient demand for approved products that treat those indications;
- the safety and efficacy of our product as compared to other available therapies;
- the availability of companion diagnostics for biomarkers associated with our product candidates or any other future product candidates;
- the time required for manufacture and release of our products;
- the availability of coverage and adequate reimbursement from managed care plans, private insurers, government payors (such as Medicare and Medicaid) and other third-party payors for any of our products that may be approved;
- acceptance by physicians, operators of hospitals and clinics and patients of the product as a safe and effective treatment;
- physician and patient willingness to adopt a new therapy over other available therapies for a particular indication;
- proper training and administration of our product candidates by physicians and medical staff;
- patient satisfaction with the results and administration of our product candidates and overall treatment experience, including, for example, the convenience of any dosing regimen;
- the cost of treatment with our product candidates in relation to alternative treatments and reimbursement levels, if any, and willingness to pay for the product, if approved, on the part of insurance companies and other third-party payors, physicians and patients;
- the prevalence and severity of side effects;
- limitations or warnings contained in the FDA-approved labeling for our products;
- the willingness of physicians, operators of hospitals and clinics and patients to utilize or adopt our products as a solution;
- any FDA requirement for a REMS;
- the effectiveness of our sales, marketing and distribution efforts;
- adverse publicity about our products or favorable publicity about competitive products; and
- potential product liability claims.

We cannot assure you that our current or future product candidates, if approved, will achieve broad market acceptance among physicians and patients. Any failure by our product candidates that obtain regulatory approval to achieve market acceptance or commercial success would adversely affect our business, financial condition, results of operations and prospects.

The successful commercialization of any products will depend in part on the extent to which governmental authorities, private health insurers, managed care plans and other third-party payors provide coverage, adequate reimbursement levels and implement pricing policies favorable for any products. Failure to obtain or maintain coverage and adequate reimbursement for products, if approved, could limit our ability to market those products and decrease our ability to generate revenue.

The availability of coverage and adequacy of reimbursement by governmental healthcare programs, such as Medicare and Medicaid, private health insurers, managed care plans and other third-party payors are essential for most patients to be able to afford medical services and pharmaceutical products such as our product candidates that receive FDA approval. Our ability to achieve acceptable levels of coverage and reimbursement by third-party payors for our products will have an effect on our ability to successfully commercialize our product candidates.

No uniform policy for coverage and reimbursement for products exists among third-party payors in the United States. Therefore, coverage and reimbursement for products can differ significantly from payor to payor. The process for determining whether a third-party payor will provide coverage for a product typically is separate from the process for setting the price of such product or for establishing the reimbursement rate that the payor will pay for the product once coverage is approved. Third-party payors may limit coverage to specific products on an approved list, also known as a formulary, which might not include all of the FDA-approved products for a particular indication, or place products at certain formulary levels that result in lower reimbursement levels and higher cost-sharing obligation imposed on patients. One third-party payor's decision to cover a particular medical product or service does not ensure that other payors will also provide coverage for the medical product or service. As a result, the coverage determination process will often require us to provide scientific and clinical support for the use of our products to each payor separately and can be a time-consuming process, with no assurance that coverage and adequate reimbursement will be applied consistently or obtained in the first instance. We cannot be sure that coverage will be available for any product that we may develop. A decision by a third-party payor not to cover any of our product candidates could reduce physician utilization of our products once approved and adversely affect our business, financial condition, results of operations and prospects.

Assuming there is coverage for our products, if any, by a third-party payor, the resulting reimbursement payment rates may not be adequate or may require co-payments that patients find unacceptably high. Furthermore, rules and regulations regarding reimbursement change frequently, in some cases on short notice, and we believe that changes in these rules and regulations are likely.

Third-party payors increasingly are challenging prices charged for pharmaceutical products and services, and many third-party payors may refuse to provide coverage and reimbursement for particular drugs or biologics when an equivalent generic drug, biosimilar or a less expensive therapy is available. It is possible that a third-party payor may consider our product candidates as substitutable and only offer to reimburse patients for the less expensive product. Even if we show improved efficacy or improved convenience of administration with our products, pricing of other third-party therapeutics may limit the amount we will be able to charge for our products. These third-party payors may deny or revoke the reimbursement status of our products, if approved, or establish prices for our products at levels that are too low to enable us to realize an appropriate return on our investment. If reimbursement is not available, is decreased or eliminated in the future, or is available only at limited levels, we may not be able to successfully commercialize our products and may not be able to obtain a satisfactory financial return on our products.

Outside the United States, international operations are generally subject to extensive governmental price controls and other market regulations, and we believe the increasing emphasis on cost-containment initiatives in Europe and other countries has and will continue to put pressure on the pricing and usage of our products, if any. In many countries, the prices of medical products are subject to varying price control mechanisms as part of national health systems. Other countries allow companies to fix their own prices for medical products but monitor and control company profits. Additional foreign price controls or other changes in pricing regulation could restrict the amount that we are able to charge for our products. Accordingly, in markets outside the United States, the reimbursement for our products may be reduced compared with the United States and may be insufficient to generate commercially reasonable revenue and profits.

Moreover, increasing efforts by governmental and third-party payors in the United States and abroad to cap or reduce healthcare costs may cause such organizations to limit both coverage and the level of reimbursement for newly approved products, and, as a result, they may not cover or provide adequate payment for our products. We expect to experience pricing pressures in connection with the sale of our product candidates due to the trend toward managed health care, the increasing influence of health maintenance organizations and additional legislative changes. The downward pressure on healthcare costs in general, particularly prescription drugs and biologics and surgical procedures and other treatments, has become intense. As a result, increasingly high barriers are being erected to the entry of new products.

If product liability lawsuits are brought against us, we may incur substantial liabilities and may be required to limit commercialization of any products.

We face an inherent risk of product liability as a result of the planned clinical trials of our product candidates and will face an even greater risk if we commercialize any products. For example, we may be sued if any product we develop allegedly causes injury or is found to be otherwise unsuitable during product testing, manufacturing, marketing or sale. Any such product liability claims may include allegations of defects in manufacturing, defects in design, a failure to warn of dangers inherent in the product, negligence, strict liability, and a breach of warranty. Claims could also be asserted under state consumer protection acts. If we cannot successfully defend ourselves against product liability claims, we may incur substantial liabilities or be required to limit commercialization of any products. Even successful defense would require significant financial and management resources. Regardless of the merits or eventual outcome, liability claims may result in:

- decreased demand for any products;

- injury to our reputation;
- withdrawal of clinical trial participants;
- costs to defend the related litigation;
- a diversion of management's time and our resources;
- substantial monetary awards to clinical trial participants or patients;
- regulatory investigations, product recalls, withdrawals or labeling, marketing or promotional restrictions;
- loss of revenue; and
- the inability to commercialize any products.

Our inability to obtain and maintain sufficient product liability insurance at an acceptable cost and scope of coverage to protect against potential product liability claims could prevent or inhibit the commercialization of any products. Although we have obtained and intend to maintain product liability insurance covering our clinical trials, any claim that may be brought against us could result in a court judgment or settlement in an amount that is not covered, in whole or in part, by our insurance or that is in excess of the limits of our insurance coverage. Our insurance policies also have various exclusions and deductibles, and we may be subject to a product liability claim for which we have no coverage. We will have to pay any amounts awarded by a court or negotiated in a settlement that exceed our coverage limitations or that are not covered by our insurance, and we may not have, or be able to obtain, sufficient funds to pay such amounts. Moreover, in the future, we may not be able to maintain insurance coverage at a reasonable cost or in sufficient amounts to protect us against losses. If and when we obtain approval for marketing any of our product candidates, we intend to expand our insurance coverage to include the sale of such product candidate; however, we may be unable to obtain this liability insurance on commercially reasonable terms or at all.

Risks Related to Intellectual Property

Our success depends on our ability to obtain and maintain protection for our intellectual property and our proprietary technologies and to avoid infringing the rights of others.

Our commercial success depends in part on our ability to obtain and maintain patent, trade secret and other intellectual property protection for our product candidates and proprietary technologies as well as our ability to operate without infringing upon the proprietary rights of others.

We and our licensors have applied, and we intend to continue applying, for patents covering important aspects of our product candidates, proprietary technologies and their uses as we deem appropriate. However, the patent prosecution process is expensive, time-consuming and complex, and we may not be able to apply for patents on certain aspects of our current or future product candidates and proprietary technologies in a timely fashion, at a reasonable cost, in all jurisdictions, or at all.

Our patent applications cannot be enforced against third parties practicing the inventions claimed in such applications unless, and until, patents issue from such applications, and then only to the extent the issued claims cover the invention as claimed. The patent application process is subject to numerous risks and uncertainties, and there can be no assurance that we or any of our actual or potential future collaborators or licensors will be successful in protecting our product candidates and proprietary technologies by obtaining and defending patents. These risks and uncertainties include the following:

- the United States Patent Office, or USPTO, and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other requirements during the patent process, the noncompliance with which can result in abandonment or lapse of a patent or patent application, and partial or complete loss of patent rights in the relevant jurisdiction;
- patent applications may not result in any patents being issued;
- our competitors, many of whom have substantially greater resources than we do and many of whom have made significant investments in competing technologies, may seek or may have already obtained or licensed patents that will limit, interfere with or eliminate our ability to make, use and sell our product candidates;

- other parties may have designed or may design around our claims or developed technologies that may be related or competitive to our platform, may have filed or may file patent applications and may have received or may receive patents that overlap or conflict with our patent applications, either by claiming the same methods or devices or by claiming subject matter that could dominate our patent position;
- any successful opposition to any patents owned by or licensed to us could deprive us of rights necessary for the practice of our technologies or the successful commercialization of any product candidates that we may develop;
- because patent applications in the United States and most other countries are confidential for a period of time after filing, we cannot be certain that we or our licensors were the first to file any patent application related to our product candidates and proprietary technologies;
- an interference proceeding can be provoked by a third party or instituted by the USPTO to determine who was the first to invent any of the subject matter covered by the patent claims of our applications for any application with an effective filing date before March 16, 2013;
- there may be significant pressure on the U.S. government and international governmental bodies to limit the scope of patent protection both inside and outside the United States for disease treatments that prove successful, as a matter of public policy regarding worldwide health concerns; and
- countries other than the United States may have patent laws less favorable to patentees than those upheld by U.S. courts, allowing foreign competitors a better opportunity to create, develop and market competing product candidates.

The patent position of biopharmaceutical companies generally is highly uncertain, involves complex legal and factual questions, and has been the subject of much litigation in recent years. It is possible that we will fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection. And although we enter into non-disclosure and confidentiality agreements with parties who have access to patentable aspects of our research and development output, such as our employees, corporate collaborators, outside scientific collaborators, CROs, contract manufacturers, consultants, advisors and other third parties, any of these parties may breach such agreements and disclose such output before a patent application is filed, thereby jeopardizing our ability to seek patent protection.

The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability, and our patents or the patent rights that we license from others, may be challenged in the courts or patent offices in the United States and abroad. Once granted, patents may remain open to opposition, interference, re-examination, post-grant review, *inter partes* review, nullification or derivation action or similar proceedings in court or before patent offices in the United States or foreign jurisdictions for a given period after allowance or grant, during which time third parties can raise objections against such patents. Such challenges may result in loss of exclusivity or in patent claims being narrowed, invalidated or held unenforceable, all of which could limit our ability to stop others from using or commercializing similar or identical product candidates, or limit the duration of the patent protection of our product candidates.

The degree of future protection for our patent rights is uncertain, and we cannot ensure that:

- any of our patents, or any of our pending patent applications, if issued, or those of our licensors, will include claims having a scope sufficient to protect our product candidates;
- any of the patents we own or license will be found to ultimately be valid and enforceable if subject to challenge;
- any patents issued to us or our licensors will provide a basis for an exclusive market for any commercially viable products we may develop or will provide us with any competitive advantages;
- we will develop or in-license additional proprietary technologies that are patentable;
- the patents of others will not have an adverse effect on our business;
- our competitors do not conduct research and development activities in countries where we do not have enforceable patent rights and then use the information learned from such activities to develop competitive products for sale in our major commercial markets; and
- our commercial activities will not infringe upon the patents of others.

Our ability to enforce patent rights also depends on our ability to detect infringement. It may be difficult to detect infringers who do not advertise the components or methods that are used in connection with their products and services. Such proceedings could also provoke third parties to assert claims against us, including that some or all of the claims in one or more of our patents are invalid or otherwise unenforceable. Moreover, it may be difficult or impossible to obtain evidence of infringement in a competitor's or potential competitor's product or service. We may not prevail in any lawsuits that we initiate and the damages or other remedies awarded if we were to prevail may not be commercially meaningful. If we initiate lawsuits to protect or enforce our patents, or litigate against third-party claims, such proceedings would be expensive and would divert the attention of our management and technical personnel.

Where we obtain licenses from or collaborate with third parties, in some circumstances, we may not have the right to control the preparation, filing and prosecution of patent applications, or to maintain the patents, covering technology that we license from third parties, or such activities, if controlled by us, may require the input of such third parties. We may also require the cooperation of our licensors and collaborators to enforce any licensed patent rights, and such cooperation may not be provided. Therefore, these patents and applications may not be prosecuted and enforced in a manner consistent with the best interests of our business. Moreover, if we do obtain necessary licenses, we will likely have obligations under those licenses, and any failure to satisfy those obligations could give our licensor the right to terminate the license. Termination of a necessary license, or expiration of licensed patents or patent applications, could have a material adverse impact on our competitive position, business, financial condition, results of operations and prospects.

Furthermore, our owned and in-licensed intellectual property rights may be subject to a reservation of rights by one or more third parties. For example, the research resulting in certain of our owned and in-licensed patent rights and technology was funded in part by the U.S. government. As a result, the government may have certain rights, or march-in rights, to such patent rights and technology. When new technologies are developed with government funding, the government generally obtains certain rights in any resulting patents, including a non-exclusive license authorizing the government to use the invention for non-commercial purposes. These rights may permit the government to disclose our confidential information to third parties and to exercise march-in rights to use or allow third parties to use our licensed technology. The government can exercise its march-in rights if it determines that action is necessary because we fail to achieve practical application of the government-funded technology, because action is necessary to alleviate health or safety needs, to meet requirements of federal regulations, or to give preference to U.S. industry. In addition, our rights in such inventions may be subject to certain requirements to manufacture products embodying such inventions in the United States. Any exercise by the government of such rights could harm our competitive position, business, financial condition, results of operations, and prospects.

If we fail to obtain sufficient patent or other intellectual property protection for our product candidates or proprietary technologies or if we lose any patent or other intellectual property protection for our product candidates or proprietary technologies, our business, financial condition, results of operations and prospects could be adversely affected.

If we do not obtain patent term extension for patents covering our product candidates, our business may be materially harmed, and in any case, the terms of our patents may not be sufficient to effectively protect our product candidates and business.

Patents have a limited term. In most countries, including the United States, the expiration of a patent is generally 20 years after its first effective non-provisional filing date. However, depending upon the timing, duration and specifics of FDA marketing approval of IDE196, our other product candidates or any future product candidates, one or more of any U.S. patents we may be issued or have licensed may be eligible for limited patent term restoration under the Drug Price Competition and Patent Term Restoration Act of 1984, also known as the Hatch-Waxman Amendments.

The Hatch-Waxman Amendments permit a patent restoration term of up to five years as compensation for patent term lost during product development and the FDA regulatory review process. The Hatch-Waxman Act allows a maximum of one patent to be extended per FDA-approved product as compensation for the patent term lost during the FDA regulatory review process. A patent term extension cannot extend the remaining term of a patent beyond a total of 14 years from the date of product approval and only those claims covering such approved drug product, a method for using it or a method for manufacturing it may be extended. Patent term extension may also be available in certain foreign countries upon regulatory approval of our product candidates. However, we may not be granted an extension because of, for example, failing to apply within applicable deadlines, failing to apply prior to expiration of relevant patents or otherwise failing to satisfy applicable requirements. Moreover, the applicable time period or the scope of patent protection afforded could be less than we request. If we are unable to obtain patent term extension or restoration or the term of any such extension is less than we request, our competitors may obtain approval of competing products following our patent expiration, and our competitive position, business, financial condition, results of operations, and prospects could be harmed, possibly materially.

If there are delays in obtaining regulatory approvals or other additional delays, the period of time during which we can market our product candidates under patent protection could be further reduced. Given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such product candidates might expire before or shortly after such product candidates are commercialized. Once the patent term has expired, we may be open to competition from similar or generic products. The launch of a generic version of one of our products in particular would be likely to result in an immediate and substantial reduction in the demand for that product, which could have a material adverse effect on our business, financial condition, results of operations and prospects.

Our rights to develop and commercialize our product candidates are subject in part to the terms and conditions of licenses granted to us by others, and the patent protection, prosecution and enforcement for some of our product candidates may be dependent on our licensors.

We currently are reliant upon licenses of certain intellectual property rights and proprietary technology from third parties that are important or necessary to the development of our proprietary technology, including technology related to our product candidates. For example, we rely on our exclusive license agreement with Novartis for the clinical development of IDE196 and our option and license agreement with Cancer Research UK for the clinical development of PARG inhibitors. These licenses, and other licenses we may enter into in the future, may not provide adequate rights to use such intellectual property rights and proprietary technology in all relevant fields of use or in all territories in which we may wish to develop or commercialize technology and product candidates in the future. Licenses to additional third-party proprietary technology or intellectual property rights that may be required for our development programs may not be available in the future or may not be available on commercially reasonable terms. In that event, we may be required to expend significant time and resources to redesign our proprietary technology or product candidates or to develop or license replacement technology, which may not be feasible on a technical or commercial basis. If we are unable to do so, we may not be able to develop and commercialize technology and product candidates in fields of use and territories for which we are not granted rights pursuant to such licenses, which could harm our business, financial condition, results of operations and prospects significantly.

In some circumstances, we may not have the right to control the preparation, filing, prosecution and enforcement of patent applications, or to maintain the patents, covering technology that we license from third parties. In addition, some of our agreements with our licensors require us to obtain consent from the licensor before we can enforce patent rights, and our licensor may withhold such consent or may not provide it on a timely basis. Therefore, we cannot be certain that our licensors or collaborators will prosecute, maintain, enforce and defend such intellectual property rights in a manner consistent with the best interests of our business, including by taking reasonable measures to protect the confidentiality of know-how and trade secrets, or by paying all applicable prosecution and maintenance fees related to intellectual property registrations for any of our product candidates. We also cannot be certain that our licensors have drafted or prosecuted the patents and patent applications licensed to us in compliance with applicable laws and regulations, which may affect the validity and enforceability of such patents or any patents that may issue from such applications. This could cause us to lose rights in any applicable intellectual property that we in-license, and as a result our ability to develop and commercialize product candidates may be adversely affected and we may be unable to prevent competitors from making, using and selling competing products.

Our current licenses impose, and our future licenses likely will impose, various royalty payments, milestones, and other obligations on us. If we fail to comply with any of these obligations, we may be subject to liability, including the payment of damages, and the licensor may have the right to terminate the license. Termination by the licensor would cause us to lose valuable rights, and could prevent us from developing and commercializing our product candidates and proprietary technologies. Furthermore, if any current or future licenses terminate, or if the underlying patents fail to provide the intended exclusivity, competitors or other third parties may gain the freedom to seek regulatory approval of, and to market, products similar or identical to our planned products. Moreover, our licensors may own or control intellectual property that has not been licensed to us and, as a result, we may be subject to claims, regardless of their merit, that we are infringing or otherwise violating the licensor’s rights. In addition, while we cannot currently determine the amount of the royalty obligations we would be required to pay on sales of future products, if any, the amounts may be significant. The amount of our future royalty obligations will depend on the technology and intellectual property we use in product candidates that we successfully develop and commercialize, if any. Therefore, even if we successfully develop and commercialize product candidates, we may be unable to achieve or maintain profitability. In addition, we may seek to obtain additional licenses from our licensors and, in connection with obtaining such licenses, we may agree to amend our existing licenses in a manner that may be more favorable to the licensors, including by agreeing to terms that could enable third parties (potentially including our competitors) to receive licenses to a portion of the intellectual property rights that are subject to our existing licenses. Any of these events could have a material adverse effect on our competitive position, business, financial conditions, results of operations, and prospects.

We may fail to comply with any of our obligations under existing or future agreements pursuant to which we license or have otherwise acquired intellectual property rights or technology, which could result in the loss of rights or technology that are material to our business.

We are party to various agreements that we depend on to operate our business, including intellectual property rights relating to IDE196, in particular, our agreement with Novartis. Our rights to use currently licensed intellectual property, or intellectual property to be licensed in the future, are or will be subject to the continuation of and our compliance with the terms of these agreements. These agreements are complex, and certain provisions in such agreements may be susceptible to multiple interpretations which could lead to disputes, including but not limited to those regarding:

- the scope of rights granted under the license agreement;
- the extent to which our proprietary technology and product candidates infringe on intellectual property of the licensor that is not subject to the licensing agreement;
- the sublicensing of patent and other rights;
- diligence obligations under the license agreement and what activities satisfy those diligence obligations;
- the ownership of inventions and know-how resulting from the creation or use of intellectual property by us or our counterparties, alone or jointly;
- the scope and duration of our payment obligations;
- rights upon termination of such agreement; and
- the scope and duration of exclusivity obligations of each party to the agreement.

The resolution of any contractual interpretation dispute that may arise, if unfavorable to us, could have a material adverse effect on our business, financial condition, results of operations and prospects. Such resolution could narrow what we believe to be the scope of our rights to the relevant intellectual property or technology, increase what we believe to be our financial or other obligations under the relevant agreement or decrease the third party's financial or other obligations under the relevant agreement.

Furthermore, if disputes over intellectual property rights that we have licensed or acquired from third parties prevent or impair our ability to maintain our current license agreements on acceptable terms, we may be unable to successfully develop and commercialize the affected product candidates. If we fail to comply with our obligations under current or future license agreements, these agreements may be terminated or the scope of our rights under them may be reduced and we might be unable to develop, manufacture or market any product that is licensed under these agreements.

Third-party claims of intellectual property infringement could require us to spend significant time and money and could prevent us from selling our products.

Our commercial success depends significantly on our ability to operate without infringing the intellectual property rights of third parties. However, our research, development and commercialization activities may nonetheless be subject to claims that we infringe or otherwise violate patents or other intellectual property rights owned or controlled by third parties. Claims by third parties that we infringe their intellectual property rights may result in liability for damages or prevent or delay our developmental and commercialization efforts. We cannot assure you that our operations do not, or will not in the future, be found to infringe existing or future patents.

Other entities may have or obtain patents or proprietary rights that could limit our ability to make, use, sell, offer for sale or import our product candidates or impair our competitive position. As the biotechnology industry expands and more patents are issued, the risk increases that our product candidates may be subject to claims of infringement of the patent rights of third parties. Our competitors in both the United States and abroad, many of which have substantially greater resources and have made substantial investments in patent portfolios and competing technologies, may have applied for or obtained or may in the future apply for and obtain, patents that will prevent, limit or otherwise interfere with our ability to make, use and sell our product candidates. There is a substantial amount of litigation, both within and outside the United States, involving patent and other intellectual property rights in the biotechnology and pharmaceutical industries, including patent infringement lawsuits, interferences, oppositions, reexaminations, *inter partes* review proceedings and post-grant review proceedings before the USPTO and/or corresponding foreign patent offices. Numerous third-party U.S. and foreign issued patents and pending patent applications exist in the fields in which we are developing product candidates. There may be third-party patents or patent applications with claims to materials, formulations, methods of manufacture or methods for treatment related to the use or manufacture of our product candidates. For example, we are aware of an international patent application published as PCT WO 2017/096165 A1. If a patent issues from such patent application with claims similar to those published, our ability to commercialize a product candidate for our MAT2A program may be adversely affected if we do not obtain a license under such patent.

Furthermore, the scope of a patent claim is determined by an interpretation of the law, the written disclosure in a patent and the patent's prosecution history and can involve other factors such as expert opinion. Our analysis of these issues, including interpretation the relevance or the scope of claims in a patent or a pending application, determining applicability of such claims to our proprietary technologies or product candidates, predicting whether a third party's pending patent application will issue with claims of relevant scope, and determining the expiration date of any patent in the United States or abroad that we consider relevant may be incorrect, which may negatively impact our ability to develop and market our product candidates. We do not always conduct independent reviews of pending patent applications of and patents issued to third parties.

Additionally, patent applications in the United States and elsewhere are typically published approximately 18 months after the earliest filing for which priority is claimed, with such earliest filing date being commonly referred to as the priority date. Certain U.S. applications that will not be filed outside the United States can remain confidential until patents issue. In addition, patent applications in the United States and elsewhere can be pending for many years before issuance, or unintentionally abandoned patents or applications can be revived. Furthermore, pending patent applications that have been published can, subject to certain limitations, be later amended in a manner that could cover our technologies, our product candidates or the use of our product candidates. These applications may later result in issued patents, or the revival of previously abandoned patents, that will prevent, limit or otherwise interfere with our ability to make, use or sell our products. As a result, we may be unaware of third-party patents that may be infringed by commercialization of IDE196 or our other product candidates, and cannot be certain that we were the first to file a patent application related to a product candidate or proprietary technology. In addition, identification of third-party patent rights that may be relevant to our technology is difficult because patent searching is imperfect due to differences in terminology among patents, incomplete databases and the difficulty in assessing the meaning of patent claims.

Although no third party has asserted a claim of patent infringement against us as of December 31, 2020, others may hold proprietary rights that could prevent IDE196, our other product candidates or any future product candidates from being marketed. Any patent-related legal action against us claiming damages and seeking to enjoin commercial activities relating to our product candidates or proprietary technologies could subject us to potential liability for damages, including treble damages if we were determined to willfully infringe or attorney's fees and costs of litigation to the party whose intellectual property rights we may be found to be infringing, and require us to obtain a license to manufacture or market IDE196, our other product candidates or any future product candidates. Defense of these claims, regardless of their merit, would involve substantial litigation expense and would be time-consuming and a substantial diversion of management and employee resources from our business. We cannot predict whether we would prevail in any such actions or that any license required under any of these patents would be made available on commercially acceptable terms, if at all. Even if such licenses are available, we could incur substantial costs related to royalty payments for licenses obtained from third parties, which could negatively affect our gross margins, and the rights may be non-exclusive, which could give our competitors access to the same technology or intellectual property rights licensed to us. In addition, we cannot be certain that we could redesign our product candidates or proprietary technologies to avoid infringement, if necessary, or on a cost-effective basis. Accordingly, an adverse determination in a judicial or administrative proceeding, or the failure to obtain necessary licenses, could prevent us from developing and commercializing IDE196, our other product candidates or any future product candidates, until the asserted patent expires or is held finally invalid or not infringed in a court of law. In addition, intellectual property litigation, regardless of its outcome, may cause negative publicity or the disclosure of confidential information, and the perceived value of our product candidates or intellectual property could be diminished correspondingly.

Additionally, our collaborators, such as GSK or any third parties with which we collaborate in the future, 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 intellectual property or proprietary information or expose us to litigation or potential liability. Further, collaborators may infringe the intellectual property rights of third parties, which may expose us to litigation and potential liability. Also, we may be obligated under our agreements with our collaborators, licensors, suppliers and others to indemnify and hold them harmless for damages arising from intellectual property infringement by us. Any of the foregoing could harm our competitive position, business, financial condition, results of operations, and prospects.

We may be involved in lawsuits to protect or enforce our patents or the patents of our licensors, which could be expensive, time-consuming, and unsuccessful. Further, our issued patents could be found invalid or unenforceable if challenged.

Competitors may infringe our intellectual property rights or those of our licensors. To prevent infringement or unauthorized use, we may be required to file infringement claims, which can be expensive and time-consuming. In addition, in a patent infringement proceeding, a court or administrative tribunal may decide that a patent we own or in-license is not valid, is unenforceable and/or is not infringed. If we or any of our collaborators, such as GSK or potential future collaborators, were to initiate legal proceedings against a third party to enforce a patent directed at one of our product candidates, the defendant could counterclaim that our patent is invalid and/or unenforceable in whole or in part. In patent litigation in the United States, defendant counterclaims alleging invalidity and/or unenforceability are commonplace. Grounds for a validity challenge include an alleged failure to meet any of several statutory requirements, including lack of novelty, obviousness or non-enablement. Grounds for an unenforceability assertion could include an allegation that someone connected with prosecution of the patent withheld relevant information from the USPTO or made a misleading statement during prosecution. Third parties may also raise similar claims before the USPTO, even outside the context of litigation. Similar mechanisms for challenging the validity and enforceability of a patent exist in foreign patent agencies. The outcome following legal assertions of invalidity and unenforceability is unpredictable, and could result in the revocation, cancellation, or amendment of our patents or those of our licensors. If a defendant were to prevail on a legal assertion of invalidity and/or unenforceability, we could lose at least part, and perhaps all, of the patent protection on an affected product candidate. Such a loss of patent protection would have a material adverse impact on our business, financial condition, results of operations and prospects.

Additionally, interference or derivation proceedings provoked by third parties or brought by us or declared by the USPTO, or equivalent actions brought in foreign jurisdictions, may be necessary to determine the priority of invention with respect to our patents or patent applications or those of our licensors. Our defense of litigation or interference proceedings may fail and, even if successful, may result in substantial costs and distract our management and other employees. An unfavorable outcome could require us to cease using the covered technology or to attempt to license rights to it from the prevailing party. Our business could be harmed if the prevailing party does not offer us a license on commercially reasonable terms or at all, or if a non-exclusive license is offered and our competitors gain access to the same technology. These and other uncertainties associated with litigation could have a material adverse effect on our ability to raise the funds necessary to continue our clinical trials, continue our research programs, license necessary technology from third parties or enter into development or manufacturing partnerships that would help us bring our product candidates to market.

Even if resolved in our favor, litigation or other legal proceedings relating to our intellectual property rights may cause us to incur significant expenses, and could distract our technical and management personnel from their normal responsibilities. 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. Such litigation or proceedings could substantially increase our operating losses and reduce the resources available for development activities or any future sales, marketing or distribution activities. We may not have sufficient financial or other resources to conduct such litigation or proceedings adequately. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their greater financial resources. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could compromise our ability to compete in the marketplace.

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. There could also be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a material adverse effect on the price of our common stock. Any of the foregoing could harm our business, financial condition, results of operations and prospects.

We may be subject to claims that we have wrongfully hired an employee, consultant, advisor or other third party from a competitor or that we or our employees, consultants, advisors or other third parties have wrongfully used or disclosed alleged confidential information or trade secrets of their former employers.

As is common in the biotechnology and biopharmaceutical industries, in addition to our employees, we engage the services of consultants, advisors and other third parties to assist us in the development of our product candidates. Many of these individuals, and many of our employees, were previously employed at, or may have previously provided or may be currently providing consulting services to, other biotechnology or biopharmaceutical companies including our competitors or potential competitors. Although we try to ensure that individuals working for or collaborating with us do not use the proprietary information or know-how of others in their work for us, we may become subject to claims that we, our employees, consultants, advisors or other third parties inadvertently or otherwise used or disclosed trade secrets or other information

proprietary to their former employers or their former or current clients. We may also be subject to claims that patents and applications we have filed to protect inventions of our employees, consultants advisors or other third parties, even those related to one or more of our product candidates, are rightfully owned by their former or concurrent employer. Litigation may be necessary to defend against these claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, which could adversely affect our competitive position, business, financial condition, results of operations, and prospects. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to our management team.

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

Our agreements with employees and our personnel policies provide that any inventions conceived by an individual in the course of rendering services to us shall be our exclusive property. Although our policy is to have all such individuals complete these agreements, we may not obtain these agreements in all circumstances, and individuals with whom we have these agreements may not comply with their terms. The assignment of intellectual property may not be self-executing and despite such agreement, such inventions may become assigned to third parties. In the event of unauthorized use or disclosure of our trade secrets or proprietary information, these agreements, even if obtained, may not provide meaningful protection, particularly for our trade secrets or other confidential information. We may be subject to claims that former employees, consultants, advisors or other third parties have an ownership interest in our patents or other intellectual property. In addition, we may face claims by third parties that our agreements with employees, consultants, advisors or other third parties obligating them to assign intellectual property to us are ineffective or in conflict with prior or competing contractual obligations of assignment, which could result in ownership disputes regarding intellectual property we have developed or will develop and interfere with our ability to capture the commercial value of such intellectual property. Litigation may be necessary to defend against these and other claims challenging inventorship or ownership. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights. Such an outcome could have a material adverse effect on our competitive position, business, financial condition, results of operations, and prospects. Even if we are successful in defending against such claims, litigation could result in substantial costs and distraction to management and other employees.

If we are unable to protect the confidentiality of our trade secrets, our business and competitive position would be harmed.

We rely on the protection of our trade secrets, including unpatented know-how, technology and other proprietary information. We have taken steps to protect our trade secrets and unpatented know-how, including entering into confidentiality agreements with third parties, and confidential information and invention assignment agreements with employees, consultants, advisors and appropriate third parties. In addition to contractual measures, we try to protect the confidential nature of our proprietary information using commonly accepted physical and technological security measures. Despite these efforts, we cannot provide any assurances that all such agreements have been duly executed, and any of these 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. In addition, such security measures may not provide adequate protection for our proprietary information, for example, in the case of misappropriation of a trade secret by an employee, consultant, customer or third party with authorized access. Our security measures may not prevent an employee, consultant, advisor or other third party from misappropriating our trade secrets and providing them to a competitor, and recourse we take against such misconduct may not provide an adequate remedy to protect our interests fully. Monitoring unauthorized uses and disclosures is difficult, and we do not know whether the steps we have taken to protect our proprietary technologies will be effective.

Unauthorized parties may also attempt to copy or reverse engineer certain aspects of our products that we consider proprietary. We may not be able to obtain adequate remedies in the event of such unauthorized use. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret can be difficult, expensive and time-consuming, and the outcome is unpredictable. Even though we use commonly accepted security measures, the criteria for protection of trade secrets can vary among different jurisdictions.

Enforcing a claim that a party illegally disclosed or misappropriated a trade secret is difficult, expensive and time-consuming, and the outcome is unpredictable. Because from time to time we expect to rely on third parties in the development, manufacture, and distribution of our products and provision of our services, we must, at times, share trade secrets with them. In addition, some courts inside and outside the United States are less willing or unwilling to protect trade secrets. Trade secrets will over time be disseminated within the industry through independent development, the publication of journal articles and the movement of personnel skilled in the art from company to company or academic to industry scientific positions. Though our agreements with third parties typically restrict the ability of our advisors, employees, collaborators, licensors, suppliers, third-party contractors and consultants to publish data potentially relating to our trade secrets, our agreements may contain certain limited publication rights. In addition, if any of our trade secrets were to be lawfully obtained

or independently developed by a competitor, 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. Despite employing the contractual and other security precautions described above, the need to share trade secrets increases the risk that such trade secrets become known by our competitors, are inadvertently incorporated into the technology of others, or are disclosed or used in violation of these agreements. If any of these events occurs or if we otherwise lose protection for our trade secrets, the value of this information may be greatly reduced and our competitive position, business, financial condition, results of operations, and prospects would be harmed. If we do not apply for patent protection prior to such publication or if we cannot otherwise maintain the confidentiality of our proprietary technology and other confidential information, then our ability to obtain patent protection or to protect our trade secret information may be jeopardized.

Intellectual property rights do not necessarily address all potential threats to our competitive advantage.

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 precision medicines that are similar to ours but that are not covered by the claims of the patents that we own or have exclusively licensed;
- we or our licensors or future collaborators might not have been the first to make the inventions covered by the issued patents or pending patent applications that we own or have exclusively licensed;
- we or our licensors or future collaborators might not have been the first to file patent applications covering certain of our inventions;
- others may independently develop similar or alternative technologies or duplicate any of our technologies without infringing our intellectual property rights;
- 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; and
- we may not develop additional proprietary technologies that are patentable;

Should any of these events occur, they could significantly harm our business, results of operations and prospects.

Risks Related to Government Regulation

Enacted and future healthcare legislation may increase the difficulty and cost for us to obtain marketing approval of and commercialize our product candidates and may affect the prices we may set.

In the United States, the EU and other jurisdictions, there have been, and we expect there will continue to be, a number of legislative and regulatory changes and proposed changes to the healthcare system that could affect our future results of operations. In particular, there have been and continue to be a number of initiatives at the U.S. federal and state levels that seek to reduce healthcare costs and improve the quality of healthcare. For example, in March 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, or collectively the ACA, was enacted, which substantially changed the way healthcare is financed by both governmental and private payors. Among the provisions of the ACA, those of greatest importance to the pharmaceutical and biotechnology industries include the following:

- an annual, non-deductible fee payable by any entity that manufactures or imports certain branded prescription drugs and biologic agents (other than those designated as orphan drugs), which is apportioned among these entities according to their market share in certain government healthcare programs;
- an increase to the minimum Medicaid rebates owed by manufacturers under the Medicaid Drug Rebate Program and an extension the rebate program to individuals enrolled in Medicaid managed care organizations;
- a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted or injected;
- expansion of eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to certain individuals with income at or below 133% of the federal poverty level, thereby potentially increasing a manufacturer’s Medicaid rebate liability;

- a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 70% point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer's outpatient drugs to be covered under Medicare Part D;
- a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research; and
- establishment of a Center for Medicare Innovation at the Centers for Medicare & Medicaid Services, or CMS, to test innovative payment and service delivery models to lower Medicare and Medicaid spending, potentially including prescription drug spending.

Since its enactment, there have been judicial and congressional challenges to certain aspects of the ACA. By way of example, the Tax Cuts and Jobs Act of 2017, or the Tax Act, which includes a provision that entered into effect on January 1, 2019, that repeals the tax-based shared responsibility payment imposed by the ACA on certain individuals who fail to maintain qualifying health coverage for all or part of a year that is commonly referred to as the "individual mandate." On December 14, 2018, a U.S. District Court Judge in the Northern District of Texas ruled that the individual mandate is a critical and inseverable feature of the ACA, and therefore, because it was repealed as part of the Tax Act, the remaining provisions of the ACA are invalid as well. On December 18, 2019, the U.S. Court of Appeals for the 5th Circuit upheld the District Court's decision that the individual mandate was unconstitutional but remanded the case back to the District Court to determine whether the remaining provisions of the ACA are invalid as well. The U.S. Supreme Court is currently reviewing the case, although it is unclear how the Supreme Court will rule. It is also unclear how other efforts, if any, to challenge, repeal or replace the ACA will impact the ACA or our business.

In addition, other legislative changes have been proposed and adopted in the United States since the ACA was enacted. In August 2011, the Budget Control Act of 2011, among other things, led to aggregate reductions of Medicare payments to providers of 2% per fiscal year. These reductions went into effect in April 2013 and, due to subsequent legislative amendments to the statute, will remain in effect through 2030, with the exception of a temporary suspension from May 1, 2020 through March 31, 2021, unless additional action is taken by Congress. In January 2013, the American Taxpayer Relief Act of 2012 was signed into law, which, among other things, further reduced Medicare payments to several types of providers, including hospitals, imaging centers and cancer treatment centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. These new laws or any other similar laws introduced in the future may result in additional reductions in Medicare and other health care funding, which could negatively affect our customers and accordingly, our financial operations.

Moreover, payment methodologies may be subject to changes in healthcare legislation and regulatory initiatives. For example, CMS may develop new payment and delivery models, such as bundled payment models. In addition, recently there has been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products, which has resulted in several U.S. congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to drug pricing, reduce the cost of prescription drugs under government payor programs, and review the relationship between pricing and manufacturer patient programs. While further proposed measures will require authorization through additional legislation to become effective, Congress and the Biden Administration have each indicated that it will continue to seek new legislative and/or administrative measures to control drug costs.

We expect that additional U.S. federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that the U.S. federal government will pay for healthcare products and services, which could result in reduced demand for our product candidates or additional pricing pressures.

Individual states in the United States have also increasingly passed legislation and implemented regulations designed to control pharmaceutical and biological product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing. Legally-mandated price controls on payment amounts by third-party payors or other restrictions could harm our business, results of operations, financial condition and prospects. In addition, regional healthcare authorities and individual hospitals are increasingly using bidding procedures to determine what pharmaceutical products and which suppliers will be included in their prescription drug and other healthcare programs. Furthermore, there has been increased interest by third party payors and governmental authorities in reference pricing systems and publication of discounts and list prices. These reforms could reduce the ultimate demand for our product candidates or put pressure on our product pricing.

In the EU, similar political, economic and regulatory developments may affect our ability to profitably commercialize our product candidates, if approved. In addition to continuing pressure on prices and cost containment measures, legislative developments at the EU or member state level may result in significant additional requirements or obstacles that may increase our operating costs. The delivery of healthcare in the EU, including the establishment and operation of health services and the pricing and reimbursement of medicines, is almost exclusively a matter for national, rather than European Union, law and policy. National governments and health service providers have different priorities and approaches to the delivery of health care and the pricing and reimbursement of products in that context. In general, however, the healthcare budgetary constraints in most European Union member states have resulted in restrictions on the pricing and reimbursement of medicines by relevant health service providers. Coupled with ever-increasing European Union and national regulatory burdens on those wishing to develop and market products, this could prevent or delay marketing approval of our product candidates, restrict or regulate post-approval activities and affect our ability to commercialize our product candidates, if approved. In markets outside of the United States and European Union, reimbursement and healthcare payment systems vary significantly by country, and many countries have instituted price ceilings on specific products and therapies.

We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action in the United States, the EU or any other jurisdiction. If we or any third parties we may engage are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we or such third parties are not able to maintain regulatory compliance, our product candidates may lose any regulatory approval that may have been obtained and we may not achieve or sustain profitability.

Our business operations and current and future relationships with investigators, healthcare professionals, consultants, third-party payors, patient organizations and customers will be subject to applicable healthcare regulatory laws, which could expose us to penalties.

Our business operations and current and future arrangements with investigators, healthcare professionals, consultants, third-party payors, patient organizations and customers, may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations. These laws may constrain the business or financial arrangements and relationships through which we conduct our operations, including how we research, market, sell and distribute our product candidates, if approved. Such laws include:

- the U.S. federal Anti-Kickback Statute, which prohibits, among other things, persons or entities from knowingly and willfully soliciting, offering, receiving or providing any remuneration (including any kickback, bribe, or certain rebate), directly or indirectly, overtly or covertly, in cash or in kind, to induce or reward, or in return for, either the referral of an individual for, or the purchase, lease, order or recommendation of, any good, facility, item or service, for which payment may be made, in whole or in part, under any U.S. federal healthcare program, such as Medicare and Medicaid. A person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;
- the U.S. federal civil and criminal false claims and civil monetary penalties laws, including the civil False Claims Act, which prohibit, among other things, including through civil whistleblower or qui tam actions, individuals or entities from knowingly presenting, or causing to be presented, to the U.S. federal government, claims for payment or approval that are false or fraudulent, knowingly making, using or causing to be made or used, a false record or statement material to a false or fraudulent claim, or from knowingly making a false statement to avoid, decrease or conceal an obligation to pay money to the U.S. federal government. Pharmaceutical manufacturers can cause false claims to be presented to the U.S. federal government by engaging in impermissible marketing practices, such as the off-label promotion of a product for an indication for which it has not received FDA approval. In addition, the government may assert that a claim including items and services resulting from a violation of the U.S. federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the civil False Claims Act;
- HIPAA, which imposes criminal and civil liability for, among other things, knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program, or knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statement, in connection with the delivery of, or payment for, healthcare benefits, items or services. Similar to the U.S. federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the healthcare fraud statute implemented under HIPAA or specific intent to violate it in order to have committed a violation;
- the Federal Food Drug or Cosmetic Act, or FDCA, which prohibits, among other things, the adulteration or misbranding of drugs, biologics and medical devices;

- the U.S. Physician Payments Sunshine Act and its implementing regulations, which requires certain manufacturers of drugs, devices, biologics and medical supplies that are reimbursable under Medicare, Medicaid, or the Children's Health Insurance Program, with specific exceptions, to report annually to the government information related to certain payments and other transfers of value to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors), certain other health care professionals beginning in 2022, and teaching hospitals, as well as ownership and investment interests held by the physicians described above and their immediate family members;
- federal consumer protection and unfair competition laws, which broadly regulate marketplace activities and activities that potentially harm consumers;
- analogous U.S. state laws and regulations, including: state anti-kickback and false claims laws, which may apply to our business practices, including but not limited to, research, distribution, sales and marketing arrangements and claims involving healthcare items or services reimbursed by any third-party payor, including private insurers; state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the U.S. federal government, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; and state laws and regulations that require drug manufacturers to file reports relating to pricing and marketing information, which requires tracking gifts and other remuneration and items of value provided to healthcare professionals and entities; state and local laws requiring the registration of pharmaceutical sales representatives;
- the U.S. Foreign Corrupt Practices Act of 1977, as amended, which prohibits, among other things, U.S. companies and their employees and agents from authorizing, promising, offering, or providing, directly or indirectly, corrupt or improper payments or anything else of value to foreign government officials, employees of public international organizations and foreign government owned or affiliated entities, candidates for foreign political office, and foreign political parties or officials thereof; and
- similar healthcare laws and regulations in the EU and other jurisdictions, including reporting requirements detailing interactions with and payments to healthcare providers.

Ensuring that our internal operations and future business arrangements with third parties comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities will conclude that our business practices do not comply with current or future statutes, regulations, agency guidance or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of the laws described above or any other governmental laws and regulations that may apply to us, we may be subject to significant penalties, including civil, criminal and administrative penalties, damages, fines, exclusion from government-funded healthcare programs, such as Medicare and Medicaid or similar programs in other countries or jurisdictions, integrity oversight and reporting obligations to resolve allegations of non-compliance, disgorgement, individual imprisonment, contractual damages, reputational harm, diminished profits and the curtailment or restructuring of our operations. If any of the physicians or other providers or entities with whom we expect to do business are found to not be in compliance with applicable laws, they may be subject to criminal, civil or administrative sanctions, including exclusions from government funded healthcare programs and imprisonment, which could affect our ability to operate our business. Further, defending against any such actions can be costly, time-consuming and may require significant personnel resources. Therefore, even if we are successful in defending against any such actions that may be brought against us, our business may be impaired.

Actual or perceived failures to comply with applicable data protection, privacy and security laws, regulations, standards and other requirements could adversely affect our business, results of operations, and financial condition.

The regulatory environment surrounding information security, data collection and privacy is increasingly demanding. We are subject to numerous U.S. federal and state laws and non-U.S. regulations governing the protection of personal and confidential information of our clinical patients, clinical investigators, employees and vendors/business contacts, including in relation to medical records, credit card data and financial information. For example, on May 25, 2018, the GDPR became effective, implementing more stringent requirements in relation to our use of personal data. The GDPR applies to any company established in the EEA as well as to those outside the EEA if they collect and use personal data in connection with the offering of goods or services to individuals in the EEA or the monitoring of their behavior. We will be subject to the GDPR where we have an EEA presence or "establishment", when conducting clinical trials with EEA based data subjects (whether the trials are conducted directly by us or through a clinical vendor or collaborator) or when offering approved products or services in the future to EEA based data subjects. Companies that must comply with the GDPR face increased compliance obligations and risk, including more robust regulatory enforcement of data protection requirements and potential fines for noncompliance of up to €20 million or 4% of the annual global revenues of the noncompliant company, whichever is greater. Among other requirements, the GDPR regulates transfers of personal data subject to the GDPR to third countries that have not been found to provide adequate protection to such personal data, including the U.S., and the efficacy and

longevity of current transfer mechanisms between the EU and the U.S. remains uncertain. For example, in 2016, the EU and U.S. agreed to a transfer framework for data transferred from the EU to the U.S., called the Privacy Shield, but the Privacy Shield was invalidated in July 2020 by the Court of Justice of the European Union. Further, from January 1, 2021, companies have to comply with the GDPR and also the UK GDPR, which, together with the amended UK Data Protection Act 2018, retains the GDPR in UK national law. The UK GDPR mirrors the fines under the GDPR, e.g. fines up to the greater of €20 million (£17.5 million) or 4% of global turnover. The relationship between the United Kingdom and the EU in relation to certain aspects of data protection law remains unclear, and it is unclear how United Kingdom data protection laws and regulations will develop in the medium to longer term, and how data transfers to and from the United Kingdom will be regulated in the long term. Currently there is a four to six-month grace period agreed in the EU and United Kingdom Trade and Cooperation Agreement, ending June 30, 2021 at the latest, while the parties discuss an adequacy decision. However, it is not clear whether (and when) an adequacy decision may be granted by the European Commission enabling data transfers from EU member states to the United Kingdom long term without additional measures. These changes may lead to additional costs and increase our overall risk exposure.

The GDPR sets out a number of requirements that must be complied with when handling the personal data of individuals within the EEA, including: disclosures about how personal information is to be used, limitations on retention of information, mandatory data breach notification requirements and onerous obligations on services providers. In addition, to the extent a company processes, controls or otherwise uses "special category" personal data (including patients' health or medical information, genetic information and biometric information), more stringent rules apply, further limiting the circumstances and the manner in which a company is legally permitted to process that data.

In the United States, HIPAA imposes privacy, security and breach reporting obligations with respect to individually identifiable health information upon "covered entities" (health plans, health care clearinghouses and certain health care providers), and their respective business associates, individuals or entities that create, receive, maintain or transmit protected health information in connection with providing a service for or on behalf of a covered entity. HIPAA mandates the reporting of certain breaches of health information to HHS, affected individuals and if the breach is large enough, the media. Entities that are found to be in violation of HIPAA as the result of a breach of unsecured protected health information, a complaint about privacy practices or an audit by HHS, may be subject to significant civil, criminal and administrative fines and penalties and/or additional reporting and oversight obligations if required to enter into a resolution agreement and corrective action plan with HHS to settle allegations of HIPAA non-compliance. Even when HIPAA does not apply, according to the Federal Trade Commission or the FTC, failing to take appropriate steps to keep consumers' personal information secure constitutes unfair acts or practices in or affecting commerce in violation of Section 5(a) of the Federal Trade Commission Act. The FTC expects a company's data security measures to be reasonable and appropriate in light of the sensitivity and volume of consumer information it holds, the size and complexity of its business, and the cost of available tools to improve security and reduce vulnerabilities. Individually identifiable health information is considered sensitive data that merits stronger safeguards.

In addition, certain states govern the privacy and security of health-related and other personal information in certain circumstances, some of which are more stringent than HIPAA and many of which differ from each other in significant ways and may not have the same effect, thus complicating compliance efforts. By way of example, California enacted the California Consumer Privacy Act, or CCPA, on June 28, 2018, which went into effect on January 1, 2020. The CCPA places increased privacy and security obligations on entities handling certain personal data of consumers or households, and gives California residents expanded rights to access and delete their personal information, opt out of certain personal information sharing, and receive detailed information about how their personal information is used. The CCPA provides for civil penalties for violations, as well as a private right of action for data breaches that is expected to increase data breach litigation. The CCPA may increase our compliance costs and potential liability. Some observers have noted that the CCPA could mark the beginning of a trend toward more stringent privacy legislation in the United States, which could increase our potential liability and adversely affect our business. Further, the CPRA was recently voted into law by California residents. The CPRA significantly amends the CCPA, and imposes additional data protection obligations on covered companies doing business in California, including additional consumer rights processes and opt outs for certain uses of sensitive data. It also creates a new California data protection agency specifically tasked to enforce the law, which would likely result in increased regulatory scrutiny of California businesses in the areas of data protection and security. The substantive requirements for businesses subject to the CPRA will go into effect on January 1, 2023, and become enforceable on July 1, 2023.

If any person, including any of our employees, clinical trial collaborators or those with whom we share such information, negligently disregards or intentionally breaches our established controls with respect to clinical subject, clinical investigator or employee data, or otherwise mismanages or misappropriates that data, we could be subject to significant monetary damages, regulatory enforcement actions, fines and/or criminal prosecution in one or more jurisdictions. In addition, a data breach could result in negative publicity which could damage our reputation and have an adverse effect on our business, financial condition or results of operations.

Risks Related to Our Common Stock

Our stock price may be volatile and you may not be able to resell shares of our common stock at or above the price you paid.

The trading price of our common stock could be highly volatile and could be subject to wide fluctuations in response to various factors, some of which are beyond our control. These factors include those discussed in this "Risk Factors" section of this Annual Report on Form 10-K and others such as:

- results from, and any delays in, our clinical trials for IDE397, IDE196, or any other future clinical development programs, including public misperception of the results of our clinical trials;
- announcements by academic or other third parties challenging the fundamental premises underlying our approach to treating cancer and/or biopharmaceutical product development;
- announcements of regulatory approval or disapproval of our current or any future product candidates;
- failure or discontinuation of any of our research and development programs;
- manufacturing setbacks or delays of or issues with the supply of the materials for our product candidates;
- announcements relating to or results from our GSK Collaboration Agreement;
- announcements relating to future licensing, collaboration or development agreements;
- delays in the commercialization of our current or any future product candidates;
- public misperception regarding the use of our therapies;
- acquisitions and sales of new products, technologies or businesses;
- quarterly variations in our results of operations or those of our future competitors;
- changes in earnings estimates or recommendations by securities analysts;
- announcements by us or our competitors of new products, significant contracts, commercial relationships, acquisitions or capital commitments;
- developments with respect to intellectual property rights;
- our commencement of, or involvement in, litigation;
- changes in financial estimates or guidance, including our ability to meet our future revenue and operating profit or loss estimates or guidance;
- major changes in our board of directors or management;
- new legislation in the United States relating to the sale or pricing of pharmaceuticals;
- FDA or other U.S. or comparable foreign regulatory actions affecting us or our industry;
- product liability claims or other litigation or public concern about the safety of our product candidates;
- market conditions in the biopharmaceutical and biotechnology sectors, particularly as a result of the volatility in the market caused by the COVID-19 pandemic; and
- general economic conditions in the United States and abroad.

In addition, the stock markets in general, and the markets for biopharmaceutical and biotechnology stocks in particular, have experienced extreme volatility, particularly in response to the COVID-19 pandemic. In particular, the market prices of securities of smaller biotechnology have experienced dramatic fluctuations that often have been unrelated or disproportionate to the operating results of these companies. These broad market fluctuations may adversely affect the trading price or liquidity of our common stock. In the past, when the market price of a stock has been volatile, holders of that stock have sometimes instituted securities class action litigation against the issuer. If any of our stockholders were to bring such a lawsuit against us, we could incur substantial costs defending the lawsuit and the attention of our management would be diverted from the operation of our business.

An active, liquid and orderly market for our common stock may not be maintained, and you may not be able to resell your common stock.

Prior to our initial public offering, or IPO, in May 2019, there was no public market for shares of our common stock. Our stock recently began trading on the Nasdaq Global Select Market, but we can provide no assurance that we will be able to maintain an active trading market on the Nasdaq Global Select Market or any other exchange in the future. The lack of an active market may impair your ability to sell your shares at the time you wish to sell them or at a price that you consider reasonable. An inactive market may also impair our ability to raise capital by selling shares and may impair our ability to acquire other businesses, applications, or technologies using our shares as consideration.

Sales of a substantial number of shares of our common stock in the public market could cause our stock price to fall.

If our existing stockholders sell, or indicate an intention to sell, substantial amounts of our common stock in the public market, the trading price of our common stock could decline. As of December 31, 2020, we have outstanding a total of 29.5 million shares of common stock, of which the holders of approximately 2.3 million shares of our common stock are entitled to rights with respect to the registration of their shares under the Securities Act. Registration of these shares under the Securities Act would result in the shares becoming freely tradable without restriction under the Securities Act, except for shares purchased by affiliates. Any sales of securities by these stockholders could have a material adverse effect on the trading price of our common stock. In addition, as of December 31, 2020, approximately 3.9 million shares of common stock that are either subject to outstanding options or reserved for future issuance under our existing equity incentive plan will become eligible for sale in the public market to the extent permitted by the provisions of various vesting schedules, Rule 144 and Rule 701 under the Securities Act. If these additional shares of common stock are sold, or if it is perceived that they will be sold, in the public market, the trading price of our common stock could decline.

General Risks

Our information technology systems, or those of our collaborators, CROs or other contractors or consultants, may fail or suffer security breaches, which could adversely affect our business. Security breaches, loss of data or financial assets, and other disruptions could compromise sensitive information related to our business or prevent us from accessing critical information and expose us to liability.

We collect and maintain information in digital form that is necessary to conduct our business, and we are increasingly dependent on information technology systems and infrastructure to operate our business. In the ordinary course of our business, we collect, store and transmit large amounts of confidential information, including intellectual property, proprietary business information and personal information. It is critical that we do so in a secure manner to maintain the confidentiality and integrity of such confidential information, including both our own and that of third parties. We have established physical, electronic and organizational measures to safeguard and secure our systems to prevent a data compromise, and rely on commercially available systems, software, tools, and monitoring to provide security for our information technology systems and the processing, transmission and storage of digital information. We have also outsourced elements of our information technology infrastructure, and as a result a number of third-party vendors may or could have access to our confidential information. Our internal information technology systems and infrastructure, and those of our current and any future collaborators, contractors and consultants and other third parties on which we rely, are vulnerable to damage from computer viruses, malware, natural disasters, terrorism, war, telecommunication and electrical failures, cyber-attacks or intrusions over the Internet, attachments to emails, persons inside our organization, or persons with access to systems inside our organization.

The risk of a security breach or disruption or data loss, particularly through cyber-attacks or cyber-intrusion, including by computer hackers, foreign governments and cyber-terrorists, has generally increased as the number, level of persistence, intensity and sophistication of attempted attacks and intrusions from around the world have increased. In addition, the pervasive use of mobile devices that access confidential information increases the risk of data security breaches, which could lead to the loss of confidential information or other intellectual property, including both our own and that of third parties. As a result of the COVID-19 pandemic, we may also face increased cybersecurity risks due to our reliance on internet technology and the number of our employees who are working remotely, which may create additional opportunities for cybercriminals to exploit vulnerabilities. Furthermore, because the techniques used to obtain unauthorized access to, or to sabotage, systems change frequently and often are not recognized until launched against a target, we may be unable to anticipate these techniques or implement adequate preventative measures. We may also experience security breaches that may remain undetected for an extended period. The costs to us to mitigate network security problems, bugs, viruses, worms, malicious software programs and security vulnerabilities could be significant, and while we have implemented security measures to protect our data security and information technology systems, our efforts to address these problems may not be

successful, and these problems could result in unexpected interruptions, delays, cessation of service and other harm to our business and our competitive position. If such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our product development programs. For example, the loss of clinical trial data could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. Moreover, if a computer security breach affects our systems or results in the unauthorized release of personally identifiable information, our reputation could be materially damaged. In addition, such a breach may require notification to governmental agencies, the media or individuals pursuant to various federal and state privacy and security laws, if applicable, HIPAA, as amended by the Health Information Technology for Clinical Health Act of 2009, or HITECH, and its implementing rules and regulations, as well as regulations promulgated by the Federal Trade Commission and state breach notification laws. We would also be exposed to a risk of loss, including financial assets or litigation and potential liability, which could materially adversely affect our business, financial condition, results of operations and prospects.

If we engage in future acquisitions or strategic collaborations, it may increase our capital requirements, dilute our stockholders, cause us to incur debt or assume contingent liabilities and subject us to other risks.

We may evaluate various acquisitions and strategic collaborations, including licensing or acquiring complementary products, intellectual property rights, technologies, or businesses. Any potential acquisition or strategic partnership may entail numerous risks, including:

- increased operating expenses and cash requirements;
- the assumption or incurrence of additional indebtedness or contingent liabilities;
- the issuance of our equity securities;
- assimilation of operations, intellectual property and products of an acquired company, including difficulties associated with integrating new personnel;
- the diversion of our management's attention from our existing product programs and initiatives in pursuing such a strategic merger or acquisition;
- loss of key personnel, and uncertainties in our ability to maintain key business relationships;
- uncertainties associated with the other party to such a transaction, including the prospects of that party and their existing products or product candidates and regulatory approvals; and
- our inability to generate revenue from acquired technology and/or products sufficient to meet our objectives in undertaking the acquisition or even to offset the associated acquisition and maintenance costs.

In addition, if we undertake acquisitions, we may incur large one-time expenses and acquire intangible assets that could result in significant future amortization expense. Moreover, we may not be able to locate suitable acquisition opportunities and this inability could impair our ability to grow or obtain access to technology or products that may be important to the development of our business.

We may not be successful in obtaining or maintaining necessary rights to our product candidates through acquisitions and in-licenses.

Our programs may require the use of intellectual property rights held by third parties to which we do not have rights. In such a case, the growth of our business will depend in part on our ability to acquire, in-license or use these rights. However, we may be unable to acquire or in-license any compositions, methods of use, processes or other third-party intellectual property rights from third parties that we identify as necessary for our product candidates on reasonable terms and conditions or at all.

The acquisition or licensing of intellectual property rights for pharmaceutical products is very competitive. If we seek to acquire or license additional intellectual property rights, we may face substantial competition from a number of more established companies, some of which have acknowledged strategies to license or acquire products, and many of which have more institutional experience and greater financial and other resources than we have. These established companies may have a competitive advantage over us due to their size, cash resources and greater clinical development and commercialization capabilities, as may other emerging companies taking similar or different approaches to product licenses and/or acquisitions. In addition, a number of established research-based pharmaceutical and biotechnology companies may acquire products in late stages of development to augment their internal product lines, which may provide those companies with an even greater competitive advantage. Furthermore, companies that perceive us to be a competitor may be unwilling to assign or license rights to us or may interfere with our acquisition or licensing of rights from others. 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.

We have collaborated with U.S. academic institutions and may in the future collaborate with U.S. and foreign academic institutions to accelerate our preclinical research or development under written agreements with these institutions. These institutions may provide us with an option to negotiate a license to any of the institution's rights in technology resulting from the collaboration. Regardless of such option, we may be unable to negotiate a license within the specified timeframe or under terms that are acceptable to us.

If we are unable to successfully obtain rights to required third-party intellectual property rights or maintain the existing intellectual property rights we have on reasonable terms, we may have to abandon development of that program and our competitive position, business, financial condition, results of operations, and prospects could suffer.

If our trademarks and trade names are not adequately protected, then we may not be able to build name recognition in our markets of interest and our business may be adversely affected.

Our registered or unregistered trademarks or trade names may be challenged, infringed, circumvented or declared generic or determined to be infringing on other marks. We may not be able to protect our rights to these trademarks and trade names, which we need to build name recognition among potential collaborators or customers in our markets of interest. At times, competitors may adopt trade names or trademarks similar to ours, thereby impeding our ability to build brand identity and possibly leading to market confusion. In addition, there could be potential trade name or trademark infringement claims brought by owners of other trademarks or trademarks that incorporate variations of our registered or unregistered trademarks or trade names. Over the long term, 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 may be adversely affected. We may license our trademarks and trade names to third parties, such as distributors. Though these license agreements may provide guidelines for how our trademarks and trade names may be used, a breach of these agreements or misuse of our trademarks and tradenames by our licensees may jeopardize our rights in or diminish the goodwill associated with our trademarks and trade names. Our efforts to enforce or protect our proprietary rights related to trademarks, trade names, trade secrets, domain names, copyrights or other intellectual property may be ineffective and could result in substantial costs and diversion of resources and could adversely affect our business, financial condition, results of operations and prospects.

Changes in patent law in the United States or in other countries could diminish the value of patents in general, thereby impairing our ability to protect our product candidates.

Our patent rights may be affected by developments or uncertainty in the United States' or other jurisdictions' patent statutes, patent case law, USPTO rules and regulations or the rules and regulations of other jurisdictions' patent offices.

There are a number of recent changes to U.S. patent laws that may have a significant impact on our ability to protect our technology and enforce our intellectual property rights. For example, on September 16, 2011, the Leahy-Smith America Invents Act, or Leahy-Smith Act, was signed into law. The Leahy-Smith Act includes a number of significant changes to U.S. patent law. These include provisions that affect the way patent applications will be prosecuted and may also affect patent litigation. In particular, under the Leahy-Smith Act, the United States transitioned in March 2013 to a "first to file" system in which the first inventor to file a patent application is typically entitled to the patent. Third parties are allowed to submit prior art before the issuance of a patent by the USPTO, and may become involved in post-grant proceedings including opposition, derivation, reexamination, *inter partes* review or interference proceedings challenging our patent rights or the patent rights of others. An adverse determination in any such submission, proceeding or litigation could reduce the scope or enforceability of, or invalidate, our patent rights, which could adversely affect our competitive position. In addition, the U.S. congress may pass additional patent reform legislation that is unfavorable to us.

The Supreme Court has ruled on several patent cases in recent years, either narrowing the scope of patent protection available in certain circumstances or weakening 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. Depending on decisions by the U.S. Congress, the federal courts and the USPTO, the laws and regulations governing patents could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce our existing patents and patents we might obtain in the future. Similarly, statutory or judicial changes to the patent laws of other countries may increase the uncertainties and costs surrounding the prosecution of patent applications and the enforcement or defense of issued patents.

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

Filing, prosecuting and defending all current and future patents 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. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the United States. Consequently, we may not be able to prevent third parties from practicing our

inventions in 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 may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and, further, may export otherwise infringing products to territories where we have patent protection but enforcement is not as strong as that in the United States. These products may compete with our product candidates, and our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing.

The legal systems of many foreign countries do not favor the enforcement of patents and other intellectual property protection, which could make it difficult for us to stop the infringement of our patents or marketing of competing products in violation of our proprietary rights. For example, some foreign countries have compulsory licensing laws under which a patent owner must grant licenses to third parties. In addition, some countries limit the enforceability of patents against third parties, including government agencies or government contractors. In these countries, patents may provide limited or no benefit. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs 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, and the damages or other remedies awarded, if any, may not be commercially meaningful. 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. If we or any of our licensors is forced to grant a license to third parties with respect to any patents relevant to our business, our competitive position may be impaired, and our business, financial condition, results of operations, and prospects may be adversely affected.

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

The USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other provisions during the patent process. Periodic maintenance fees, renewal fees, annuity fees and various other governmental fees on patents and/or applications will be due to be paid to the USPTO and various governmental patent agencies outside of the United States in several stages over the lifetime of the patents and/or applications. We employ reputable professionals and rely on such third parties to help us comply with these requirements and effect payment of these fees with respect to the patents and patent applications that we own, and if we license intellectual property we may have to rely upon our licensors to comply with these requirements and effect payment of these fees with respect to any patents and patent applications that we license. In many cases, an inadvertent lapse 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 noncompliance can result in abandonment or lapse of a patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. In such an event, competitors might be able to enter the market earlier than would otherwise have been the case.

If securities or industry analysts do not publish research or reports about our business, or if they issue an adverse or misleading opinion regarding our stock, our stock price and trading volume could decline.

The trading market for our common stock will be influenced by the research and reports that industry or securities analysts publish about us or our business. We currently have research coverage by securities and industry analysts. If no further or fewer securities or industry analysts commence coverage of us, the trading price for our stock could be negatively impacted. If any of the analysts who cover us issue an adverse or misleading opinion regarding us, our business model, our intellectual property or our stock performance, or if our clinical trials and operating results fail to meet the expectations of analysts, our stock price would likely decline. If one or more of these analysts cease coverage of us or fail to publish reports on us regularly, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline.

We incur significant costs as a result of operating as a public company, and our management devotes substantial time to new compliance initiatives. We may fail to comply with the rules that apply to public companies, including Section 404 of the Sarbanes-Oxley Act of 2002, which could result in sanctions or other penalties that would harm our business.

We incur significant legal, accounting and other expenses as a public company, including costs resulting from public company reporting obligations under the Exchange Act and regulations regarding corporate governance practices. The listing requirements of the Nasdaq Global Market and the rules of the Securities and Exchange Commission, or SEC, require that we satisfy certain corporate governance requirements relating to director independence, filing annual and interim reports, stockholder meetings, approvals and voting, soliciting proxies, conflicts of interest and a code of conduct. Our management and other personnel devote a substantial amount of time to ensure that we comply with all of these requirements. Moreover, the reporting requirements, rules and regulations will increase our legal and financial compliance costs and make some activities more time-consuming and costly. Any changes we make to comply with these obligations may not be sufficient to

allow us to satisfy our obligations as a public company on a timely basis, or at all. These reporting requirements, rules and regulations, coupled with the increase in potential litigation exposure associated with being a public company, could also make it more difficult for us to attract and retain qualified persons to serve on our board of directors or board committees or to serve as executive officers, or to obtain certain types of insurance, including D&O insurance, on acceptable terms.

As a public company, we are subject to Section 404 of the Sarbanes-Oxley Act of 2002, or Section 404, and the related rules of the SEC, which generally require our management and independent registered public accounting firm to report on the effectiveness of our internal control over financial reporting. Beginning with the second annual report that we will be required to file with the SEC, Section 404 requires an annual management assessment of the effectiveness of our internal control over financial reporting. However, for so long as we remain an emerging growth company as defined in the Jumpstart Our Business Startups Act of 2012, or JOBS Act, we intend to take advantage of certain exemptions from various reporting requirements that are applicable to public companies that are not emerging growth companies, including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404. Once we are no longer an emerging growth company or, if prior to such date, we opt to no longer take advantage of the applicable exemption, we will be required to include an opinion from our independent registered public accounting firm on the effectiveness of our internal control over financial reporting. We will remain an emerging growth company until the earlier of (1) the last day of the fiscal year (a) following the fifth anniversary of the completion of our IPO, (b) in which we have total annual gross revenue of at least $1.07 billion, or (c) in which we are deemed to be a large accelerated filer, which means the market value of our common stock that is held by non-affiliates exceeds $700.0 million as of the prior June 30th, and (2) the date on which we have issued more than $1.0 billion in non-convertible debt during the prior three-year period.

In order to provide the reports required by these rules, we must conduct reviews and testing of our internal controls. During the course of our review and testing, we may identify deficiencies and be unable to remediate them before we must provide the required reports. Furthermore, if we have a material weakness in our internal control over financial reporting, we may not detect errors on a timely basis and our audited financial statements may be materially misstated. We or our independent registered public accounting firm may not be able to conclude on an ongoing basis that we have effective internal control over financial reporting, which could harm our operating results, cause investors to lose confidence in our reported financial information and cause the trading price of our stock to fall. In addition, as a public company we are required to file accurate and timely quarterly and annual reports with the SEC under the Exchange Act. In order to report our results of operations and financial statements on an accurate and timely basis, we will depend on CROs and contract manufacturing organizations, or CMOs, to provide timely and accurate notice of their costs to us and on GSK to provide timely and accurate reports of cost sharing under the GSK Collaboration Agreement. Any failure to report our financial results on an accurate and timely basis could result in sanctions, lawsuits, delisting of our shares from the Nasdaq Global Market or other adverse consequences that would materially harm to our business.

If we are unable to maintain effective internal controls, our business, financial position, results of operations and prospects could be adversely affected.

As a public company, we are subject to reporting and other obligations under the Exchange Act, including Section 404, which require annual management assessments of the effectiveness of our internal control over financial reporting. However, our independent registered public accounting firm will not be required to formally attest to the effectiveness of our internal control over financial reporting pursuant to Section 404 until we are no longer an emerging growth company if we continue to take advantage of the exemptions available to us through the JOBS Act.

The rules governing the standards that must be met for management to assess our internal control over financial reporting are complex and require significant documentation, testing and possible remediation to meet the detailed standards under the rules. During the course of its testing, our management may identify material weaknesses or deficiencies which may not be remedied in time to meet the deadline imposed by the Sarbanes-Oxley Act of 2002. These reporting and other obligations place significant demands on our management and administrative and operational resources, including accounting resources.

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with accounting principles generally accepted in the United States. Any failure to maintain effective internal controls could have an adverse effect on our business, financial position, and results of operations.

We are an "emerging growth company," and the reduced disclosure requirements applicable to emerging growth 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 and plan to rely on exemptions from certain disclosure requirements that are applicable to other public companies that are not emerging growth companies. These exemptions include not being required to comply with the auditor attestation requirements of Section 404, 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 non-binding 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. We cannot predict whether investors will find our common stock less attractive because 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 irrevocably elected not to avail ourselves of this exemption from new or revised accounting standards, and, therefore, we are subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

If we sell shares of our common stock in future financings, stockholders may experience immediate dilution and, as a result, our stock price may decline.

We may from time to time issue additional shares of common stock at a discount from the current trading price of our common stock. As a result, our stockholders would experience immediate dilution upon the purchase of any shares of our common stock sold at such discount. In addition, as opportunities present themselves, we may enter into financing or similar arrangements in the future, including the issuance of debt securities, preferred stock or common stock. If we issue common stock or securities convertible into common stock, our common stockholders would experience additional dilution and, as a result, our stock price may decline.

Our ability to use our net operating loss carryforwards and certain other tax attributes may be limited.

We have incurred substantial losses during our history and do not expect to become profitable in the near future, and we may never achieve profitability. To the extent that we continue to generate losses for U.S. federal income tax purposes in the foreseeable future, unused losses will carry forward to offset a portion of future taxable income, if any, until such unused losses expire, if ever. Under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, if a corporation undergoes an "ownership change," generally defined as a greater than 50 percentage point change (by value) in its equity ownership by certain stockholders over a three-year period, the corporation's ability to use its pre-change net operating loss carryforwards, or NOLs, and other pre-change tax attributes (such as research and development tax credits) to offset its post-change taxable income or tax liability may be limited. We have experienced ownership changes in the past and in the current year. As a result of the ownership changes, some of the tax attributes carryforward may be permanently limited as they will expire unused. We are continuing to analyze the impact of the limitation to our financial statements. If finalized, Treasury Regulations currently proposed under Section 382 of the Code may further limit our ability to utilize our pre-change NOLs or credits if we undergo a future ownership change. We have experienced ownership changes in the past and in the current year, and we may experience ownership changes in the future and/or subsequent shifts in our stock ownership (some of which may be outside our control). As a result, even if we attain profitability, we may be unable to use a material portion of our NOLs and other tax attributes, which could potentially result in increased future tax liability to us.

Enacted on June 29, 2020, California's Assembly Bill No. 85 generally prohibits the total amount of refunds or credit offsets that would otherwise be allowed for a taxable year beginning on or after January 1, 2020, and before January 1, 2023, from exceeding $5,000,000. This bill would, subject to certain exceptions related to a taxpayer's income, disallow a net operating loss deduction for any taxable year beginning on or after January 1, 2020, and before January 1, 2023, and would extend the carryover period for a net operating loss deduction disallowed by that provision, as specified. It is possible that these provisions could adversely affect our ability to utilize our net operating losses and business credits.

Provisions in our charter documents and under Delaware law could discourage a takeover that stockholders may consider favorable and may lead to entrenchment of management.

Our amended and restated certificate of incorporation and amended and restated bylaws contain provisions that could delay or prevent changes in control or changes in our management without the consent of our board of directors. These provisions include the following:

- a classified board of directors with three-year staggered terms, which may delay the ability of stockholders to change the membership of a majority of our board of directors;
- no cumulative voting in the election of directors, which limits the ability of minority stockholders to elect director candidates;
- the exclusive right of our board of directors to elect a director to fill a vacancy created by the expansion of the board of directors or the resignation, death or removal of a director, which prevents stockholders from being able to fill vacancies on our board of directors;
- the ability of our board of directors to authorize the issuance of shares of preferred stock and to determine the price and other terms of those shares, including preferences and voting rights, without stockholder approval, which could be used to significantly dilute the ownership of a hostile acquiror;
- the ability of our board of directors to alter our amended and restated bylaws without obtaining stockholder approval;
- the required approval of at least 66 2/3% of the shares entitled to vote at an election of directors to adopt, amend or repeal our amended and restated bylaws or repeal the provisions of our amended and restated certificate of incorporation regarding the election and removal of directors;

  a prohibition on stockholder action by written consent, which forces stockholder action to be taken at an annual or special meeting of our stockholders;
- the requirement that a special meeting of stockholders may be called only by our chief executive officer or president or by the board of directors, which may delay the ability of our stockholders to force consideration of a proposal or to take action, including the removal of directors; and
- advance notice procedures that stockholders must comply with in order to nominate candidates to our board of directors or to propose matters to be acted upon at a stockholders' meeting, which may discourage or deter a potential acquiror from conducting a solicitation of proxies to elect the acquiror's own slate of directors or otherwise attempting to obtain control of us.

We are also subject to the anti-takeover provisions contained in Section 203 of the Delaware General Corporation Law. Under Section 203, a corporation may not, in general, engage in a business combination with any holder of 15% or more of its capital stock unless the holder has held the stock for three years or, among other exceptions, the board of directors has approved the transaction.

Claims for indemnification by our directors and officers may reduce our available funds to satisfy successful third-party claims against us and may reduce the amount of money available to us.

Our amended and restated certificate of incorporation and amended and restated bylaws provide that we will indemnify our directors and officers, in each case to the fullest extent permitted by Delaware law.

In addition, as permitted by Section 145 of the Delaware General Corporation Law, our amended and restated bylaws and our indemnification agreements that we have entered into with our directors and officers provide that:

- we will indemnify our directors and officers for serving us in those capacities or for serving other business enterprises at our request, to the fullest extent permitted by Delaware law. Delaware law provides that a corporation may indemnify such person if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the registrant and, with respect to any criminal proceeding, had no reasonable cause to believe such person's conduct was unlawful;
- we may, in our discretion, indemnify employees and agents in those circumstances where indemnification is permitted by applicable law;

- we are required to advance expenses, as incurred, to our directors and officers in connection with defending a proceeding, except that such directors or officers shall undertake to repay such advances if it is ultimately determined that such person is not entitled to indemnification;
- we will not be obligated pursuant to our amended and restated bylaws to indemnify a person with respect to proceedings initiated by that person against us or our other indemnitees, except with respect to proceedings authorized by our board of directors or brought to enforce a right to indemnification;
- the rights conferred in our amended and restated bylaws are not exclusive, and we are authorized to enter into indemnification agreements with our directors, officers, employees and agents and to obtain insurance to indemnify such persons; and
- we may not retroactively amend our amended and restated bylaw provisions to reduce our indemnification obligations to directors, officers, employees and agents.

The cost of D&O insurance policy premiums is expected to continue to increase. If the costs of maintaining adequate D&O insurance coverage increase significantly in the future, our operating results could be materially adversely affected. Likewise, if any of our current D&O insurance coverage should become unavailable to us or become economically impractical, we may need to decrease our coverage limits or increase our self-insured retention or we may be unable to renew such insurance at all. If we incur liabilities that exceed our coverage or incur liabilities not covered by our insurance, we would have to self-fund any indemnification amounts owed to our directors and officers and employees in which case our results of operations and financial condition could be materially adversely affected. Additionally, a lack of D&O insurance may make it difficult for us to retain and attract talented and skilled directors and officers to serve our company, which could adversely affect our business.

Our amended and restated certificate of incorporation provides for an exclusive forum in the Court of Chancery of the State of Delaware and in the U.S. federal district courts for certain disputes between us and our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or employees.

Our amended and restated certificate of incorporation provides that the Court of Chancery of the State of Delaware is the exclusive forum for any state law derivative action or proceeding brought on our behalf, any action asserting a breach of fiduciary duty, any action asserting a claim against us arising pursuant to the Delaware General Corporation Law, our amended and restated certificate of incorporation or our amended and restated bylaws, any action to interpret, apply, enforce, or determine the validity of 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. The choice of forum provision may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and other employees and result in increased costs for investors to bring a claim.

We do not intend to pay dividends on our common stock, and, consequently, your ability to achieve a return on your investment will depend on appreciation in the price of our common stock.

We do not intend to pay any cash dividends on our common stock for the foreseeable future. We currently intend to invest our future earnings, if any, to fund our growth. Therefore, you are not likely to receive any dividends on your common stock for the foreseeable future. Since we do not intend to pay dividends, your ability to receive a return on your investment will depend on any future appreciation in the market value of our common stock. There is no guarantee that our common stock will appreciate or even maintain the price at which our holders have purchased it.

Item 1B. Unresolved Staff Comments.

Not applicable.

Item 2. Properties

Our corporate headquarters is located in South San Francisco, California, where we lease and occupy approximately 29,600 square feet of office and laboratory space. The current term of our South San Francisco lease expires in July 2024, with an option to extend the term through July 2026.

We believe our existing facilities are sufficient for our needs for the foreseeable future. To meet the future needs of our business, we may lease additional or alternate space, and we believe suitable additional or alternative space will be available in the future on commercially reasonable terms.

Item 3. Legal Proceedings

From time to time, we may become involved in litigation or other legal proceedings. We are not currently a party to any litigation or legal proceedings that, in the opinion of our management, are likely to have a material adverse effect on our business. Regardless of outcome, litigation can have an adverse impact on our business, financial condition, results of operations and prospects because of defense and settlement costs, diversion of management resources and other factors.

Item 4. Mine Safety Disclosures.

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

Market Information

Our common stock trades on the Nasdaq Global Select Market under the symbol "IDYA."

Stockholders

As of March 15, 2021, we had 15 record holders of our common stock. Since many of our shares of common stock are held by brokers and other institutions on behalf of stockholders, we are unable to estimate the total number of stockholders represented by these record holders.

Dividend Policy

We have never declared or paid any cash dividends on our common stock and do not anticipate paying cash dividends in the foreseeable future.

Securities Authorized for Issuance under Equity Compensation Plans

Information about our equity compensation plans is incorporated by reference to Item 12 of Part III of this Annual Report on Form 10-K.

Sale of Unregistered Securities

None.

Use of Proceeds from the Sale of Registered Securities

Not applicable.

Issuer Purchases of Equity Securities

None.

Item 6. Selected Financial Data.

We have omitted this information in accordance with the elimination of Item 301 of Regulation S-K (Release No. 33-10890).

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

You should read the following discussion and analysis of our financial condition and results of operations together with our financial statements and the related notes included elsewhere in this report. This discussion and analysis and other parts of this report contain forward-looking statements based upon current beliefs, plans and expectations related to future events and our future financial performance that involve risks, uncertainties and assumptions, such as statements regarding our intentions, plans, objectives, expectations, forecasts and projections. Our actual results and the timing of selected events could differ materially from those anticipated in these forward-looking statements as a result of several factors, including those set forth under the section titled "Risk Factors" and elsewhere in this report.

Overview

We are a synthetic lethality-focused precision medicine oncology company committed to the discovery and development of targeted therapeutics for patient populations selected using molecular diagnostics. Our approach integrates small molecule drug discovery with extensive capabilities in identifying and validating translational biomarkers to develop targeted therapies for select patient populations most likely to benefit. We are applying these capabilities to develop a robust pipeline in precision medicine oncology, with a research and development focus in synthetic lethality—which represents an emerging class of precision medicine targets.

IDE397 – MAT2A Inhibitor Development Candidate

Our most advanced synthetic lethality research program targets methionine adenosyltransferase 2a, or MAT2A, for solid tumors with methylthioadenosine phosphorylase, or MTAP, deletions, a patient population estimated to represent approximately 15% of solid tumors.

Our MAT2A inhibitor development candidate is designated as IDE397. We submitted an IND, to the FDA for IDE397, which is now effective. We are initiating a Phase 1 clinical trial for evaluation of IDE397 as monotherapy, and are targeting First-Patient-In in the Phase 1 clinical trial in the first quarter of 2021.

Initial clinical development plans to evaluate IDE397 include a dose escalation portion of the Phase 1 clinical trial in which we plan to enroll patients having solid tumors with MTAP deletion identified by commercial or institutional next generation sequencing, or NGS, panels, and in some cases also confirmed by an MTAP immunohistochemistry, or IHC, assay. Following and subject to satisfactory completion of the dose escalation portion of the Phase 1 clinical trial, we plan to enroll patients having solid tumors with MTAP deletion into one or more expansion arms focused on selected solid tumor indications. We plan to obtain patient biopsies from the dose escalation and expansion portions of the clinical trial for translational research, including evaluation of certain pharmacodynamic, or PD, biomarkers, such as peripheral S-adenosyl methionine, or SAM, and tumor SAM as determined by liquid chromatography / mass spectroscopy, or LCMS, assays, and tumor symmetrical dimethyl arginine, or SDMA, as determined by enzyme linked immunosorbent assay, or ELISA, IHC assay and/or LCMS assay. We have a program objective to obtain preliminary clinical PD data from the dose-escalation portion of the IDE397 monotherapy Phase 1 clinical trial in the second half of 2021.

We are continuing to advance certain preclinical activities to support IDE397 as a clinical candidate.

We are evaluating the efficacy of monotherapy IDE397 in over forty solid tumor patient derived xenograft, or PDX, models with homozygous MTAP deletions across a range of solid tumor types. Preliminary results of this IDE397 MTAP-deletion PDX Panel Study show in vivo efficacy in multiple MTAP-null xenograft models, demonstrating tumor growth inhibition when MAT2A is pharmacologically inhibited with IDE397 as monotherapy, including in non-small cell lung cancer. In this study, we observed > 75% Tumor Growth Inhibition, or TGI, in ~ 50% of models and across major solid tumor types. We also observed tumor regressions, with > 100% TGI, in multiple PDX models and across multiple solid tumor types.

We are planning to present data summarizing the results of the IDE397 MTAP-deletion PDX Panel Study at the 2021 Annual Meeting of the American Association for Cancer Research, or AACR in April 2021. We also plan to present preclinical data at AACR in April 2021 evaluating the effects of pharmacological inhibition of MAT2A, including analyses of genomic and metabolic effects in an isogenic cell pair and of proliferation effects in a panel of MTAP wild type and MTAP-deleted cell lines.

We have completed the good laboratory practice, or GLP, compliant toxicology studies with IDE397 in multiple species.

Preclinical combination tolerability and efficacy studies are ongoing to evaluate IDE397 in combination with GSK oncology assets, as well as other potential oncology agents, including taxanes.

We plan to lead research and development of IDE397 through early clinical development, in collaboration with GlaxoSmithKline pursuant to the Collaboration, Option and License Agreement, or the GSK Collaboration Agreement, with an affiliate of GlaxoSmithKline, GLAXOSMITHKLINE INTELLECTUAL PROPERTY (NO. 4), Limited, or GSK.

PARG

We are advancing our preclinical research for an inhibitor of poly (ADP-ribose) glycohydrolase, or PARG, for patients having tumors with a defined biomarker based on genetic mutations and/or molecular signatures.

One of our PARG inhibitor compounds, designated as IDB-PARG, has demonstrated dose-dependent in vivo efficacy as monotherapy with tumor regression or stasis in multiple PDX models and in multiple cell-derived xenograft, or CDX, models. We observed tumor regressions (> 100% TGI) in multiple breast cancer PDX models with defined genetic and subtyping profiles. We also observed tumor regressions and enhanced TGI relative to niraparib in multiple CDX models, including in vivo efficacy in a niraparib-resistant resistant CDX model.

We plan to present data at AACR in April 2021 summarizing the results of our preclinical studies evaluating the effects of pharmacological inhibition of PARG in a panel of homologous recombination deficient cell lines and in CDX and PDX models.

We are continuing to evaluate the efficacy of IDB-PARG as monotherapy across a panel of additional solid tumor PDX models with specific genetic alterations.

We entered into a strategic collaboration with the Broad Institute of MIT and Harvard, or Broad Institute, focused on synthetic lethality target and biomarker discovery. Under our collaboration with the Broad Institute, we are evaluating pharmacological inhibition across a panel of cell lines using the Broad Institute's PRISM platform to inform patient selection for potential clinical development of a PARG inhibitor. PRISM is a high-throughput, multiplexed screening platform which we are using to evaluate our proprietary small molecule PARG inhibitor for activity against a curated panel of more than 750 genomically-characterized human cancer cell lines representing > 45 lineages.

We are also collaborating with the Broad Institute to evaluate paralogous CRISPR knockdown in selected cell lines in conjunction with pharmacological inhibition of PARG to inform patient selection and combination strategies in ovarian and breast cancer.

We have extended the option period during which IDEAYA has rights to exercise an option to certain license rights under the Evaluation, Option and License Agreement with Cancer Research UK and University of Manchester, or CRUK-UMann Agreement to September 2022. The eighteen month extension of the option period was effected pursuant to the terms of the March 2020 amendment to the CRUK-UMann Agreement.

Subject to further preclinical studies, we are targeting to identify a PARG inhibitor development candidate in 2021.

Werner Helicase

We are also continuing to advance our preclinical research in collaboration with GSK for an inhibitor targeting Werner Helicase, or WRN, for patients having tumors with high microsatellite instability, or MSI. We have observed dose-dependent cellular viability effect and a dose-dependent cellular pharmacodynamic, or PD, response in multiple endogenous MSI high cell lines. We have also demonstrated preliminary in vivo efficacy and PD response in a relevant MSI high model.

For this program, we plan to continue further development in collaboration with GSK pursuant to the GSK Collaboration Agreement.

Pol Theta

We are progressing our program targeting DNA Polymerase Theta, or Pol Theta or POLQ, in collaboration with GSK for patients having solid tumors with BRCA or other homologous recombination deficiency, or HRD, mutations. We have shown combination activity with multiple PARP inhibitors, including niraparib. We have demonstrated synergistic in vivo

efficacy of a Pol Theta inhibitor with niraparib: the combination of our Pol Theta inhibitor with niraparib enhanced the activity of niraparib in the DLD1 BRCA2-/- xenograft model. Tumor regressions were observed for all animals in the study which were administered the combination, which was well tolerated.

We plan to continue further development of our POLQ program, including both protein degraders and small molecule inhibitors in collaboration with GSK pursuant to the GSK Collaboration Agreement, and are targeting selecting a development candidate for a Pol Theta small molecule inhibitor in 2021.

DNA Damage Target

We have initiated early preclinical research programs to identify small molecule inhibitors for multiple distinct DNA Damage Targets, or DDTs, for patients with solid tumors characterized by a proprietary biomarker or a gene signature.

Synthetic Lethality Target and Biomarker Discovery Platform

Synthetic lethality continues to be our core research focus. We have invested significantly and continue to invest in capabilities for identification and validation of new synthetic lethality targets. For targets of interest, we advance our research to discover therapeutic drugs and relevant biomarkers.

IDE196 - PKC Inhibitor Clinical Candidate

We continue to execute on our ongoing Phase 1/2 clinical trial and preclinical research activities for our clinical candidate IDE196, a protein kinase C, or PKC, inhibitor for genetically-defined cancers having activating GNAQ or GNA11 hotspot mutations, including in metastatic uveal melanoma, or MUM, skin melanoma and other solid tumors.

Our clinical trial strategy is to pursue IDE196 combination therapies in MUM, including with binimetinib, a MEK inhibitor, and independently with crizotinib, a cMET inhibitor, each pursuant to our Clinical Trial Collaboration and Supply Agreement, or Pfizer Agreement, with Pfizer. We have formed a joint development committee with Pfizer responsible for coordinating all regulatory and other activities under the Pfizer Agreement, including for both the IDE196/binimetinib combination arm of the clinical trial and the IDE196/crizotinib combination arm of the clinical trial. If the clinical data from either or both of these combination studies is positive, we plan to enter into good faith negotiations with Pfizer to determine a regulatory submission strategy.

We are continuing to evaluate IDE196 as monotherapy in non-MUM cancers, including in skin melanoma, where we have met the clinical protocol criteria for an expansion cohort, based on observing one confirmed partial response in an initial four evaluable patients.

Based on preliminary IDE196 monotherapy clinical data and its mechanism of action, we anticipate IDE196 clinical activity independent of Human Leukocyte Antigen (HLA) status in GNAQ/11-mutation cancers.

IDE196 / Binimetinib Combination Therapy

In June 2020, we initiated a combination arm of our Phase 1/2 clinical trial to evaluate IDE196 in combination with binimetinib in patients having tumors harboring activating GNAQ or GNA11 hotspot mutations. An initial dose escalation portion of this arm of the clinical trial is evaluating the safety and efficacy of IDE196 in combination with binimetinib at various dose combinations, initially in patients with metastatic uveal melanoma, or MUM. Following our evaluation of tolerability and preliminary efficacy from the IDE196 / binimetinib combination arm of the clinical trial in MUM, we may also evaluate IDE196 / binimetinib combination therapy in patients having other solid tumors with activating GNAQ/11 hotspot mutations outside of uveal melanoma, such as skin melanoma.

We are continuing patient enrollment into the IDE196 / binimetinib combination arm under the clinical trial collaboration and supply agreement with Pfizer. We initiated dose expansion in the IDE196 / binimetinib Phase 1/2 study in MUM, based on an observation of early clinical activity of the combination in MUM. We are targeting to enroll a total of approximately 40 patients in the IDE196 / binimetinib combination arm in MUM.

We anticipate interim data from the IDE196 / binimetinib combination therapy arm of the Phase 1/2 clinical trial in MUM patients in 2021.

IDE196 / Crizotinib Combination Therapy

In September, 2020, we expanded the scope of our Pfizer Agreement to evaluate IDE196 and crizotinib as a combination therapy in patients having tumors harboring activating GNAQ or GNA11 hotspot mutations.

In December 2020, we initiated a combination arm of our Phase 1/2 clinical trial to evaluate IDE196 in combination with crizotinib in patients having tumors harboring activating GNAQ or GNA11 hotspot mutations. An initial dose escalation portion of this arm of the clinical trial will be evaluating the safety and efficacy of IDE196 in combination with crizotinib at various dose combinations, initially in patients with metastatic uveal melanoma, or MUM. Following our evaluation of tolerability and preliminary efficacy from the IDE196 / crizotinib combination arm of the clinical trial in MUM, we may also evaluate IDE196 / crizotinib combination therapy in patients having other solid tumors with activating GNAQ/11 hotspot mutations outside of uveal melanoma, such as skin melanoma.

We are continuing patient enrollment into the IDE196 / crizotinib combination arm under the clinical trial collaboration and supply agreement with Pfizer.

We identified cMET as a potential biomarker and a cMET inhibitor as potential combination agent though our translational research studies, or IDE196 cMET Translational Studies. In these studies, we observed preclinical synergies between IDE196 and crizotinib in relevant cellular models under conditions simulating a tumor microenvironment in the liver, the site of approximately 90% of uveal melanoma metastases. Additionally, we conducted a retrospective analysis of human clinical samples from the Novartis IDE196 Phase 1 clinical trial, which also independently supported cMET expression / activation as potential biomarker / combination agent.

We are planning to present data summarizing the results of the IDE196 cMET Translational Studies at AACR in April 2021.

IDE196 Monotherapy

Our ongoing monotherapy arm of the Phase 1/2 clinical trial was initiated in June 2019 to evaluate IDE196 in solid tumors harboring GNAQ or GNA11 hotspot mutations in a basket trial design. We have completed enrollment in the monotherapy arm of the Phase 1/2 clinical trial in MUM. We are continuing enrollment of patients having other, non-MUM solid tumors harboring GNAQ or GNA11 hotspot mutations, such as skin melanoma.

Our development strategy in the monotherapy non-MUM GNAQ/11 arm of the clinical trial is focused on skin melanoma. In the Phase 2 basket arm evaluating IDE196 as monotherapy in non-MUM solid tumors harboring GNAQ or GNA11 hotspot mutations (GNAQ/11), the clinical protocol criteria have been met for cohort expansion in cutaneous melanoma, or skin melanoma. We are actively enrolling for this Phase 2 cohort expansion in skin melanoma. Of 4 evaluable skin melanoma patients harboring GNAQ/11 hotspot mutations (excluding 1 non-evaluable) as of August 1, 2020, a 100% Disease Control Rate was observed, and one confirmed partial response (cPR) was determined by RESIST, or Response Evaluation Criteria in Solid Tumors, 1.1 guidelines, satisfying the protocol requirement of at least one RECIST response in the first Stage 1 cohort (n=9) in order to expand into a second Stage 2 cohort (n=15). Following satisfaction of the clinical protocol criteria, we can enroll an additional 15 skin melanoma patients harboring GNAQ/11 mutations into the Stage 2 cohort expansion, for a total planned enrollment of 24 patients in the skin melanoma cohort.

As of March 15, 2020, we have enrolled a total of nine patients with solid tumors other than MUM, including seven patients with skin melanoma, into the Phase 2 monotherapy basket arm.

We have added and are continuing to access potential additional clinical trial sites to supplement enrollment into the Phase 2 basket arm of the IDE196 clinical trial. We have established a relationship with Tempus and with CARIS, in each case through which we are accessing their network of clinical trial sites into which we can enroll qualifying patients having tumors harboring GNAQ/11 hotspot mutations.

We anticipate disclosing interim data from the monotherapy arm of our ongoing IDE196-001 Phase 1/2 basket trial in 2021, including in MUM and in GNAQ/11-mutation skin melanoma. Preliminary clinical data from IDE196 monotherapy arm shows that IDE196 activity is independent of HLA status.

IDE196 Tolerability

IDE196 has been generally well tolerated in the Phase 1/2 clinical trial. We plan to update further on tolerability in connection with an interim data updates for IDE196 / binimetinib combination therapy in MUM and for IDE196 monotherapy in MUM and in GNAQ/11 mutant skin melanoma.

IDE196 was initially developed by Novartis, and we obtained an exclusive, worldwide license to IDE196 from Novartis in September 2018. Pursuant to our license agreement with Novartis, except for Novartis' ongoing Phase 1 clinical trial, we control all future clinical development, and all commercial rights to IDE196, and may rely on and incorporate data previously submitted to the FDA by Novartis into our own regulatory submissions. Novartis has completed enrollment in a Phase 1 clinical trial it is conducting to evaluate IDE196 in metastatic uveal melanoma. Phase 1 monotherapy data from Novartis was presented at the American Association for Cancer Research, or AACR, in April 2019.

Other Potential Indications

We are continuing our preclinical evaluation of IDE196 in Sturge-Weber Syndrome, or SWS, a rare neurocutaneous disorder characterized by capillary malformations and associated with mutations in GNAQ. Our preclinical evaluation will include potential feasibility for pediatric use.

Clinical Trial Collaboration and Supply Agreement for IDE196 Program

On March 11, 2020, we entered into the Pfizer Agreement with Pfizer Inc., pursuant to which Pfizer will supply us with their MEK inhibitor, binimetinib, to evaluate the combination in patients with tumors harboring activating GNAQ or GNA11 hotspot mutations.

On September 23, 2020, we expanded the scope of our clinical trial collaboration and supply agreement with Pfizer, pursuant to which Pfizer will supply us with their cMET inhibitor, crizotinib to evaluate IDE196 and crizotinib as a combination therapy in patients having tumors harboring activating GNAQ or GNA11 hotspot mutations.

For each of the IDE196/binimetinib and IDE196/crizotinib combination arms of the clinical trial, we have established a joint development committee, and there will be joint decision making and data sharing of the clinical trial results between the parties. We will sponsor the clinical studies and Pfizer will provide the binimetinib and crizotinib drug supply. If there is clinical data from the collaboration studies that could be used to obtain regulatory approvals or label changes, we will enter into good faith negotiations with Pfizer to determine a regulatory submission strategy.

Public Offering and Sale of IDEAYA Common Stock

On June 22, 2020, we closed on an underwritten public offering, or the Offering, of 6,666,667 shares of our common stock at an offering price of $15.00 per share, pursuant to which we received gross proceeds of $100.0 million, before deducting underwriting discounts and commissions and other offering expenses.

On July 22, 2020, as part of the Offering, the Company sold and issued an additional 500,000 shares of common stock upon the exercise of the overallotment option by the underwriters for gross proceeds of $7.5 million before deducting underwriting discounts and commissions and other offering. We realized aggregate gross proceeds of $107.5 million from the Offering, including gross proceeds from the sale of shares in the base Offering and the sale of shares from exercise of the overallotment option, and before deducting underwriting discounts and commissions and other offering expenses payable by us.

Private Placement of IDEAYA Common Stock with GSK

On June 17, 2020, we entered into a stock purchase agreement with Glaxo Group Limited, or GGL, an affiliate of GlaxoSmithKline, pursuant to which GGL agreed to purchase in a private placement, subject to certain conditions, 1,333,333 shares of our common stock at a price per share of $15.00, which is equal to the public offering price per share in the Offering. The common stock sold pursuant thereto was not registered under the Securities Act of 1933, as amended, or the Securities Act. The closing of this private placement occurred on August 3, 2020, following HSR Clearance of the associated GSK Collaboration Agreement, described below, and satisfaction of other certain customary closing conditions, pursuant to which we received proceeds of $20.0 million.

On August 3, 2020, following HSR Clearance of the associated GSK Collaboration Agreement, we closed on the private placement of 1,333,333 shares of our common stock to Glaxo Group Limited, or GGL, an affiliate of GlaxoSmithKline, at a price per share of $15.00, which is equal to the public offering price per share in the Offering. The common stock sold pursuant thereto was not registered under the Securities Act of 1933, as amended, or the Securities Act. We received proceeds of $20.0 million from the sale of these shares in this private placement.

Prospectus Supplement - At-the-Market Facility

On August 12, 2020, we filed a prospectus supplement to the prospectus dated June 10, 2020, activating our at-the-market, or ATM, facility by entering into an Open Market Sale Agreement, or August 2020 Sales Agreement, with Jefferies LLC, or Jefferies, relating to shares of our common stock offered by the prospectus supplement and the accompanying prospectus. Pursuant to the terms of the August 2020 Sales Agreement, we may offer and sell shares of our common stock, $0.0001 par value per share, having an aggregate offering price of up to $50,000,000 from time to time through Jefferies acting as agent. Pursuant to the August 2020 Sales Agreement, Jefferies, as sales agent, receives a commission of 3.0% of the aggregate gross proceeds that the Company receives from each sale of its shares of common stock sold under the August 2020 Sales Agreement.

During the three months ended December 31, 2020, we sold 410,896 shares of our common stock for aggregate net proceeds of $6.6 million after deducting sales commission and other expenses at a weighted average sales price of approximately $16.92 per share under an at-the-market offering pursuant to the August 2020 Sales Agreement with Jefferies as sales agent.

On January 20, 2021, we entered into a new Open Market Sale Agreement, or January 2021 Sale Agreement, with Jefferies, with respect to an at-the-market offering program under which we may offer and sell, from time to time at our sole discretion, shares of its common stock, par value $0.0001 per share (the “Common Stock”), having aggregate gross proceeds of up to $90.0 million through Jefferies as its sales agent. Under the January 2021 Sale Agreement, we will pay Jefferies a commission equal to three percent (3.0%) of the aggregate gross proceeds from each sale of shares sold through Jefferies under the January 2021 Sale Agreement.

Subsequent to December 31, 2020, from January 2021 through March 22, 2021, we sold an additional 2,709,385 shares of our common stock for aggregate gross proceeds of $43.3 million at a weighted average sales price of approximately $15.97 per share under an at-the-market offering pursuant to the August 2020 and January 2021 Sales Agreements with Jefferies as sales agent.

Management / Leadership Team

We continue to enhance our leadership team with the addition of Matthew Maurer, M.D. as Vice President, Head of Clinical Oncology and Medical Affairs in January 2021. Dr. Maurer was previously with Bristol Myers Squibb, and was earlier an oncologist and Assistant Professor of Medicine at Columbia University College of Physicians and Surgeons.

Board of Directors

Susan L. Kelley, M.D. has joined as a member of our board of directors effective February 12, 2021, serving as a Class III director, with an initial term expiring at our 2022 annual meeting of stockholders. Dr. Kelley has over 25 years of experience in oncology drug research and development, including most recently as Chief Medical Officer of the Multiple Myeloma Research Consortium (MMRC), and previously at Bayer Healthcare Pharmaceuticals and Bayer-Schering Pharma, and at Bristol-Myers Squibb.

Components of Operating Results

Collaboration Revenues

To date, we have not generated any revenue from product sales, and we do not expect to generate any revenue from product sales for the foreseeable future. Our revenue exclusively consists of collaboration revenue under the GSK Collaboration Agreement, including amounts that are recognized related to upfront payments and amounts due to us for research and development services. In the future, revenue may include additional milestone payments, option exercise payments, profit sharing, and royalties on any net product sales under our collaborations. We expect that any revenue we generate will fluctuate from period to period as a result of the timing and amount of license, research and development services, and milestone and other payments.

Operating Expenses

Research and Development Expenses

Substantially all of our research and development expenses consist of expenses incurred in connection with discovery and development of our product candidates. These expenses include certain payroll and personnel-related expenses, including salaries, employee benefit costs and stock-based compensation expenses for our research and product development employees, fees to third parties to conduct certain research and development activities on our behalf including fees to CMOs and CROs in support of manufacturing and clinical activity for IDE196, consulting costs, costs for laboratory supplies, costs for product licenses and allocated overhead, including rent, equipment, depreciation, information technology costs and utilities. We expense both internal and external research and development expenses as they are incurred.

We have entered into various agreements with CMOs and CROs. Our research and development accruals are estimated based on the level of services performed, progress of the studies, including the phase or completion of events, and contracted costs. The estimated costs of research and development provided, but not yet invoiced, are included in accrued liabilities on the balance sheet. If the actual timing of the performance of services or the level of effort varies from the original estimates, we will adjust the accrual accordingly. Payments made to CMOs and CROs under these arrangements in advance of the performance of the related services are recorded as prepaid expenses and other current assets until the services are rendered.

Costs of certain activities, such as preclinical studies, are generally recognized based on an evaluation of the progress to completion of specific tasks. Nonrefundable payments made prior to the receipt of goods or services that will be used or rendered for future research and development activities are deferred and capitalized as prepaid expenses and other current assets on our balance sheet. The capitalized amounts are recognized as expense as the goods are delivered or the related services are performed.

We do not allocate our internal costs by product candidate, including internal costs, such as payroll and other personnel expenses, laboratory supplies and allocated overhead. With respect to internal costs, several of our departments support multiple product candidate research and development programs, and therefore the costs cannot be allocated to a particular product candidate or development program. The following table summarizes our external clinical development expenses by program:

	Year Ended December 31,	
	2020	**2019**
External clinical development expenses (1):		
IDE397	$ 2,162	$ —
IDE196	6,237	6,119
Personnel related and stock-based compensation	10,669	11,772
Other research and development expenses	20,630	16,428
Total research and development expenses	$ 39,698	$ 34,319

(1) External clinical development expenses include manufacturing and clinical trial costs. These expenses are primarily for services provided by external consultants, CMOs and CROs.

We are focusing substantially all of our resources on the development of our product candidates. We expect our research and development expenses to increase substantially during the next few years, as we seek to initiate clinical trials for our product candidates, complete our clinical program, pursue regulatory approval of our product candidates and prepare for a possible commercial launch. Predicting the timing or the cost to complete our clinical program or validation of our commercial manufacturing and supply processes is difficult and delays may occur because of many factors, including factors outside of our control. For example, if the FDA or other regulatory authorities were to require us to conduct clinical trials beyond those that we currently anticipate, or if we experience significant delays in enrollment in any of our clinical trials, we could be required to expend significant additional financial resources and time on the completion of clinical development. Furthermore, we are unable to predict when or if our product candidates will receive regulatory approval with any certainty.

General and Administrative Expenses

General and administrative expenses consist primarily of payroll and personnel-related expenses, including salaries, employee benefit costs and stock-based compensation expense, professional fees for legal, patent, consulting, accounting and tax services, allocated overhead, including rent, equipment, depreciation, information technology costs and utilities, and other general operating expenses not otherwise classified as research and development expenses. We anticipate that our general and administrative expenses will increase, as a result of increased personnel costs, including salaries, benefits and stock-based compensation expense, patent costs for our product candidates, expanded infrastructure and higher consulting, legal and accounting services associated with maintaining compliance with our NASDAQ stock exchange listing and requirements of the Securities and Exchange Commission, or the SEC, investor relations costs and director and officer insurance policy premiums associated with being a public company.

Other Income (Expense)

Interest Income and Other Income (Expense), Net

Interest income and other income (expense), net consists primarily of interest income earned on our cash, cash equivalents and marketable securities.

Results of Operations

A discussion regarding our financial condition and results of operations for fiscal year 2020 compared to fiscal year 2019 is presented below. A discussion regarding our financial condition and results of operations for fiscal year 2019 compared to fiscal year 2018 can be found in "Management's Discussion and Analysis of Financial Condition and Results of Operations" in our Annual Report on Form 10-K filed with the SEC on March 24, 2020, which is available free of charge on the SEC's website at http://www.sec.gov and at our investor relations website, https://ir.ideayabio.com/.

Comparison of the Years Ended December 31, 2020 and December 31, 2019

The following table summarizes our results of operations for the periods indicated (in thousands):

	Years Ended December 31,			
	2020	2019	Change	% Change
Revenue:				
Collaboration revenue	$ 19,538	$ —	$ 19,538	100%
Operating expenses:				
Research and development	39,698	34,319	5,379	16%
General and administrative	15,184	9,952	5,232	53%
Loss from operations	$ (35,344)	$ (44,271)	$ 8,927	(20%)
Interest income and other income (expense), net	849	2,296	(1,447)	(63%)
Net loss	$ (34,495)	$ (41,975)	$ 7,480	(18%)

Collaboration Revenue

Collaboration revenue increased by $19.5 million in the year ended December 31, 2020. In July 2020, the GSK Collaboration Agreement became effective, and we started recognizing collaboration revenue, which consists of revenue from preclinical and Phase 1 monotherapy clinical research and development services under the MAT2A program as well as preclinical research services and the related license under the Pol Theta and WRN programs. Collaboration revenue recognized in the year ended December 31, 2020 also included $3.0 million of revenue from the exercise by GSK of the material right associated with the option to license IDEAYA-owned technology under the MAT2A program to the extent necessary for preclinical activities.

Research and Development Expenses

Research and development expenses increased by $5.4 million, or 16%, from the year ended December 31, 2019 to the year ended December 31, 2020. The increase in research and development expenses was primarily due to an increase in external clinical development expenses for IDE397 of $2.2 million related to manufacturing and clinical startup activities, an increase in external clinical development expenses for IDE196 of $0.1 million related to increased patient enrollment in our Phase 1/2 clinical trial to evaluate IDE196 in solid tumors, an increase in fees paid to CROs, CMOs and consultants of $5.2 million related to the advancement of our lead product candidates through preclinical studies, and an increase in software licenses, subscriptions and depreciation expense of $0.3 million. The increase was partially offset by a decrease in costs for laboratory supplies used in support of our research programs of $1.5 million due to decreased laboratory operations as a result of COVID-19 restrictions, and a decrease in payroll expenses, including salaries, benefits and stock-based compensation expense of $1.1 million due to a decrease in our average research and development headcount for the year.

General and Administrative Expenses

General and administrative expenses increased by $5.2 million, or 53%, from the year ended December 31, 2019 to the year ended December 31, 2020. The increase in general and administrative expenses was primarily due to an increase in payroll and personnel-related expenses, including salaries, benefits and stock-based compensation expense, of $2.8 million related to increased general and administrative headcount to support our growth, an increase in directors' and officers' liability insurance premiums of $1.0 million, an increase in legal patent expense of $0.4 million due to increased patent filings, an increase in consulting fees of $0.3 million related to human resources and information technology support, an increase in costs associated with the filing of a shelf registration statement on Form S-3 of $0.2 million, and an increase in software licenses of $0.2 million.

Interest Income and Other Income (Expense), Net

Interest income decreased by $1.4 million, or 63%, from the year ended December 31, 2019 to the year ended December 31, 2020, primarily due to a decrease in interest income on our cash, cash equivalents and marketable securities balances, as a result of the lower interest yields.

Liquidity and Capital Resources; Plan of Operations

Sources of Liquidity

We have funded our operations primarily through the sale and issuance of common stock, redeemable convertible preferred stock, and convertible promissory notes, as well as the up-front payment received from GSK. As of December 31, 2020, we had cash, cash equivalents and marketable securities of $283.6 million, consisting primarily of money market funds, U.S. government securities, commercial paper, and corporate bonds.

Material Cash Requirements

We have incurred net losses since our inception. For the years ended December 31, 2020 and December 31, 2019, we had net losses of $34.5 million and $42.0 million, respectively, and we expect to incur substantial additional losses in future periods. As of December 31, 2020, we had an accumulated deficit of $127.0 million. Based on our current business plan, we believe that our existing cash, cash equivalents and marketable securities will be sufficient to fund our planned operations into 2024.

To date, we have not generated any product revenue. We do not expect to generate any meaningful product revenue unless and until we obtain regulatory approval of and commercialize any of our product candidates, and we do not know when, or if, it will occur. We expect to continue to incur significant losses for the foreseeable future, and we expect the losses to increase as we continue the development of, and seek regulatory approvals for, our product candidates and begin to commercialize any approved products. We are subject to all of the risks typically related to the development of new product candidates, and we may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business. Moreover, we expect to incur additional costs associated with operating as a public company.

We will continue to require additional capital to develop our product candidates and fund operations for the foreseeable future. We may seek to raise capital through private or public equity or debt financings, collaboration or other arrangements with corporate sources, or through other sources of financing. Adequate additional funding may not be available to us on acceptable terms or at all. Our failure to raise capital as and when needed would have a negative impact on our financial condition and our ability to pursue our business strategies. We anticipate that we will need to raise substantial additional capital, the requirements for which will depend on many factors, including:

- the scope, timing, rate of progress and costs of our drug discovery, preclinical development activities, laboratory testing and clinical trials for our product candidates;
- the number and scope of clinical programs we decide to pursue;
- the scope and costs of manufacturing development and commercial manufacturing activities;
- the extent to which we acquire or in-license other product candidates and technologies;
- the cost, timing and outcome of regulatory review of our product candidates;
- potential delays in our ongoing clinical programs as a result of the COVID-19 pandemic;
- the costs of preparing, filing and prosecuting patent applications, maintaining and enforcing our intellectual property rights and defending intellectual property-related claims;
- our ability to establish and maintain collaborations on favorable terms, if at all;
- our efforts to enhance operational systems and our ability to attract, hire and retain qualified personnel, including personnel to support the development of our product candidates;
- the costs associated with being a public company; and
- the cost and timing associated with commercializing our product candidates, if they receive marketing approval.

A change in the outcome of any of these or other variables with respect to the development of any of our product candidates could significantly change the costs and timing associated with the development of that product candidate. Furthermore, our operating plans may change in the future, and we will continue to require additional capital to meet operational needs and capital requirements associated with such operating plans. If we raise additional funds by issuing equity securities, our stockholders may experience dilution. Any future debt financing into which we enter may impose upon us additional covenants that restrict our operations, including limitations on our ability to incur liens or additional debt, pay dividends, repurchase our common stock, make certain investments or engage in certain merger, consolidation or asset sale transactions. Any debt financing or additional equity that we raise may contain terms that are not favorable to us or our stockholders. If we are unable to raise additional funds when needed, we may be required to delay, reduce, or terminate some or all of our development programs and clinical trials. We may also be required to sell or license to others rights to our product candidates in certain territories or indications that we would prefer to develop and commercialize ourselves.

We lease our laboratory and office facilities in South San Francisco, California under non-cancelable operating leases with expiration dates in July 2024. In May 2018, we amended our South San Francisco facility lease agreement to expand the size of the original premises by adding approximately 7,340 rentable square feet of additional space. In September 2019, we further amended our South San Francisco facility lease agreement to expand the size of the premises by adding 5,588 rentable square feet of additional space. As of December 31, 2020, we expect to make the total lease payments of $7.6 million through July 2024.

We enter into contracts in the normal course of business with third-party contract organizations for preclinical and clinical studies and testing, manufacture and supply of our preclinical and clinical materials and providing other services and products for operating purposes. These contracts generally provide for termination following a certain period after notice, and therefore we believe that our non-cancelable obligations under these agreements are not material.

Pursuant to the GSK Collaboration Agreement, subject to GSK’s exercise of the Option, we will be responsible for 20% of further development costs for the MAT2A program thereafter. The cost-sharing percentages will be adjusted based on the actual ratio of U.S. to global profits for MAT2A products, as measured three and six years after global commercial launch thereof. Also, we will be responsible for 20% of global research and development costs for the WRN program. The cost-sharing percentages will be adjusted based on the actual ratio of U.S. to global profits for WRN products, as measured three and six years after global commercial launch thereof. We may opt out of 50% U.S. net profit share and corresponding development cost share for the MAT2A program and/or WRN program.

In September 2018, we entered into a license agreement with Novartis International Pharmaceuticals Ltd., or Novartis, to develop and commercialize Novartis' LXS196 (also known as IDE196), a PKC inhibitor for the treatment of cancers having GNAQ and GNA11 mutations. In consideration of license and rights granted under the license agreement, we made a one-time cash payment of $2.5 million to Novartis and issued 263,615 shares of Series B redeemable convertible preferred stock to an affiliate of Novartis. Under the license agreement, we agreed to make contingent development and sales milestone payments of up to $29.0 million and mid to high single digit royalty payments of the net sales of licensed products. Such milestones and royalties are dependent on future activity or product sales and are not provided for in the table above as the timing and amounts, if any, are not estimable.

We did not have during the periods presented, and we do not currently have, any off-balance sheet arrangements.

Adequate additional funding may not be available to us on acceptable terms or at all. See the section of this Annual Report titled "Part I, Item 1A. – Risk Factors" for additional risks associated with our substantial capital requirements.

Summary Statement of Cash Flows

The following table sets forth the primary sources and uses of cash, cash equivalents, and restricted cash for each of the periods presented below (in thousands):

	Years Ended December 31,	
	2020	**2019**
Net cash (used in) provided by:		
Operating activities	$ 55,463	$ (39,313)
Investing activities	(146,243)	2,265
Financing activities	128,750	50,610
Net increase in cash, cash equivalents and restricted cash	$ 37,970	$ 13,562

Cash Flows from Operating Activities

Net cash provided by operating activities was $55.5 million for the year ended December 31, 2020. Cash provided by operating activities was primarily due to an increase in contract liability of $83.8 million as a result of the up-front payment received from GSK, stock-based compensation expense of $3.6 million, an increase of accrued and other liabilities of $3.0 million due to fees to CROs in support of research and manufacturing activities and an increase in accrued payroll expenses due to increased headcounts, and depreciation and amortization expense of $1.4 million, partially offset by the use of funds in our operations to develop our product candidates resulting in a net loss of $34.5 million and an increase in accounts receivable of $1.9 million due to the estimated program costs for the fourth quarter of 2020 reimbursable by GSK under the GSK Collaboration Agreement.

Net cash used in operating activities was $39.3 million for the year ended December 31, 2019. Cash used in operating activities was primarily due to the use of funds in our operations to develop our product candidates resulting in a net loss of $42.0 million, adjusted for the net amortization of premiums and discounts on marketable securities of $0.5 million and an increase in prepaid expenses and other assets of $2.0 million mainly due to advance payments for director's and officers' liability insurance premiums and fees for CROs, partially offset by depreciation and amortization expense of $1.2 million and stock-based compensation expense of $2.2 million, and an increase in accrued and other liabilities of $2.0 million mainly due to fees to CMOs and CROs in support of manufacturing and clinical activity for IDE196 and personnel-related expenses.

Cash Flows from Investing Activities

Net cash used in investing activities was $146.2 million for the year ended December 31, 2020, which consisted primarily of $242.3 million used to purchase marketable securities and $0.5 million used to purchase property and equipment, partially offset by $96.6 million provided by maturities of marketable securities.

Net cash provided by investing activities was $2.3 million for the year ended December 31, 2019, which consisted primarily of $73.5 million provided by maturities of marketable securities and $18.1 million from sales of marketable securities, partially offset by $88.0 million used to purchase marketable securities and $1.4 million used to purchase property and equipment.

Cash Flows from Financing Activities

Net cash provided by financing activities was $128.8 million for the year ended December 31, 2020, which consisted primarily of $100.7 million of net proceeds from our follow-on offering, $20.0 million of net proceeds from our private placement of common stock, $6.6 million of proceeds from ATM offering, $1.2 million of proceeds from exercise of common stock options, and $0.3 million of proceeds from ESPP purchase.

Net cash provided by financing activities was $50.6 million for the year ended December 31, 2019, which consisted primarily of $50.3 million of net proceeds from our IPO.

Critical Accounting Policies and Estimates

Our financial statements have been prepared in accordance with U.S. generally accepted accounting principles, or GAAP. The preparation of these financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements and the reported revenue recognized and expenses incurred during the reporting periods. Our estimates are based on our historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions. We believe that the accounting policies discussed below are critical to understanding our historical and future performance, as these policies relate to the more significant areas involving management's judgments and estimates. For more detail on our critical accounting policies, refer to Note 2 to the financial statements appearing elsewhere in this Annual Report on Form 10-K.

Revenue Recognition

We follow Accounting Standards Codification Topic 606, *Revenue from Contracts with Customers* ("ASC 606"). Under ASC 606, we recognize revenue when our customer obtains control of promised goods or services, in an amount that reflects the consideration which we expect to receive in exchange for those goods or services. To determine revenue recognition for arrangements that we determine are within the scope of ASC 606, we perform the following five steps: (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) we satisfy a performance obligation.

We apply the five-step model to contracts when (1) parties have approved the contract and are committed to performing respective obligations, (2) we can identify each party's rights regarding the goods or services to be transferred, (3) we can identify the payment terms for the goods or services to be transferred, (4) the contract has commercial substance, and (5) it is probable that we will collect the consideration we are entitled to in exchange for the goods or services we transfer to the customer. At contract inception, we assess the goods or services promised within each contract and determine the performance obligations by assessing whether each promised good or service is distinct. Goods or services that are not distinct are bundled with other goods or services in the contract until a bundle of goods or services that is distinct is created. We then recognize as revenue the amount of the transaction price that is allocated to the respective performance obligations when (or as) the performance obligations are satisfied. We constrain our estimate of the transaction price up to the amount (the "variable consideration constraint") that a significant reversal of recognized revenue is not probable.

Licenses of intellectual property: If a license to our intellectual property is determined to be distinct from the other promised goods or services identified in an arrangement, we recognize revenue from non-refundable, upfront fees allocated to the license at the point in time when the license is transferred to the customer and the customer is able to use and benefit from the license. For licenses that are bundled with other goods or services, we utilize judgment to assess the nature of the combined performance obligation to determine whether the combined performance obligation is satisfied over time or at a point in time and, if over time, the appropriate method of measuring progress toward satisfying the performance obligation for purposes of recognizing revenue from non-refundable, upfront fees. We evaluate the measure of progress each reporting period and, if necessary, adjusts the measure of progress and related revenue recognition.

Customer options for additional goods or services: If a contract contains customer options that allow the customer to acquire additional goods or services, including a license to our intellectual property, the goods and services underlying the customer options are evaluated to determine whether they are deemed to represent a material right. In determining whether the customer option has a material right, we assess whether there is an option to acquire additional goods or services at a discount. If the customer option is determined not to represent a material right, the option is not considered to be a performance obligation. If the customer option is determined to represent a material right, the material right is recognized as a separate performance obligation. We allocate the transaction price to material rights based on the relative standalone selling price, which is determined based on the identified discount and the probability that the customer will exercise the option. Amounts allocated to a material right are not recognized as revenue until the option is exercised.

Milestone payments: At the inception of each arrangement or amendment that includes development, regulatory or commercial milestone payments, we evaluate whether the milestones are considered probable of being reached and estimates the amount to be included in the transaction price. ASC 606 prescribes two methods to use when estimating the amount of variable consideration: the expected value method and the most likely amount method. Under the expected value method, an entity considers the sum of probability-weighted amounts in a range of possible consideration amounts. Under the most likely amount method, an entity considers the single most likely amount in a range of possible consideration amounts. Whichever method is used, it should be consistently applied throughout the life of the contract; however, it is not necessary for us to use the same approach for all contracts. If it is probable that a significant revenue reversal would not occur when the uncertainty associated with the milestone is resolved, the associated milestone value is included in the transaction price. Milestone payments that are highly susceptible to factors outside our influence, such as regulatory approvals, are not considered probable of being achieved until those approvals are received. If there is more than one performance obligation, the transaction price is then allocated to each performance obligation on a relative stand-alone selling price basis. We recognize revenue as or when the performance obligations under the contract are satisfied. At the end of each subsequent reporting period, we re-evaluate the probability or achievement of each milestone and any related constraint, and if necessary, adjusts our estimates of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis, which would affect revenues and earnings in the period of adjustment.

Royalties: For arrangements that include sales-based royalties, including milestone payments based on the level of sales, and the license deemed to be the predominant item to which the royalties relate, we recognize revenue at the later of (i) when the related sales occur, or (ii) when the performance obligation to which some or all of the royalty has been allocated has been satisfied (or partially satisfied).

Upfront payments and fees are recorded as contract liabilities upon receipt or when due and may require deferral of revenue recognition to a future period until we perform our obligations under these arrangements. Amounts payable to us are recorded as accounts receivable when our right to consideration is unconditional. We do not assess whether a contract has a significant financing component if the expectation at contract inception is such that the period between payment by the customer and the transfer of the promised goods or services to the customer will be one year or less.

Contractual cost sharing payments received from a customer or collaboration partner are accounted for as variable consideration. We include an expected value in the transaction price. Contractual cost sharing payments made to a customer or collaboration partner are accounted for as a reduction to the transaction price if such payments are not related to distinct goods or services received from the customer or collaboration partner.

Contracts may be amended to account for changes in contract specifications and requirements. Contract modifications exist when the amendment either creates new, or changes existing, enforceable rights and obligations. When contract modifications create new performance obligations and the increase in consideration approximates the standalone selling price for goods and services related to such new performance obligations as adjusted for specific facts and circumstances of the contract, the modification is accounted for as a separate contract. If a contract modification is not accounted for as a separate contract, we account for the promised goods or services not yet transferred at the date of the contract modification (the remaining promised goods or services) prospectively, as if it were a termination of the existing contract and the creation of a new contract, if the remaining goods or services are distinct from the goods or services transferred on or before the date of the contract modification. We account for a contract modification as if it were a part of the existing contract if the remaining goods or services are not distinct and, therefore, form part of a single performance obligation that is partially satisfied at the date of the contract modification. In such case the effect that the contract modification has on the transaction price, and on the entity's measure of progress toward complete satisfaction of the performance obligation, is recognized as an adjustment to revenue (either as an increase in or a reduction of revenue) at the date of the contract modification (the adjustment to revenue is made on a cumulative catch-up basis).

Upfront payment contract liabilities resulting from our license and collaboration agreements do not represent a financing component as the payment is not financing the transfer of goods and services, and the technology underlying the licenses granted reflects research and development expenses already incurred by us. As such, we do not adjust our revenues for the effects of a significant financing component.

Determination of the estimate of standalone selling price ("SSP")

Prior to entering into the GSK Collaboration Agreement, we have never entered into a similar collaboration agreement nor have ever recognized any revenue, and the SSP of performance obligations identified in the GSK Collaboration Agreement is not directly observable. Accordingly, we developed an estimate of the SSP of each performance obligation based on the information known to us on the Effective Date and on input from an independent third-party valuation firm.

We applied the income approach as a primary methodology to determine the SSP of each performance obligation. Specifically, based on our early stage of development and other relevant factors, we determined to use the following methodologies:

(1) Preclinical and Phase 1 Monotherapy clinical research and development services under the MAT2A program ("MAT2A R&D Services") – the expected costs of satisfying the performance obligation, adjusted for probabilities of technical success where appropriate;

(2) Preclinical research services and the related license to IDEAYA-owned technology under the Pol Theta program ("Pol Theta R&D Services") – a combination of risk-adjusted net present value analysis and the expected costs of satisfying the performance obligation, adjusted for probabilities of technical success where appropriate;

(3) Preclinical research services and the related license to IDEAYA-owned technology under the WRN program ("WRN R&D Services") – a combination of risk-adjusted net present value analysis and the expected costs of satisfying the performance obligation, adjusted for probabilities of technical success where appropriate;

(4) The Option – risk-adjusted net present value analysis;

(5) Material right associated with the option to license to IDEAYA-owned technology under the MAT2A program to the extent necessary for preclinical activities in preparation for the MAT2A Combination Trial ("Preclinical MAT2A License") – the expected costs of satisfying the performance obligation; and,

(6) Material right associated with the supply of MAT2A product for the MAT2A Combination Trial ("MAT2A Supply") – the expected costs of satisfying the performance obligation.

The assumptions used to determine the SSP of each performance obligation are based on numerous objective and subjective factors, combined with management judgment, including:

- projected preclinical and clinical research and development expenses;
- the probability of technical success for the development, regulatory approval and commercialization of our product candidates;
- projected cash flow during development and commercialization periods;
- discount rates based on cost of capital;
- the probability of exercise of the Option; and,
- the projected manufacturing cost and overhead expense for IDE 397.

We considered reasonably available data points, market conditions and entity-specific factors in estimating the SSP of performance obligations. However, some of these assumptions are specific to us and are not directly observable. We also applied our own judgment as management in determining these assumptions. Accordingly, these assumptions are subject to uncertainty, and changing methodology and/or assumption could materially impact the estimate of the SSP of performance obligations, and as a result, an amount of subsequent revenue recognition and/or its timing.

Determination of the timing of satisfaction of performance obligations

We recognize revenue from the MAT2A R&D Services, Pol Theta R&D Services and WRN R&D Services over time, as GSK simultaneously receives and consumes the benefits provided by our performance as we perform. We measure our progress toward complete satisfaction of the MAT2A R&D Services, Pol Theta R&D Services and WRN R&D Services based on the costs incurred as a percentage of the estimated total costs to be incurred to complete the performance obligations.

The estimated total costs to be incurred to complete the MAT2A R&D Services, Pol Theta R&D Services and WRN R&D Services may evolve and be updated throughout the performance period with the consultation with GSK through the joint development committee. Also, the expected timing of completing the MAT2A R&D Services, Pol Theta R&D Services and WRN R&D Services may be updated. The change in the estimated total costs and/or the timing of completion may materially impact an amount of subsequent revenue recognition and/or its timing.

Indemnification Agreements

We enter into standard indemnification arrangements in the ordinary course of business with vendors, clinical trial sites and other parties. Pursuant to these arrangements, we indemnify, hold harmless and agree to reimburse the indemnified parties for losses suffered or incurred by the indemnified party. The term of these indemnification agreements is generally perpetual any time after the execution of the agreement. The maximum potential amount of future payments we could be required to make under these arrangements is not determinable. We have never incurred costs to defend lawsuits or settle claims related to these indemnification agreements. As a result, we believe the fair value of these agreements is not material.

JOBS Act Accounting Election

The Jumpstart Our Business Startups Act of 2012, or the JOBS Act, permits an “emerging growth company” such as us to take advantage of an extended transition period to comply with new or revised accounting standards applicable to public companies. However, we have chosen to irrevocably “opt out” of such extended transition period, and as a result, we will comply with new or revised accounting standards on the relevant dates on which adoption of such standards is required for non-emerging growth companies.

Recent Accounting Pronouncements

See the section titled “Summary of Significant Accounting Policies—Recent Accounting Pronouncements” in Note 2 to our financial statements included elsewhere in this Annual Report on Form 10-K for additional information.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

Interest Rate Sensitivity

The market risk inherent in our financial instruments and in our financial position represents the potential loss arising from adverse changes in interest rates or exchange rates. As of December 31, 2020, we had cash equivalents and marketable securities of $283.6 million, consisting of interest-bearing money market funds, investments in U.S. government securities, commercial paper, and corporate bonds, for which the fair value would be affected by changes in the general level of U.S. interest rates. However, due to the low-risk profile of our cash equivalents and marketable securities, an immediate 10% change in interest rates would not have a material effect on the fair value of our cash equivalents and marketable securities.

We do not believe that inflation, interest rate changes or exchange rate fluctuations have had a significant impact on our results of operations for any periods presented herein.

Item 8. Financial Statements and Supplementary Data

The financial statements required to be filed pursuant to this Item 8 are appended to this report. An index of those financial statements is found in Item 15 of Part IV of this Annual Report on Form 10-K.

Item 9. Changes in and Disagreements With Accountants on Accounting and Financial Disclosure.

None.

Item 9A. Controls and Procedures

Management's Evaluation of our Disclosure Controls and Procedures

We maintain "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act, that are designed to ensure that information required to be disclosed in the reports that we file or submit under the Exchange Act is (1) recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission's rules and forms and (2) accumulated and communicated to our management, including our principal executive and principal financial and accounting officers, as appropriate to allow timely decisions regarding required disclosure. Our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and our management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Our disclosure controls and procedures are designed to provide reasonable assurance of achieving their control objectives.

Our management, with the participation of our principal executive officer and principal financial and accounting officer, evaluated the effectiveness of our disclosure controls and procedures at the end of the period covered by this Annual Report on Form 10-K. Based upon such evaluation, our principal executive officer and principal financial and accounting officer have concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of such date.

Changes in Internal Control Over Financial Reporting

There were no changes in the Company's internal control over financial reporting that occurred during the quarterly period ended December 31, 2020 that have materially affected, or are reasonably likely to materially effect, the Company's internal control over financial reporting.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act). Under the supervision of and with the participation of our principal executive officer and principal financial officer, our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2020 based on the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in "Internal Control—Integrated Framework" (2013). Based on this assessment, management concluded that our internal control over financial reporting was effective as of December 31, 2020.

This Annual Report on Form 10-K does not include an attestation report of our independent registered public accounting firm on our internal control over financial reporting due to an exemption established by the JOBS Act for "emerging growth companies."

Item 9B. Other Information

None.

Part III

Item 10. Directors, Executive Officers and Corporate Governance.

The information required by this item will be contained in our definitive proxy statement to be filed with the SEC in connection with the Annual Meeting of Stockholders within 120 days after December 31, 2020, or the Proxy Statement, and is incorporated in this Annual Report on Form 10-K by reference.

Item 11. Executive Compensation.

The information required by this item will be contained in the Proxy Statement and is incorporated in this Annual Report on Form 10-K by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

The information required by this item will be contained in the Proxy Statement and is incorporated in this Annual Report on Form 10-K by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

The information required by this item will be contained in the Proxy Statement and is incorporated in this Annual Report on Form 10-K by reference.

Item 14. Principal Accounting Fees and Services.

The information required by this item will be contained in the Proxy Statement and is incorporated in this Annual Report on Form 10-K by reference.

Part IV

Item 15. Exhibits, Financial Statement Schedules.

(a) The following documents are filed as part of this report:

(1) FINANCIAL STATEMENTS

The following documents are included on pages F-1 through F-27 attached hereto and are filed as part of this Annual Report on Form 10-K.

(2) FINANCIAL STATEMENT SCHEDULES

All schedules to the financial statements are omitted as the required information is either inapplicable or presented in the financial statements.

(3) EXHIBITS

The exhibits listed in the accompanying Exhibit Index are filed as part of, or incorporated by reference into, this report.

Exhibit Index

(a) Exhibits.

Exhibit Number	Exhibit Description	Incorporated by Reference			Filed Herewith
		Form	Date	Number	
3.1	Amended and Restated Certificate of Incorporation.	8-K	5/28/2019	3.1	
3.2	Amended and Restated Bylaws.	8-K	5/28/2019	3.2	
4.1	Reference is made to Exhibits 3.1 through 3.2.				
4.2	Form of Common Stock Certificate.	S-1/A	5/13/2019	4.2	
4.3	Description of Common Stock.				X
10.1†	License agreement by and between IDEAYA Biosciences, Inc. and Novartis International Pharmaceutical, Inc. dated as of September 19, 2018.	S-1	4/26/2019	10.1	
10.2(a)†	Evaluation, Option and License Agreement by and among IDEAYA Biosciences, Inc., Cancer Research Technology Ltd. and University of Manchester dated as of April 28, 2017.	S-1	4/26/2019	10.2(a)	
10.2(b)	Amendment #1 to Evaluation, Option and License Agreement by and among IDEAYA Biosciences, Inc., Cancer Research Technology Ltd. and University of Manchester dated as of April 24, 2019.	S-1	4/26/2019	10.2(b)	
10.2(c)	Amendment #2 to Evaluation, Option and License Agreement by and among IDEAYA Biosciences, Inc., Cancer Research Technology Ltd. and University of Manchester dated as of March 3, 2020.	10-K	3/24/2020	10.2(c)	
10.3(a)#	2019 Incentive Award Plan.	S-1/A	5/13/2019	10.5(a)	
10.3(b)#	Form of Stock Option Grant Notice and Stock Option Agreement under the 2019 Incentive Award Plan.	S-1/A	5/13/2019	10.5(b)	
10.3(c)#	Form of Restricted Stock Award Grant Notice and Restricted Stock Award Agreement under the 2019 Incentive Award Plan.	S-1/A	5/13/2019	10.5(c)	
10.3(d)#	Form of Restricted Stock Unit Award Grant Notice and Restricted Stock Unit Award Agreement under the 2019 Incentive Award Plan.	S-1/A	5/13/2019	10.5(d)	
10.4#	Employee Stock Purchase Plan.	S-1/A	5/13/2019	10.6	
10.5(a)#	2015 Equity Incentive Plan, as amended.	S-1	4/26/2019	10.4(a)	
10.5(b)#	Form of Stock Option Agreement under the 2015 Equity Incentive Plan.	S-1	4/26/2019	10.4(b)	
10.5(c)#	Form of Early Exercise Stock Option Agreement under the 2015 Equity Incentive Plan.	S-1	4/26/2019	10.4(c)	
10.5(d)#	Form of Stock Purchase Right Grant Notice and Restricted Stock Purchase Agreement under 2015 Equity Incentive Plan.	S-1	4/26/2019	10.4(d)	

10.6#	Employment Agreement by and between IDEAYA Biosciences, Inc. and Yujiro Hata.	S-1/A	5/13/2019	10.7(b)	
10.7#	Employment Agreement by and between IDEAYA Biosciences, Inc. and Michael Dillon.	S-1/A	5/17/2019	10.8	
10.8#	Employment Agreement by and between IDEAYA Biosciences, Inc. and Paul Stone.	S-1/A	5/17/2019	10.12	
10.9#	Amended and Restated Employment Agreement by and between IDEAYA Biosciences, Inc. and Jason Throne.				X
10.10	Non-Employee Director Compensation Program.	S-1/A	5/17/2019	10.13	
10.11	Form of indemnification agreement for directors and officers.	S-1/A	5/13/2019	10.14	
10.12	Lease Agreement by and between IDEAYA Biosciences, Inc. and ARE-SAN FRANCISCO NO. 17, LLC dated August 26, 2016.	S-1	4/26/2019	10.15	
10.13	Letter Agreement Amendment to Lease Agreement by and between IDEAYA Biosciences, Inc. and ARE-SAN FRANCISCO NO. 17, LLC dated January 27, 2017.	S-1	4/26/2019	10.16	
10.14	First Amendment to Lease Agreement by and between IDEAYA Biosciences, Inc. and ARE-SAN FRANCISCO NO. 17, LLC dated May 31, 2018.	S-1	4/26/2019	10.17	
10.15	Second Amendment to Lease Agreement by and between IDEAYA Biosciences, Inc. and ARE-SAN FRANCISCO NO. 17, LLC dated September 30, 2019.	10-Q	11/13/2019	10.11	
10.16(a)†	Clinical Trial Collaboration and Supply Agreement between IDEAYA Biosciences, Inc. and Pfizer Inc. dated as of March 11, 2020.	10-Q	5/12/2020	10.4	
10.16(b)†	Amendment No. 1 to Clinical Trial Collaboration and Supply Agreement between Pfizer Inc. and IDEAYA Biosciences, Inc. dated as of September 23, 2020.	10-Q	11/12/2020	10.1	
10.17†	Collaboration, Option and License Agreement between GlaxoSmithKline Intellectual Property (No. 4) Limited and IDEAYA Biosciences, Inc. dated as of June 15, 2020.	10-Q	8/12/2020	10.3	
23.1	Consent of Independent Registered Public Accounting Firm.				X
24.1	Power of Attorney (included on signature page to this Annual Report on Form 10-K).				X
31.1	Certification of the Chief Executive Officer pursuant to Rule 13a-14(a) and Rule 15d-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				X
31.2	Certification of the Chief Financial Officer pursuant to Rule 13a-14(a) and Rule 15d-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				X
32.1*	Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				X

101.INS	XBRL Instance Document	X
101.SCH	XBRL Taxonomy Extension Schema Document	X
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document	X
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document	X
101.LAB	XBRL Taxonomy Extension Labels Linkbase Document	X
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document	X

† Certain information in this exhibit has been excluded pursuant to Regulation S-K, Item 601(b)(10).
# Indicates management contract or compensatory plan.
* The certification attached as Exhibit 32.1 that accompanies this Annual Report on Form 10-K is not deemed filed with the SEC and is not to be incorporated by reference into any filing of IDEAYA Biosciences, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Form 10-K, irrespective of any general incorporation language contained in such filing.

Item 16. Form 10-K Summary.

None.

INDEX TO THE FINANCIAL STATEMENTS

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of IDEAYA Biosciences, Inc.

Opinion on the Financial Statements

We have audited the accompanying balance sheets of IDEAYA Biosciences, Inc. (the "Company") as of December 31, 2020 and 2019, and the related statements of operations and comprehensive loss, of redeemable convertible preferred stock and stockholders' equity (deficit) and of cash flows for each of the three years in the period ended December 31, 2020, including the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2020 and 2019, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2020 in conformity with accounting principles generally accepted in the United States of America.

Change in Accounting Principle

As discussed in Note 2 to the financial statements, the Company changed the manner in which it accounts for leases in 2019.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's 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 of these financial statements in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the 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 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 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 financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ PricewaterhouseCoopers LLP
San Jose, California
March 23, 2021

We have served as the Company's auditor since 2017.

IDEAYA Biosciences, Inc.
Balance Sheets
(in thousands, except share and per share amounts)

	December 31,	
	2020	**2019**
Assets		
Current assets		
Cash and cash equivalents	$ 72,037	$ 34,067
Short-term marketable securities	211,548	64,889
Accounts receivable	1,877	—
Prepaid expenses and other current assets	3,143	2,698
Total current assets	288,605	101,654
Restricted cash	106	106
Long-term marketable securities	—	1,526
Property and equipment, net	4,271	4,642
Right-of-use assets	5,205	5,057
Other non-current assets	82	16
Total assets	$ 298,269	$ 113,001
Liabilities and Stockholders' Equity		
Current liabilities		
Accounts payable	$ 953	$ 709
Accrued liabilities	8,516	5,023
Contract liability	27,613	—
Operating lease liabilities, current	1,540	1,145
Other current liabilities	18	63
Total current liabilities	38,640	6,940
Long-term contract liability	56,160	—
Long-term operating lease liabilities	5,183	5,627
Other non-current liabilities	12	34
Total liabilities	99,995	12,601
Commitments and contingencies (Note 6)		
Stockholders' equity		
Preferred stock, $0.0001 par value, 10,000,000 shares authorized as of December 31, 2020 and December 31, 2019; no shares issued and outstanding as of December 31, 2020 and December 31, 2019	—	—
Common stock, $0.0001 par value, 300,000,000 shares authorized as of December 31, 2020 and December 31, 2019; 29,537,216 and 20,339,461 shares issued and outstanding as of December 31, 2020 and December 31, 2019	3	2
Additional paid-in capital	325,250	192,824
Accumulated other comprehensive income	7	65
Accumulated deficit	(126,986)	(92,491)
Total stockholders' equity	198,274	100,400
Total liabilities and stockholders' equity	$ 298,269	$ 113,001

The accompanying notes are an integral part of these financial statements.

IDEAYA Biosciences, Inc.
Statements of Operations and Comprehensive Loss
(in thousands, except share and per share amounts)

	Year Ended December 31,		
	2020	**2019**	**2018**
Collaboration revenue	$ 19,538	$ —	$ —
Total revenue	19,538	—	—
Operating expenses			
Research and development	39,698	34,319	31,749
General and administrative	15,184	9,952	4,668
Total operating expenses	54,882	44,271	36,417
Loss from operations	(35,344)	(44,271)	(36,417)
Interest income and other income (expense), net	849	2,296	2,071
Net loss	(34,495)	(41,975)	(34,346)
Change in unrealized (losses) gains on marketable securities	(58)	96	(30)
Comprehensive loss	$ (34,553)	$ (41,879)	$ (34,376)
Net loss per common share, basic and diluted	$ (1.40)	$ (3.36)	$ (35.92)
Weighted-average number of common shares outstanding used in computing net loss per share, basic and diluted	24,721,775	12,496,957	956,252

The accompanying notes are an integral part of these financial statements.

IDEAYA Biosciences, Inc.
Statements of Redeemable Convertible Preferred Stock and Stockholders' Equity (Deficit)
(in thousands, except share amounts)

	Redeemable Convertible Preferred Stock		Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Total Stockholders' Equity (Deficit)
	Shares	Amount	Shares	Amount				
Balances as of January 1, 2018	4,379,916	$ 26,084	1,263,416	$ —	$ 432	$ (1)	$ (16,170)	$ (15,739)
Issuance of Series A redeemable convertible preferred stock, net of issuance costs of $5, adjusted for the redeemable convertible preferred stock liability of $3,137	1,414,811	14,651	—	—	—	—	—	—
Issuance of Series B redeemable convertible preferred stock, net of issuance costs of $176	7,081,452	93,844	—	—	—	—	—	—
Issuance of Series B redeemable convertible preferred stock pursuant to license agreement	263,615	3,812	—	—	—	—	—	—
Issuance of common stock upon exercise of stock options	—	—	19,591	—	28	—	—	28
Early exercised common stock options	—	—	70,583	—	—	—	—	—
Repurchase of early exercised shares			(17,900)	—	—	—	—	—
Vesting of early exercised common stock options and restricted stock	—	—	—	—	189	—	—	189
Stock-based compensation	—	—	—	—	950	—	—	950
Other comprehensive loss	—	—	—	—	—	(30)	—	(30)
Net loss	—	—	—	—	—	—	(34,346)	(34,346)
Balances as of December 31, 2018	13,139,794	$ 138,391	1,335,690	$ —	$ 1,599	$ (31)	$ (50,516)	$ (48,948)
Conversion of redeemable convertible preferred stock into common stock	(13,139,794)	(138,391)	13,139,794	1	138,390	—	—	138,391
Issuance of common stock upon initial public offering, net of issuance costs	—	—	5,750,000	1	50,246	—	—	50,247
Issuance of common stock upon exercise of stock options	—	—	135,563	—	307	—	—	307
Early exercised common stock options	—	—	2,112	—	—			—
Repurchase of early exercised shares	—	—	(23,698)	—	—	—	—	—
Vesting of early exercised common stock options and restricted stock	—	—	—	—	114	—	—	114
Stock-based compensation	—	—	—	—	2,168	—	—	2,168
Other comprehensive income	—	—	—	—	—	96	—	96
Net loss	—	—	—	—	—	—	(41,975)	(41,975)
Balances as of December 31, 2019	—	$ —	20,339,461	$ 2	$ 192,824	$ 65	$ (92,491)	$ 100,400
Issuance of common stock upon follow-on public offering, net of issuance costs	—	—	7,166,667	1	100,663	—	—	100,664
Issuance of common stock in private placement, net of issuance costs	—	—	1,333,333	—	19,988	—	—	19,988
Issuance of common stock related to at-the-market offering program, net of issuance costs	—	—	410,896	—	6,582	—	—	6,582
Issuance of common stock upon exercise of stock options	—	—	256,583	—	1,202	—	—	1,202
Employee stock purchase plan (ESPP) purchase	—	—	40,794	—	326	—	—	326
Repurchase of early exercised shares	—	—	(10,518)	—	—	—	—	—
Vesting of early exercised common stock options	—	—	—	—	56	—	—	56
Stock-based compensation	—	—	—	—	3,609	—	—	3,609
Other comprehensive loss	—	—	—	—	—	(58)	—	(58)
Net loss	—	—	—	—	—	—	(34,495)	(34,495)
Balances as of December 31, 3020	—	$ —	29,537,216	$ 3	$ 325,250	$ 7	$ (126,986)	$ 198,274

The accompanying notes are an integral part of these financial statements.

IDEAYA Biosciences, Inc.
Statements of Cash Flows
(in thousands)

	Year Ended December 31,		
	2020	**2019**	**2018**
Cash flows from operating activities			
Net loss	$ (34,495)	$ (41,975)	$ (34,346)
Adjustments to reconcile net loss to net cash provided by (used in) operating activities			
Depreciation and amortization	1,381	1,245	886
Net amortization (accretion) of premiums (discounts) on marketable securities	578	(473)	(808)
Stock-based compensation	3,609	2,168	950
Issuance of Series B redeemable convertible preferred stock pursuant to license agreement	—	—	3,812
Change in fair value of redeemable convertible preferred stock liability	—	—	(70)
Landlord contributions for leasehold improvements	—	—	367
Loss (gain) on sale of property and equipment	2	14	(54)
Gain on sale of marketable securities	(18)	(8)	(11)
Changes in assets and liabilities			
Accounts receivable	(1,877)	—	—
Prepaid expenses and other assets	(510)	(1,963)	(243)
Right-of-use assets	(148)	1,093	—
Accounts payable	225	(195)	322
Accrued and other liabilities	2,992	2,030	1,672
Contract liabilities	83,773	—	—
Deferred rent	—	—	(97)
Lease liabilities	(49)	(1,249)	—
Net cash provided by (used in) operating activities	55,463	(39,313)	(27,620)
Cash flows from investing activities			
Purchases of property and equipment, net	(493)	(1,353)	(1,708)
Purchases of marketable securities	(242,314)	(88,004)	(133,301)
Maturities of marketable securities	96,564	73,528	65,830
Sales of marketable securities	—	18,094	6,000
Net cash (used in) provided by investing activities	(146,243)	2,265	(63,179)
Cash flows from financing activities			
Proceeds from issuance of redeemable convertible preferred stock, net of issuance costs	—	—	105,358
Proceeds from issuance of common stock in public offering, net of issuance costs	100,664	50,321	—
Proceeds from issuance of common stock in private placement, net of issuance costs	19,988	—	—
Proceeds from issuance of common stock related to at-the-market offering program, net of issuance costs	6,582	—	—
Proceeds from exercise of common stock options, net of repurchases	1,190	289	91
Proceeds from ESPP purchases	326	—	—
Payments of deferred offering costs	—	—	(71)
Net cash provided by financing activities	128,750	50,610	105,378
Net increase in cash, cash equivalents and restricted cash	37,970	13,562	14,579
Cash, cash equivalents and restricted cash			
Cash, cash equivalents and restricted cash, at beginning of period	34,173	20,611	6,032
Cash, cash equivalents and restricted cash, at end of period	$ 72,143	$ 34,173	$ 20,611
Reconciliation of cash, cash equivalents and restricted cash			
Cash and cash equivalents	$ 72,037	$ 34,067	$ 20,505
Restricted cash	$ 106	$ 106	$ 106
Cash, cash equivalents and restricted cash	$ 72,143	$ 34,173	$ 20,611
Supplemental disclosure of cash flow information:			
Cash paid for income taxes	$ 1	$ 1	$ 1
Cash paid for interest	$ 82	$ 91	$ 99
Supplemental non-cash investing and financing activities:			
Right-of-use asset obtained in exchange for new operating lease liability	$ 1,191	$ —	$ —
Issuance of Series B redeemable convertible preferred stock pursuant to license agreement	$ —	$ —	$ 3,812
Unpaid deferred offering costs	$ —	$ —	$ 499
Vesting of early exercised options and restricted stock	$ 56	$ 114	$ 189
Purchases of property and equipment in accounts payable and accrued liabilities	$ 520	$ —	$ 604
Extinguishment of redeemable convertible preferred stock liability	$ —	$ —	$ 3,137
Conversion of redeemable convertible preferred stock into common stock	$ —	$ 138,391	$ —

The accompanying notes are an integral part of these financial statements.

1. Organization

Description of the Business

IDEAYA Biosciences, Inc. (the "Company") is a synthetic lethality-focused precision medicine oncology company committed to the discovery and development of targeted therapeutics for patient populations selected using molecular diagnostics. The Company is headquartered in South San Francisco, California and was incorporated in the State of Delaware in June 2015. To date, the Company has been primarily engaged in business planning, research, development, recruiting and raising capital.

Initial Public Offering

On May 22, 2019, the Company's registration statement on Form S-1 (File No. 333-231081) relating to its initial public offering ("IPO") of common stock became effective. The IPO closed on May 28, 2019 at which time the Company issued 5,750,000 shares of its common stock at a price of $10.00 per share, which included shares issued upon the underwriters' exercise of their overallotment option to purchase 750,000 additional shares. In addition, upon closing the IPO, all outstanding shares of the redeemable convertible preferred stock converted into 13,139,794 shares of common stock. The Company received an aggregate of $50.2 million in cash, net of underwriting discounts and commissions of $4.0 million, and after deducting offering costs of $3.3 million.

Follow-On Offering

On June 22, 2020, the Company completed an underwritten public offering and sold and issued 6,666,667 shares of common stock at a price to the public of $15.00 per share for gross proceeds of $100.0 million. On July 22, 2020, the Company sold and issued an additional 500,000 shares of common stock upon the exercise of the overallotment option by the underwriters for gross proceeds of $7.5 million. The aggregate net proceeds to the Company were $100.7 million after deducting underwriting discounts and commissions and other offering costs.

Private Placement

The Company entered into a stock purchase agreement with Glaxo Group Limited, or GGL, on June 17, 2020, pursuant to which, on August 3, 2020, the Company sold 1,333,333 shares at a price of $15.00 per shares to GGL for net proceeds of $20.0 million in a private placement.

At-the-Market Offering

On June 1, 2020, the Company entered into an open market sale agreement with Jefferies LLC ("Jefferies"), pursuant to which the Company may offer and sell shares of its common stock with an aggregate offering price of up to $50.0 million under an "at the market" offering program (the "ATM Offering"). For the year ended December 31, 2020, the Company sold an aggregate of 410,896 shares for net proceeds of $6.6 million after deducting sales commission and other expenses.

From January 2021 through March 22, 2021, the Company additionally sold an aggregate of 2,709,385 shares for gross proceeds of $43.3 million in the ATM Offering.

Liquidity

The Company has incurred significant losses and negative cash flows from operations in all periods since inception and had an accumulated deficit of $127.0 million as of December 31, 2020. The Company has historically financed its operations primarily through the sale of convertible notes, redeemable convertible preferred stock and common stock, and payments received from its collaboration arrangement. To date, none of the Company's product candidates have been approved for sale, and the Company has not generated any revenue from commercial products since inception. Management expects operating losses to continue and increase for the foreseeable future, as the Company progresses into clinical development activities for its lead product candidates. The Company's prospects are subject to risks, expenses and uncertainties frequently encountered by companies in the biotechnology industry as discussed under Risks and Uncertainties in Note 2. While the Company has been able to raise multiple rounds of financing, there can be no assurance that in the event the Company requires additional financing, such financing will be available on terms which are favorable or at all. Failure to generate sufficient cash flows from operations, raise additional capital or reduce certain discretionary spending would have a material adverse effect on the Company's ability to achieve its intended business objectives.

As of December 31, 2020, the Company had cash, cash equivalents and marketable securities of $283.6 million. Management believes that the Company's current cash, cash equivalents and marketable securities will be sufficient to fund its planned operations for at least 12 months from the date of the issuance of these financial statements.

2. Summary of Significant Accounting Policies

Basis of Presentation

The financial statements and accompanying notes have been prepared in accordance with generally accepted accounting principles in the United States of America ("U.S. GAAP").

Reverse Stock Split

In May 2019, the Company's board of directors approved a 1-for-10.2564 reverse stock split of the Company's common stock and redeemable convertible preferred stock, which was effected on May 21, 2019. The par value and authorized shares of the common stock and redeemable convertible preferred stock were not adjusted as a result of the reverse stock split. All issued and outstanding common stock, options to purchase common stock and per share amounts contained in these financial statements have been retroactively adjusted to give effect to the reverse stock split for all periods presented.

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities as of the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. Such estimates include useful lives of property and equipment, determination of the discount rate for operating leases, accruals for research and development activities, revenue recognition, stock-based compensation, and income taxes. On an ongoing basis, management reviews these estimates and assumptions. Changes in facts and circumstances may alter such estimates and actual results could differ from those estimates.

Segments

The Company operates and manages its business as one operating and reportable segment, which is the business of research and development for oncology-focused precision medicine. The Company's chief executive officer, who is the chief operating decision maker, reviews financial information on an aggregate basis for purposes of allocating resources and evaluating financial performance. All of the Company's long-lived assets are located in the United States.

Risks and Uncertainties

The Company operates in a dynamic and highly competitive industry and is subject to risks and uncertainties common to early-stage companies in the biotechnology industry, including, but not limited to, development by competitors of new technological innovations, protection of proprietary technology, dependence on key personnel, contract manufacturer, contract research organizations and collaboration partners, compliance with government regulations and the need to obtain additional financing to fund operations. Product candidates currently under development will require significant additional research and development efforts, including extensive preclinical studies and clinical trials and regulatory approval, prior to commercialization. These efforts require significant amounts of additional capital, adequate personnel infrastructure and extensive compliance and reporting. The Company believes that changes in any of the following areas could have a material adverse effect on the Company's future financial position, results of operations, or cash flows: ability to obtain future financing; advances and trends in new technologies and industry standards; results of clinical trials and collaboration activities; regulatory approval and market acceptance of the Company's products; development of sales channels; certain strategic relationships; litigation or claims against the Company based on intellectual property, patent, product, regulatory, or other factors; and the Company's ability to attract and retain employees necessary to support its growth.

Products developed by the Company require approvals from the U.S. Food and Drug Administration ("FDA") or other international regulatory agencies prior to commercial sales. There can be no assurance that the Company's research and development will be successfully completed, that adequate protection for the Company's intellectual property will be obtained or maintained, that the products will receive the necessary approvals, or that any approved products will be commercially viable. If the Company was denied approval, approval was delayed or the Company was unable to maintain approval, it could have a materially adverse impact on the Company. Even if the Company's product development efforts are successful, it is uncertain when, if ever, the Company will generate revenue from product sales. The Company operates in an environment of rapid change in technology and substantial competition from other pharmaceutical and biotechnology companies. In addition, the Company is dependent upon the services of its employees, consultants and other third parties.

Beginning in late 2019, the outbreak of a novel strain of virus named SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2), or coronavirus, which causes coronavirus disease 2019, or COVID-19, has evolved into a global pandemic. The extent of the impact of the coronavirus outbreak on the Company's business will depend on certain developments, including the duration and spread of the outbreak and the extent and severity of the impact on the Company's clinical trial activities, research activities and suppliers, all of which are uncertain and cannot be predicted. At this point, the extent to which the coronavirus outbreak may materially impact the Company's financial condition, liquidity or results of operations is uncertain.

The Company has expended and will continue to expend substantial funds to complete the research, development and clinical testing of product candidates. The Company also will be required to expend additional funds to establish commercial-scale manufacturing arrangements and to provide for the marketing and distribution of products that receive regulatory approval. The Company may require additional funds to commercialize its products. The Company is unable to entirely fund these efforts with its current financial resources. If adequate funds are unavailable on a timely basis from operations or additional sources of financing, the Company may have to delay, reduce the scope of or eliminate one or more of its research or development programs which would materially and adversely affect its business, financial condition and operations.

Concentration of Credit Risk

Financial instruments that potentially subject the Company to a concentration of credit risk consist of cash, cash equivalents, marketable securities and accounts receivable. Substantially all the Company's cash is held by one financial institution that management believes is of high credit quality. Such deposits may, at times, exceed federally insured limits.

The Company's investment policy addresses credit ratings, diversification, and maturity dates. The Company invests its cash equivalents and marketable securities in money market funds, U.S. government securities, commercial paper, and corporate bonds. The Company limits its credit risk associated with cash equivalents and marketable securities by placing them with banks and institutions it believes are highly creditworthy and in highly rated investments and, by policy, limits the amount of credit exposure with any one commercial issuer. The Company has not experienced any credit losses on its deposits of cash, cash equivalents or marketable securities.

Accounts receivable represents amounts due from GlaxoSmithKline. The Company monitors economic conditions to identify facts or circumstances that may indicate that any of its accounts receivable are at risk of collection.

Cash and Cash Equivalents

Cash equivalents that are readily convertible to cash are stated at cost, which approximates fair value. The Company considers all highly liquid investments purchased with an original or remaining maturity of three months or less at the date of purchase to be cash equivalents.

Restricted Cash

Restricted cash as of December 31, 2020 and December 31, 2019 consisted of cash balances held as security in connection with the Company's facility lease agreement in South San Francisco, California. The balances are classified as long-term assets on the Company's balance sheet.

Marketable Securities

Marketable securities are investments in marketable securities with maturities greater than three months at the time of purchase. The Company determines the appropriate classification of its investments in marketable securities at the time of purchase and reevaluates such designation at each balance sheet date. The Company has classified and accounted for its marketable securities as available-for-sale. After consideration of the Company's risk versus reward objectives and liquidity requirements, the Company may sell these securities prior to their stated maturities. The Company classifies highly liquid securities with maturities beyond 12 months as long-term marketable securities in the balance sheet. These securities are carried at fair value as determined based upon quoted market prices or pricing models for similar securities. Unrealized gains and losses, if any, are excluded from earnings and are reported as a component of accumulated other comprehensive income (loss). The amortized cost of debt securities is adjusted for amortization of premiums and accretion of discounts to maturity, which is included in interest income on the statements of operations and comprehensive loss. Realized gains and losses, if any, on available-for-sale securities are included in other income (expense), net. The cost of securities sold is based on the specific identification method. Interest and dividends on securities classified as available-for-sale are included in interest income. The Company did not identify any of its marketable securities as other-than-temporarily impaired as of December 31, 2020 and December 31, 2019.

Fair Value of Financial Instruments

The carrying amounts of the Company's certain financial instruments, including cash equivalents, accounts receivable, accounts payable and accrued liabilities approximate fair value due to their relatively short maturities and market interest rates if applicable. Refer to Note 3 for details on the fair value of marketable securities.

Property and Equipment, Net

Property and equipment are stated at cost less accumulated depreciation and amortization. Depreciation is computed using the straight-line method over the estimated useful lives of the assets, which is generally between three and five years. Leasehold improvements are stated at cost and amortized over the shorter of the useful lives of the assets or the lease term. Maintenance and repairs are charged to expense as incurred. When assets are retired or otherwise disposed of, the cost and accumulated depreciation are removed from the balance sheet and any resulting gain or loss is reflected in the statements of operations and comprehensive loss in the period realized.

Impairment of Long-Lived Assets

The Company reviews property and equipment for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset or asset group may not be recoverable. Recoverability is measured by comparison of the carrying amount of the asset or asset group to the future net cash flows which the asset or asset group is expected to generate. If such asset or asset group is considered to be impaired, the impairment to be recognized is measured by the amount by which the carrying amount of the asset or asset group exceeds the fair value of the asset or asset group. There have been no such impairments of long-lived assets for the years ended December 31, 2020 and December 31, 2019.

Leases

Upon adoption of ASC 842, Leases on January 1, 2019, the Company determined if any arrangement is a lease, or contains a lease, at inception. Operating leases are included in right-of-use ("ROU") assets, lease liabilities, and long-term lease liabilities on the Company's balance sheet.

The Company determines if an arrangement is a lease, or contains a lease, at inception. Operating leases are included in right-of-use ("ROU") assets, lease liabilities, and long-term lease liabilities on the Company's balance sheet.

ROU assets and lease liabilities are recognized based on the present value of the future lease payments over the lease term at commencement date. As most of the Company's leases do not provide an implicit rate, the Company uses its incremental borrowing rate based on the information available at commencement date in determining the present value of future payments. The ROU asset also includes any lease payments made to the lessor at or before the commencement date, minus lease incentives received, and initial direct costs incurred. The Company's lease terms may include options to extend or terminate the lease when it is reasonably certain that the Company will exercise that option. Lease expense for lease payments is recognized on a straight-line basis over the lease term. The Company combines lease and nonlease components.

Revenue Recognition

The Company follows Accounting Standards Codification Topic 606, Revenue from Contracts with Customers ("ASC 606"). Under ASC 606, the Company recognizes revenue when its customer obtains 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. To determine revenue recognition for arrangements that the Company determines are within the scope of ASC 606, the Company performs the following five steps: (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) the Company satisfies a performance obligation.

The Company applies the five-step model to contracts when (1) parties have approved the contract and are committed to performing respective obligations, (2) the Company can identify each party's rights regarding the goods or services to be transferred, (3) the Company can identify the payment terms for the goods or services to be transferred, (4) the contract has commercial substance, and (5) it is probable that the Company will collect the consideration it is entitled to in exchange for the goods or services it transfers to the customer. At contract inception, the Company assesses the goods or services promised within each contract and determines the performance obligations by assessing whether each promised good or service is distinct. Goods or services that are not distinct are bundled with other goods or services in the contract until a bundle of goods or services that is distinct is created. The Company then recognizes as revenue the amount of the transaction price that

is allocated to the respective performance obligations when (or as) the performance obligations are satisfied. The Company constrains its estimate of the transaction price up to the amount (the "variable consideration constraint") that a significant reversal of recognized revenue is not probable.

Licenses of intellectual property: If a license to the Company's intellectual property is determined to be distinct from the other promised goods or services identified in an arrangement, the Company recognizes revenue from non-refundable, upfront fees allocated to the license at the point in time when the license is transferred to the customer and the customer is able to use and benefit from the license. For licenses that are bundled with other goods or services, the Company applies judgment to assess the nature of the combined performance obligation to determine whether the combined performance obligation is satisfied over time or at a point in time and, if over time, the appropriate method of measuring progress toward satisfying the performance obligation for purposes of recognizing revenue from non-refundable, upfront fees. The Company evaluates the measure of progress each reporting period and, if necessary, adjusts the measure of progress and related revenue recognition.

Customer options for additional goods or services: If a contract contains customer options that allow the customer to acquire additional goods or services, including a license to the Company's intellectual property, the goods and services underlying the customer options are evaluated to determine whether they are deemed to represent a material right. In determining whether the customer option has a material right, the Company assesses whether there is an option to acquire additional goods or services at a discount. If the customer option is determined not to represent a material right, the option is not considered to be a performance obligation. If the customer option is determined to represent a material right, the material right is recognized as a separate performance obligation. The Company allocates the transaction price to material rights based on the relative standalone selling price, which is determined based on the identified discount and the probability that the customer will exercise the option. Amounts allocated to a material right are not recognized as revenue until the option is exercised.

Milestone payments: At the inception of each arrangement or amendment that includes development, regulatory or commercial milestone payments, the Company evaluates whether the milestones are considered probable of being reached and estimates the amount to be included in the transaction price. ASC 606 prescribes two methods to use when estimating the amount of variable consideration: the expected value method and the most likely amount method. Under the expected value method, an entity considers the sum of probability-weighted amounts in a range of possible consideration amounts. Under the most likely amount method, an entity considers the single most likely amount in a range of possible consideration amounts. Whichever method is used, it should be consistently applied throughout the life of the contract; however, it is not necessary for the Company to use the same approach for all contracts. If it is probable that a significant revenue reversal would not occur when the uncertainty associated with the milestone is resolved, the associated milestone value is included in the transaction price. Milestone payments that are highly susceptible to factors outside the Company's influence, such as regulatory approvals, are not considered probable of being achieved until those approvals are received. If there is more than one performance obligation, the transaction price is then allocated to each performance obligation on a relative stand-alone selling price basis. The Company recognizes revenue as or when the performance obligations under the contract are satisfied. At the end of each subsequent reporting period, the Company re-evaluates the probability or achievement of each milestone and any related constraint, and if necessary, adjusts its estimates of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis, which would affect revenues and earnings in the period of adjustment.

Royalties: For arrangements that include sales-based royalties, including milestone payments based on the level of sales, and the license deemed to be the predominant item to which the royalties relate, the Company recognizes revenue at the later of (i) when the related sales occur, or (ii) when the performance obligation to which some or all of the royalty has been allocated has been satisfied (or partially satisfied).

Upfront payments and fees are recorded as contract liabilities upon receipt or when due and may require deferral of revenue recognition to a future period until the Company performs its obligations under these arrangements. Amounts payable to the Company are recorded as accounts receivable when the Company's right to consideration is unconditional. The Company does not assess whether a contract has a significant financing component if the expectation at contract inception is such that the period between payment by the customer and the transfer of the promised goods or services to the customer will be one year or less.

Contractual cost sharing payments received from a customer or collaboration partner are accounted for as variable consideration. The Company includes an expected value in the transaction price. Contractual cost sharing payments made to a

customer or collaboration partner are accounted for as a reduction to the transaction price if such payments are not related to distinct goods or services received from the customer or collaboration partner.

Contracts may be amended to account for changes in contract specifications and requirements. Contract modifications exist when the amendment either creates new, or changes existing, enforceable rights and obligations. When contract modifications create new performance obligations and the increase in consideration approximates the standalone selling price for goods and services related to such new performance obligations as adjusted for specific facts and circumstances of the contract, the modification is accounted for as a separate contract. If a contract modification is not accounted for as a separate contract, the Company accounts for the promised goods or services not yet transferred at the date of the contract modification (the remaining promised goods or services) prospectively, as if it were a termination of the existing contract and the creation of a new contract, if the remaining goods or services are distinct from the goods or services transferred on or before the date of the contract modification. The Company accounts for a contract modification as if it were a part of the existing contract if the remaining goods or services are not distinct and, therefore, form part of a single performance obligation that is partially satisfied at the date of the contract modification. In such case the effect that the contract modification has on the transaction price, and on the entity's measure of progress toward complete satisfaction of the performance obligation, is recognized as an adjustment to revenue (either as an increase in or a reduction of revenue) at the date of the contract modification (the adjustment to revenue is made on a cumulative catch-up basis).

Upfront payment contract liabilities resulting from the Company's license and collaboration agreements do not represent a financing component as the payment is not financing the transfer of goods and services, and the technology underlying the licenses granted reflects research and development expenses already incurred by the Company. As such, the Company does not adjust its revenues for the effects of a significant financing component.

Research and Development Expenses

Research and development expenses consist of compensation costs, employee benefit costs, costs for contract manufacturing organizations ("CMOs"), costs for contract research organizations ("CROs"), costs for sponsored research, consulting costs, costs for laboratory supplies, costs for product licenses, facility-related expenses and depreciation. All research and development costs are charged to research and development expenses within the statements of operations and comprehensive loss as incurred. Payments associated with licensing agreements to acquire exclusive licenses to develop, use, manufacture and commercialize products that have not reached technological feasibility and do not have alternate commercial use are also expensed as incurred. Payments made to third parties under these arrangements in advance of the performance of the related services by the third parties are recorded as prepaid expenses until the services are rendered.

Accrued Research and Development

The Company has entered into various agreements with CMOs and CROs. The Company's research and development accruals are estimated based on the level of services performed, progress of the studies, including the phase or completion of events, and contracted costs. The estimated costs of research and development provided, but not yet invoiced, are included in accrued liabilities on the balance sheet. If the actual timing of the performance of services or the level of effort varies from the original estimates, the Company will adjust the accrual accordingly. Payments made to CMOs and CROs under these arrangements in advance of the performance of the related services are recorded as prepaid expenses and other current assets until the services are rendered.

Stock-Based Compensation

The Company accounts for stock-based compensation arrangements with employees in accordance with ASC 718, *Stock Compensation.* The Company accounts for stock-based compensation arrangements using a fair value method which requires the recognition of compensation expense related to all stock-based awards. The fair value method requires the Company to estimate the fair value of stock option awards on the date of grant using an option pricing model. The Company uses the Black-Scholes option pricing model to determine the fair value of options granted, which is expensed on a straight-line basis over the vesting period. Generally, the stock options the Company has granted to its employees have a 10 year term and vest over a 4-year period with 1-year cliff vesting.

For the year ended December 31, 2018, the Company accounted for stock options issued to non-employees based on the estimated fair value of the awards using the Black-Scholes option pricing model in accordance with ASC 505-50, *Equity-Based Payment to Non-employees*. Stock-based compensation expense related to stock options granted to non-employees was recognized as the stock options vested. The Company believes that the fair value of the stock options is more reliably measurable than the fair value of the services received. Stock options granted to non-employees were recorded at their fair

value on the measurement date and were subject to periodic adjustments as such options vested and at the end of each reporting period, and the resulting change in value, if any, was recognized in the Company's statements of operations and comprehensive loss during the period the related services were rendered.

Upon adoption of ASU 2018-07, *Compensation–Stock Compensation (Topic 718): Improvements to Non-employee Share–Based Payment Accounting*, as described below under Recently Adopted Accounting Pronouncements, starting January 1, 2019, the Company accounts for stock options issued to non-employees in accordance with ASC 718, *Stock Compensation.* The fair value method requires the Company to estimate the fair value of stock-based awards on the date of grant using an option pricing model. The Company uses the Black-Scholes option pricing model to determine the fair value of options granted, which is expensed on a straight-line basis over the vesting period.

Income Taxes

The Company accounts for income taxes using the asset and liability method whereby deferred tax assets and liabilities are determined based on differences between financial reporting and tax bases of assets and liabilities and are measured using the enacted tax rates and laws that are currently in effect unless such rate is expected to be different when the deferred item reverses. Valuation allowances are established where necessary to reduce deferred tax assets to the amounts expected to be realized. Deferred tax assets and liabilities are classified as noncurrent on the balance sheet.

The Company recognizes the effect of income tax positions only if those positions are more likely than not of being sustained. Recognized income tax positions are measured at the largest amount that has a greater than 50% likelihood of being realized. Changes in recognition or measurement are reflected in the period in which the change in judgment occurs. The Company records interest and penalties related to unrecognized tax benefits in interest expense and other expense, respectively.

Comprehensive Loss

Comprehensive loss represents all changes in stockholders' equity (deficit) except those resulting from and distributions to stockholders.

Net Loss per Share Attributable to Common Stockholders

Basic net loss per common share is calculated by dividing the net loss attributable to common stockholders by the weighted-average number of common stock outstanding during the period, without consideration of potentially dilutive securities. Diluted net loss per share is computed by dividing the net loss attributable to common stockholders by the weighted-average number of common stock and potentially dilutive securities outstanding for the period. For purposes of the diluted net loss per share calculation, redeemable convertible preferred stock, stock options and restricted stock that is subject to repurchase at the original purchase price are considered to be potentially dilutive securities. Basic and diluted net loss attributable to common stockholders per share is presented in conformity with the two-class method required for participating securities. The Company considers the shares issued upon the early exercise of stock options subject to repurchase to be participating securities, because holders of such shares have non-forfeitable dividend rights in the event a dividend is paid on common stock. The holders of early exercised shares subject to repurchase do not have a contractual obligation to share in the Company's losses. As such, the net loss was attributed entirely to common stockholders. Because the Company has reported a net loss for all periods presented, diluted net loss per common share is the same as basic net loss per common share for those periods.

Recent Accounting Pronouncements

From time to time, new accounting pronouncements are issued by the Financial Accounting Standards Board ("FASB") under its accounting standard codifications ("ASC") or other standard setting bodies and adopted by the Company as of the specified effective date, unless otherwise discussed below.

Recently Adopted Accounting Pronouncements

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*, which modifies the disclosure requirements on fair value measurements. ASU 2018-13 removes the requirement to disclose: the amount of and reasons for transfers between Level 1 and Level 2 of the fair value hierarchy; the policy for timing of transfers between levels; and the valuation processes for Level 3 fair value measurements. For public business entities, this ASU is effective for fiscal years beginning after

December 15, 2019, and interim periods within those fiscal years. Early adoption is permitted. The Company adopted this ASU on January 1, 2020. The adoption did not result in a material impact on the Company's financial statements and related disclosures.

In August 2018, the FASB issued ASU 2018-15, *Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract.* ASU 2018-15 requires that certain implementation costs incurred in a cloud computing arrangement be deferred and recognized over the term of the arrangement. For public business entities, this ASU is effective for fiscal years beginning after December 15, 2019, and interim periods within those fiscal years. Early adoption is permitted. The Company adopted this ASU on January 1, 2020, using the prospective transition method. The adoption did not result in a material impact on the Company's financial statements and related disclosures.

In November 2018, the FASB issued ASU 2018-18, *Collaborative arrangements (Topic 808)—Clarifying the interaction between Topic 808 and Topic 606*. ASU 2018-18 (i) clarifies that certain transactions between collaborative arrangement participants should be accounted for as revenue under Topic 606 when the collaborative arrangement participant is a customer in the context of a unit of account, (ii) adds unit-of-account guidance in Topic 808 to align with the guidance in Topic 606 (that is, a distinct good or service) when an entity is assessing whether the collaborative arrangement or a part of the arrangement is within the scope of Topic 606, and (iii) requires that in a transaction with a collaborative arrangement participant that is not directly related to sales to third parties, presenting the transaction together with revenue recognized under Topic 606 is precluded if the collaborative arrangement participant is not a customer. For public business entities, the amendments in this ASU are effective for fiscal years beginning after December 15, 2019, and interim periods within those fiscal years. Early adoption is permitted. The Company adopted this ASU on January 1, 2020. The adoption did not result in a material impact on the Company's financial statements and related disclosures.

New Accounting Pronouncements Not Yet Adopted

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments—Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*, which requires the measurement and recognition of expected credit losses for financial assets held at amortized cost. ASU 2016-13 replaces the existing incurred loss impairment model with an expected loss model. It also eliminates the concept of other-than-temporary impairment and requires credit losses related to available-for-sale debt securities to be recorded through an allowance for credit losses rather than as a reduction in the amortized cost basis of the securities. These changes will result in earlier recognition of credit losses. For public business entities, this ASU is effective for fiscal years beginning after December 15, 2019, and interim periods within those fiscal years. The FASB subsequently issued supplemental guidance to ASC 326 within ASU 2019-05, *Financial Instruments—Credit Losses (Topic 326): Targeted Transition Relief*, ASU 2019-10, *Financial Instruments—Credit Losses (Topic 326), Derivatives and Hedging (Topic 815), and Leases (Topic 842)* and ASU 2019-11, *Codification Improvements to Topic 326, Financial Instruments—Credit Losses*. ASU 2019-05 provides an option to irrevocably elect the fair value option for certain financial assets previously measured at amortized cost basis. ASU 2019-10 extended the effectiveness of Topic 326 for smaller reporting companies until fiscal years beginning after December 31, 2020. Early adoption is permitted. The Company is currently evaluating the impact the adoption of these ASUs will have on its financial statements and related disclosures.

In December 2019, the FASB issued ASU 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes.* ASU 2019-12 simplifies the accounting for income taxes by removing certain exceptions to the general principles in Topic 740 and improves consistent application of and simplifies GAAP for other areas of Topic 740 by clarifying existing guidance. For public business entities, this ASU is effective for fiscal years beginning after December 15, 2020, and interim periods within those fiscal years. Early adoption is permitted. The Company is currently evaluating the impact the adoption of this ASU will have on its financial statements and related disclosures.

3. Fair Value Measurement and Marketable Securities

The Company applies fair value accounting for all financial assets and liabilities and non-financial assets and liabilities that are recognized or disclosed at fair value in the financial statements on a recurring basis. Fair value is an exit price, representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset or liability. As a basis for considering such assumptions, a three-tier fair value hierarchy has been established, which prioritizes the inputs used in measuring fair value as follows:

Level 1—Observable inputs, such as quoted prices in active markets for identical assets or liabilities at the measurement date.

Level 2—Observable inputs other than Level 1 prices such as quoted prices for similar assets or liabilities, quoted prices in markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

Level 3—Unobservable inputs which reflect management's best estimate of what market participants would use in pricing the asset or liability at the measurement date. Consideration is given to the risk inherent in the valuation technique and the risk inherent in the inputs to the model.

In determining fair value, the Company utilizes valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs to the extent possible as well as considers counterparty credit risk in its assessment of fair value.

As of December 31, 2020, financial assets measured and recognized at fair value are as follows (in thousands):

		December 31, 2020			
		Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Assets					
U.S. government securities	Level 1	$ 80,020	$ 10	$ —	$ 80,030
Corporate bonds	Level 2	72,573	11	(14)	72,570
Commercial paper	Level 2	63,948	—	—	63,948
Marketable securities		216,541	21	(14)	216,548
Money market funds(1)	Level 1	67,065	—	—	67,065
Total fair value of assets		$ 283,606	$ 21	$ (14)	$ 283,613

(1) Included in cash and cash equivalents on the balance sheet

As of December 31, 2019, financial assets measured and recognized at fair value are as follows (in thousands):

		December 31, 2019			
		Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Assets					
U.S. government securities	Level 1	$ 24,973	$ 32	$ —	$ 25,005
Corporate bonds	Level 2	39,185	37	(4)	39,218
Commercial paper	Level 2	2,192	—	—	2,192
Marketable securities		66,350	69	(4)	66,415
Money market funds(1)	Level 1	34,008	—	—	34,008
Total fair value of assets		$ 100,358	$ 69	$ (4)	$ 100,423

(1) Included in cash and cash equivalents on the balance sheet

As of December 31, 2020, all marketable securities had a remaining maturity of one year or less. As of December 31, 2019, all marketable securities had a remaining maturity of one year or less, except for corporate bonds with a fair value of $ 1.5 million that had maturities of one to two years. There were no financial liabilities measured and recognized at fair value as of December 31, 2020 and December 31, 2019.

4. Balance Sheet Components

Property and Equipment, Net

Property and equipment, net consisted of the following (in thousands):

	Useful Life (In Years)	As of December 31, 2020	As of December 31, 2019
Laboratory equipment	5	$ 4,793	$ 4,034
Computer equipment	3	117	117
Software	3	118	118
Leasehold improvements	Shorter of useful life or lease term	2,716	2,581
Furniture and fixtures	5	421	308
Total property and equipment		8,165	7,158
Less: Accumulated depreciation and amortization		(3,894)	(2,516)
Property and equipment, net		$ 4,271	$ 4,642

Depreciation and amortization expense was $1.4 million, $1.2 million and $0.9 million for the years ended December 31, 2020, December 31, 2019 and December 31, 2018, respectively.

Accrued Liabilities

Accrued liabilities consisted of the following (in thousands):

	As of December 31, 2020	As of December 31, 2019
Accrued research and development expenses	$ 5,259	$ 2,787
Accrued salaries and benefits	2,685	1,733
Legal and professional fees	543	457
Other	29	46
Accrued liabilities	$ 8,516	$ 5,023

5. Operating Leases

The Company leases its laboratory and office facilities in South San Francisco, California under a non-cancelable operating lease with expiration date in July 2024 (“Original Lease”).

On September 30, 2019, the Company and the landlord of the laboratory and office facilities in South San Francisco entered into a second amendment (“Second Amendment”) to lease additional office spaces at the same location. The Company accounts for the Second Amendment as a separate contract and recognized a related right-of-use (“ROU”) asset and lease liability of $1.2 million on the lease commencement date in August 2020.

The maturities of operating lease liabilities as of December 31, 2020 are as follows (in thousands):

As of December 31, 2020	Operating Leases
2021	1,930
2022	1,982
2023	2,036
2024	1,647
Total lease payments	7,595
Less: Interest	(872)
Present value of lease liabilities	$ 6,723
Amounts recognized on the balance sheet	
Current lease liabilities	$ 1,540
Long-term lease liabilities	5,183
Total lease liabilities	$ 6,723

Operating lease cost was $1.5 million and $1.5 million for the years ended December 31, 2020 and December 31, 2019, respectively.

As of December 31, 2020, the ROU assets of $5.2 million are included in non-current assets on the balance sheet, and lease liabilities of $6.7 million are included in current liabilities and non-current liabilities on the balance sheet.

As of December 31, 2020, the remaining term for the operating lease in South San Francisco, California is 3.6 years, and the discount rate used to measure the lease liability for such operating lease upon recognition is 7.0% for the Original Lease and 6.0% for the Second Amendment. The Company has one right to extend the lease term of the operating lease in South San Francisco for two years by giving the landlord written notice. The remaining term does not include the additional two years, as the Company assessed at commencement date that it was not reasonably certain to extend the lease term.

During the years ended December 31, 2020 and December 31, 2019, cash paid for amounts included in operating lease liabilities of $1.7 million and $1.7 million, respectively, is included in cash flows from operating activities on the statement of cash flows.

6. Commitments and Contingencies

Contingencies

From time to time, the Company may be involved in litigation related to claims that arise in the ordinary course of its business activities. The Company accrues for these matters when it is probable that future expenditures will be made and these expenditures can be reasonably estimated. As of December 31, 2020, the Company does not believe that any such matters, individually or in the aggregate, will have a material adverse effect on the Company's financial position, results of operations or cash flows.

Indemnification

The Company enters into standard indemnification arrangements in the ordinary course of business with vendors, clinical trial sites and other parties. Pursuant to these arrangements, the Company indemnifies, holds harmless and agrees to reimburse the indemnified parties for losses suffered or incurred by the indemnified party. The term of these indemnification agreements is generally perpetual any time after the execution of the agreement. The maximum potential amount of future payments the Company could be required to make under these arrangements is not determinable. The Company has never incurred costs to defend lawsuits or settle claims related to these indemnification agreements. As a result, the Company believes the fair value of these agreements is not material.

7. Income Taxes

No provision for income taxes was recorded for the years ended December 31, 2020, December 31, 2019 and December 31, 2018. The Company has incurred net operating losses only in the United States since its inception. The Company has not reflected any benefit of such net operating loss carryforwards in the financial statements.

The provision for income taxes differs from the amount expected by applying the federal statutory rate to the loss before taxes as follows:

	Year Ended December 31,		
	2020	2019	2018
Federal statutory income tax rate	21.0%	21.0%	21.0%
State income taxes	(1.9%)	7.0%	6.9%
Change in valuation allowance	(21.5%)	(31.4%)	(29.4%)
Research tax credits	2.7%	3.6%	2.7%
Other permanent differences	(0.3%)	(0.4%)	(1.3%)
Change in fair value of redeemable convertible preferred stock liability	0.0%	0.2%	0.1%
Provision for income taxes	0.0%	0.0%	0.0%

The tax effects of temporary differences and carryforwards of the deferred tax assets are presented below (in thousands):

	As of December 31,	
	2020	2019
Deferred tax assets:		
Net operating loss carryforwards	$ 13,418	$ 23,947
Research and development credit carryforwards	3,813	2,995
Lease liability	1,420	1,895
Intangible assets	1,274	1,809
Stock-based compensation	705	407
Accruals and reserves	505	436
Deferred revenue	17,332	—
Gross deferred tax assets	38,467	31,489
Less: Valuation allowance	(36,879)	(29,462)
Deferred tax assets, net of valuation allowance	1,588	2,027
Deferred tax liabilities:		
Right-of-use assets	(1,100)	(1,415)
Property and equipment	(488)	(612)
Net deferred tax assets	$ —	$ —

The Company has established a full valuation allowance against its deferred tax assets due to the uncertainty surrounding the realization of such assets.

ASC 740 requires that the tax benefit of net operating losses, temporary differences and credit carryforwards be recorded as an asset to the extent that management assesses that realization is “more likely than not.” Realization of the future tax benefits is dependent on the Company’s ability to generate sufficient taxable income within the carryforward period. Because of the Company’s recent history of operating losses, management believes that recognition of the deferred tax assets arising from the above-mentioned future tax benefits is currently not likely to be realized and, accordingly, has provided a valuation allowance.

As of December 31, 2020, the Company had net operating loss carryforwards of $35.8 million available to reduce future taxable income, if any, for federal income tax purposes. As of December 31, 2020, the Company had net operating loss carryforwards of $83.8 million available to reduce future taxable income, if any, for California state income tax purposes. If not utilized, the federal carryforwards of $11.7 million and the state carryforwards of $83.8 million will begin to expire in 2037 and 2036, respectively. The federal net operating loss carryforwards of $24.1 million arising after December 31, 2017 do not expire.

The Company also had federal and state research and development credit carryforwards of $2.6 million and $2.5 million, respectively, as of December 31, 2020. The federal credits will expire starting in 2037 if not utilized and the state research credit can be carried forward indefinitely.

The Tax Reform Act of 1986 limits the use of net operating loss carryforwards in certain situations where changes occur in the stock ownership of a company. The annual limitation may result in the expiration of net operating losses and credits before utilization. The Company performed a Section 382 analysis through December 31, 2020. The Company has experienced ownership changes in the past and in the current year. As a result of the ownership changes, some of the tax attribute carryforwards may be permanently limited as they will expire unused. The Company is continuing to analyze the impact of the limitation. Subsequent ownership changes may affect the limitation in future years.

Related to unrecognized tax benefits noted below, the Company accrued no penalties or interest during the years ended December 31, 2020, December 31, 2019 and December 31, 2018. The Company does not expect its unrecognized tax benefit balance to change materially over the next 12 months.

The Company had $0.9 million and $0.7 million of unrecognized tax benefits as of December 31, 2020 and December 31, 2019, respectively.

The following table summarizes the activity related to the Company's unrecognized tax benefits (in thousands).

Balance as of January 1, 2019	$	399
Increase related to prior year tax positions		59
Increase related to current year tax positions		288
Balance as of December 31, 2019	$	746
Increase related to prior year tax positions		2
Increase related to current year tax positions		153
Balance as of December 31, 2020	$	901

The Company files income tax returns in the U.S. federal jurisdiction and in California. For jurisdictions in which tax filings have been filed, all tax years remain open for examination by the federal and California state authorities for three and four years, respectively, from the date of utilization of any net operating losses or credits.

8. Common Stock

As of December 31, 2020 and December 31, 2019, the Company's certificate of incorporation authorized the Company to issue 300,000,000 shares of common stock at a par value of $0.0001 per share. Each share of common stock is entitled to one vote. The holders of common stock are also entitled to receive dividends whenever funds are legally available and when declared by the Company's board of directors. As of December 31, 2020, no dividends have been declared to date.

The Company had reserved common stock for future issuance as follows:

	As of December 31,	
	2020	2019
Exercise of outstanding options under the 2015 and 2019 Plans	2,591,456	1,962,332
Issuance of common stock options under the 2019 Plan	975,135	1,036,746
Issuance of common stock options under the Employee Stock Purchase Plan	357,600	195,000
Total	3,924,191	3,194,078

9. Stock-Based Compensation

2019 Incentive Award Plan

In May 2019, the Company's board of directors adopted and the Company's stockholders approved the 2019 Incentive Award Plan (the "2019 Plan"), under which the Company may grant cash and equity-based incentive awards to the Company's employees, consultants and directors. Following the effectiveness of the 2019 Plan, the Company will not make any further grants under the 2015 Equity Incentive Plan (the "2015 Plan"). However, the 2015 Plan continues to govern the terms and conditions of the outstanding awards granted under it. Shares of common stock subject to awards granted under the 2015 Plan that are forfeited or lapse unexercised and which following the effective date of the 2019 Plan are not issued under the 2015 Plan will be available for issuance under the 2019 Plan.

Options granted under the 2019 Plan may be either incentive stock options ("ISOs") or nonqualified stock options ("NSOs"). ISOs may be granted only to Company employees (including officers and directors who are also employees). NSOs may be granted to Company employees and consultants.

The exercise price of an ISO and NSO shall not be less than 100% of the estimated fair value of the shares on the date of grant. The exercise price of an ISO granted to an employee who, at the time of grant, owns stock representing more than 10% of the voting power of all classes of stock of the Company (a "10% stockholder") shall be no less than 110% of the estimated fair value of the shares on the date of grant. Options granted under the 2019 Plan have a term of 10 years (or five years if granted to a 10% stockholder) and generally vest over a 4-year period with 1-year cliff vesting.

2015 Equity Incentive Plan

In 2015, the Company established its 2015 Plan which provides for the granting of stock options to employees and consultants of the Company. Options granted under the 2015 Plan may be either ISOs or NSOs.

2019 Employee Stock Purchase Plan

In May 2019, the Company's board of directors adopted and the Company's stockholders approved the 2019 Employee Stock Purchase Plan (the "ESPP"). The ESPP provides eligible employees with the opportunity to acquire an ownership interest in the Company through periodic payroll deductions up to 15% of eligible compensation. The offering period is determined by the Company in its discretion but may not exceed 27 months. The per-share purchase price on the applicable exercise date for an offering period is equal to the lesser of 85% of the fair market value of the common stock at either the first business day or last business day of the offering period, provided that no more than 4,000 shares of common stock may be purchased by any one employee during each offering period. The ESPP is intended to constitute an "employee stock purchase plan" under Section 423(b) of the Internal Revenue Code of 1986, as amended. A total of 195,000 shares of common stock were initially reserved for issuance under the ESPP, subject to an annual increase on January 1 of each year, beginning on January 1, 2020. For the years ended December 31, 2020 and December 31, 2019, the Company recorded $0.2 million and less than $0.1 million of compensation expense related to participation in the ESPP.

Stock-Based Compensation Expense

Total stock-based compensation expense recorded related to awards granted to employees and non-employees was as follows (in thousands):

	Year Ended December 31,		
	2020	2019	2018
Research and development	$ 1,234	$ 956	$ 410
General and administrative	2,375	1,212	540
Total stock-based compensation expense	$ 3,609	$ 2,168	$ 950

Stock Options

Activity under the Company's 2015 and 2019 Plans is set forth below:

		Outstanding Options		
	Shares available for Grant	Shares	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (Years)
Balance, January 1, 2020	1,036,746	1,962,332	$ 6.03	8.63
Additional shares authorized	813,578	—		
Options granted	(1,252,826)	1,252,826	$ 8.48	
Options exercised	—	(256,583)	$ 4.68	
Options repurchased	10,518	—	$ 1.08	
Options canceled	367,119	(367,119)	$ 6.58	
Balance, December 31, 2020	975,135	2,591,456	$ 7.27	8.36
Exercisable as of December 31, 2020		844,226	$ 5.79	7.55
Vested and expected to vest as of December 31, 2020		2,591,456	$ 7.27	8.36

The weighted-average grant-date fair value of options granted during the years ended December 31, 2020 and December 31, 2019 was $6.16 and $6.73 per share, respectively. The aggregate intrinsic value of options exercised for the years ended December 31, 2020 and December 31, 2019 was $1.7 million and $0.8 million, respectively. Intrinsic values are calculated as the difference between the exercise price of the underlying options and the fair value of the common stock on the date of exercise.

As of December 31, 2020, the total unrecognized stock-based compensation expense for stock options was $8.5 million, which is expected to be recognized over a weighted-average period of 2.51 years.

Early Exercise of Stock Options

The terms of the 2015 Plan permit the exercise of options granted under the 2015 Plan prior to vesting, subject to required approvals. The shares so acquired prior to vesting are subject to a lapsing repurchase right in favor of the Company at the original purchase price of such shares, exercisable upon a termination of the holder's service with the Company prior to full vesting. The proceeds are initially recorded in other liabilities from the early exercise of stock options and are reclassified to additional paid-in capital as the Company's repurchase right lapses. During the years ended December 31, 2020 and December 31, 2019, the Company repurchased 10,518 and 23,698 shares of common stock, respectively. As of December 31, 2020 and December 31, 2019, shares that were subject to repurchase were 14,460 and 84,964, respectively. The aggregate exercise price of early exercised shares as of December 31, 2020 and December 31, 2019 was less than $0.1 million and $0.1 million, respectively, which were recorded in other current liabilities and other non-current liabilities.

Black-Scholes Assumptions

The fair values of options were calculated using the assumptions set forth below:

	Year Ended December 31,		
	2020	2019	2018
Expected term	5.5 - 6.1 years	5.4 - 6.1 years	5.8 - 6.1 years
Expected volatility	84.9 % - 98.3%	77.2% - 85.5%	80.3% - 82.3%
Risk-free interest rate	0.3% - 1.5%	1.4% - 2.5 %	2.6% - 3.1%
Dividend yield	0%	0%	0%

Expected term. The expected term represents the weighted-average period the stock options are expected to remain outstanding and is based on the options' vesting terms, contractual terms and industry peers, as the Company does not have sufficient historical information to develop reasonable expectations about future exercise patterns and post-vesting employment termination behavior.

Expected Volatility. The Company uses an average historical stock price volatility of a peer group of publicly traded companies to be representative of its expected future stock price volatility, as the Company does not have sufficient trading history for its common stock. For purposes of identifying these peer companies, the Company considers the industry, stage of development, size and financial leverage of potential comparable companies. For each grant, the Company measures historical volatility over a period equivalent to the expected term. The Company will continue to apply this process until a sufficient amount of historical information regarding the volatility of its own stock price becomes available.

Risk-Free Interest Rate. The risk-free rate assumption is based on U.S. Treasury instruments whose term was consistent with the expected term of the Company's stock options.

Expected Dividend Rate. The Company has not paid and does not anticipate paying any dividends in the near future. Accordingly, the Company has estimated the dividend yield to be zero.

The Company accounts for forfeitures as they occur.

Fair Value of Common Stock

The fair value of the Company's common stock is determined based on its closing market price on the date of grant.

Restricted Stock

Restricted stock activity was as follows:

	Number of Shares Underlying Outstanding Restricted Stock Awards	Weighted Average Grant Date Fair Value
Unvested, December 31, 2019	14,625	$ 0.82
Vested	—	
Unvested, December 31, 2020	14,625	$ 0.82

As of December 31, 2020 and December 31, 2019, 14,625 shares of restricted stock were outstanding with an aggregate purchase price of less than $0.1 million, which is recorded in other non-current liabilities on the balance sheets. The restricted stock vests upon the achievement of pre-defined research milestones. The holder of restricted stock has voting and dividend rights with respect to such shares held without regard to vesting. Shares of restricted stock are subject to a right of repurchase at the original purchase price held by the Company. As the restricted stock was purchased by an employee at a price equal to its fair value at the time of issuance, there was no stock-based compensation expense related to these awards. The total fair value of restricted stock vested during the years ended December 31, 2020 and December 31, 2019 was zero and $0.1 million in each period.

10. Significant Agreements

GlaxoSmithKline Collaboration, Option and License Agreement

In June 2020, the Company entered into a Collaboration, Option and License Agreement, or the GSK Collaboration Agreement, with an affiliate of GlaxoSmithKline, GLAXOSMITHKLINE INTELLECTUAL PROPERTY (NO. 4), Limited, or GSK, pursuant to which the Company and GSK have entered into a collaboration for its synthetic lethality programs targeting methionine adenosyltransferase 2a, or MAT2A, DNA Polymerase Theta, or Pol Theta or POLQ, and Werner Helicase, or WRN. On July 27, 2020 ("Effective Date"), the Company and GSK received Hart-Scott-Rodino Antitrust Improvements Act clearance, or HSR Clearance, and the GSK Collaboration Agreement became effective.

Pursuant to the GSK Collaboration Agreement, GSK agreed to pay the Company $100.0 million (the "Upfront Payment") within ten business days of the Effective Date of the GSK Collaboration Agreement. On July 31, 2020, the Company received the Upfront Payment.

MAT2A Program

For the MAT2A program, the Company will lead research and development through early clinical development. GSK has an exclusive option to obtain an exclusive license to continue development of and commercialize MAT2A products arising out of the MAT2A program, or the Option, exercisable within a specified time period after the Company delivers to GSK a data package resulting from its conduct of a MAT2A Phase 1 monotherapy clinical trial. At such time of exercise, GSK has agreed to pay the Company an option exercise payment of $50.0 million.

GSK may initiate, or request that the Company initiates, a Phase 1 combination clinical trial for a MAT2A product and GSK's Type I PRMT inhibitor (GSK3368715) product, or the MAT2A Combination Trial, prior to GSK's exercise of the Option. The Company will be responsible for the costs of research and early clinical development activities that the Company conducts for the MAT2A program prior to GSK's exercise of the Option, excluding the costs of conducting the MAT2A Combination Trial. GSK will be solely responsible for costs of the conduct of the MAT2A Combination Trial, except for supply of the MAT2A product therefor, to be provided by the Company at its own cost.

Subject to GSK's exercise of the Option, GSK will lead later stage global clinical development for the MAT2A program, with IDEAYA responsible for 20% and GSK responsible for 80% of further development costs. The cost-sharing percentages will be adjusted based on the actual ratio of U.S. to global profits for MAT2A products, as measured three and six years after global commercial launch thereof.

Subject to GSK's exercise of the Option, the Company will be eligible to receive future development and regulatory milestones of up to $465.0 million, and commercial milestones of up to $475.0 million, with respect to each MAT2A product. Additionally, the Company is entitled to receive 50% of U.S. net profits and tiered royalties on global non-U.S. net sales of MAT2A products by GSK, its affiliates and their sublicensees ranging from high single digit to sub-teen double digit percentages, subject to certain customary reductions. The Company will have a right to opt-out of the 50% U.S. net profit share and corresponding development cost share for the MAT2A program, in which case the Company would be eligible to receive tiered royalties on U.S. net sales of MAT2A products by GSK, its affiliates and their sublicensees at the same royalty rates as for global non-U.S. net sales thereafter, with economic adjustments based on the stage of the MAT2A program at the time of opt-out.

Pol Theta Program

Pursuant to the GSK Collaboration Agreement, GSK holds a global, exclusive license to develop and commercialize POLQ products arising out of the POLQ program. GSK and the Company will collaborate on ongoing preclinical research for the POLQ program, and GSK will lead clinical development for the POLQ program. GSK will be responsible for all research and development costs for the POLQ program, including those incurred by the Company.

The Company will be eligible to receive future development and regulatory milestones of up to $485.0 million, with respect to each POLQ product, including as applicable, for multiple POLQ products that target certain alternative protein domains or are based on alternative modalities. Additionally, the Company is eligible to receive up to $475.0 million of commercial milestones with respect to each POLQ product. The Company is also entitled to receive tiered royalties on global net sales of POLQ products by GSK, its affiliates and their sublicensees ranging from high single digit to sub-teen double digit percentages, subject to certain customary reductions.

WRN Program

Pursuant to the GSK Collaboration Agreement, GSK holds a global, exclusive license to develop and commercialize WRN products arising out of the WRN program. The Company and GSK will collaborate on ongoing preclinical research for the WRN program, and GSK will lead clinical development for the WRN program, with IDEAYA responsible for 20% and GSK responsible for 80% of such global research and development costs. The cost-sharing percentages will be adjusted based on the actual ratio of U.S. to global profits for WRN products, as measured three and six years after global commercial launch thereof.

The Company will be eligible to receive future development milestones of up to $485.0 million, with respect to each WRN product, including as applicable, for multiple WRN products that are based on alternative modalities. Additionally, the Company will be eligible to receive up to $475.0 million of commercial milestones with respect to each WRN product. The Company will be entitled to receive 50% of U.S. net profits and tiered royalties on global non-U.S. net sales of WRN products by GSK, its affiliates and their sublicensees ranging from high single digit to sub-teen double digit percentages, subject to certain customary reductions. The Company will have a right to opt-out of the 50% U.S. net profit share and corresponding research and development cost share for the WRN program, and would be eligible to receive tiered royalties on U.S. net sales of WRN products by GSK, its affiliates and their sublicensees at the same royalty rates as for global non-U.S. net sales thereafter, with economic adjustments based on the stage of the WRN program at the time of opt-out.

General

Under the terms of the GSK Collaboration Agreement, subject to certain exceptions, the Company and GSK will not, directly or through third parties, develop or commercialize other products whose primary and intended mechanism of action is the modulation of WRN, POLQ, or MAT2A (unless GSK does not exercise the Option, in which case such restriction shall cease to apply with respect to MAT2A) for an agreed upon period of time. The Company and GSK will form a joint steering committee, joint development committees, and joint commercialization committees responsible for coordinating all activities under the GSK Collaboration Agreement. Ownership of intellectual property developed under the GSK Collaboration Agreement is allocated between or shared by the parties depending on development and subject matter.

GSK’s royalty obligations continue with respect to each country and each product until the later of (i) the date on which such product is no longer covered by certain intellectual property rights in such country and (ii) the 10th anniversary of the first commercial sale of such product in such country.

Each party has the right to sublicense its rights under the GSK Collaboration Agreement subject to certain conditions.

The GSK Collaboration Agreement will continue in effect on a product-by-product and country-by-country basis until the expiration of the obligation to make payments under the GSK Collaboration Agreement with respect to such product in each country, unless earlier terminated by either party pursuant to its terms. Either the Company or GSK may terminate the GSK Collaboration Agreement for the other party’s insolvency or certain uncured breaches. The Company may terminate the GSK Collaboration Agreement if GSK or any of its sublicensees or affiliates challenge certain patents of the Company. GSK may terminate the GSK Collaboration Agreement in its entirety or on a target-by-target basis upon 90-day notice to the Company.

Pfizer Clinical Trial Collaboration and Supply Agreement

In March 2020, the Company entered into a clinical trial collaboration and supply agreement with Pfizer Inc., or the Supply Agreement, which was subsequently amended in September 2020. Pursuant to the Supply Agreement, Pfizer supplies the Company with their MEK inhibitor, binimetinib, and cMET inhibitor, crizotinib, to evaluate the combination in patients with tumors harboring activating GNAQ or GNA11 hotspot mutations. Under the Supply Agreement, the Company will sponsor a Phase 1/2 clinical trial for its product candidate, IDE196, and Pfizer will supply the Company with binimetinib and crizotinib for use in the clinical trial at no cost to the Company. The Supply Agreement provides that the Company and Pfizer will jointly own clinical data generated from the clinical trial.

Novartis License Agreement

In September 2018, the Company entered into a license agreement with Novartis International Pharmaceuticals Ltd. ("Novartis") to develop and commercialize Novartis' LXS196 (also known as IDE196), a Phase 1 protein kinase C ("PKC") inhibitor for the treatment of cancers having GNAQ and GNA11 mutations. In consideration of license and rights granted under the license agreement, the Company made a one-time cash payment of $2.5 million to Novartis and issued 263,615 shares of Series B redeemable convertible preferred stock with a fair value of $3.8 million to an affiliate of Novartis, which were recorded within research and development expenses on the Company's statements of operations and comprehensive loss, as the products have not reached technological feasibility and do not have alternative future use. Under the license agreement, the Company is liable to make contingent development and sales milestone payments of up to $29.0 million and mid to high single digit royalty payments of the net sales of licensed products.

11. Revenue Recognition

The Company recognizes revenue in accordance with ASC 606 for the GSK Collaboration Agreement (see No. 10, Significant Agreements).

Disaggregation of Revenue

The following table presents revenue disaggregated by research program (in thousands):

	Year Ended December 31, 2020
MAT2A	$ 6,048
Pol Theta	7,917
WRN	5,573
Total collaboration revenue	$ 19,538

Contract balances

As of December 31, 2020, the Company had $1.9 million of accounts receivable and $83.8 million of contract liabilities related to the GSK Collaboration Agreement.

The following table presents the significant changes in the balance of contract liabilities during the year ended December 31, 2020 (in thousands):

	Contract liabilities
Receipt of the Upfront Payment	$ 100,000
Reclassification to revenue, as the result of performance obligations satisfied	(19,538)
Cash received for cost reimbursement	1,434
Increase in accounts receivable	1,877
Total	$ 83,773

The timing of revenue recognition, billings, and cash collections results in accounts receivable, contract assets, and contract liabilities on the balance sheets. Based on the estimated reimbursable program costs for a quarter, the Company recognizes accounts receivable, which are derecognized upon reimbursement. When consideration is received, or such consideration is unconditionally due, from a customer prior to transferring goods or services to the customer under the terms of a contract, a contract liability is recorded. Contract liabilities are recognized as revenue after control of the products or services is transferred to the customer and all revenue recognition criteria have been met.

Performance obligations

The Company has identified the following six performance obligations associated with the GSK Collaboration Agreement:

(1) Preclinical and Phase 1 Monotherapy clinical research and development services under the MAT2A program ("MAT2A R&D Services")

(2) Preclinical research services and the related license to IDEAYA-owned technology under the Pol Theta program ("Pol Theta R&D Services")

(3) Preclinical research services and the related license to IDEAYA-owned technology under the WRN program ("WRN R&D Services")

(4) Material right associated with the option to license IDEAYA-owned technology under the MAT2A program (defined as the "Option" in Note 10)

(5) Material right associated with the option to license to IDEAYA-owned technology under the MAT2A program to the extent necessary for preclinical activities in preparation for the MAT2A Combination Trial ("Preclinical MAT2A License")

(6) Material right associated with the supply of MAT2A product for the MAT2A Combination Trial ("MAT2A Supply")

The Company will recognize revenue related to amounts allocated to the MAT2A R&D services as the underlying services are performed over the period through the delivery of the data package, which will be generated from its conduct of the MAT2A Phase 1 monotherapy clinical trial. The Company uses its internal research and development capability and may also engage third-party clinical research organizations, or CROs, in transferring the MAT2A R&D services, for which the Company acts as a principal.

With respect to the Pol Theta and WRN programs, the Company identified two promises: (1) granting of the license to develop and commercialize Pol Theta and WRN products, respectively, and (2) the preclinical research services. The Company has determined that these two promises are not distinct within the context of the contract. As of the effective date of the GSK Collaboration Agreement, both programs were at an early stage, and the Company was yet to identify any development candidate for either program, which will require the completion of certain preclinical studies. After the Company and GSK identify a development candidate, a series of IND-enabling studies will be conducted before an Investigational New Drug application is submitted to the FDA. Due to the early stage of development, the Company's preclinical research services are expected to transform the underlying technology and significantly modify or customize the license. Therefore, the two promises are not distinct from each other and are accounted for as a single performance obligation for each of the Pol Theta and WRN programs, respectively. The Company will recognize revenue related to amounts allocated to the Pol Theta R&D Services and WRN R&D Services as the underlying services are performed over the period through the completion of the Pol Theta and WRN preclinical research programs, respectively. Within 90 days from the end of each calendar quarter, GSK will reimburse the Pol Theta program costs incurred by the Company. Within 75 days from the end of each calendar quarter, the Company and GSK will determine the amounts of WRN program costs incurred by both parties and the net amount owed by GSK to the Company or by the Company to GSK, which will be paid within 75 days from such determination by a reimbursing party. The Company uses its internal research capability and may also engage third-party clinical research organizations, or CROs, in transferring the Pol Theta R&D services and WRN R&D services, for which the Company acts as a principal.

Upon exercise of the Option, GSK will obtain the license to develop and commercialize MAT2A products. The Company has concluded that this Option results in a material right as the option exercise fee contains a discount that GSK would not have otherwise received. The Company has determined the nature of the license to develop and commercialize MAT2A products to be functional. After exercise of the Option, the Company will recognize revenue, when it makes the underlying MAT2A technology available to GSK, which will immediately be able to use and benefit from its right to use the intellectual property.

The Company has identified two additional customer options under the MAT2A program, both of which have been determined a material right. GSK may elect to conduct certain preclinical activities in preparation for the MAT2A Combination Trial and may elect to exercise the option to license to MAT2A technology. GSK may be able to use and exploit the license to the extent necessary for GSK's performance of such preclinical activities. The Company will not receive any consideration for providing such license and has concluded that this license option results in a material right as it involves a discount that GSK would not have otherwise received. The Company has determined the nature of such license to MAT2A technology to be functional. As of December 31, 2020, GSK has exercised the Preclinical MAT2A License, and the Company has made the underlying MAT2A technology available to GSK, which is immediately able to use and benefit from its right to use the intellectual property. Accordingly, the Company recognized revenue from the Preclinical MAT2A License in the year ended December 31, 2020.

If GSK elects to conduct the MAT2A Combination Trial, the Company will supply MAT2A product to be used for the MAT2A Combination Trial at its own cost. The Company has concluded that this supply option results in a material right as it involves a discount that GSK would not have otherwise received. The Company will recognize revenue, as it transfers the control of the MAT2A product to GSK. The Company has not supplied MAT2A product as of December 31, 2020.

Transaction price allocated to the remaining performance obligations

At inception of the GSK Collaboration Agreement, the Company determined that the transaction price was $108.5 million, including the Upfront Payment, and the estimated reimbursable program costs. The following table presents the transaction price allocated to the remaining performance obligations as of December 31, 2020 (in thousands):

Performance Obligations	**Allocation of Transaction Price**
MAT2A R&D Services	$ 16,144
Pol Theta R&D Services	25,776
WRN R&D Services	27,785
The Option	17,235
MAT2A Supply	2,351
Total transaction price allocated to the remaining performance obligations	$ 89,291

The Company applies the sales-based royalty exception to the commercial milestones and tiered royalties for all programs because GSK would ascribe significantly more value to the license than to the other goods or services to which the commercial milestones and tiered royalties relate. The Company will be entitled to receive the commercial milestones either when the first commercial sale occurs, or when the predefined net sales in a calendar year are achieved, upon which the variability will be resolved. Also, the Company will be entitled to receive the tiered royalties during a calendar year when global net sales of each product occur, upon which the variability will be resolved.

Significant judgements

In applying ASC 606 to the GSK Collaboration Agreement, the Company made the following judgments that significantly affect the timing and amount of revenue recognition:

(i) Determination of the transaction price, including whether any variable consideration is included at inception of the contract

The transaction price is the amount of consideration that the Company expects to be entitled to in exchange for transferring promised goods or services to the customer. The transaction price must be determined at inception of a contract and may include amounts of variable consideration. However, there is a constraint on inclusion of variable consideration in the transaction price, if there is uncertainty at inception of the contract as to whether such consideration will be recognized in the future.

The decision as to whether or not it is probable that a significant reversal of revenue will occur in the future, depends on the likelihood and magnitude of the reversal and is highly susceptible to factors outside the Company’s influence (for example, the Company cannot determine the outcome of clinical trials; the Company cannot determine if or when the counterparty will initiate or complete clinical trials; and the Company cannot determine if or when an regulatory agency provides any approval). In addition, the uncertainty is not expected to be resolved for a long period and finally, the Company has limited experience in the field. Therefore, at inception of the GSK Collaboration Agreement, development and regulatory milestones were fully constrained and were not included in the transaction price based on the factors noted above.

The Company constrains estimates of other variable consideration, such as reimbursable program costs, to amounts that are not expected to result in a significant revenue reversal in the future. The Company re-evaluates the transaction price, including the estimated variable consideration included in the transaction price and all constrained amounts, in each reporting period and as uncertain events are resolved or other changes in circumstances occur.

(ii) Determination of the estimate of the standalone selling price of performance obligations

In order to recognize revenue under ASC 606, for contracts for which more than one distinct performance obligation has been identified, the Company must allocate the transaction price to the performance obligations based upon their standalone selling prices. The best evidence of standalone selling price is an observable price of a good or service when sold separately by an entity in similar circumstances to similar customers. If such evidence is not available, standalone selling price should be estimated so that the amount that is allocated to each performance obligation equals the amount that the entity expects to receive for transferring goods or services. The Company has identified more than one performance obligation in the GSK Collaboration Agreement. Since evidence based on observable prices is not available for the performance obligations, the Company considered market conditions and entity-specific factors, including those contemplated in negotiating the agreements, as well as certain internally developed estimates.

The Company determined the estimate of standalone selling price of the MAT2A R&D Services by using the expected costs of satisfying the performance obligation, adjusted for probabilities of technical success where appropriate. The Company determined the estimate of standalone selling price of the Pol Theta R&D Services and WRN R&D Services by using a combination of risk-adjusted net present value analysis and the expected costs of satisfying the performance obligation, adjusted for probabilities of technical success where appropriate. The Company determined the estimate of standalone selling price of the Option by using risk-adjusted net present value analysis. Finally, the Company determined the estimate of standalone selling price of the Preclinical MAT2A License and MAT2A Supply by using the expected costs of satisfying the performance obligation.

(iii) Determination of the method of allocation of the transaction price to the distinct performance obligations

At inception of the GSK Collaboration Agreement, the Company allocated the transaction price among the six performance obligations based on their relative selling prices, determined as described above.

(iv) Determination of the timing of satisfaction of performance obligations

The Company recognizes revenue from the MAT2A R&D Services, Pol Theta R&D Services and WRN R&D Services over time, as GSK simultaneously receives and consumes the benefits provided by the Company's performance as the Company performs. The Company measures its progress toward complete satisfaction of the MAT2A R&D Services, Pol Theta R&D Services and WRN R&D Services based on the costs incurred as a percentage of the estimated total costs to be incurred to complete the performance obligations. As the Company performs, it shares the results of research and development studies with GSK through the joint development committee. Accordingly, the cost incurred method faithfully depicts the Company's performance of the MAT2A R&D Services, Pol Theta R&D Services and WRN R&D Services.

The license to IDEAYA-owned technology under the MAT2A program underlying the Option and Preclinical MAT2A License is functional in nature. Upon the exercise of the material right associated with the option to license to IDEAYA-owned technology under the MAT2A program, the Company will recognize revenue upon the later of transfer of the underlying technology to GSK and the beginning of the period during which GSK is able to use and benefit from its right to use the underlying technology.

After the exercise of the material right associated with the supply of MAT2A product for the MAT2A Combination Trial, the Company recognize revenue as it transfers the control of MAT2A product to GSK.

12. Net Loss Per Share Attributable to Common Stockholders

The following table sets forth the computation of basic and diluted net loss per share attributable to common stockholders (in thousands, except share and per share data):

	Year Ended December 31,		
	2020	2019	2018
Numerator:			
Net loss attributable to common stockholders	$ (34,495)	$ (41,975)	$ (34,346)
Denominator:			
Weighted-average shares outstanding	24,783,287	12,669,367	1,338,776
Less: weighted-average shares of restricted stock that are subject to repurchase	(61,512)	(172,410)	(382,524)
Weighted-average shares used in computing net loss per share attributable to common stock, basic and diluted	24,721,775	12,496,957	956,252
Net loss per share attributable to common stockholders, basic and diluted	$ (1.40)	$ (3.36)	$ (35.92)

The following outstanding shares of potentially dilutive securities were excluded from the computation of diluted net loss per share attributable to common stockholders for the periods presented because including them would have been antidilutive:

	As of December 31,		
	2020	2019	2018
Redeemable convertible preferred stock	—	—	13,139,794
Options to purchase common stock	2,591,456	1,962,332	1,598,864
Restricted stock	14,625	14,625	19,492
Restricted stock acquired upon early exercise of stock options	14,460	84,964	237,853
Total	2,620,541	2,061,921	14,996,003

As of December 31, 2020, the Company has contributions from plan participant of $0.3 million under the ESPP, which if converted, would be equivalent to 30,454 shares based on 85% of the stock price at the beginning of the offering period.

13. 401(k) Retirement Savings Plan

In 2016, the Company adopted a 401(k) plan for all employees who have met certain eligibility requirements. Under the agreement, employees may elect to contribute up to 90% of their eligible compensation to a 401(k) plan, subject to certain limitations. The Company is responsible for administrative costs of the 401(k) plan. The Company may, at its discretion, make matching or profit-sharing contributions to the 401(k) plan. For the years ended December 31, 2020, December 31, 2019 and December 31, 2018, the Company made matching contributions of $0.2 million, $0.2 million and less than $0.1 million, respectively.

14. Related Party Transactions

The Company incurred $1.3 million of research and development expenses during the year ended December 31, 2018 in relation to agreements for pharmaceutical research, development and manufacturing activities with entities affiliated with a former director of the Company, Edward Hu. Mr. Hu resigned from the Company’s board of directors in January 2019.

15. Subsequent Event

From January 2021 through March 22, 2021, the Company sold an aggregate of 2,709,385 shares for gross proceeds of $43.3 million in the ATM Offering.

Signatures

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, the Registrant has duly caused this Report to be signed on its behalf by the undersigned, thereunto duly authorized, in South San Francisco, California on March 23, 2021.

IDEAYA Biosciences, Inc.

By: /s/ Yujiro Hata
Yujiro Hata
President and Chief Executive Officer

Power of Attorney

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Yujiro Hata and Paul Stone, and each of them acting individually, as his or her true and lawful attorneys-in-fact and agents, each with full power of substitution, for him in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K (including post-effective amendments), and to file the same, with all exhibits thereto and other documents in connection therewith, with the SEC, granting unto said attorneys-in-fact and agents, with full power of each to act alone, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully for all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or his or their substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, this Report has been signed by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Yujiro Hata Yujiro Hata	President, Chief Executive Officer and Director *(Principal Executive Officer)*	March 23, 2021
/s/ Paul Stone, J.D. Paul Stone, J.D.	Senior Vice President and Chief Financial Officer *(Principal Financial and Accounting Officer)*	March 23, 2021
/s/ Timothy Shannon, M.D. Timothy Shannon, M.D.	Chairman of the Board of Directors	March 23, 2021
/s/ Garret Hampton, Ph.D. Garret Hampton, Ph.D.	Director	March 23, 2021
/s/ Susan L. Kelley, M.D. Susan L. Kelley, M.D.	Director	March 23, 2021
/s/ Scott Morrison Scott Morrison	Director	March 23, 2021
/s/ Terry Rosen, Ph.D. Terry Rosen, Ph.D.	Director	March 23, 2021
/s/ Jeffrey Stein, Ph.D. Jeffrey Stein, Ph.D.	Director	March 23, 2021
/s/ Wendy Yarno Wendy Yarno	Director	March 23, 2021

Exhibit 4.3

DESCRIPTION OF THE REGISTRANT'S SECURITIES REGISTERED PURSUANT TO SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934

As of March 23, 2021, IDEAYA had one class of common stock registered under Section 12 of the Securities Exchange Act of 1934, as amended (the "**Exchange Act**").

The following summary describes our common stock and the material provisions of our amended and restated certificate of incorporation (the "**certificate of incorporation**"), our amended and restated bylaws (the "**bylaws**"), the amended and restated investors' rights agreement (the "**investors' rights agreement**") to which we and certain of our stockholders are parties and of the Delaware General Corporation Law (the "**DGCL**"). Because the following is only a summary, it does not contain all of the information that may be important to you. For a complete description, you should refer to our certificate of incorporation, bylaws and investors' rights agreement, filed as Exhibits 3.1, 3.2 and 10.19, respectively, to our Annual Report on Form 10-K filed with the Securities Exchange Commission, of which this Exhibit 4.3 is a part. We encourage you to read those documents and the DGCL carefully.

General

The certificate of incorporation authorizes 300,000,000 shares of common stock, $0.0001 par value per share.

Common Stock

Voting Rights

Each holder of our 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 stockholders do not have cumulative voting rights in the election of directors. Accordingly, holders of a majority of the voting shares are able to elect all of the directors. In addition, the affirmative vote of holders of 66-2/3% of the voting power of all of the then outstanding voting stock is required to take certain actions, including amending certain provisions of our amended and restated certificate of incorporation, such as the provisions relating to amending our amended and restated bylaws, the classified board and director liability.

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 are 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 outstanding shares of common stock are fully paid and non-assessable.

Undesignated Preferred Stock

Under our certificate of incorporation, our board of directors has the authority, without further action by our stockholders, to issue up to 10,000,000 shares of preferred stock, $0.0001 par value per share, 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, terms of redemption, liquidation preferences, sinking fund terms and the number of shares constituting, or the designation of, such series, any or all of which may be greater than the rights of common stock. The issuance of our 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 our liquidation. In addition, the issuance of preferred stock could have the effect of delaying, deferring or preventing a change in control of our company or other corporate action. As of March 23, 2021, no shares of convertible preferred stock were outstanding.

Registration Rights

Certain holders of unregistered common stock purchased in private placements, or their permitted transferees, are entitled to rights with respect to the registration of such shares under the Securities Act of 1933, as amended (the "Securities Act"). These rights are provided under the terms of (i) an investors' rights agreement between us and the holders of certain of these shares, or the investors' rights agreement, which include demand registration rights and piggyback registration rights, and (ii) a stock purchase agreement between us and the holder of certain of these shares, or the stock purchase agreement, which include Form S-3 registration rights. All fees, costs and expenses of underwritten registrations will be borne by us and all selling expenses, including underwriting discounts and selling commissions, will be borne by the holders of the shares being registered.

The demand, piggyback and Form S-3 registration rights will expire, with respect to any particular stockholder party to the investors' rights agreement, upon the earliest of (i) three years after the consummation of our initial public offering, (ii) when that stockholder can sell all of its shares under Rule 144 of the Securities Act during any 90-day period or (iii) upon the consummation of an acquisition. The Form S-3 registration rights will expire, with respect to the stockholder party to the stock purchase agreement, when such stockholder can sell all of its shares under Rule 144 of the Securities Act during any 90-day period.

Anti-Takeover Effects of Provisions of Our Amended and Restated Certificate of Incorporation, Our Amended and Restated Bylaws and Delaware Law

Some provisions of Delaware law and our amended and restated certificate of incorporation and our amended and restated bylaws contain provisions that could make the following transactions more difficult: acquisition of us by means of a tender offer; acquisition of us by means of a proxy contest or otherwise; or removal of our incumbent officers and directors. It is possible that these provisions could make it more difficult to accomplish or could deter transactions that stockholders may otherwise consider to be in their best interest or in our best interests, including transactions that might result in a premium over the market price for our shares.

These provisions, summarized below, are expected to discourage coercive takeover practices and inadequate takeover bids. These provisions are also designed to encourage persons seeking to acquire control of us to first negotiate with our board of directors. We believe that the benefits of increased protection of our potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure us outweigh the disadvantages of discouraging these proposals because negotiation of these proposals could result in an improvement of their terms.

Delaware Anti-Takeover Statute

We are subject to Section 203 of the DGCL, which prohibits persons deemed "interested stockholders" from engaging in a "business combination" with a publicly-held Delaware corporation for three years following the date these persons become interested stockholders unless the business combination is, or the transaction in which the

person became an interested stockholder was, approved in a prescribed manner or another prescribed exception applies. Generally, an "interested stockholder" is a person who, together with affiliates and associates, beneficially owns, or within three years prior to the determination of interested stockholder status did own, 15% or more of a corporation's voting stock. Generally, a "business combination" includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. The existence of this provision may have an anti-takeover effect with respect to transactions not approved in advance by the board of directors, such as discouraging takeover attempts that might result in a premium over the market price of our common stock.

Undesignated Preferred Stock

The ability to authorize undesignated preferred stock makes it possible for our board of directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to change control of us. These and other provisions may have the effect of deterring hostile takeovers or delaying changes in control or management of our company.

Special Stockholder Meetings

Our amended and restated bylaws provide that a special meeting of stockholders may be called by our board of directors, or by our President or Chief Executive Officer.

Requirements for Advance Notification of Stockholder Nominations and Proposals

Our amended and restated bylaws establish advance notice procedures with respect to stockholder proposals and the nomination of candidates for election as directors, other than nominations made by or at the direction of the board of directors or a committee of the board of directors.

Elimination of Stockholder Action by Written Consent

Our amended and restated certificate of incorporation and our amended and restated bylaws eliminate the right of stockholders to act by written consent without a meeting.

Classified Board; Election and Removal of Directors; Filling Vacancies

Our board of directors is divided into three classes. The directors in each class will serve for a three-year term, one class being elected each year by our stockholders, with staggered three-year terms. Only one class of directors will be elected at each annual meeting of our stockholders, with the other classes continuing for the remainder of their respective three-year terms. Because our stockholders do not have cumulative voting rights, our stockholders holding a majority of the shares of common stock outstanding will be able to elect all of our directors. Our amended and restated certificate of incorporation provides for the removal of any of our directors only for cause and requires a stockholder vote by the holders of at least a 66-2/3% of the voting power of the then outstanding voting stock. Furthermore, any vacancy on our board of directors, however occurring, including a vacancy resulting from an increase in the size of the board, may only be filled by a resolution of the board of directors unless the board of directors determines that such vacancies shall be filled by the stockholders. This system of electing and removing directors and filling vacancies may tend to discourage a third party from making a tender offer or otherwise attempting to obtain control of us, because it generally makes it more difficult for stockholders to replace a majority of the directors.

Choice of Forum

Our amended and restated certificate of incorporation provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware will be the exclusive forum for: any state law derivative action or proceeding brought on our behalf; any action asserting a breach of fiduciary duty; any action asserting a claim against us arising pursuant to the DGCL; or any action asserting a claim against us that is governed by the internal affairs doctrine. Similarly, our amended and restated certificate of incorporation provides that the U.S. federal district courts are the exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act. The enforceability of similar choice of forum provisions has been challenged

in legal proceedings, and it is possible that, in connection with such actions or any future actions, a court could find the choice of forum provisions contained in our amended and restated certificate of incorporation to be inapplicable or unenforceable. Although our amended and restated certificate of incorporation contains the choice of forum provision described above, it is possible that a court could find that such provisions are inapplicable for a particular claim or action or that such provisions are unenforceable.

Amendment of the Certificate of Incorporation and Bylaws

The amendment of any of the above provisions, except for the provision making it possible for our board of directors to issue undesignated preferred stock, would require approval by a stockholder vote by the holders of at least a 66-2/3% of the voting power of the then outstanding voting stock.

The provisions of the DGCL, our amended and restated certificate of incorporation and our amended and restated bylaws could have the effect of discouraging others from attempting hostile takeovers and, as a consequence, they may also inhibit temporary fluctuations in the market price of our common stock that often result from actual or rumored hostile takeover attempts. These provisions may also have the effect of preventing changes in our management. It is possible that these provisions could make it more difficult to accomplish transactions that stockholders may otherwise deem to be in their best interests.

Limitations of Liability and Indemnification Matters

Our amended and restated certificate of incorporation contains provisions that limit the liability of our directors for monetary damages to the fullest extent permitted by Delaware law. Consequently, our directors will not be personally liable to us or our stockholders for monetary damages for any breach of fiduciary duties as directors, except liability for:

- any breach of the director's duty of loyalty to us or our stockholders;
- any act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- unlawful payments of dividends or unlawful stock repurchases or redemptions as provided in Section 174 of the DGCL; or
- any transaction from which the director derived an improper personal benefit.

Each of our amended and restated certificate of incorporation and amended and restated bylaws provide that we are required to indemnify our directors and officers, in each case to the fullest extent permitted by Delaware law. Our amended and restated bylaws also obligate us to advance expenses incurred by a director or officer in advance of the final disposition of any action or proceeding, and permit us to secure insurance on behalf of any officer, director, employee or other agent for any liability arising out of his or her actions in that capacity regardless of whether we would otherwise be permitted to indemnify him or her under Delaware law. We have entered and expect to continue to enter into agreements to indemnify our directors, executive officers and other employees as determined by our board of directors. With specified exceptions, these agreements provide for indemnification for related expenses including, among other things, attorneys' fees, judgments, fines and settlement amounts incurred by any of these individuals in any action or proceeding. We believe that these bylaw provisions and indemnification agreements are necessary to attract and retain qualified persons as directors and officers. We also maintain directors' and officers' liability insurance.

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 our directors and officers for breach of their fiduciary duty. They may also reduce the likelihood of derivative litigation against our directors and officers, even though an action, if successful, might benefit us and our stockholders. Further, a stockholder's investment may be adversely affected to the extent that we pay the costs of settlement and damages.

Nasdaq Global Select Market Listing

Our common stock is listed on the Nasdaq Global Select Market under the symbol “IDYA.”

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company, LLC. The transfer agent and registrar’s address is 6201 15th Avenue, Brooklyn, New York 11219.

IDEAYA BIOSCIENCES, INC.

AMENDED AND RESTATED EMPLOYMENT AGREEMENT

This Employment Agreement (the "***Agreement***") is entered into between IDEAYA Biosciences, Inc., a Delaware corporation (the "***Company***") and Jason S. Throne ("***Executive***" and, together with the Company, the "***Parties***") effective as of February 24, 2021 (the "***Effective Date***"). This Agreement supersedes in its entirety that certain Employment Agreement between Executive and the Company dated as of October 9, 2019 ("***Prior Agreement***")

WHEREAS, the Company has promoted the Executive; and

WHEREAS, the Company desires to assure itself of the services of Executive by engaging Executive to perform services as an employee of the Company under the terms hereof; and

WHEREAS, Executive desires to provide services to the Company on the terms herein provided effective as of the Effective Date.

NOW, THEREFORE, in consideration of the foregoing, and for other good and valuable consideration, including the respective covenants and agreements set forth below, the receipt and sufficiency of which are hereby acknowledged, the Parties hereto agree as follows:

1. Employment.

(a) General. The Company shall employ Executive upon the terms and conditions provided herein effective as of the Effective Date.

(b) Position and Duties. Effective as of the Effective Date, Executive: (i) shall serve as the Company's **Senior Vice President, General Counsel**, with responsibilities, duties, and authority usual and customary for such position, subject to direction by the Chief Executive Officer of the Company (the "***CEO***"); (ii) shall report directly to the CEO or the CEO's designee; and (iii) agrees promptly and faithfully to comply with all present and future policies, requirements, rules and regulations, and reasonable directions and requests, of the Company in connection with the Company's business. At the Company's request, Executive shall serve the Company and/or its subsidiaries and affiliates in such other capacities in addition to the foregoing as the Company shall designate. In the event that Executive serves in any one or more of such additional capacities, Executive's compensation shall not automatically be increased on account of such additional service.

(c) Principal Office. Executive shall perform services for the Company at the Company's offices located in South San Francisco, California, or, with the Company's consent, at any other place in connection with the fulfillment of Executive's role with the Company; provided, however, that the Company may from time to time require Executive to travel temporarily to other locations in connection with the Company's business.

(d) Exclusivity. Except with the prior written approval of the CEO (which the CEO may grant or withhold in his or her sole and absolute discretion), Executive shall devote Executive's best efforts and full working time, attention, and energies to the business of the Company, except during any paid vacation or other excused absence periods. Notwithstanding the foregoing, Executive may, without violating this Section 1(d), (i) as a passive investment, own publicly traded securities in such form or manner as will not require any services by Executive in the operation of the entities in which such securities are owned; (ii) engage in charitable and civic activities; or (iii) engage in other personal passive investment activities, in each case, so long as such interests or activities do not materially interfere to the extent such activities do not, individually or in the aggregate, interfere with or otherwise prevent the performance of Executive's duties and responsibilities hereunder. Executive may also serve as a member of the board of directors or board of advisors of another organization provided (i) such organization is not a competitor of the Company; (ii) Executive receives prior written approval from the Company's CEO; and (iii) such activities do not individually or in the aggregate interfere with the performance of Executive's duties under this Agreement, violate the Company's standards of conduct then in effect, or raise a conflict under the Company's conflict of interest policies. For the avoidance of doubt, the CEO has approved Executive's continued service with those organizations set forth on Exhibit A, such approval to continue until the earlier to occur of (a) the CEO's revocation of such approval in his or her sole and absolute discretion, or (b) such time as such service interferes with the performance of Executive's duties under this Agreement, violates the Company's standards of conflict or raises a conflict under the Company's conflict of interest policies.

2. Term. The period of Executive's employment under this Agreement shall commence on the Effective Date and shall continue until Executive's employment with the Company is terminated pursuant to Section 5. The phrase "***Term***" as used in this Agreement shall refer to the entire period of employment of Executive by the Company.

3. Compensation and Related Matters.

(a) Annual Base Salary. During the Term, Executive shall receive a base salary at the rate of $362,500 per year (as may be increased from time to time, the "***Annual Base Salary***"), subject to withholdings and deductions, which shall be paid to Executive in accordance with the customary payroll practices and procedures of the Company. Such Annual Base Salary shall be reviewed by the CEO, and, as applicable, the Board of Directors of the Company (the "***Board***") and/or the Compensation Committee of the Board, not less than annually.

(b) Annual Bonus. Executive shall be eligible to receive a discretionary annual bonus based on Executive's achievement of performance objectives established by the Board, its Compensation Committee and/or the CEO, such bonus to be targeted at thirty-five percent (35%) of Executive's Annual Base Salary (the "***Annual Bonus***"). Any Annual Bonus approved by the Board, the Compensation Committee of the Board and/or the CEO shall be paid at the same time annual bonuses are paid to other executives of the Company generally, subject to Executive's continuous employment through the date of approval.

(c) Benefits. Executive shall be entitled to participate in such employee and executive benefit plans and programs as the Company may from time to time offer to provide to its executives, subject to the terms and conditions of such plans. Notwithstanding the foregoing,

nothing herein is intended, or shall be construed, to require the Company to institute or continue any particular plan or benefit.

(d) Business Expenses. The Company shall reimburse Executive for all reasonable, documented, out-of-pocket travel and other business expenses incurred by Executive in the performance of Executive's duties to the Company in accordance with the Company's applicable expense reimbursement policies and procedures as are in effect from time to time.

(e) Vacation. Executive will be entitled to paid vacation in accordance with the Company's vacation policy, as in effect from time to time.

4. Equity Awards.

(a) Executive shall be eligible for any stock options and other equity awards as may be determined by the Board or its Compensation Committee. Notwithstanding anything to the contrary in any agreement evidencing a stock option or other equity award, the unvested portion of such stock option or other equity award shall not terminate upon the date of a Covered Termination but instead shall remain outstanding and eligible to vest in accordance with Section 6 hereof until the three month anniversary of such Covered Termination.

(b) Future Awards. Executive shall be eligible for such future grants of stock options and other equity awards as may be determined by the Board or its Compensation Committee.

(c) Covered Terminations. Notwithstanding anything to the contrary in any agreement evidencing the Stock Option, or any future stock option or other equity award, the unvested portion of the Stock Option, or such future stock option or other equity award, shall not terminate upon the date of a Covered Termination (as defined below) but instead shall remain outstanding and eligible to vest in accordance with Section 6 hereof until the three month anniversary of such Covered Termination.

5. Termination.

(a) At-Will Employment. The Company and Executive acknowledge that Executive's employment is and shall continue to be at-will, as defined under applicable law. This means that it is not for any specified period of time and can be terminated by Executive or by the Company at any time, with or without advance notice, and for any or no particular reason or cause. It also means that Executive's job duties, title, and responsibility and reporting level, work schedule, compensation, and benefits, as well as the Company's personnel policies and procedures, may be changed with prospective effect, with or without notice, at any time in the sole discretion of the Company (subject to any ramification such changes may have under Section 6 of this Agreement). This "at-will" nature of Executive's employment shall remain unchanged during Executive's tenure as an employee and may not be changed, except in an express writing signed by Executive and a duly-authorized officer of the Company. If Executive's employment terminates for any lawful reason, Executive shall not be entitled to any payments, benefits, damages, award, or compensation other than as provided in this Agreement.

(b) Notice of Termination. During the Term, any termination of Executive's employment by the Company or by Executive (other than by reason of death) shall be communicated by written notice (a "***Notice of Termination***") from one Party hereto to the other Party hereto (i) indicating the specific termination provision in this Agreement relied upon, if any, (ii) setting forth in reasonable detail the facts and circumstances claimed to provide a basis for termination of Executive's employment under the provision so indicated, and (iii) specifying the Date of Termination (as defined below). The failure by the Company to set forth in the Notice of Termination all of the facts and circumstances which contribute to a showing of Cause (as defined below) shall not waive any right of the Company hereunder or preclude the Company from asserting such fact or circumstance in enforcing their rights hereunder. The failure by the Executive to set forth in the Notice of Termination all of the facts and circumstances which contribute to a showing of Good Reason (as defined below) shall not waive any right of the Executive hereunder or preclude the Executive from asserting such fact or circumstance in enforcing their rights hereunder.

(c) Date of Termination. For purposes of this Agreement, "***Date of Termination***" shall mean the date of the termination of Executive's employment with the Company specified in a Notice of Termination.

(d) Deemed Resignation. Upon termination of Executive's employment for any reason, Executive shall be deemed to have resigned from all offices and board memberships, if any, then held with the Company or any of its affiliates, and, at the Company's request, Executive shall execute such documents as are necessary or desirable to effectuate such resignations.

6. Consequences of Termination.

(a) Payments of Accrued Obligations upon all Terminations of Employment. Upon a termination of Executive's employment for any reason, Executive (or Executive's estate or legal representative, as applicable) shall be entitled to receive, within 30 days after Executive's Date of Termination (or such earlier date as may be required by applicable law): (i) any portion of Executive's Annual Base Salary earned through Executive's Date of Termination not theretofore paid, (ii) any expenses owed to Executive under Section 3, (iii) any accrued but unused paid time-off owed to Executive, (iv) any Annual Bonus earned but unpaid as of the Date of Termination, and (v) any amount arising from Executive's participation in, or benefits under, any employee benefit plans, programs, or arrangements under Section 3, which amounts shall be payable in accordance with the terms and conditions of such employee benefit plans, programs, or arrangements. Except as otherwise set forth in Sections 6(b) and (c), the payments and benefits described in this Section 6(a) shall be the only payments and benefits payable in the event of Executive's termination of employment for any reason.

(b) Severance Payments upon Covered Termination Outside a Change in Control Period. If, during the Term, Executive experiences a Covered Termination outside a Change in Control Period (each as defined below), then in addition to the payments and benefits described in Section 6(a), the Company shall, subject to Executive's delivery to the Company of a waiver and release of claims agreement substantially in the form of Exhibit B hereto, with any

such changes to applicable law as the Company deems necessary (the "***Release***") that becomes effective and irrevocable in accordance with Section 11(d), provide Executive with the following:

(i) The Company shall pay to Executive an amount equal to Executive's Annual Base Salary multiplied by 0.75. Such amount will be subject to applicable withholdings and payable in a single lump sum cash payment on the first regular payroll date following the date the Release becomes effective and irrevocable in accordance with Section 11(d).

(ii) During the period commencing on the Date of Termination and ending on the nine month anniversary thereof or, if earlier, the date on which Executive becomes eligible for comparable replacement coverage under a subsequent employer's group health plan (in any case, the "***Non-CIC COBRA Period***"), subject to Executive's valid election to continue healthcare coverage under Section 4980B of the Internal Revenue Code of 1986, as amended (the "***Code***") and the regulations thereunder, the Company shall, in its sole discretion, either (A) continue to provide to Executive and Executive's dependents, at the Company's sole expense, or (B) reimburse Executive and Executive's dependents for coverage under its group health plan (if any) at the same levels in effect on the Date of Termination; *provided, however*, that if (1) any plan pursuant to which such benefits are provided is not, or ceases prior to the expiration of the continuation coverage period to be, exempt from the application of Section 409A under Treasury Regulation Section 1.409A-1(a)(5), (2) the Company is otherwise unable to continue to cover Executive or Executive's dependents under its group health plans, or (3) the Company cannot provide the benefit without violating applicable law (including, without limitation, Section 2716 of the Public Health Service Act), then, in any such case, an amount equal to each remaining Company subsidy shall thereafter be paid to Executive in substantially equal monthly installments over the Non-CIC COBRA Period (or remaining portion thereof).

(c) Severance Payments upon Covered Termination During a Change in Control Period. If, during the Term, Executive experiences a Covered Termination during a Change in Control Period, then, in addition to the payments and benefits described in Section 6(a), the Company shall, subject to Executive's delivery to the Company of the Release that becomes effective and irrevocable in accordance with Section 11(d), provide Executive with the following:

(i) The Company shall pay to Executive an amount equal to the sum of Executive's Annual Base Salary and Executive's target Annual Bonus. Such amount will be subject to applicable withholdings and payable in a single lump sum cash payment on the first regular payroll date following the date the Release becomes effective and irrevocable in accordance with Section 11(d).

(ii) During the period commencing on the Date of Termination and ending on the twelve month anniversary thereof or, if earlier, the date on which Executive becomes eligible for comparable replacement coverage under a subsequent employer's group health plan (in any case, the "***CIC COBRA Period***"), subject to Executive's valid election to continue healthcare coverage under Section 4980B of the Code and the regulations thereunder, the Company shall, in its sole discretion, either (A) continue to

provide to Executive and Executive's dependents, at the Company's sole expense, or (B) reimburse Executive and Executive's dependents for coverage under its group health plan (if any) at the same levels in effect on the Date of Termination; *provided, however*, that if (1) any plan pursuant to which such benefits are provided is not, or ceases prior to the expiration of the continuation coverage period to be, exempt from the application of Section 409A under Treasury Regulation Section 1.409A-1(a)(5), (2) the Company is otherwise unable to continue to cover Executive or Executive's dependents under its group health plans, or (3) the Company cannot provide the benefit without violating applicable law (including, without limitation, Section 2716 of the Public Health Service Act), then, in any such case, an amount equal to each remaining Company subsidy shall thereafter be paid to Executive in substantially equal monthly installments over the CIC COBRA Period (or remaining portion thereof).

(iii) Cause any unvested equity awards, including any stock options, restricted stock awards and any such awards subject to performance-based vesting, held by Executive as of the Date of Termination, to become fully vested and, if applicable, exercisable, and cause all restrictions and rights of repurchase on such awards to lapse with respect to all of the shares of the Company's Common Stock subject thereto.

(d) No Other Severance. The provisions of this Section 6 shall supersede in their entirety any severance payment provisions in any severance plan, policy, program, or other arrangement maintained by the Company except as otherwise approved by the Board.

(e) No Requirement to Mitigate; Survival. Executive shall not be required to mitigate the amount of any payment provided for under this Agreement by seeking other employment or in any other manner. Notwithstanding anything to the contrary in this Agreement, the termination of Executive's employment shall not impair the rights or obligations of any Party.

(f) Definition of Cause. For purposes hereof, "***Cause***" shall mean any one of the following: (i) Executive's commission of any felony or any crime involving fraud, dishonesty or moral turpitude under the laws of the United States or any state thereof; (ii) Executive's attempted commission of, or participation in, a fraud or act of dishonesty against the Company; (iii) Executive's intentional, material violation of any contract or agreement between Executive and the Company or of any statutory duty owed to the Company; (iv) Executive's unauthorized use or disclosure of the Company's confidential information or trade secrets; or (v) Executive's gross misconduct. The determination that a termination of Executive's employment is either for Cause or without Cause shall be made by the Board or its Compensation Committee, in each case, in its sole discretion.

(g) Definition of Change in Control. For purposes of this Agreement, "***Change in Control***" shall mean any of the following types of transactions: (i) the direct or indirect sale or exchange in a single or series of related transactions by the stockholders of the Company of more than fifty percent (50%) of the voting stock of the Company; (ii) a merger or consolidation in which the Company is a party; or (iii) the sale, exchange, or transfer of all or substantially all of the assets of the Company (each, a "***Transaction***"), wherein the stockholders of the Company immediately before the Transaction do not retain immediately after the Transaction, in substantially the same proportions as their ownership of shares of the Company's voting stock

immediately before the Transaction, direct or indirect beneficial ownership of more than fifty percent (50%) of the total combined voting power of the outstanding voting securities of the Company or the successor entity, or, in the case of a Transaction described in (iii), the corporation or other entity to which the assets of the Company were transferred, as the case may be. Notwithstanding the foregoing, a transaction shall not constitute a Change in Control if: (i) its sole purpose is to change the state of the Company's incorporation; (ii) its sole purpose is to create a holding company that will be owned in substantially the same proportions by the persons who held the Company's securities immediately before such transaction; (iii) it constitutes the Company's initial public offering of its securities; or (iv) it is a transaction effected primarily for the purpose of financing the Company with cash (as determined by the Board in its discretion). Notwithstanding the foregoing, a "Change in Control" must also constitute a "change in control event," as defined in Treasury Regulation §1.409A-3(i)(5).

(h) Definition of Change in Control Period. For purposes hereof, "***Change in Control Period***" shall mean the period commencing three months prior to a Change in Control and ending 12 months after such Change in Control.

(i) Definition of Covered Termination. For purposes hereof, "***Covered Termination***" shall mean the termination of Executive's employment by the Company without Cause or by Executive for Good Reason, and shall not include a termination due to Executive's death or disability.

(j) Definition of Good Reason. For purposes hereof, "***Good Reason***" shall mean that Executive has complied in all material respects with the "Good Reason Process" (hereinafter defined) following the occurrence of any of the following events, without Executive's prior written consent: (i) a material reduction of Executive's Annual Base Salary (unless pursuant to a salary reduction program applicable generally to the Company's senior management employees); or (ii) relocation of Executive's principal place of employment to a place that increases Executive's one-way commute by more than by more than seventy-five (75) miles as compared to Executive's principal place of employment immediately prior to such relocation; or (iii) a material reduction in Executive's job title and primary duties, responsibilities and authorities, *provided*, *however*, that a change in job position (including a change in title) shall not be deemed a "material reduction" in and of itself unless Executive's new duties are materially reduced from the prior duties.

(k) Definition of Good Reason Process. For the purposes hereof, "***Good Reason Process***" shall mean that (A) Executive has reasonably determined in good faith that a "Good Reason" condition has occurred; (B) Executive has notified the Company in writing of the first occurrence of the Good Reason condition within 60 days of the first time the Executive becomes aware of the occurrence of such condition; (C) Executive has cooperated in good faith with the Company's efforts, for a period not less than 30 days immediately following the Company's receipt of such notice (the "***Cure Period***"), to remedy the condition; (D) notwithstanding such efforts, the Good Reason condition continues to exist; and (E) Executive terminates Executive's employment with the Company within 30 days after the end of the Cure Period. If the Company cures the Good Reason condition during the Cure Period, Good Reason shall be deemed not to have occurred.

7. Assignment and Successors. The Company shall assign its rights and obligations under this Agreement to any successor to all or substantially all of the business or the assets of the Company (by merger or otherwise). This Agreement shall be binding upon and inure to the benefit of the Company, Executive, and their respective successors, assigns, personnel, and legal representatives, executors, administrators, heirs, distributees, devisees, and legatees, as applicable. None of Executive's rights or obligations may be assigned or transferred by Executive, other than Executive's rights to payments hereunder, which may be transferred only by will, operation of law, or as otherwise provided herein**.**

8. Miscellaneous Provisions.

(a) Restrictive Covenant Agreements. On or before the Effective Date, Executive shall enter into the Company's standard form Proprietary Information and Invention Assignment Agreement (the "***Intellectual Property Assignment Agreement***" together with any other confidentiality agreement between Executive and the Company, the "***Restrictive Covenant Agreements***"). The Restrictive Covenant Agreements shall survive the termination of this Agreement and Executive's employment with the Company for the applicable period(s) set forth therein. Notwithstanding the foregoing, in the event of any conflict between the terms of the Restrictive Covenant Agreements and the terms of this Agreement, the terms of this Agreement shall prevail.

(b) Non-Solicitation of Employees. For a period of one year following Executive's Date of Termination, Executive shall not, either directly or indirectly (i) solicit for employment by any individual, corporation, firm, or other business, any employees, consultants, independent contractors, or other service providers of the Company or any of its affiliates, or (ii) solicit any employee or consultant of the Company or any of its affiliates to leave the employment or consulting of or cease providing services to the Company or any of its affiliates; *provided*, *however*, that the foregoing clauses (i) and (ii) shall not apply to a general advertisement or solicitation (or any hiring pursuant to such advertisement or solicitation) that is not specifically targeted to such employees or consultants.

(c) Governing Law. This Agreement shall be governed, construed, interpreted, and enforced in accordance with its express terms, and otherwise in accordance with the substantive laws of the State of California, without giving effect to any principles of conflicts of law, whether of the State of California or any other jurisdiction, and where applicable, the laws of the United States, that would result in the application of the laws of any other jurisdiction.

(d) Validity. The invalidity or unenforceability of any provision or provisions of this Agreement shall not affect the validity or enforceability of any other provision of this Agreement, which shall remain in full force and effect.

(e) Counterparts. This Agreement may be executed in several counterparts, each of which shall be deemed to be an original, but all of which together will constitute one and the same Agreement. Signatures delivered by facsimile shall be deemed effective for all purposes.

(f) Entire Agreement. The terms of this Agreement, together with the Restrictive Covenant Agreements, are intended by the Parties to be the final expression of their

agreement with respect to the employment of Executive by the Company and supersede all prior understandings and agreements, whether written or oral, regarding Executive's service to the Company. The Parties further intend that this Agreement, together with the Restrictive Covenant Agreements, shall constitute the complete and exclusive statement of their terms and that no extrinsic evidence whatsoever may be introduced in any judicial, administrative, or other legal proceeding to vary the terms of this Agreement or the Restrictive Covenant Agreements. Notwithstanding the foregoing, in the event of any conflict between the terms of the Restrictive Covenant Agreements and the terms of this Agreement, the terms of this Agreement shall prevail.

(g) Amendments; Waivers. This Agreement may not be modified, amended, or terminated except by an instrument in writing signed by Executive and a duly authorized representative of the Company. By an instrument in writing similarly executed, Executive or a duly authorized officer of the Company, as applicable, may waive compliance by the other Party with any specifically identified provision of this Agreement that such other Party was or is obligated to comply with or perform; *provided*, *however*, that such waiver shall not operate as a waiver of, or estoppel with respect to, any other or subsequent failure. No failure to exercise and no delay in exercising any right, remedy, or power hereunder shall preclude any other or further exercise of any other right, remedy, or power provided herein or by law or in equity.

(h) Dispute Resolution. To ensure the timely and economical resolution of disputes that arise in connection with this Agreement, Executive and the Company agree that any and all controversies, claims and disputes arising out of or relating to this Agreement, including without limitation any alleged violation of its terms, shall be resolved solely and exclusively by final and binding arbitration held in San Francisco, California through JAMS in conformity with the then-existing JAMS employment arbitration rules, which can be found at https://www.jamsadr.com/rules-employment-arbitration/. The arbitration provisions of this Agreement shall be governed by and enforceable pursuant to the Federal Arbitration Act. In all other respects for provisions not governed by the Federal Arbitration Act, this Agreement shall be construed in accordance with the laws of the State of California, without reference to conflicts of law principles. The arbitrator shall: (a) provide adequate discovery for the resolution of the dispute; and (b) issue a written arbitration decision, to include the arbitrator's essential findings and conclusions and a statement of the award. The arbitrator shall award the prevailing Party attorneys' fees and expert fees, if any. Notwithstanding the foregoing, it is acknowledged that it will be impossible to measure in money the damages that would be suffered if the Parties fail to comply with any of the obligations imposed on them under Section 8(a), and that in the event of any such failure, an aggrieved person will be irreparably damaged and will not have an adequate remedy at law. Any such person shall, therefore, be entitled to seek injunctive relief, including specific performance, to enforce such obligations, and if any action shall be brought in equity to enforce any of the provisions of Section 8(a), none of the Parties shall raise the defense, without a good faith basis for raising such defense, that there is an adequate remedy at law. Executive and the Company understand that by agreement to arbitrate any claim pursuant to this Section 8(h), they will not have the right to have any claim decided by a jury or a court, but shall instead have any claim decided through arbitration. Executive and the Company waive any constitutional or other right to bring claims covered by this Agreement other than in their individual capacities. Except as may be prohibited by applicable law, the foregoing waiver includes the ability to assert claims as a plaintiff or class member in any purported class or representative proceeding.

(i) Enforcement. If any provision of this Agreement is held to be illegal, invalid, or unenforceable under present or future laws, such provision shall be fully severable; this Agreement shall be construed and enforced as if such illegal, invalid, or unenforceable provision had never comprised a portion of this Agreement; and the remaining provisions of this Agreement shall remain in full force and effect and shall not be affected by the illegal, invalid, or unenforceable provision or by its severance from this Agreement. Furthermore, in lieu of such illegal, invalid, or unenforceable provision there shall be added automatically as part of this Agreement a provision as similar in terms to such illegal, invalid, or unenforceable provision as may be possible and be legal, valid, and enforceable.

(j) Withholding. The Company shall be entitled to withhold from any amounts payable under this Agreement any federal, state, local, or foreign withholding or other taxes or charges which the Company is required to withhold. The Company shall be entitled to rely on an opinion of counsel if any questions as to the amount or requirement of withholding shall arise.

(k) Whistleblower Protections and Trade Secrets. Notwithstanding anything to the contrary contained herein, nothing in this Agreement prohibits Executive from reporting possible violations of federal law or regulation to any United States governmental agency or entity in accordance with the provisions of and rules promulgated under Section 21F of the Securities Exchange Act of 1934 or Section 806 of the Sarbanes-Oxley Act of 2002, or any other whistleblower protection provisions of state or federal law or regulation (including the right to receive an award for information provided to any such government agencies). Furthermore, in accordance with 18 U.S.C. § 1833, notwithstanding anything to the contrary in this Agreement: (i) Executive shall not be in breach of this Agreement, and shall not be held criminally or civilly liable under any federal or state trade secret law (x) for the disclosure of a trade secret that is made in confidence to a federal, state, or local government official or to an attorney solely for the purpose of reporting or investigating a suspected violation of law, or (y) for the disclosure of a trade secret that is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal; and (ii) if Executive files a lawsuit for retaliation by the Company for reporting a suspected violation of law, Executive may disclose the trade secret to Executive's attorney, and may use the trade secret information in the court proceeding, if Executive files any document containing the trade secret under seal, and does not disclose the trade secret, except pursuant to court order.

9. Prior Employment. Executive represents and warrants that Executive's acceptance of employment with the Company has not breached, and the performance of Executive's duties hereunder will not breach, any duty owed by Executive to any prior employer or other person. Executive further represents and warrants to the Company that (a) the performance of Executive's obligations hereunder will not violate any agreement between Executive and any other person, firm, organization, or other entity; (b) Executive is not bound by the terms of any agreement with any previous employer or other party to refrain from competing, directly or indirectly, with the business of such previous employer or other party that would be violated by Executive entering into this Agreement and/or providing services to the Company pursuant to the terms of this Agreement; and (c) Executive's performance of Executive's duties under this Agreement will not require Executive to, and Executive shall not, rely on in the performance of Executive's duties or disclose to the Company or any other person or entity or

induce the Company in any way to use or rely on any trade secret or other confidential or proprietary information or material belonging to any previous employer of Executive.

10. Golden Parachute Excise Tax.

(a) Best Pay. Any provision of this Agreement to the contrary notwithstanding, if any payment or benefit Executive would receive from the Company pursuant to this Agreement or otherwise ("***Payment***") would (i) constitute a "parachute payment" within the meaning of Section 280G of the Code and (ii) but for this sentence, be subject to the excise tax imposed by Section 4999 of the Code (the "***Excise Tax***"), then such Payment will be equal to the Reduced Amount (as defined below). The "***Reduced Amount***" will be either (A) the largest portion of the Payment that would result in no portion of the Payment (after reduction) being subject to the Excise Tax or (B) the entire Payment, whichever amount after taking into account all applicable federal, state, and local employment taxes, income taxes, and the Excise Tax (all computed at the highest applicable marginal rate, net of the maximum reduction in federal income taxes which could be obtained from a deduction of such state and local taxes), results in Executive' s receipt, on an after-tax basis, of the greater economic benefit notwithstanding that all or some portion of the Payment may be subject to the Excise Tax. If a reduction in a Payment is required pursuant to the preceding sentence and the Reduced Amount is determined pursuant to clause (A) of the preceding sentence, the reduction shall occur in the manner (the "***Reduction Method***") that results in the greatest economic benefit for Executive. If more than one method of reduction will result in the same economic benefit, the items so reduced will be reduced pro rata (the "***Pro Rata Reduction Method***"). Notwithstanding the foregoing, if the Reduction Method or the Pro Rata Reduction Method would result in any portion of the Payment being subject to taxes pursuant to Section 409A (as defined below) that would not otherwise be subject to taxes pursuant to Section 409A, then the Reduction Method and/or the Pro Rata Reduction Method, as the case may be, shall be modified so as to avoid the imposition of taxes pursuant to Section 409A as follows: (1) as a first priority, the modification shall preserve to the greatest extent possible, the greatest economic benefit for Executive as determined on an after-tax basis; (2) as a second priority, Payments that are contingent on future events (*e.g.*, being terminated without cause), shall be reduced (or eliminated) before Payments that are not contingent on future events; and (3) as a third priority, Payments that are "deferred compensation" within the meaning of Section 409A shall be reduced (or eliminated) before Payments that are not deferred compensation within the meaning of Section 409A.

(b) Accounting Firm. The accounting firm engaged by the Company for general tax purposes as of the day prior to the Change in Control will perform the calculations set forth in Section 10(a). If the firm so engaged by the Company is serving as the accountant or auditor for the acquiring company, the Company will appoint a nationally recognized accounting firm to make the determinations required hereunder. The Company will bear all expenses with respect to the determinations by such firm required to be made hereunder. The accounting firm engaged to make the determinations hereunder will provide its calculations, together with detailed supporting documentation, to the Company within 30 days before the consummation of a Change in Control (if requested at that time by the Company) or such other time as requested by the Company. If the accounting firm determines that no Excise Tax is payable with respect to a Payment, either before or after the application of the Reduced Amount, it will furnish the Company with documentation reasonably acceptable to the Company that no Excise Tax will be imposed

with respect to such Payment. Any good faith determinations of the accounting firm made hereunder will be final, binding and conclusive upon the Company and Executive.

11. Section 409A.

(a) General. The intent of the Parties is that the payments and benefits under this Agreement comply with or be exempt from Section 409A of the Code and the Department of Treasury regulations and other interpretive guidance issued thereunder, including without limitation any such regulations or other guidance that may be issued after the Effective Date, ("***Section 409A***") and, accordingly, to the maximum extent permitted, this Agreement shall be interpreted to be in compliance therewith. Notwithstanding any provision of this Agreement to the contrary, if the Company determines that any compensation or benefits payable under this Agreement may be subject to Section 409A, the Company shall work in good faith with Executive to adopt such amendments to this Agreement or adopt other policies and procedures (including amendments, policies and procedures with retroactive effect), or take any other actions, that the Company determines are necessary or appropriate to avoid the imposition of taxes under Section 409A, including, without limitation, actions intended to (i) exempt the compensation and benefits payable under this Agreement from Section 409A, and/or (ii) comply with the requirements of Section 409A; however, this Section 11(a) shall not create an obligation on the part of the Company to adopt any such amendment, policy or procedure or take any such other action, nor shall the Company (A) have any liability for failing to do so, or (B) incur or indemnify Executive for any taxes, interest or other liabilities arising under or by operation of Section 409A.

(b) Separation from Service. Notwithstanding any provision to the contrary in this Agreement: (i) no amount that constitutes "deferred compensation" under Section 409A shall be payable pursuant to Section 6 unless the termination of Executive's employment constitutes a "separation from service" within the meaning of Section 1.409A-1(h) of the Department of Treasury Regulations ("***Separation from Service***"); (ii) for purposes of Section 409A, Executive's right to receive installment payments shall be treated as a right to receive a series of separate and distinct payments; and (iii) to the extent that any reimbursement of expenses or in-kind benefits constitutes "deferred compensation" under Section 409A, such reimbursement or benefit shall be provided no later than December 31st of the year following the year in which the expense was incurred. The amount of expenses reimbursed in one year shall not affect the amount eligible for reimbursement in any subsequent year. The amount of any in-kind benefits provided in one year shall not affect the amount of in-kind benefits provided in any other year.

(c) Specified Employee. Notwithstanding anything in this Agreement to the contrary, if Executive is deemed by the Company at the time of Executive's Separation from Service to be a "specified employee" for purposes of Section 409A, to the extent delayed commencement of any portion of the benefits to which Executive is entitled under this Agreement is required in order to avoid a prohibited distribution under Section 409A, such portion of Executive's benefits shall not be provided to Executive prior to the earlier of (i) the expiration of the six-month period measured from the date of Executive's Separation from Service with the Company or (ii) the date of Executive's death. Upon the first business day following the expiration of the applicable Section 409A period, all payments deferred pursuant to the preceding sentence shall be paid in a lump sum to Executive (or Executive's estate or beneficiaries), and any remaining payments due to Executive under this Agreement shall be paid as otherwise provided herein.

(d) Release. Notwithstanding anything to the contrary in this Agreement, to the extent that any payments due under this Agreement as a result of Executive's termination of employment are subject to Executive's execution and delivery of the Release, (i) if Executive fails to execute the Release on or prior to the Release Expiration Date (as defined below) or timely revokes Executive's acceptance of the Release thereafter, Executive shall not be entitled to any payments or benefits otherwise conditioned on the Release, and (ii) in any case where Executive's Date of Termination and the Release Expiration Date fall in two separate taxable years, any payments required to be made to Executive that are conditioned on the Release and are treated as nonqualified deferred compensation for purposes of Section 409A shall be made in the later taxable year. For purposes of this Section 11(d), "***Release Expiration Date***" shall mean the date that is 21 days following the date upon which the Company timely delivers the Release to Executive, or, in the event that Executive's termination of employment is "in connection with an exit incentive or other employment termination program" (as such phrase is defined in the Age Discrimination in Employment Act of 1967), the date that is 45 days following such delivery date. To the extent that any payments of nonqualified deferred compensation (within the meaning of Section 409A) due under this Agreement as a result of Executive's termination of employment are delayed pursuant to this Section 11(d), such amounts shall be paid in a lump sum on the first payroll date following the date that Executive executes and does not revoke the Release (and the applicable revocation period has expired) or, in the case of any payments subject to Section 11(d)(ii), on the first payroll period to occur in the subsequent taxable year, if later.

12. Employee Acknowledgement. Executive acknowledges that Executive has read and understands this Agreement, is fully aware of its legal effect, has not acted in reliance upon any representations or promises made by the Company other than those contained in writing herein, and has entered into this Agreement freely based on Executive's own judgment.

[*Signature Page Follows*]

The Parties have executed this Agreement as of the Effective Date.

IDEAYA BIOSCIENCES, INC.

By: /s/ Paul A. Stone

Name: Paul A. Stone

Title: Chief Financial Officer

EXECUTIVE

By: /s/ Jason S. Throne

Name: Jason S. Throne

Address:

EXHIBIT A

PERMITTED OUTSIDE ACTIVITIES

1. [____]

EXHIBIT B

RELEASE OF CLAIMS

ase of Claims ("***Release***") is entered into as of _____, 20__, between [_____] ("***Executive***") and IDEAYA Biosciences, Inc., a Delaware corporation (the "***Company***" and, together with Executive, the "***Parties***"), effective eight days after Executive's signature hereto (the "***Effective Date***"), unless Executive revokes his acceptance of this Release as provided in Paragraph 1(c), below.

1. Executive's Release of the Company. Executive understands that by agreeing to this Release, Executive is agreeing not to sue, or otherwise file any claim against, the Company or any of its employees or other agents for any reason whatsoever based on anything that has occurred as of the date Executive signs this Release.

(a) On behalf of Executive and Executive's heirs and assigns, Executive hereby releases and forever discharges the "Releasees" hereunder, consisting of the Company, and each of its owners, affiliates, divisions, predecessors, successors, assigns, agents, directors, officers, partners, employees, and insurers, and all persons acting by, through, under or in concert with them, or any of them, of and from any and all manner of action or actions, cause or causes of action, in law or in equity, suits, debts, liens, contracts, agreements, promises, liability, claims, demands, damages, loss, cost or expense, of any nature whatsoever, known or unknown, fixed or contingent (hereinafter called "Claims"), which Executive now has or may hereafter have against the Releasees, or any of them, by reason of any matter, cause, or thing whatsoever from the beginning of time to the date hereof, including, without limiting the generality of the foregoing, any Claims arising out of, based upon, or relating to Executive's hire, employment, remuneration or resignation by the Releasees, or any of them, including Claims arising under federal, state, or local laws relating to employment, Claims of any kind that may be brought in any court or administrative agency, any Claims arising under the Age Discrimination in Employment Act ("ADEA"), 29 U.S.C. § 621, et seq.; Title VII of the Civil Rights Act of 1964, as amended by the Civil Rights Act of 1991, 42 U.S.C. § 2000 et seq.; the Equal Pay Act, 29 U.S.C. § 206(d); the Civil Rights Act of 1866, 42 U.S.C. § 1981; the Family and Medical Leave Act of 1993, 29 U.S.C. § 2601 et seq.; the Americans with Disabilities Act of 1990, 42 U.S.C. § 12101 et seq.; the False Claims Act , 31 U.S.C. § 3729 et seq.; the Employee Retirement Income Security Act, 29 U.S.C. § 1001 et seq.; the Worker Adjustment and Retraining Notification Act, 29 U.S.C. § 2101 et seq. the Fair Labor Standards Act, 29 U.S.C. § 215 et seq., the Sarbanes-Oxley Act of 2002; the California Labor Code; the employment and civil rights laws of California; Claims for breach of contract; Claims arising in tort, including, without limitation, Claims of wrongful dismissal or discharge, discrimination, harassment, retaliation, fraud, misrepresentation, defamation, libel, infliction of emotional distress, violation of public policy, and/or breach of the implied covenant of good faith and fair dealing; and Claims for damages or other remedies of any sort, including, without limitation, compensatory damages, punitive damages, injunctive relief and attorney's fees.

(b) Notwithstanding the generality of the foregoing, Executive does not release the following claims:

(i) Claims for unemployment compensation or any state disability insurance benefits pursuant to the terms of applicable state law;

(ii) Claims for workers' compensation insurance benefits under the terms of any worker's compensation insurance policy or fund of the Company;

(iii) Claims to continued participation in certain of the Company's group benefit plans pursuant to the terms and conditions of COBRA;

(iv) Claims to any benefit entitlements vested as the date of Executive's employment termination, pursuant to written terms of any Company employee benefit plan;

(v) Claims for indemnification under any indemnification agreement with the Company, the Company's Bylaws, California Labor Code Section 2802 or any other applicable law; and

(vi) Executive's right to bring to the attention of the Equal Employment Opportunity Commission claims of discrimination; provided, however, that Executive does release Executive's right to secure any damages for alleged discriminatory treatment.

(c) In accordance with the Older Workers Benefit Protection Act of 1990, Executive has been advised of the following:

(i) Executive has the right to consult with an attorney before signing this Release;

(ii) Executive has been given at least [twenty-one (21) OR forty-five (45)] days to consider this Release;

(iii) Executive has seven (7) days after signing this Release to revoke it, and Executive will not receive the severance benefits provided by that certain Employment Agreement between the Parties (the "Employment Agreement") unless and until such seven (7) day period has expired. If Executive wishes to revoke this Release, Executive must deliver notice of Executive's revocation in writing, no later than 5:00 p.m. on the 7th day following Executive's execution of this Release to [_____].

(d) EXECUTIVE ACKNOWLEDGES THAT EXECUTIVE HAS BEEN ADVISED OF AND IS FAMILIAR WITH THE PROVISIONS OF CALIFORNIA CIVIL CODE SECTION 1542, WHICH PROVIDES AS FOLLOWS:

"A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS THAT THE CREDITOR OR RELEASING PARTY DOES NOT KNOW OR SUSPECT TO EXIST IN HIS OR HER FAVOR AT THE TIME OF EXECUTING THE RELEASE AND THAT, IF KNOWN BY HIM OR HER, WOULD HAVE MATERIALLY AFFECTED HIS OR HER SETTLEMENT WITH THE DEBTOR OR RELEASED PARTY."
BEING AWARE OF SAID CODE SECTION, EXECUTIVE HEREBY EXPRESSLY WAIVES ANY RIGHTS EXECUTIVE MAY HAVE THEREUNDER, AS WELL AS UNDER ANY OTHER STATUTES OR COMMON LAW PRINCIPLES OF SIMILAR EFFECT.

2. Executive Representations. Executive represents and warrants that:

(a) Executive has returned to the Company all Company property in Executive's possession;

(b) Executive is not owed wages, commissions, bonuses or other compensation, other than wages through the date of the termination of Executive's employment and any accrued, unused vacation earned through such date, and any payments that become due under the Change of Control Agreement;

(c) During the course of Executive's employment Executive did not sustain any injuries for which Executive might be entitled to compensation pursuant to worker's compensation law or Executive has disclosed any injuries of which Executive is currently, reasonably aware for which Executive might be entitled to compensation pursuant to worker's compensation law; and

(d) Executive has not initiated any adversarial proceedings of any kind against the Company or against any other person or entity released herein, nor will Executive do so in the future, except as specifically allowed by this Release.

3. Severability. The provisions of this Release are severable. If any provision is held to be invalid or unenforceable, it shall not affect the validity or enforceability of any other provision.

4. Choice of Law. This Release shall in all respects be governed and construed in accordance with the laws of the State of California, including all matters of construction, validity and performance, without regard to conflicts of law principles.

5. Integration Clause. This Release and the Employment Agreement contain the Parties' entire agreement with regard to the separation of Executive's employment, and supersede and replace any prior agreements as to those matters, whether oral or written. This Release may not be changed or modified, in whole or in part, except by an instrument in writing signed by Executive and a duly authorized officer or director of the Company.

6. Execution in Counterparts. This Release may be executed in counterparts with the same force and effectiveness as though executed in a single document. Facsimile signatures shall have the same force and effectiveness as original signatures.

7. Intent to be Bound. The Parties have carefully read this Release in its entirety; fully understand and agree to its terms and provisions; and intend and agree that it is final and binding on all Parties.

IN WITNESS WHEREOF, and intending to be legally bound, the Parties have executed the foregoing on the dates shown below.

EXECUTIVEIDEAYA BIOSCIENCES, INC.

_____

y:
itle:

Date: _____Date: _____

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (No. 333-237362 and No. 333-231784) and Form S-3 (No. 333-238849) of IDEAYA Biosciences, Inc. of our report dated March 23, 2021 relating to the financial statements, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP
San Jose, California
March 23, 2021

Exhibit 31.1

CERTIFICATION OF THE CHIEF EXECUTIVE OFFICER PURSUANT TO

RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,

AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Yujiro Hata, certify that:

1. I have reviewed this Annual Report on Form 10-K of IDEAYA Biosciences, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 23, 2021

By: /s/ Yujiro Hata

Yujiro Hata
President and Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION OF THE CHIEF FINANCIAL OFFICER PURSUANT TO

RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,

AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Paul Stone, J.D., certify that:

1. I have reviewed this Annual Report on Form 10-K of IDEAYA Biosciences, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 23, 2021

By: /s/ Paul Stone, J.D.

Paul Stone, J.D.
Senior Vice President and Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit 32.1

CERTIFICATION PURSUANT TO

18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO

SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

I, Yujiro Hata, President and Chief Executive Officer of IDEAYA Biosciences, Inc. (the "Company"), hereby certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge:

(1) The Annual Report on Form 10-K of the Company for the period ended December 31, 2020 (the "Report") fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 23, 2021

By: /s/ Yujiro Hata
Yujiro Hata
President and Chief Executive Officer
(Principal Executive Officer)

I, Paul Stone, J.D., Chief Financial Officer of IDEAYA Biosciences, Inc. (the "Company"), hereby certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge:

(1) The Annual Report on Form 10-K of the Company for the period ended December 31, 2020 (the "Report") fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 23, 2021

By: /s/ Paul Stone, J.D.
Paul Stone, J.D.
Senior Vice President and Chief Financial Officer
(Principal Financial and Accounting Officer)