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, 2017

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the transition period from to .

Commission File No.: 001-34705

Codexis, Inc.

(Exact name of Registrant as specified in its charter)

Delaware	**71-0872999**
(State or other Jurisdiction of Incorporation or Organization)	**(I.R.S. Employer Identification No.)**
200 Penobscot Drive, Redwood City, California	**94063**
(Address of Principal Executive Offices)	**(Zip Code)**

Registrant's telephone number, including area code: (650) 421-8100

Securities Registered Pursuant to Section 12(b) of the Act:

Title of Each Class:	**Name of Each Exchange on which Registered:**
Common Stock, par value $0.0001 per share	The 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 Section 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 and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted 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 and post such files). Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☒

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

Large accelerated filer	☐	Accelerated filer	☒
Non-accelerated filer	☐	Smaller reporting company	☐
(Do not check if a 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 is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

The aggregate market value of voting common stock held by non-affiliates of Codexis as of June 30, 2017 was approximately $185.6 million based upon the closing price reported for such date on The NASDAQ Global Select Market.

As of February 28, 2018, there were 48,433,744 shares of the registrant's Common Stock, par value $0.0001 per share, outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Definitive Proxy Statement to be filed with the Commission pursuant to Regulation 14A in connection with the registrant's 2018 Annual Meeting of Stockholders, to be filed subsequent to the date hereof, are incorporated by reference into Part III of this Report. Such Definitive Proxy Statement will be filed with the Securities and Exchange Commission not later than 120 days after the conclusion of the registrant's fiscal year ended December 31, 2017. Except with respect to information specifically incorporated by reference in this Form 10-K, the Proxy Statement is not deemed to be filed as part of this Form 10-K.

Codexis, Inc.
Annual Report on Form 10-K
For The Year Ended December 31, 2017

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

The following discussion and analysis should be read in conjunction with our audited consolidated financial statements and the related notes that appear elsewhere in this Annual Report on Form 10-K. This Annual Report on Form 10-K contains "forward-looking statements" within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended ("the Exchange Act"), particularly in Part I, Item 1: "Business," Part I, Item 1A: "Risk Factors" and Part 2, Item 7: "Management's Discussion and Analysis of Financial Condition and Results of Operations." These statements are often identified by the use of words such as "may," "will," "expect," "believe," "anticipate," "intend," "could," "should," "estimate" or "continue," and similar expressions or variations. All statements other than statements of historical fact could be deemed forward-looking, including, but not limited to: any projections of financial information; any statements about historical results that may suggest trends for our business; any statements of the plans, strategies, and objectives of management for future operations; any statements of expectation or belief regarding future events, technology developments, our products, product sales, expenses, liquidity, cash flow, market growth rates or enforceability of our intellectual property rights and related litigation expenses; and any statements of assumptions underlying any of the foregoing. Such forward-looking statements are subject to risks, uncertainties and other factors that could cause actual results and the timing of certain events to differ materially from future results expressed or implied by such forward-looking statements. Accordingly, we caution you not to place undue reliance on these statements. For a discussion of some of the factors that could cause actual results to differ materially from our forward-looking statements, see the discussion on risk factors that appear in Part I, Item 1A: "Risk Factors" of this Annual Report on Form 10-K and other risks and uncertainties detailed in this and our other reports and filings with the Securities and Exchange Commission ("SEC"). The forward-looking statements in this Annual Report on Form 10-K represent our views as of the date of this Annual Report on Form 10-K. We anticipate that subsequent events and developments will cause our views to change. However, while we may elect to update these forward-looking statements at some point in the future, we have no current intention of doing so except to the extent required by applicable law. You should, therefore, not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this Annual Report on Form 10-K.

PART I

ITEM 1. BUSINESS

COMPANY OVERVIEW

We discover, develop and sell proteins that deliver value to our clients in a growing set of industries. We view proteins as a vast untapped source of value-creating materials, and we are using our proven technologies, which have been continuously improved over our fifteen year history, to commercialize an increasing number of novel proteins, both as proprietary Codexis products and in partnership with our customers.

Many companies have historically used naturally occurring proteins to produce or enhance goods used in everyday life. Despite the growing number of commercial applications of naturally occurring proteins across many industries, the inherent limitations of naturally-occurring proteins frequently restrict their commercial use. Through the application of our proprietary CodeEvolver® protein engineering technology platform, we are able to engineer novel proteins to overcome these restrictions, thereby adding value or opening up new prospects for our potential clients' products, processes or businesses. We have developed new proteins that are significantly more stable and/or active in our commercial applications than proteins derived from nature.

We are also a pioneer in the harnessing of computational technologies to drive biology advancements. Over the last fifteen years, we have made substantial investments in the development of our CodeEvolver® protein engineering technology platform, the primary source of our competitive advantage. Our technology platform is powered by proprietary, artificial intelligence-based, computational algorithms that rapidly mine our large and continuously growing library of protein variants' performance attributes. These computational outputs enable increasingly reliable predictions for next generation protein variants to be engineered, enabling delivery of targeted performance enhancements in a time-efficient manner. In addition to its computational prowess, our CodeEvolver® protein engineering technology platform integrates additional modular competencies, including robotic high-throughput screening and genomic sequencing, organic chemistry and process development which are all coordinated to create our novel protein innovations.

OUR STRATEGY

Our strategy is to grow our revenues, profits, and stockholder value by leveraging our CodeEvolver® protein engineering technology platform in the following ways:

- *Licensing our CodeEvolver® protein engineering technology platform.* We intend to continue to pursue opportunities to license our CodeEvolver® protein engineering technology platform to third parties so they can create cost-saving protein catalyst solutions utilizing their own in-house protein engineering capability.
- *Growing our pharmaceutical protein catalysts business.* We intend to continue to pursue opportunities in the pharmaceutical market to use our protein catalysis products and services to reduce the costs for manufacturing small molecule drugs. We intend to increase the number of pharmaceutical customers and processes that utilize and benefit from our novel, cost-saving protein catalyst solutions.
- *Growing our fine chemicals protein catalysts business.* We intend to continue to pursue opportunities in the fine chemicals market to use protein catalysis products and services to reduce the costs for manufacturing in adjacent markets like food and food ingredients. We intend to increase the number of fine chemical customers and processes who utilize and benefit from our novel, cost-saving protein catalyst solutions.
- *Creating and advancing novel biotherapeutic drug candidates.* We intend to continue to pursue opportunities to apply our protein engineering capabilities to the creation and development of novel biotherapeutic drug candidates, both in partnership with customers and as proprietary Codexis drug candidates. We have also invested in research and development in an effort to generate additional early stage novel biotherapeutic candidates.
- *Developing high-performance enzymes for use in diagnostic applications*. We intend to offer high-performance enzymes to customers using next generation sequencing ("NGS") and polymerase chain reaction ("PCR/qPCR") for *in vitro* molecular diagnostic applications.

In this Annual Report, the "Company," "we," "us" and "our" refer to Codexis, Inc. and its subsidiaries on a consolidated basis.

OUR MARKET OPPORTUNITIES

Pharmaceutical Market

We believe the pharmaceutical industry represents a significant market opportunity for us and is our primary business focus. Pharmaceutical companies are in constant search for new drugs to offer to their customers, and are under significant competitive pressure both to reduce costs and to increase the speed to market for their products. To meet these pressures, pharmaceutical companies are discovering and developing novel protein-based drug products, as well as seeking manufacturing processes for their new and existing drugs that reduce overall costs, simplify production and increase efficiency and product yield, while not affecting drug safety and efficacy. Cost reduction is even more important to developers (known as innovators) of patent-protected pharmaceutical products when the patents for those products expire and such innovators are forced to compete with manufacturers of generic drugs.

The pharmaceutical product lifecycle begins with the discovery of new chemical entities and continues through preclinical and clinical development, regulatory review and approval, commercial scale-up, product launch, and, ultimately, patent expiration and the transition from branded to generic products. As innovators develop, produce and then market products, manufacturing priorities and processes evolve. Historically, innovators have focused on production cost reduction in the later stages of clinical development and have been reluctant to make process changes after a product has been launched. However, as pressures to reduce costs have increased, innovators have pursued cost reduction measures much earlier in the pharmaceutical product lifecycle and are increasingly looking for opportunities to improve their operating margins, including making manufacturing process changes for marketed products after the products have been launched if these changes can result in significant cost reductions. As a result, innovators are investing in new technologies, including our CodeEvolver® protein engineering technology platform, to improve their manufacturing productivity and efficiency or outsourcing the manufacture of their intermediates and active pharmaceutical ingredients (“APIs”).

Our Solutions for the Pharmaceutical Market

Small Molecule Manufacturing Cost Reduction

Our pharmaceutical customers, which include many large global pharmaceutical companies, use our technology, products and services in their manufacturing processes and process development. Our CodeEvolver® protein engineering technology platform enables us to deliver solutions to our customers in this market by developing and delivering optimized protein catalysts that perform chemical transformations at a lower cost and improve the efficiency and productivity of manufacturing processes. We provide value throughout the pharmaceutical product lifecycle. Our products and services allow us to provide benefits to our pharmaceutical customers in a number of cost saving ways, including any - and sometimes all - of the following:

- reducing the use of raw materials and reagents;
- eliminating multiple steps in the manufacturing process;
- improving purity, productivity and yield;
- using water as a primary solvent;
- eliminating hazardous inputs;
- enabling the use of simple equipment and reducing the need for capital expenditure;
- reducing energy requirements;
- reducing the generation of chemical byproducts or waste; and
- reducing the need for late-stage purifications.

Early in a pharmaceutical product’s lifecycle, pharmaceutical manufacturers can use our protein catalyst products and services to reduce manufacturing costs. If an innovator incorporates our products or processes into an approved product, we expect the innovator to continue to use our products or processes at least over the patent life of the marketed drug.

Pharmaceutical manufacturers can also use our products and services to reduce manufacturing costs after a product is launched. At this stage, changes in the manufacturing process originally approved by the drug regulator may require additional regulatory review. Typically, pharmaceutical companies will only seek regulatory approval for a manufacturing change if substantial cost savings are realizable. We believe that the cost savings associated with our products may lead our customers to change their manufacturing processes for approved products and, if necessary, seek regulatory approval of the new processes which incorporate our proteins. Moreover, we believe these cost savings are attractive to generics manufacturers, who compete primarily on price.

In addition, manufacturing processes that utilize our protein catalysts can frequently enable processes that are more sustainable and environmentally friendly compared to alternative, traditional manufacturing approaches. This has led Codexis to earn three US EPA Presidential Green Chemistry Challenge awards for improved pharmaceutical manufacturing processes since we were

founded. All three of these awards were associated with blockbuster drug products.

Discovery and Development of Biotherapeutic Drug Candidates

We are also targeting new opportunities in the pharmaceutical industry to discover or improve biotherapeutic drug candidates for our customers. We believe that our CodeEvolver® protein engineering platform technology can be used to discover novel biotherapeutic drug candidates that will target human diseases that are in need of improved therapeutic interventions. Similarly, we believe that we can deploy our platform technology to improve specific characteristics of a customer's pre-existing biotherapeutic drug candidate, such as its activity, stability or immunogenicity.

Collaborative Biotherapeutic Product Development

We are using our platform technology to improve characteristics of our customers' pre-existing biotherapeutic drug candidates. In July 2016, we successfully completed our obligations under a collaborative research and development agreement with a leading global biopharmaceutical company. Under that agreement, we employed our CodeEvolver® protein engineering platform technology to develop a novel enzyme for use in our partner's preclinical therapeutic development program. During this project, we earned success fees, associated milestone payments and research and development service revenues. We continue to pursue other customers who could benefit by applying our CodeEvolver® protein engineering platform technology to improve the discovery and/or development of other biotherapeutics in partnership with Codexis.

Biotherapeutic Product Development

We are also using our platform technology to develop our own early stage, novel enzyme therapeutic product candidates. Our lead product candidate is CDX-6114, an enzyme which we have engineered to be orally administered and are developing as a potential treatment of PKU in humans. PKU is an inborn metabolic disorder in which the enzyme that converts the essential amino acid phenylalanine into tyrosine is deficient. As a result, phenylalanine accumulates to toxic levels in the brain, causing serious neurological problems including intellectual disability, seizures and cognitive and behavioral problems. To avoid toxic levels of phenylalanine in their blood, individuals with PKU must follow a strict, life-long diet that is low in phenylalanine and supplement their diet with a synthetic phenylalanine-free formula to provide them with sufficient nutrients. Maintaining a strict, life-long diet can be challenging for individuals with PKU. There are an estimated 50,000 people with PKU in the developed world.

In addition to the PKU program, we have previously made, and expect to continue to make additional investments with the aim of generating additional product candidates targeting other therapeutic areas.

Nestlé Health Science

On October 12, 2017 (the "Effective Date"), we entered into a Global Development, Option and License Agreement (the "Nestlé Agreement") with Nestec Ltd. ("Nestlé Health Science").

Pursuant to the Nestlé Agreement, we granted to Nestlé Health Science, under certain of our patent rights and know-how: (i) an option (the "Option") to obtain an exclusive, worldwide, royalty-bearing, sublicensable license to develop and commercialize certain products (each, a "Product") based on CDX-6114 and our other therapeutic enzyme product candidates for the treatment of hyperphenylalaninemia ("HPA"), and (ii) an exclusive right of first negotiation (the "Right of First Negotiation") for a period of five years to obtain an exclusive worldwide license to develop and commercialize up to two enzymes discovered by us for use in the field of the prevention, diagnosis, treatment and management of inborn errors of amino acid metabolism. We are not under any obligation to undertake any research and development activities relating to inborn errors of amino acid metabolism. HPA (also referred to as PKU) is a medical condition characterized by elevated concentrations of the amino acid phenylalanine in the blood. PKU can result in severe HPA.

Under the terms of the Nestlé Agreement, upon the License Effective Date (defined below) after the Option trigger, Nestlé Health Science will be granted a license to any enzyme (each, a "Compound") covered by specified patent applications, other than any enzyme that has other clinically significant, specified activity against another molecule, unless that enzyme's specified activity against phenylalanine is ten times greater than its activity against such other molecule (in which case it is not excluded). Furthermore, we generally will retain the right to use any enzyme as a biocatalyst, provided that preclinical development of such enzyme has not commenced. The first Compound to be developed under the Nestlé Agreement is our enzyme CDX-6114 (the "Initial Compound").

Nestlé Health Science has the sole discretion to exercise the Option after the effectiveness of an investigational new drug application filed by us for the study of the Initial Compound for the treatment of HPA and the completion of a Phase 1a study by us (the "Option Trigger Date"). The effective date of the license granted in connection with the Option exercise will either be the date that Nestlé Health Science notifies us of Nestlé Health Science's exercise of the Option if Nestlé Health Science

determines that no antitrust clearance is necessary, or the date that any antitrust clearance Nestlé Health Science determines is required is obtained ("License Effective Date"). The Option will expire 60 days after the Option Trigger Date if unexercised by Nestlé Health Science. If Nestlé Health Science exercises the Option and determines that a filing under the Hart-Scott-Rodino Antitrust Improvements Act of 1976 ("HSR") is necessary in connection with the Option exercise, our obligation to grant the license under the Option will expire if the HSR filing does not receive clearance within 180 days of filing and such delay is not attributable to any material failure on our part to cooperate in the HSR review process.

The Nestlé Agreement also sets forth the parties' respective obligations for development, commercialization, regulatory and manufacturing and supply activities for the Initial Compound and Product containing the Initial Compound. Prior to the earlier to occur of the Option expiration date or the License Effective Date, we will be generally responsible for development activities, including a Phase 1a study. Following the License Effective Date, Nestlé Health Science will be responsible for development activities. Our development activities will be governed by a development plan and overseen by a joint steering committee. The parties will establish a patent committee to discuss strategies and coordinate activities for the patents related to Initial Compound and Product containing the Initial Compound, and will jointly own all inventions and information that result from each party's activities performed under the Nestlé Agreement. The Nestlé Agreement also contains customary representations and warranties by the parties, intellectual property protection provisions, certain indemnification rights in favor of each party and customary confidentiality provisions and limitations of liability.

Nestlé Health Science paid us an upfront cash payment of $14.0 million in the fourth quarter of 2017. Pursuant to the Agreement, Nestle is obligated to pay us $4.0 million after the commencement of a Phase 1a clinical trial and in the event Nestlé exercises the Option, they will be obligated to pay us $3.0 million within 60 days after the license effective date. Other potential payments from Nestlé Health Science to us under the Agreement include (i) development and approval milestones of up to $86.0 million, (ii) sales-based milestones of up to $250.0 million in the aggregate, which aggregate amount is achievable if net sales exceed $1.0 billion in a single year, and (iii) tiered royalties, at percentages ranging from the middle single digits to low double-digits, of net sales of products containing a Compound as its sole active ingredient.

In addition to the Nestlé Agreement, we and Nestlé Health Science concurrently entered into a strategic collaboration agreement pursuant to which we and Nestlé Health Science will collaborate to leverage the CodeEvolver® platform technology to develop novel enzymes for Nestlé Health Science's established Consumer Care and Medical Nutrition business areas.

Fine Chemicals Markets

Beyond the pharmaceutical industry, our CodeEvolver® protein engineering platform technology has enabled cost-savings for our partners in the fine chemicals markets, and the food industry in particular. In November 2016, we entered into an exclusive agreement with Tate & Lyle, a market-leading food ingredients company, to supply a proprietary enzyme for use in Tate & Lyle's food ingredient production. In March 2017, we announced a second multi-year research and development services agreement with Tate & Lyle for the development of a second ingredient for the food ingredient industry. We are seeking to expand our protein catalyst offerings in the fine chemicals market within and beyond the food industry, including, for example, to the agricultural chemicals and flavors and fragrances markets.

Molecular Biology and *In Vitro* Diagnostic Enzymes

We believe that our Codexis protein engineering capability can also be deployed to commercialize novel enzymes as improvements to enzymes consumed by customers in many industrial sectors. As our first effort in this strategy, we have developed an enzyme for customers using NGS and PCR/qPCR for *in vitro* molecular diagnostic applications. Our first proprietary enzyme for this market targets improved library preparation for NGS users and is currently being beta tested. It is expected to be available commercially in 2018.

Licensing Our CodeEvolver® Protein Engineering Technology Platform

Our CodeEvolver® protein engineering technology platform enables rapid development of custom-designed enzymes that are highly optimized for efficient manufacturing processes. We intend to continue to enter into license arrangements with third parties that will allow them to use our CodeEvolver® protein engineering technology platform to discover and develop novel proteins for their internal use. To date, we have entered into platform technology licensing agreements with each of GlaxoSmithKline and Merck.

GlaxoSmithKline

We entered into our first CodeEvolver® protein engineering technology Platform Technology Transfer, Collaboration and License Agreement ("GSK CodeEvolver® Agreement") on July 10, 2014 with GlaxoSmithKline Intellectual Property Development Limited, a subsidiary of GlaxoSmithKline plc (collectively, "GSK").

The GSK CodeEvolver® Agreement allows GSK to use our proprietary CodeEvolver® protein engineering technology platform in the field of human healthcare.

Under the terms of the GSK CodeEvolver® Agreement, we granted to GSK a non-exclusive, worldwide license to use our CodeEvolver® protein engineering technology platform to develop novel enzymes for (a) the manufacture and commercialization of compounds, molecules and products for the treatment of any human disease or medically treatable human condition, (b) the prophylaxis, diagnosis or treatment of any human disease or medically treatable human condition, and (c) the research and development of compounds, molecules and products for the treatment of any human disease or medically treatable human condition (the "Field"). This license to GSK is exclusive for the use of our CodeEvolver® protein engineering technology platform to develop novel enzymes for the synthesis of small-molecule compounds owned or controlled by GSK (the "GSK Exclusive Field"). GSK has the right to grant sublicenses to affiliates of GSK and, in certain limited circumstances, to third parties. We also granted a license to GSK to make or have made products developed using our CodeEvolver® protein engineering technology platform, with a right to grant sublicenses solely to affiliates of GSK, contract manufacturing organizations and contract research organizations. This manufacturing license is exclusive in the GSK Exclusive Field and otherwise non-exclusive in the Field. The licenses granted by us to GSK are subject to certain limitations based on pre-existing contractual obligations that apply to the technology and intellectual property that is the subject of the license grants. In addition, GSK is prohibited from using our CodeEvolver® protein engineering technology platform to develop or produce any enzymes or other compounds for or on behalf of any third party except that GSK can exercise its license rights in connection with certain research and development programs jointly performed with a bona fide third party collaborator so long as GSK uses our CodeEvolver® protein engineering technology platform independently from the third party collaborator and complies with all of the other restrictions and obligations under the GSK CodeEvolver® Agreement.

Under the GSK CodeEvolver® Agreement, we transferred our CodeEvolver® protein engineering technology platform to GSK over a twenty-one-month period that began on July 10, 2014. As a part of this technology transfer, we provided to GSK our proprietary enzymes, proprietary protein engineering protocols and methods, and proprietary software algorithms. In addition, teams of our and GSK scientists participated in technology training sessions and collaborative research projects at our laboratories in Redwood City, California and at GSK's laboratories in Upper Merion, Pennsylvania. The technology transfer was completed in April 2016 and our CodeEvolver® protein engineering technology platform has been installed at GSK's Upper Merion, Pennsylvania site. We have the potential to receive additional contingent payments that range from $5.75 million to $38.5 million per project based on GSK's successful application of the licensed technology.

We are also eligible to receive royalties based on net sales, if any, of a limited set of products developed by GSK using the CodeEvolver® protein engineering technology platform.

The licenses to GSK were granted under certain patents, patent applications and know-how that we owned or controlled as of the effective date of the GSK CodeEvolver® Agreement and that cover our CodeEvolver® protein engineering technology platform and certain enzymes useful in the Field. Any improvements to our CodeEvolver® protein engineering technology platform during the technology transfer period were included in the license grants from us to GSK.

Under the GSK CodeEvolver® Agreement, GSK owns (the "GSK-Owned Technology") (a) any enzyme technology that was developed during a project under the GSK CodeEvolver® Agreement that used our CodeEvolver® protein engineering technology platform during the technology transfer period and (b) the methods of use of any Project Enzyme in compound synthesis that were developed during the technology transfer period. GSK granted to us a worldwide, non-exclusive, fully paid-up, royalty-free license, with the right to grant sublicenses, to use outside of the GSK Exclusive Field, the GSK-Owned Technology that was developed during the technology transfer period.

Until July 10, 2019 (the "Embargo Period"), GSK is prohibited from using the CodeEvolver® protein engineering technology platform for the use, research or development (whether in vitro or in vivo) or commercialization of any enzyme or enzyme fusion protein that (a) effects a chemical transformation in humans or (b) facilitates, assists, transports or enables the action, dispersion, absorption or bioavailability of a molecule, biologic agent, drug product, therapeutic agent or other compound in humans (the "Embargo Field"). GSK is permitted to use our CodeEvolver® protein engineering technology platform during the Embargo Period to develop and use an enzyme or enzyme fusion protein that (x) is used by GSK solely as a research reagent or a research tool within the Embargo Field, (y) is used to synthesize a small-molecule compound owned or controlled by GSK or (z) facilitates, assists, transports or enables the action, dispersion, absorption or bioavailability of a small-molecule compound that is owned or controlled by GSK.

The term of the GSK CodeEvolver® Agreement continues, unless earlier terminated, until the expiration of all payment obligations under the GSK CodeEvolver® Agreement. GSK can terminate the GSK CodeEvolver® Agreement by providing 90 days written notice to us.

Merck

On August 3, 2015, we entered into a CodeEvolver® platform technology transfer and license agreement (the "Merck CodeEvolver® Agreement") with Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc. (collectively, "Merck").

The Merck CodeEvolver® Agreement allows Merck to use our proprietary CodeEvolver® protein engineering platform technology in the field of human and animal healthcare.

Under the terms of the Merck CodeEvolver® Agreement, we granted to Merck a non-exclusive worldwide license to use the CodeEvolver® protein engineering technology platform to research, develop and manufacture novel enzymes for use by Merck in its internal research programs ("Merck Non-Exclusive Field"). The license to Merck is exclusive for the research, development and manufacture of novel enzymes for use by Merck in the chemical synthesis of therapeutic products owned or controlled by Merck ("Merck Exclusive Field"). Merck has the right to grant sublicenses to affiliates of Merck and, in certain limited circumstances, to third parties. We also granted to Merck a license to make or have made products manufactured using the CodeEvolver® protein engineering technology platform with a right to grant sublicenses solely to affiliates of Merck, contract manufacturing organizations and contract research organizations. The manufacturing license is exclusive in the Merck Exclusive Field and non-exclusive in the Merck Non-Exclusive Field. The licenses are subject to certain limitations based on pre-existing contractual obligations that apply to the technology and intellectual property that are the subject of the license grants. The licenses do not permit the use of the CodeEvolver® protein engineering technology platform to discover any therapeutic enzyme, diagnostic product or vaccine. In addition, Merck is prohibited from using the CodeEvolver® protein engineering technology platform to develop or produce enzymes or any other compounds for or on behalf of any third parties except in a very limited manner when Merck divests a therapeutic product that is manufactured using an enzyme developed using the CodeEvolver® protein engineering technology platform.

Under the terms of the Merck CodeEvolver® Agreement, Merck paid us $18.0 million in technology transfer up-front and milestone payments over the technology transfer period of 15 months from August 3, 2015, the effective date of the Merck CodeEvolver® Agreement. We also have the potential to receive product-related payments of up to $15.0 million for each API that is manufactured by Merck using one or more enzymes that have been developed or are in development using the CodeEvolver® protein engineering technology platform during the 10-year period that begins on the conclusion of the 15-month technology transfer period. These product-related payments, if any, will be paid by Merck to us for each quarter that Merck manufactures API using a CodeEvolver®-developed enzyme. The payments will be based on the total volume of API produced using the CodeEvolver®-developed enzyme. We have the right to conduct an annual audit to confirm that all payments that are owed to us have been paid in full and on time.

Under the Merck CodeEvolver® Agreement, we transferred the CodeEvolver® protein engineering technology platform to Merck over the period from August 2015 through September 2016. As part of this technology transfer, we provided to Merck our proprietary enzymes, proprietary protein engineering protocols and methods, and proprietary software algorithms. We provided additional enzyme evolution services to Merck at our laboratories in Redwood City through November 2016. The remaining deferred revenue relating to the upfront payment was recognized upon completion of the additional enzyme evolution services.

The licenses to Merck are granted under patents, patent applications and know-how that we owned or controlled as of the effective date of the Merck CodeEvolver® Agreement and that cover the CodeEvolver® protein engineering technology platform. Any improvements to the CodeEvolver® protein engineering technology platform during the technology transfer period are also included in the license grants from Codexis to Merck. Following the technology transfer period, Merck can exercise annual options that, upon payment of certain option fees, would extend Merck's license to include certain improvements to the CodeEvolver® protein engineering technology platform that arise during the three-year period that begins at the end of the technology transfer period.

Under the Merck CodeEvolver® Agreement, we own any improvements to our protein engineering methods, processes and algorithms that arose and any enzyme technology or process technology that are developed during an evolution program or additional services. Merck owns (the "Merck-Owned Technology") (a) any enzyme technology that is developed solely by Merck under the Merck CodeEvolver® Agreement using the CodeEvolver® protein engineering technology platform (a "Project Enzyme") and (b) the methods of use of any Project Enzyme or any enzyme developed jointly by Merck and us using the CodeEvolver® protein engineering technology platform. Merck granted to us a worldwide, non-exclusive, fully paid-up, royalty-free license, with the right to grant sublicenses, to use the Merck-Owned Technology outside of the Merck Exclusive Field.

For each API that Merck manufactures using an enzyme developed with the CodeEvolver® protein engineering technology platform, we will have a right of first refusal to supply Merck with the enzyme used to manufacture the API if Merck

outsources the supply of the enzyme. Our right of first refusal applies during the period that begins on the completion of a phase III clinical trial for the product containing the API and ends five years following regulatory approval for such product.

The Merck CodeEvolver® Agreement has a term that continues, unless earlier terminated, until the expiration of all payment obligations under the agreement. Merck may terminate the Merck CodeEvolver® Agreement by providing 90 days written notice to us. We can terminate the Merck CodeEvolver® Agreement by providing 30 days written notice to Merck if we determine, pursuant to our contractual audit rights under the Merck CodeEvolver® Agreement, that Merck has repeatedly failed to make required payments to us and/or materially underpaid us an amount due under the Merck CodeEvolver® Agreement. In the event the Merck CodeEvolver® Agreement is terminated earlier by Merck, or by us due to an uncured material breach by Merck, or if Merck sells or transfers to a third party any Merck business or facility that includes any of our proprietary materials, information or technology, we have the right to conduct an audit of Merck's facilities to confirm that all of our proprietary materials, information and technology have been destroyed. The Merck CodeEvolver® Agreement contains indemnification provisions under which Merck and we have agreed to indemnify each other against certain third party claims.

In September 2016, we completed the full transfer of the engineering platform technology and earned milestone revenue of $8.0 million. We received the $8.0 million milestone payment in the fourth quarter of 2016.

Protein Catalyst Products and Services

Our protein catalyst products and services can deliver value to our customers in multiple potential ways:

- manufacture their products at lower cost;
- manufacture their products with lower fixed capital investment;
- reduce the cost of development of complex chemical synthesis processes;
- enable their products to achieve higher product purity;
- reduce the risk of adverse effects arising from product impurities;
- allow the removal of entire steps from chemical production; and
- flexibility to apply at any point across their product's lifecycle.

Our products include protein catalysts, chemical intermediates and Codex® Biocatalyst Panels and Kits. We sell our products worldwide primarily through our directed sales and business development force in the United States and Europe.

In addition to products, we also offer research and development services to our customers. These research and development service agreements often contain service fee payments and intellectual property provisions under which we screen and/or engineer protein catalysts for customers in connection with their process development efforts. In these collaborations, we typically receive consideration in the form of one or more of the following: up-front payments, milestone payments, payments for screening and engineering services, licensing fees and royalties.

Protein Catalysts

We often sell protein catalysts (also referred to as biocatalysts or enzymes), by the gram or kilogram, that have been already been engineered, scaled up, and installed in a customer's commercial process. For example, we sell protein catalysts to Merck for their manufacture of Sitagliptin, the active ingredient in Januvia®. We also sell protein catalysts which are in developmental stages. These are enzymes that are sold in batches or by the gram or kilogram that are in the process of being engineered or scaled up by Codexis, or are in the process of being trialed or approved for use in the customer's process. We may sell batches of specific protein catalysts that are in the middle of our protein engineering efforts to test their performance at a larger customer scale. We also may sell batches of specific protein catalysts for use in customer's developmental products (for example, to trial in a customer's Phase II drug candidate process). Finally, we may sell batches of specific protein catalysts as a customer performs trials for approval in their commercial manufacturing operations.

Chemical Intermediates

In some cases, we sell intermediate chemicals products that are produced in a process that uses our protein catalysts. These chemical intermediates are then used by our customer for further chemical processing.

Codex® Biocatalyst Panels and Kits

We sell kits and panels of our protein catalysts. These kits and panels assemble a relevant subset of our engineered enzymes to enable customers to perform chemistry screening on their own. These kits and panels are organized by specific types of chemical reactions that are widely applicable in the pharmaceutical and fine chemical markets.

Protein Catalyst Screening Services

If a customer prefers, rather than purchasing our Codex® Biocatalyst Panels or Kits to use for its own screening, it may send us its starting materials and desired chemical reaction, and we will test against our existing libraries of enzymes on a research and development service fee basis. If we detect desired activity in a specific enzyme, we can supply the customer with this enzyme or perform engineering services to improve the performance of the enzyme.

Protein Engineering Services

We work with our customers throughout their product development lifecycle to optimize enzymes that have been engineered specifically to perform a desired process according to a highly selective set of specifications. We typically charge customers on research and development services basis by project or project-month. These are typically larger research and development service fees than screening services.

The protein engineering process starts by identifying genes that code for enzymes known to have the general type of catalytic reactivity for a desired chemical reaction. Typically, we identify gene sequences from our extensive in-house collection or from published databases and then synthesize candidate genes having those sequences. Using a variety of biotechnology tools, we diversify these genes by introducing mutations, giving rise to changes in the enzymes for which they encode. The methods for diversifying these genes, and types of diversity being tested, often vary over the course of a protein engineering program. For finding initial diversity, methods typically include random mutagenesis and site-directed (included computational structure-guided) mutagenesis. We also test mutational variations from related enzymes found in different organisms.

Once we have identified potentially beneficial mutations, we create libraries of thousands of variants with combinations of these mutations. With our proprietary genetic manipulation tools, we generate libraries of genes that have programmed and random combinations of the mutations for testing. The pool of genes is used to transform host cells, which entails introducing the various genes into host cells. These cells are then grown into colonies. Cells from individual colonies are cultured in high throughput to produce the enzyme encoded by the genetic variant in those cells. The enzymes expressed by these cells are then screened in high throughput using test conditions relevant to the desired process. The screening results allow us to identify and catalog individual genes that produce improved enzymes with beneficial mutations as well as enzymes having detrimental ones. Using specifically developed test conditions and analytical methods, we can identify variant enzymes that exhibit various improved performance characteristics, such as stability, activity and selectivity, under conditions relevant to the desired chemical process.

In the next step in our optimization process, we use our proprietary bioinformatics software to analyze protein sequence-activity relationships. Our software and algorithms relate the screening results to the mutations and ranks the individual and interacting protein sequence mutations with regard to their degree of benefit or detriment, relative to the process parameter(s) tested. Using this information, we can create a select pool of mutational diversity in the next iteration to further the accumulation of beneficial diversity and cancel out detrimental diversity in the individual genes in the resulting library. The gene that codes for the best performing enzyme in one iteration is used as the starting gene for the next iteration of recombination and screening. As the enzymes improve over these iterations, the screening conditions are made increasingly more stringent. In this way, the protein catalyst is rapidly optimized until all in-process performance requirements have been achieved and the economic objectives for the desired process have been met.

INTELLECTUAL PROPERTY

Our success depends in large part on our ability to protect our proprietary products and technology under patent, copyright, trademark and trade secret laws. We also rely heavily on confidential disclosure agreements for further protection of our proprietary products and technologies. Protection of our technologies is important for us to offer our customers and partners proprietary services and products that are not available from our competitors, and to exclude our competitors from practicing technology that we have developed or exclusively licensed from other parties. For example, our ability to supply innovator pharmaceutical manufacturers depends on our ability to supply proprietary enzymes or methods for making pharmaceutical intermediates or APIs that are not available from our competitors. Likewise, in the generic pharmaceutical area, proprietary protection, through patent, trade secret or other protection of our enzymes and methods of producing a pharmaceutical product is important for us and our customers to maintain a lower cost production advantage over competitors.

As of December 31, 2017, we owned or controlled approximately 1,100 issued patents and pending patent applications in the United States and in various foreign jurisdictions. These patents and patent applications include many that are directed to our enabling technologies and specific methods and products that support our business in the pharmaceutical markets. Our current intellectual property rights have terms that expire between 2018 and 2038. Our United States intellectual property rights directed to the CodeEvolver® proprietary enabling technology platform developed internally by us have terms that expire between 2029 to 2034. Our current intellectual property rights also include patents, trademarks, copyrights, software and certain assumed contracts that we acquired from Maxygen, Inc. ("Maxygen") in October 2010, which are associated with directed evolution technology, known as the MolecularBreeding™ technology platform developed by Maxygen. The intellectual property rights and assets that we acquired from Maxygen continue to be subject to existing exclusive and non-exclusive license rights granted by Maxygen to third parties. We continue to file new patent applications, for which terms generally extend 20 years from the non-provisional filing date in the United States.

We will continue to file and prosecute patent applications and maintain trade secrets in an ongoing effort to protect our intellectual property. It is possible that our current patents, or patents which we may later acquire, may be successfully challenged or invalidated in whole or in part. It is also possible that we may not obtain issued patents from our pending patent applications or other inventions we seek to protect. We sometimes permit certain intellectual property to lapse or go abandoned under appropriate circumstances. Due to uncertainties inherent in prosecuting patent applications, sometimes patent applications are rejected and we subsequently abandon them. It is also possible that we may develop proprietary products or technologies in the future that are not patentable or that the patents of others will limit or altogether preclude our ability to conduct business. In addition, any patent issued to us may provide us with little or no competitive advantage, in which case we may abandon such patent or license it to another entity.

As of December 31, 2017, we owned and used the following registered, pending, and common law trademarks in the United States, with some trademarks also registered or pending in foreign jurisdictions: Codexis®, Codex®, CodeEvolver®, Mosaic®, Sage™, Microcyp®, MYCP®, ProSAR™, Unlock the Power of Proteins™, Codexis Protein Engineering Experts™, Transform Your Thinking™, and a Codexis design mark (i.e., the Codexis logo).

Our means of protecting our proprietary rights may not be adequate and our competitors may independently develop technology or products that are similar to ours or that compete with ours. Patent, trademark, and trade secret laws afford only limited protection for our technology platform and products. The laws of many countries do not protect our proprietary rights to as great an extent as do the laws of the United States. Despite our efforts to protect our proprietary rights, unauthorized parties have in the past attempted, and may in the future attempt, to operate under aspects of our intellectual property or products or to obtain and use information that we regard as proprietary. Third parties may also design around our proprietary rights, which may render our protected technology and products less valuable, if the design around is favorably received in the marketplace. In addition, if any of our products or technology is covered by third-party patents or other intellectual property rights, we could be subject to various legal actions. We cannot assure you that our technology platform and products do not infringe patents held by others or that they will not in the future.

Litigation may be necessary to enforce our intellectual property rights, to protect our trade secrets, to determine the validity and scope of the proprietary rights of others, or to defend against claims of infringement, invalidity, misappropriation, or other claims.

Any such litigation could result in substantial costs and diversion of our resources. Moreover, any settlement of or adverse judgment resulting from litigation relating to intellectual property could require us to obtain a license to continue to make, use or sell the products or technology that is the subject of the claim, or otherwise restrict or prohibit our use of the technology.

COMPETITION

We face differing forms of competition in the small molecule pharmaceuticals, biotherapeutics, and fine chemicals markets, as set forth below.

Small Molecule Pharmaceuticals

We market our protein catalyst products and services to manufacturers of small molecule pharmaceutical intermediates and APIs. Our primary competitors in that market are companies marketing either conventional, non-enzymatic catalysts or alternative protein catalyst products and services. We also face competition sometimes from existing in-house technologies (both biocatalysts and conventional catalysts) within our client and potential client companies. The principal methods of competition and competitive differentiation in this market are price, product quality and performance, including manufacturing yield, safety and environmental benefits and speed of delivery of product. Pharmaceutical manufacturers that use biocatalytic processes can face increased competition from manufacturers that use more conventional processes and/or manufacturers that are based in regions (such as India and China) with lower regulatory, safety and environmental costs.

The market for the manufacture and supply of APIs and intermediates is large with many established companies. These companies include many of our large innovator and generic pharmaceutical customers, such as Merck, GSK, Pfizer, Bristol Myers Squibb and Teva Pharmaceutical Industries Ltd., which have significant internal research and development efforts directed at developing processes to manufacture APIs and intermediates. The processes used by these companies include classical conventional organic chemistry reactions, chemo catalytic reactions, biocatalytic, reactions or combinations thereof. Our protein catalyst based manufacturing processes must compete with these internally developed routes.

Companies developing and marketing conventional catalysts include Solvias AG, BASF, Johnson-Mathey, and Takasago International Corporation.

The market for supplying enzymes for use in pharmaceutical manufacturing is quite fragmented. There is competition from large industrial enzyme companies, such as Novozymes, as well as subsidiaries of larger contract research/contract manufacturing organizations (“CRO/CMO”), such as Royal DSM N.V. (“DSM”), Cambrex Corporation and Almac Group Ltd. There is also competition in the customized and optimized enzyme area from several smaller companies, such as BRAIN AG, Arzeda, c-LEcta GmbH, Gingko Bioworks and Evocatal GmbH.

We believe that our principal advantage is our ability to rapidly deliver customized protein catalysts for existing and new intermediates and APIs in the pharmaceutical manufacturing market. This capability has allowed us to create a breadth of protein catalysts with improved performance characteristics including, for example, better activity, stability, and activity on a range of substrates, compared to traditional chemistry-based manufacturing processes and naturally occurring (and thus not optimized) biocatalysts. We believe that our CodeEvolver® protein engineering platform technology provides substantially superior results, in shorter time frames, than companies offering competing biocatalyst development services.

Biotherapeutics

There are numerous companies that participate in the biotherapeutics market generally and the PKU market specifically. Many of these companies are large, successful and well-capitalized. BioMarin Pharmaceutical Inc. (“BioMarin”) and Daiichi Sankyo Company market Kuvan® in the United States, Europe and Japan for the treatment of a certain type of PKU. The FDA is currently reviewing a biologics license application (“BLA”) from BioMarin for an injectable enzyme substitution therapy for the potential treatment of PKU. Shire Plc, Genzyme / Sanofi S.A. and other companies market or are actively developing new biotherapeutics. There are numerous companies that are developing other forms of therapeutics, such as small molecules and gene therapy, which could compete with biotherapeutics.

Fine Chemicals

We entered the fine chemicals market in 2013 by applying our protein engineering technology in the food market. We face similar forms of competition in this market as in the small molecule pharmaceutical markets, with the exception that the risk of losing opportunities to larger competitors in fine chemicals is greater given the larger scale of opportunities available in the fine chemicals market compared to the pharmaceutical market. Our significant competitors in the fine chemicals markets include companies that have been in these marketplaces for many years, such as DuPont Industrial Biosciences (DuPont Genencor), DSM, Novozymes and A.B. Enzymes. These companies have greater resources in these markets than we do and have long-term supply arrangements already in place with customers. Our ability to compete in these markets may be limited by our relatively late entrance. We also face competition in both the fine chemicals and small molecule pharmaceutical markets from emerging companies offering whole cell metabolic pathway approaches to these markets.

Core Technology

We are a leader in the field of protein engineering to create novel biocatalysts. Both our pharmaceuticals and fine chemicals businesses rely on our core technology. We are aware that other companies, organizations and persons have developed technologies that appear to have some similarities to our patented proprietary technologies. For example, we are aware that other companies, including DSM and BASF, have alternative methods for obtaining and generating genetic diversity or use mutagenesis techniques to produce genetic diversity. In addition, academic institutions such as the California Institute of Technology, the Max Planck Institute and the Austrian Centre of Industrial Biotechnology are also working in this field. This field is highly competitive with companies and academic and research institutions actively seeking to develop technologies that could be competitive with our technologies.

Technological developments by others may result in our products and technologies, as well as products manufactured by our customers using our biocatalysts, becoming obsolete. We monitor publications and patents that relate to directed molecular evolution to be aware of developments in the field and evaluate appropriate courses of action in relation to these developments.

Many of our competitors have substantially greater manufacturing, financial, research and development, personnel and marketing resources than we do. As a result, our competitors may be able to develop competing and/or superior technologies and processes, and compete more aggressively and sustain that competition over a longer period of time than we could. Our technologies and products may be rendered obsolete or uneconomical by technological advances or entirely different approaches developed by one or more of our competitors.

OPERATIONS

Our corporate headquarters is located in Redwood City, California and provides general administrative support to our business and is the center of our research, development and business operations. We have limited internal manufacturing capacity at our headquarters in Redwood City. We expect to rely on third-party manufacturers for commercial production of our biocatalysts for the foreseeable future. Our in-house manufacturing is dedicated to producing both Codex® Biocatalyst Panels and Kits and enzymes for use by our customers in pilot scale production. We also supply initial commercial quantities of biocatalysts for use by our collaborators to produce pharmaceutical intermediates and manufacture biocatalysts that we sell. Please see Note 15 to our consolidated financial statements appearing in Item 8 of this Annual Report on Form 10-K for a description of our revenues and long-lived assets both within and outside of the United States.

Our research and development operations include efforts directed towards engineering protein catalysts, bioprocess development, cellular engineering, biocatalyst screening, metabolites, strain improvement, fermentation development and process engineering. We conduct enzyme evolution, enzyme production development, microbial bioprocess development, cellular engineering, microbial evolution and process engineering evaluations and design primarily at our headquarters in Redwood City, California. For more information on our research and development expenditures, see Item 8 of this Annual Report on Form 10-K. Manufacturing of our enzymes is conducted primarily in three locations, at our in-house facility in Redwood City, California and at third-party contract manufacturing organizations, Lactosan, GmbH & Co. KG (“Lactosan”), in Kapfenberg, Austria and DPhar SpA (“DPhar”) in Agnani, Italy. Generally, we perform smaller scale manufacturing in-house and outsource the larger scale manufacturing and a large percentage of our production of novel enzymes to contract manufacturing organizations.

CUSTOMERS

We rely on a limited number of key customers for the majority of our revenues. Customers that provided 10% or more of our total revenues in any of the past three fiscal years consist of the following:

	Percentage of Total Revenues For The Years Ended December 31,		
	2017	2016	2015
Customers:			
Merck	28%	47%	29%
GSK	*	22%	20%
Novartis	14%	*	*
Nestlé	15%	*	*
Exela	*	*	12%
Tate & Lyle	11%	*	*

** Percentage was less than 10%*

EMPLOYEES

As of December 31, 2017, we had 116 full-time employees and part-time employees worldwide. Of these employees, 66 were engaged in research and development, 19 were engaged in operations and quality control, and 31 were engaged in selling, general and administrative activities. None of our employees is represented by a labor union, and we consider our employee relations to be good.

CORPORATE & AVAILABLE INFORMATION

Our principal corporate offices are located at 200 Penobscot Drive, Redwood City, California 94063 and our telephone number is (650) 421-8100. We were incorporated in Delaware in January 2002. Our internet address is www.codexis.com. The information on, or that can be accessed through, our website is not incorporated by reference into this Annual Report on Form 10-K or any other filings we make with the U.S. Securities and Exchange Commission (the "SEC").

We make available on or through our website certain reports and amendments to those reports that we file with, or furnish to, the SEC in accordance with the Exchange Act. These include our Annual Reports on Form 10-K, our Quarterly Reports on Form 10-Q and our Current Reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act. We make this information available on or through our website free of charge as soon as reasonably practicable after we electronically file the information with, or furnish it to, the SEC. Copies of this information may be obtained at the SEC's Public Reference Room at 100 F Street, NE, Washington, D.C. 20549. Information on the operation of the Public Reference Room may be obtained by calling the SEC at 1-800-SEC-0330. The SEC maintains a website that contains reports, proxy and information statements, and other information regarding our filings, at www.sec.gov. The contents of these websites are not incorporated into this filing. Further, the references to website URLs are intended to be inactive textual references only.

ITEM 1A. RISK FACTORS

You should carefully consider the risks described below together with the other information set forth in this Annual Report on Form 10-K, which could materially affect our business, financial condition or future results. The risks described below are not the only risks facing our company. Risks and uncertainties not currently known to us or that we currently deem to be immaterial also may materially adversely affect our business, financial condition and/or operating results.

Risks Relating to Our Business and Strategy

We have a limited operating history, and the markets in which we participate are changing rapidly, which may make it difficult to evaluate our current business and predict our future performance.

Our company has been in existence since January 2002. From 2002 until 2005, our operations focused on organizing and staffing our company and developing our technology platform. In 2005, we recognized our first revenues from product sales. Since 2005, we have continued to generate revenues, but because our revenue growth has occurred in recent periods, our limited operating history may make it difficult to evaluate our current business and predict our future performance. Additionally, from 2006 to August 2012, a major portion of our business revolved around our research and development collaboration with Shell with respect to advanced biofuels. The Shell collaboration was terminated in August 2012 and did not contribute to our revenues after the termination. As a result of the termination of the Shell collaboration, we undertook a significant restructuring of our operations and refocused our business on the biocatalysis market. In November 2013, we announced that we had begun to wind down our CodeXyme® cellulase enzymes program, and that we had stopped further development of our CodeXol® detergent alcohols program in the third quarter of 2013. As a result of these changes in our business and any changes to our business focus that we may make as we move forward, our operating history in past periods may not provide a basis to evaluate our current business or be indicative of our future performance. We have encountered and will continue to encounter risks and difficulties frequently experienced by young companies in rapidly changing industries. If we do not address these risks successfully, our business will be harmed.

Our quarterly or annual operating results may fluctuate in the future. As a result, we may fail to meet or exceed the expectations of research analysts or investors, which could cause our stock price to decline.

Our financial condition and operating results have varied significantly in the past and may continue to fluctuate from quarter to quarter and year to year in the future due to a variety of factors, many of which are beyond our control. Factors relating to our business that may contribute to these fluctuations include the following factors, as well as other factors described elsewhere in this report:

- our ability to achieve or maintain profitability;
- our relationships with, and dependence on, collaborators in our principal markets;
- our dependence on a limited number of customers;
- our dependence on a limited number of products in our biocatalysis business;
- our reliance on a limited number of contract manufacturers for large scale production of substantially all of our enzyme products;
- our ability to develop and successfully commercialize new products for the biocatalysis market(s);
- our ability to deploy our technology platform in the fine chemicals market;
- the success of our customers' pharmaceutical products in the market and the ability of such customers to obtain regulatory approvals for products and processes;
- our or our customers' ability to obtain regulatory approval for the sale and manufacturing of food products using our enzymes;
- our ability to deploy our technology platform in the *in vitro* molecular diagnostics market;
- our ability to compete if we do not adequately protect our proprietary technologies or if we lose some of our intellectual property rights;
- our ability to avoid infringing the intellectual property rights of third parties;
- our involvement in lawsuits to protect or enforce our patents or other intellectual property rights;
- our ability to enforce our intellectual property rights throughout the world;
- our dependence on, and the need to attract and retain, key management and other personnel;
- our ability to prevent the theft or misappropriation of our biocatalysts, the genes that code for our biocatalysts, know-how or technologies;
- our ability to protect our trade secrets and other proprietary information from disclosure by employees and others;

- our ability to obtain substantial additional capital that may be necessary to expand our business;
- our ability to find a partner for or otherwise advance our biotherapeutic program;
- our customers' ability to pay amounts owed to us in a timely manner;
- our ability to avoid charges to earnings as a result of any impairment of goodwill, intangible assets or other long-lived assets;
- changes in financial accounting standards or practices may cause adverse, unexpected financial reporting fluctuations and affect our reported results of operations;
- our ability to maintain effective internal control over financial reporting;
- our dependency on information technology systems, infrastructure and data;
- our ability to control and to improve product gross margins;
- our ability to protect against risks associated with the international aspects of our business;
- the cost of compliance with European Union chemical regulations;
- potential advantages that our competitors and potential competitors may have in securing funding or developing products;
- our ability to accurately report our financial results in a timely manner;
- results of regulatory tax examinations;
- business interruptions, such as earthquakes and other natural disasters;
- public concerns about the ethical, legal and social ramifications of genetically engineered products and processes;
- our ability to integrate our current business with any businesses that we may acquire in the future;
- our ability to properly handle and dispose of hazardous materials in our business;
- potential product liability claims;
- uncertainties in the interpretation and application of the 2017 Tax Cuts and Jobs Act could materially affect our tax obligations and effective tax rate; and
- our ability to use our net operating loss carryforwards to offset future taxable income.

Due to the various factors mentioned above, and others, the results of any prior quarterly or annual periods should not be relied upon as indications of our future operating performance.

We have a history of net losses and we may not achieve or maintain profitability.

We have incurred net losses since our inception, including losses of $23.0 million in 2017, $8.6 million in 2016 and $7.6 million in 2015. As of December 31, 2017 and 2016, we had an accumulated deficit of $315.1 million and $292.1 million, respectively. If we are unable to expand our biocatalysis business, through new or expanded collaborations, development of new products or services, or increased sales of existing products and services, our net losses may increase and we may never achieve profitability. In addition, some of our collaboration agreements, including our collaboration with Nestlé Health Science, provide for milestone payments and/or future royalty payments, which we will only receive if we and our collaborators develop and commercialize products. We also may fund development of additional proprietary biocatalysis and/or biotherapeutic products. There can be no assurance that any of these products will become commercially viable or that we will ever achieve profitability on a quarterly or annual basis. If we fail to achieve profitability, or if the time required to achieve profitability is longer than we anticipate, we may not be able to continue our business. Even if we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis.

We are dependent on our collaborators, and our failure to successfully manage these relationships could prevent us from developing and commercializing many of our products and achieving or sustaining profitability, and could lead to disagreements with our current or former collaborators.

Our ability to maintain and manage collaborations in our markets is fundamental to the success of our business. We currently have license agreements, research and development agreements, supply agreements and/or distribution agreements with various collaborators. For example, we have ongoing collaborations with GSK, Merck and Nestlé Health Science that are important to our business and financial results. We may have limited or no control over the amount or timing of resources that any collaborator is able or willing to devote to our partnered products or collaborative efforts. Any of our collaborators may fail to perform its obligations. These collaborators may breach or terminate their agreements with us or otherwise fail to conduct their collaborative activities successfully and in a timely manner. Further, our collaborators may not develop products arising out of our collaborative arrangements or devote sufficient resources to the development, manufacture, marketing or sale of these products. Moreover, disagreements with a collaborator could develop, and any conflict with a collaborator could lead to litigation and could reduce our ability to enter into future collaboration agreements and negatively impact our relationships with

one or more existing collaborators. If any of these events occur, especially if they occur in our collaborations with GSK, Merck or Nestlé Health Science, or if we fail to maintain our agreements with our collaborators, we may not be able to commercialize our existing and potential products or grow our business or generate sufficient revenues to support our operations, we may not receive contemplated milestone payments and royalties under the collaboration, and we may be involved in litigation. Our collaboration opportunities could be harmed and our financial condition and results of operations could be negatively affected if:

- we do not achieve our research and development objectives under our collaboration agreements in a timely manner or at all;
- we develop products and processes or enter into additional collaborations that conflict with the business objectives of our other collaborators;
- we, our collaborators and/or our contract manufacturers do not receive the required regulatory and other approvals necessary for the commercialization of the applicable product;
- we disagree with our collaborators as to rights to intellectual property that are developed during the collaboration, or their research programs or commercialization activities;
- we are unable to manage multiple simultaneous collaborations;
- our collaborators or licensees are unable or unwilling to implement or use the technology or products that we provide or license to them;
- our collaborators become competitors of ours or enter into agreements with our competitors;
- our collaborators become unable or less willing to expend their resources on research and development or commercialization efforts due to general market conditions, their financial condition or other circumstances beyond our control; or
- our collaborators experience business difficulties, which could eliminate or impair their ability to effectively perform under our agreements.

Even after collaboration relationships expire or terminate, some elements of the collaboration may survive. For instance, certain rights, licenses and obligations of each party with respect to intellectual property and program materials may survive the expiration or termination of the collaboration. Disagreements or conflicts between and among the parties could develop even though the collaboration has ended. These disagreements or conflicts could result in expensive arbitration or litigation, which may not be resolved in our favor.

Finally, our business could be negatively affected if any of our collaborators or suppliers undergoes a change of control or were to otherwise assign the rights or obligations under any of our agreements.

Our biotherapeutic programs are early stage, highly regulated and expensive. Our ability to obtain additional development partners for the programs, to advance our product candidates to clinical trials and to ultimately receive regulatory approvals is highly uncertain.

We are developing novel biotherapeutic candidates, in particular CDX-6114, our novel oral enzyme product candidate for the treatment of phenylketonuria ("PKU"). The successful development of biotherapeutic candidates involves many risks and uncertainties, requires long timelines and may lead to uncertain results. In addition, drug development is highly regulated and requires areas of expertise and capital resources we do not currently possess. In order to market a drug product in the United States, we must undergo the following process required by the FDA:

- completion of extensive preclinical laboratory tests and preclinical animal studies, all performed in accordance with the Good Laboratory Practice, or GLP, regulations;
- submission to the FDA of an IND, which must become effective before human clinical studies may begin in the United States;
- approval by an independent institutional review board, or IRB, representing each clinical site before each clinical study may be initiated;
- performance of adequate and well-controlled human clinical studies (generally divided into three phases) in accordance with Good Clinical Practice, or GCP, regulations to establish the safety and efficacy of the product candidate for each proposed indication;
- preparation of and submission to the FDA of a new drug application, or NDA after completion of all clinical studies;

- potential review of the product candidate by an FDA advisory committee;
- satisfactory completion of an FDA pre-approval inspection of the manufacturing facilities where the product candidate is produced to assess compliance with current Good Manufacturing Practice, or cGMP, regulations; and
- FDA review and approval of an NDA prior to any commercial marketing or sale of the drug in the United States.

If we fail to comply with applicable FDA or other regulatory requirements at any time during the drug development process, clinical testing, the approval process or after approval, we may become subject to administrative or judicial penalties, including the FDA's refusal to approve a pending application, withdrawal of an approval, warning letters, product recalls, and additional enforcement actions.

In October 2017, we entered into a Global Development, Option and License Agreement with Nestlé Health Science pursuant to which we granted to Nestlé Health Science an option to obtain an exclusive, worldwide, royalty-bearing, sublicensable license to develop and commercialize certain products based on our therapeutic enzyme product candidates for the treatment of hyperphenylalaninemia ("HPA"), including CDX-6114, as well as an exclusive right of first negotiation to obtain an exclusive worldwide license to develop and commercialize any enzyme discovered by us for use in the field of the prevention, diagnosis, treatment and management of inborn errors of amino acid metabolism. HPA is a medical condition characterized by mildly or strongly elevated concentrations of the amino acid phenylalanine in the blood. PKU can result in severe HPA. Our efforts to advance our PKU program, including CDX-6114, and any other biotherapeutic candidates that we develop are subject to numerous risks, including the following:

- The regulatory approval processes of the FDA and comparable foreign authorities are lengthy, time consuming and inherently unpredictable. If we, or Nestlé Health Science, as applicable, are ultimately unable to obtain regulatory approval for CDX-6114 or any other product candidates that we may develop in the future, our business will be harmed. To obtain regulatory approval to market any product candidate, preclinical studies and costly and lengthy clinical trials are required, and the results of the studies and trials are highly uncertain. A failure of one or more pre-clinical or clinical trials can occur at any stage, and many companies that have believed their drug candidates performed satisfactorily in pre-clinical and clinical testing have nonetheless failed to obtain marketing approval of their product candidates.
- We may find it difficult to enroll patients in our clinical trials given the limited number of patients that have PKU. Any enrollment difficulties could delay clinical trials and any potential product approval.
- We may experience difficulty or delay in obtaining the FDA's acceptance of an IND for CDX-6114 or any other product candidates we may seek to enter into clinical development, which would delay initiation of Phase 1 clinical testing. Delays in the commencement or completion of clinical testing could significantly affect our product development costs or the product development costs of our present and any future collaborators. We do not know whether planned clinical trials will begin on time or be completed on schedule, if at all. The commencement and completion of clinical trials can be delayed for a number of reasons. For example, a clinical trial may be suspended or terminated by us, by the Institutional Review Board (IRB) of the institution in which such trial is being conducted, or by the FDA due to a number of factors, including unforeseen safety issues, changes in governmental regulations or lack of adequate funding to continue the clinical trial.
- If Nestlé Health Science does not exercise its option with respect to CDX-6114 or any other product candidates that we develop under our agreement, or if it terminates any development program under its collaboration 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. In addition, without a partner to assist us with the funding and development of our PKU program, we may not have sufficient funds or expertise to advance development of the program on our own.
- We do not have experience in drug development or regulatory matters related to drug development. As a result, we rely or will rely on third parties to conduct our pre-clinical and clinical studies, assist us with drug manufacturing and formulation and perform other tasks for us. If these third parties do not successfully carry out their responsibilities or comply with regulatory requirements, we may receive lower quality products or services, suffer reputational harm and not be able to obtain regulatory approval for CDX-6114 or any other product candidates that we may develop in the future.
- Our efforts to use CodeEvolver® protein engineering technology platform to generate new lead biotherapeutic candidates, whether under our collaboration with Nestlé Health Science or otherwise, may not be successful in creating candidates of value.

- We will be exposed to potential product liability risks through the testing of experimental therapeutics in humans, which may expose us to substantial uninsured liabilities.
- Third parties may develop intellectual property that could limit our ability to develop, market and commercialize CDX-6114, if approved, or any other product candidates that we may develop in the future.
- Changes in methods of treatment of disease, such as gene therapy, could cause us to stop development of our product candidate or reduce or eliminate potential demand for CDX-6114, if approved, or any other product candidates that we may develop in the future.

We are dependent on a limited number of customers.

Our current revenues are derived from a limited number of key customers. For the year ended December 31, 2017 and 2016, customers that each individually contributed 10% or more of our total revenue accounted for 68% and 69% of our total revenues in 2017 and 2016, respectively. We expect a limited number of customers to continue to account for a significant portion of our revenues for the foreseeable future. This customer concentration increases the risk of quarterly fluctuations in our revenues and operating results. The loss or reduction of business from one or a combination of our significant customers could, materially adversely affect our revenues, financial condition and results of operations.

We are dependent on a limited number of products in our protein catalysts business.

Our current product sales are derived from a limited number of protein catalyst products. We expect a limited number of protein catalyst products to continue to account for a significant portion of our product sales for the foreseeable future. This product concentration increases the risk of quarterly fluctuations in our revenues and operating results. The loss or reduction of business of one or a combination of our significant products could materially adversely affect our revenues, financial condition and results of operations.

We are dependent on a limited number of contract manufacturers for large scale production of substantially all of our enzymes.

Manufacturing of our enzymes is conducted primarily in three locations: our in-house facility in Redwood City, California, and at two third-party contract manufacturing organizations, Lactosan, GmbH & Co. KG ("Lactosan"), in Kapfenberg, Austria, and DPhar SpA (“DPhar”), in Agnani, Italy. Generally, we perform smaller scale manufacturing in-house and outsource the larger scale manufacturing to these contract manufacturers. We have limited internal capacity to manufacture enzymes. As a result, we are dependent upon the performance and capacity of third-party manufacturers for the larger scale manufacturing of the enzymes used in our pharmaceutical and fine chemicals business.

Accordingly, we face risks of difficulties with, and interruptions in, performance by third party manufacturers, the occurrence of which could adversely impact the availability, launch and/or sales of our enzymes in the future. Manufacturing delays at a contract manufacturer could negatively affect our business, reputation, results of operations and financial condition. The failure of any contract manufacturer to supply us enzymes on a timely basis, or to manufacture our enzymes in compliance with our specifications or applicable quality requirements or in volumes sufficient to meet demand, would adversely affect our ability to sell pharmaceutical and fine and complex chemicals products, could harm our relationships with our collaborators or customers and could negatively affect our revenues and operating results. We may be forced to secure alternative sources of supply, which may be unavailable on commercially acceptable terms, and could cause delays in our ability to deliver products to our customers, increase our costs and decrease our profit margins.

We currently have supply agreements in place with Lactosan and DPhar. In the absence of a supply agreement, a contract manufacturer will be under no obligation to manufacture our enzymes and could elect to discontinue their manufacture at any time. If we require additional manufacturing capacity and are unable to obtain it in sufficient quantity, we may not be able to increase our product sales, or we may be required to make substantial capital investments to build that capacity or to contract with other manufacturers on terms that may be less favorable than the terms we currently have with our suppliers. If we choose to build our own additional manufacturing facility, it could take two years or longer before our facility is able to produce commercial volumes of our enzymes. Any resources we expend on acquiring or building internal manufacturing capabilities could be at the expense of other potentially more profitable opportunities. In addition, if we contract with other manufacturers, we may experience delays of several months in qualifying them, which could harm our relationships with our collaborators or customers and could negatively affect our revenues or operating results.

If we are unable to develop and commercialize new products for the pharmaceutical, fine chemicals, biotherapeutics and molecular diagnostics markets, our business and prospects will be harmed.

We plan to launch new products for the pharmaceutical, fine chemicals, therapeutics and molecular diagnostics markets. These efforts are subject to numerous risks, including the following:

- customers in these markets may be reluctant to adopt new manufacturing processes that use our enzymes;
- we may be unable to successfully develop the enzymes or manufacturing processes for our products in a timely and cost-effective manner, if at all;
- we may face difficulties in transferring the developed technologies to our customers and the contract manufacturers that we may use for commercial scale production of intermediates and enzymes in these markets;
- the contract manufacturers that we may use may be unable to scale their manufacturing operations to meet the demand for these products and we may be unable to secure additional manufacturing capacity;
- customers may not be willing to purchase these products for these markets from us on favorable terms, if at all;
- we may face product liability litigation, unexpected safety or efficacy concerns and product recalls or withdrawals;
- changes in laws or regulations relating to the pharmaceutical industry or the industries into which we sell our fine chemicals products, including the food industry, could cause us to incur increased costs of compliance or otherwise harm our business;
- our customers' products may experience adverse events or face competition from new products, which would reduce demand for our products;
- we may face pressure from existing or new competitive products; and
- we may face pricing pressures from existing or new competitors, some of which may benefit from government subsidies or other incentives.

Our efforts to deploy our technology platform in the fine chemicals market may fail.

We have recently begun to use our CodeEvolver® protein engineering technology platform to develop new products in the fine chemicals markets. We do not know if we can successfully compete in this new market. This new market is well established and consists of numerous large, well-funded entrenched market participants who have long and established track records and customer relationships. We have currently developed products in the food sector of this market and these products, or any other products that we may develop in the future for the fine chemicals market may not succeed in displacing current products. If we succeed in commercializing new products for the fine chemicals market, we may not generate significant revenues and cash flows from these activities. The failure to successfully deploy products in the fine chemicals space may limit our growth and have a material adverse effect on our financial condition, operating results and business prospects.

Our business could be adversely affected if our customers' products are not received well in the market, if their products, or the processes used by our customers to manufacture their final products, fail to be approved, or if our customers discontinue their development activities for any reason.

Our enzymes are used by our pharmaceutical customers in the manufacture of intermediates and APIs which are then used in the manufacture of final pharmaceutical products by our existing and potential branded and generic drug customers, and by our fine chemicals customers to manufacture food ingredients. Our business could be adversely affected if these final products do not perform in the market as well as expected, or if our customers encounter competition from new entrants into the market with competing, and possibly superior, products. Additionally, many of these pharmaceutical and food products must be reviewed and approved by the FDA in the United States and similar regulatory bodies in other markets prior to commercialization. If our customers who sell branded drugs, which we refer to as innovators, fail to receive regulatory approval for the drugs, fail to receive regulatory approval for new manufacturing processes for previously approved drugs, or decide for business or other reasons to discontinue their drug development activities, our revenues and prospects will be negatively impacted. The process of producing these drugs, and their generic equivalents, is also subject to regulation by the FDA in the United States and equivalent regulatory bodies in other markets. Similarly, if our food ingredient product and other fine chemical customers were to delay or discontinue development on their products, our revenues and prospects will be negatively impacted. If any pharmaceutical or food manufacturing process that uses our enzymes or enzyme technology does not receive required approval by the appropriate regulatory body or if customers decide not to pursue approval, our business could be adversely affected.

Our efforts to deploy our technology in the in vitro molecular diagnostics market may fail.

We have recently begun to use our CodeEvolver® protein engineering technology platform to develop new products for customers using NGS and PCR/qPCR for *in vitro* molecular diagnostic applications. We do not know if we can successfully compete in this new market. This new market is well established and consists of numerous large, well-funded entrenched market participants who have long and established track records and customer relationships. Our first proprietary enzyme for this market, which is designed to improve library preparation for NGS users, and any products that we may develop in the future for this market, may not succeed in displacing current products. If we succeed in commercializing new products for this market, we may not generate significant revenues and cash flows from these activities. The failure to successfully and timely deploy products in this space may limit our growth and have a material adverse effect on our financial condition, operating results and business prospects.

Our ability to compete may decline if we do not adequately protect our proprietary technologies or if we lose some of our intellectual property rights.

Our success depends in part on our ability to obtain patents and maintain adequate protection of our intellectual property for our technologies and products and potential products in the United States and other countries. We have adopted a strategy of seeking patent protection in the United States and in foreign countries with respect to certain of the technologies used in or relating to our products and processes. As such, as of December 31, 2017, we owned or controlled approximately 1,100 issued patents and pending patent applications in the United States and in various foreign jurisdictions. Our intellectual property rights, as of December 31, 2017, have terms that expire between 2018 and 2038. We also have license rights to a number of issued patents and pending patent applications in the United States and in various foreign jurisdictions. Our owned and licensed patents and patent applications include those directed to our enabling technologies and to the methods and products that support our business in the pharmaceuticals manufacturing and complex chemistry markets. We intend to continue to apply for patents relating to our technologies, methods and products as we deem appropriate.

Numerous patents in our portfolio involve complex legal and factual questions and, therefore, enforceability cannot be predicted with any certainty. Issued patents and patents issuing from pending applications may be challenged, invalidated, or circumvented. Moreover, the United States Leahy-Smith America Invents Act (“AIA”), enacted in September 2011, brought significant changes to the United States patent system, which include a change to a “first to file” system from a “first to invent” system and changes to the procedures for challenging issued patents and disputing patent applications during the examination process, among other things. While interference proceedings are possible for patent claims filed prior to March 16, 2013, many of our filings will be subject to the post- and pre-grant proceedings set forth in the AIA, including citation of prior art and written statements by third parties, third party pre-issuance submissions, ex parte reexamination, inter partes review, post-grant review, and derivation proceedings. We may need to utilize the processes provided by the AIA for supplemental examination or patent reissuance. These proceedings could result in substantial cost to us even if the outcome is favorable. Even if successful, any interference may result in loss of certain claims. Any litigation or proceedings could divert our management's time and efforts. Even unsuccessful claims filed by third parties could result in significant legal fees and other expenses, diversion of management time, and disruption in our business. Uncertainties resulting from initiation and continuation of any patent or related litigation could harm our ability to compete. We have not assessed the applicability of the AIA and new regulations on our patent portfolio. These changes could increase the costs and uncertainties surrounding the prosecution of our patent applications and the enforcement or defense of our patent rights.

Additional uncertainty may result from legal precedent handed down by the United States Federal Circuit Court and Supreme Court as they determine legal issues concerning the scope and construction of patent claims and inconsistent interpretation of patent laws by the lower courts. Accordingly, we cannot ensure that any of our pending patent applications will result in issued patents, or even if issued, predict the breadth of the claims upheld in our and other companies' patents. Given that the degree of future protection for our proprietary rights is uncertain, we cannot ensure that: (i) we were the first to invent the inventions covered by each of our pending applications, (ii) we were the first to file patent applications for these inventions, or (iii) the proprietary technologies we develop will be patentable. In addition, unauthorized parties may attempt to copy or otherwise obtain and use our products or technology. Monitoring unauthorized use of our intellectual property is difficult, and we cannot be certain that the steps we have taken will prevent unauthorized use of our technology, particularly in certain foreign countries where the local laws may not protect our proprietary rights as fully as in the United States. Moreover, third parties could practice our inventions in territories where we do not have patent protection. Such third parties may then try to import products made using our inventions into the United States or other territories. If competitors are able to use our technology, our ability to compete effectively could be harmed. In addition, others may independently develop and obtain patents for technologies that are similar to or superior to our technologies. If that happens, we may need to license these technologies, and we may not be able to obtain licenses on reasonable terms, if at all, which could cause harm to our business.

Third parties may claim that we are infringing their intellectual property rights or other proprietary rights, which may subject us to costly and time consuming litigation and prevent us from developing or commercializing our products.

Our commercial success also depends in part on our ability to operate without infringing patents and proprietary rights of third parties, and without breaching any licenses or other agreements that we have entered into with regard to our technologies, products and business. We cannot ensure that patents have not been issued to third parties that could block our ability to obtain patents or to operate as we would like. There may be patents in some countries that, if valid, may block our ability to make, use or sell our products in those countries, or import our products into those countries, if we are unsuccessful in circumventing or acquiring rights to these patents. There also may be claims in patent applications filed in some countries that, if granted and valid, may also block our ability to commercialize products or processes in these countries if we are unable to circumvent or license them.

The industries in which we operate and the biotechnology industry, in particular, are characterized by frequent and extensive litigation regarding patents and other intellectual property rights. Many biotechnology companies have employed intellectual property litigation as a way to gain a competitive advantage. Our involvement in litigation or other intellectual property proceedings inside and outside of the United States, to defend our intellectual property rights or as a result of alleged infringement of the rights of others, may divert our management's time from focusing on business operations and could cause us to spend significant amounts of money. Any potential intellectual property litigation also could force us to do one or more of the following:

- stop selling or using our products or technologies that use the subject intellectual property;
- pay monetary damages or substantial royalties;
- grant cross-licenses to third parties relating to our patents or proprietary rights;
- obtain from the third party asserting its intellectual property rights a license to sell or use the relevant technology, which license may not be available on reasonable terms, or at all; or
- redesign those products or processes that use any allegedly infringing technology, or relocate the operations relating to the allegedly infringing technology to another jurisdiction, which may result in significant cost or delay to us, could be technically infeasible or could prevent us from selling some of our products in the United States or other jurisdictions.

We are aware of some patents and patent applications relating to aspects of our technologies filed by, and issued to, third parties. We cannot assure you that if this third party intellectual property is asserted against us that we would ultimately prevail.

We may be involved in lawsuits to protect or enforce our patents, which could be expensive, time-consuming and unsuccessful.

Competitors may infringe our intellectual property rights or those of our licensors. To prevent infringement or unauthorized use, we have in the past filed, and may in the future be required to file, infringement claims, which can be expensive and time-consuming. See Item 3, "Legal Proceedings." In addition, in a patent infringement proceeding, a court may decide that a patent we own or in-license is not valid, is unenforceable and/or is not infringed. In legal proceedings against a third party to enforce a patent directed at one of our technologies or products, 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. The outcome following legal assertions of invalidity and unenforceability is unpredictable, and prior art could render our patents or those of our licensors invalid. If a defendant were to prevail on a legal assertion of invalidity and/or unenforceability, we would lose at least part, and perhaps all, of the patent protection on such product. Such a loss of patent protection would have a material adverse impact on our business.

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 expenses and reduce the resources available for operations and research and development 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.

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

The laws of some foreign countries where we do business do not protect intellectual property rights to the same extent as the laws of the United States. Many companies have encountered significant problems in protecting and defending intellectual property rights in certain foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents and other intellectual property, particularly those relating to biotechnology and/or bioindustrial technologies. Accordingly, our efforts to protect our intellectual property rights in such countries may be inadequate. This could make it difficult for us to stop the infringement of our patents or misappropriation of our other intellectual property rights. Additionally, 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.

If we lose key personnel, including key management personnel, or are unable to attract and retain additional personnel as needed in the future, it could disrupt the operation of our business, delay our product development programs, harm our research and development efforts, and/or impact our ability to pursue and build collaborations.

Our business involves complex, global operations across a variety of markets and requires a management team and employee workforce that is knowledgeable in the many areas in which we operate. The loss of any key members of our management team or the failure to attract or retain other key employees who possess the requisite expertise for the conduct of our business could prevent us from developing and commercializing our products for our target markets and entering into collaborations or licensing arrangements to execute on our business strategy.

In addition, the loss of any key scientific staff, or the failure to attract or retain other key scientific employees, could prevent us from developing and commercializing our products for our target markets and entering into collaborations or licensing arrangements to execute on our business strategy. We may not be able to attract or retain qualified employees in the future due to the intense competition for qualified personnel among biotechnology and other technology-based businesses or due to the availability of personnel with the qualifications or experience necessary for our business. If we are not able to attract and retain the necessary personnel to accomplish our business objectives, we may experience staffing constraints that will adversely affect our ability to meet the demands of our collaborators and customers in a timely fashion or to support our internal research and development programs. Competition for experienced scientists and other technical personnel from numerous companies and academic and other research institutions may limit our ability to do so on acceptable terms. All of our employees are at-will employees, which mean that either the employee or we may terminate their employment at any time.

Our planned activities will require additional expertise in specific industries and areas applicable to the products and processes developed through our technology platform or acquired through strategic or other transactions, especially in the end markets that we seek to penetrate. These activities will require the addition of new personnel, and the development of additional expertise by existing personnel. The inability to attract personnel with appropriate skills or to develop the necessary expertise could impair our ability to grow our business.

If our protein catalysts, or the genes that code for our protein catalysts, are stolen, misappropriated or reverse engineered, others could use these biocatalysts or genes to produce competing products.

Third parties, including our contract manufacturers, customers and those involved in shipping our protein catalysts, often have custody or control of our protein catalysts. If our protein catalysts, or the genes that code for our protein catalysts, were stolen, misappropriated or reverse engineered, they could be used by other parties who may be able to reproduce these protein catalysts for their own commercial gain. If this were to occur, it may be difficult for us to challenge this type of use, especially in countries with limited intellectual property protection or in countries in which we do not have patents covering the misappropriated biocatalysts.

Confidentiality agreements with employees and others may not adequately prevent disclosures of trade secrets and other proprietary information.

We rely in part on trade secret protection to protect our confidential and proprietary information and processes. However, trade secrets are difficult to protect. We have taken measures to protect our trade secrets and proprietary information, but these measures may not be effective. We require employees and consultants to execute confidentiality agreements upon the commencement of an employment or consulting arrangement with us. These agreements generally require that all confidential information developed by the individual or made known to the individual by us during the course of the individual’s

relationship with us be kept confidential and not disclosed to third parties. These agreements also generally provide that inventions conceived by the individual in the course of rendering services to us shall be our exclusive property. Nevertheless, our proprietary information may be disclosed, third parties could reverse engineer our biocatalysts and others may independently develop substantially equivalent proprietary information and techniques or otherwise gain access to our trade secrets. Costly and time-consuming litigation could be necessary to enforce and determine the scope of our proprietary rights, and failure to obtain or maintain trade secret protection could adversely affect our competitive business position.

We may need additional capital in the future in order to expand our business.

Our future capital requirements may be substantial, particularly as we continue to develop our business. Although we believe that, based on our current level of operations, our existing cash, cash equivalents and marketable securities will provide adequate funds for ongoing operations, planned capital expenditures and working capital requirements for at least the next 12 months, we may need additional capital if our current plans and assumptions change. Our need for additional capital will depend on many factors, including the financial success of our biocatalysis business, our spending to develop and commercialize new and existing products and the amount of collaboration funding we may receive to help cover the cost of such expenditures, the effect of any acquisitions of other businesses, technologies or facilities that we may make or develop in the future, our spending on new market opportunities, including opportunities in the fine chemicals markets, and the filing, prosecution, enforcement and defense of patent claims. If our capital resources are insufficient to meet our capital requirements, and we are unable to enter into or maintain collaborations with partners that are able or willing to fund our development efforts or commercialize any products that we develop or enable, we will have to raise additional funds to continue the development of our technology and products and complete the commercialization of products, if any, resulting from our technologies. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. We may seek to obtain such additional capital through equity offerings, debt financings, credit facilities and/or strategic collaborations. If future financings involve the issuance of equity securities, our existing stockholders would suffer dilution. If we raise debt financing or enter into credit facilities, we may be subject to restrictive covenants that limit our ability to conduct our business. Strategic collaborations may also place restrictions on our business. We may not be able to raise sufficient additional funds on terms that are favorable to us, if at all. If we fail to raise sufficient funds and fail to generate sufficient revenues to achieve planned gross margins and to control operating costs, our ability to fund our operations, take advantage of strategic opportunities, develop products or technologies, or otherwise respond to competitive pressures could be significantly limited. If this happens, we may be forced to delay or terminate research or development programs or the commercialization of products resulting from our technologies, curtail or cease operations or obtain funds through collaborative and licensing arrangements that may require us to relinquish commercial rights, or grant licenses on terms that are not favorable to us. If adequate funds are not available, we will not be able to successfully execute our business plan or continue our business.

If we are unable to comply with the terms of our credit facility, our business and financial condition would be materially and adversely affected.

On June 30, 2017 we entered into a credit facility ("Credit Facility") financing arrangement secured by a lien on substantially all of our personal property other than our intellectual property. Although we have made no loans or draws under the Credit Facility as of December 31, 2017, the Credit Facility includes affirmative and negative covenants including, among others, covenants requiring us to achieve consolidated product revenues at minimum levels and restricting our ability to transfer collateral, incur additional indebtedness, engage in mergers or acquisitions, pay dividends or make other distributions, make investments, create liens and sell assets. The Credit Facility also includes events of default including, among other things, our failure to pay any amounts due under the Credit Facility, a breach of covenants under the Credit Facility, our insolvency, a material adverse change, the occurrence of any default under certain other indebtedness in an amount greater than $250,000 and a final judgment against us in an amount greater than $250,000. If an event of default occurs, it could cause our obligations to become immediately due and payable and our lender would be entitled to foreclose against the collateral securing the indebtedness, including our cash. If our indebtedness were to be accelerated, we may be unable to repay such debt and, therefore, such acceleration could materially and adversely affect our business and financial condition. For more information regarding our compliance with our financial covenants, see “Management’s Discussion and Analysis of Financial Condition and Results of Operations.”

Debt service obligation may place us at a competitive disadvantage in our industry.

Draws under the Credit Facility would create debt service obligations for us. Although we have not drawn on the Credit Facility to date, any future draws under the Credit Facility and the related debt service requirements could adversely affect our ability to

operate our business and may limit our ability to take advantage of potential business opportunities. For example, the Credit Facility presents the following risks, certain of which apply regardless of whether we draw on the Credit Facility:

- we may be required to use a portion of our cash flow from operations to make debt service payments, thereby reducing the availability of our cash flow to fund working capital, capital expenditures, product development efforts, research and development, and other general corporate requirements;

- our interest expense could increase if prevailing interest rates increase, because a portion of draws which could be made under the Credit Facility bear interest at floating rates;

- the Credit Facility could reduce our flexibility to adjust to changing business conditions or obtain additional financing to fund working capital, capital expenditures, product development efforts, research and development, and other general corporate requirements; and

- restrictive covenants in our Credit Facility, which apply regardless of whether we draw down under the facility, limit our ability to, among other things, transfer collateral, incur additional indebtedness, engage in mergers or acquisitions, pay dividends or make other distributions, make investments, create liens and sell assets.

Our revenues, financial condition and results of operations may also be adversely affected if one or more of our customers is delayed in paying, or becomes unable to pay, for our delivered products on a timely basis.

Certain of our customers may become subject to financial and other challenges that affect their cash flow. If these customers fail to pay us on a timely basis it may cause our financial results to fluctuate. Failure by such customers to pay us on timely basis, or at all, would adversely impact our financial condition.

If goodwill or other long-lived assets become impaired we may be required to record a significant charge to earnings.

Our total assets reflect goodwill of $3.2 million and other long-lived assets of $3.1 million as of December 31, 2017. Under accounting principles generally accepted in the United States ("GAAP"), we review goodwill for impairment on at least an annual basis and at any interim date whenever events or changes in circumstances indicate that the carrying value may not be recoverable. We review our long lived assets with finite lives for impairment whenever events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable. Events or changes in circumstances (i.e., information that indicates an impairment might exist) could include: a significant decrease in the market price of our common stock; current period cash flow losses or operating losses combined with a history of losses or a forecast of continuing losses associated with the use of the assets; slower growth rates in our industry; significant adverse changes in the business climate or legal factors; accumulation of costs significantly in excess of the amount originally expected for the acquisition or construction of the assets; loss of significant customers or partners; or the current expectation that the assets will more likely than not be sold or disposed of significantly before the end of their estimated useful life. We tested long-lived assets for impairment as of December 31, 2017. Based on our analysis, we determined that the fair value of the assets exceeded their carrying value and that no impairment was necessary as of December 31, 2017. Nevertheless, we may experience additional events or changes in circumstances in the future that we determine to be indicators of impairment and that may in turn require us to undertake impairment analysis in future periods. Depending on the circumstances and judgments made at such future time, the outcome of the analysis may require us to recognize impairment.

We may be required to record a significant charge to earnings in our financial statements during the period in which any impairment of our goodwill or other long-lived assets is determined, resulting in an adverse impact on our financial position and results of operations.

Changes in financial accounting standards or practices may cause adverse, unexpected financial reporting fluctuations and affect our reported results of operations.

Financial accounting standards may change or their interpretation may change. A change in accounting standards or practices can have a significant effect on our reported results and may even affect our reporting of transactions completed before the change becomes effective. Changes to existing rules or the re-examining of current practices may adversely affect our reported financial results or the way we conduct our business. In particular, in order to be able to comply with the requirements of the revenue recognition standard under Accounting Standards Codification, or ASC 606, we have been updating and enhancing our internal accounting processes and our internal controls over financial reporting. This has required, and will continue to require, additional investments by us, and may require incremental resources that could increase our operating costs in future periods.

Further, the timing of recognition for our product sales under certain license and supply agreements and research and development revenues, on or after January 1, 2018, will change as a result of the new ASC 606 standard.

If we are unable to maintain effective internal control over financial reporting in the future, the accuracy and timeliness of our financial reporting may be adversely affected.

Section 404 of the Sarbanes-Oxley Act of 2002 requires companies to conduct a comprehensive evaluation of their disclosure controls and procedures over financial reporting. At the end of each fiscal year, we must perform an evaluation of our disclosure controls and procedures over financial reporting, include in our annual report the results of the evaluation, and have our external auditors publicly attest to such evaluation.

We have identified material weaknesses and other control deficiencies in the past, and while the material weaknesses have since been remediated, we cannot assure you that in the future additional material weaknesses or significant deficiencies will not exist or otherwise be discovered. If other deficiencies are discovered in the future, our ability to accurately and timely report our financial position, results of operations or cash flows could be impaired, which could result in late filings of our annual and quarterly reports under the Exchange Act, restatements of our consolidated financial statements, a decline in our stock price, suspension or delisting of our common stock by The NASDAQ Stock Market, or other material adverse effects on our business, reputation, results of operations, financial condition or liquidity.

We are dependent on information technology systems, infrastructure and data.

We are dependent upon information technology systems, infrastructure and data. The multitude and complexity of our computer systems make them inherently vulnerable to service interruption or destruction, malicious intrusion and random attack. Likewise, data privacy or security breaches by employees or others may pose a risk that sensitive data, including our intellectual property, trade secrets or personal information of our employees, customers or other business partners may be exposed to unauthorized persons or to the public. Cyberattacks are increasing in their frequency, sophistication and intensity. Cyberattacks could include the deployment of harmful malware, denial-of-service, social engineering and other means to affect service reliability and threaten data confidentiality, integrity and availability. Our business partners face similar risks and any security breach of their systems could adversely affect our security posture. While we have invested, and continue to invest, in the protection of our data and information technology infrastructure, there can be no assurance that our efforts will prevent service interruptions, or identify breaches in our systems, that could adversely affect our business and operations and/or result in the loss of critical or sensitive information, which could result in financial, legal, business or reputational harm to us. In addition, our liability insurance may not be sufficient in type or amount to cover us against claims related to security breaches, cyberattacks and other related breaches.

Our product gross margins are variable and may decline from quarter to quarter.

Our product gross margins have varied significantly in the past and may continue to fluctuate from quarter to quarter and year to year in the future due to a variety of factors, including product mix, pricing pressure from our pharmaceutical customers and competition from other products or technologies. This variability may have a material adverse impact on our operating results and financial condition and cause our stock price to decline.

We face risks associated with our international business.

While we have a limited number of employees located outside of the United States, we are and will continue to be dependent upon contract manufacturers located outside of the United States. In addition, we have customers and partners located outside of the United States. Conducting business internationally exposes us to a variety of risks, including:

- changes in or interpretations of foreign regulations that may adversely affect our ability to sell our products, repatriate profits to the United States or operate our foreign-located facilities;
- the imposition of tariffs;
- the imposition of limitations on, or increase of, withholding and other taxes on remittances and other payments by foreign subsidiaries or joint ventures;
- the imposition of limitations on genetically-engineered products or processes and the production or sale of those products or processes in foreign countries;
- currency exchange rate fluctuations;
- uncertainties relating to foreign laws, regulations and legal proceedings including tax, import/export, anti-corruption and exchange control laws;

- the availability of government subsidies or other incentives that benefit competitors in their local markets that are not available to us;
- increased demands on our limited resources created by our operations may constrain the capabilities of our administrative and operational resources and restrict our ability to attract, train, manage and retain qualified management, technicians, scientists and other personnel;
- economic or political instability in foreign countries;
- difficulties associated with staffing and managing foreign operations; and
- the need to comply with a variety of United States and foreign laws applicable to the conduct of international business, including import and export control laws and anti-corruption laws.

Compliance with European Union chemical regulations could be costly and adversely affect our business and results of operations.

Some of our products are subject to the European Union regulatory regime known as The Registration, Evaluation and Authorization of Chemicals ("REACH"). REACH mandates that certain chemicals manufactured in, or imported into, the European Union be registered and evaluated for their potential effects on human health and the environment. Under REACH, we and our contract manufacturers located in the European Union are required to register certain of our products based on the quantity of such product imported into or manufactured in the European Union and on the product's intended end-use. The registration, evaluation and authorization process under REACH can be costly and time consuming. Problems or delays in the registration, evaluation or authorization process under REACH could delay or prevent the manufacture of some of our products in, or the importation of some of our products into, the European Union, which could adversely affect our business and results of operations. In addition, if we or our contract manufacturers fail to comply with REACH, we may be subject to penalties or other enforcement actions, which could have a material adverse effect on our business and results of operations.

We or our customers may not be able to obtain regulatory approval for the use of our products in food and food ingredients, if required, and, even if approvals are obtained, complying on an ongoing basis with the numerous regulatory requirements applicable to these products will be time-consuming and costly.

The products that we develop for our food and food ingredient customers are, and any other products that we may develop for the food and food ingredients market will likely be, subject to regulation by various government agencies, including the FDA, state and local agencies and similar agencies outside the United States, as well as religious compliance certifying organizations. Food ingredients are regulated by the FDA either as food additives or as substances generally recognized as safe ("GRAS"). A substance can be listed or affirmed as GRAS by the FDA or self-affirmed by its manufacturer upon determination that independent qualified experts would generally agree that the substance is GRAS for a particular use. While we generally self-affirm GRAS status for the products that we develop for the food market, our customer(s) will need to submit a GRAS Notice of Determination for its final commercial product. There can be no assurance that our customer(s) will not receive any objections from the FDA to their Notice of Determination. If the FDA were to disagree with our customer's determination, they could ask our customer to voluntarily withdraw the final commercial product from the market or could initiate legal action to halt its sale. Such actions by the FDA could have an adverse effect on our business, financial condition, and results of our operations. Food ingredients that are not GRAS are regulated as food additives and require FDA approval prior to commercialization. The food additive petition process is generally expensive and time consuming, with approval, if secured, potentially taking years.

Changes in regulatory requirements, laws and policies, or evolving interpretations of existing regulatory requirements, laws and policies, may result in increased compliance costs, delays, capital expenditures and other financial obligations that could adversely affect our business or financial results.

We expect to encounter regulations in most if not all of the countries in which we may seek to sell our products which are used in food and food ingredients, and we cannot be sure that we or our customers will be able to obtain necessary approvals in a timely manner or at all. If our existing and future products which are used in food and food ingredients do not meet applicable regulatory requirements in a particular country or at all, then we may not be able to commercialize them and our business will be adversely affected. The various regulatory schemes applicable to our products which are used in food and food ingredients will continue to apply following initial approval for sale, including FDA requirements for food safety, mandatory labeling, and certain nutrient content or health claims made about the product. Monitoring regulatory changes and ensuring our ongoing compliance with applicable requirements will be time-consuming and may affect our results of operations. If we fail to comply with such requirements on an ongoing basis, we may be subject to fines or other penalties, or may be prevented from selling our products which are used in food and food ingredients and our business may be harmed.

Competitors and potential competitors who have greater resources and experience than we do may develop products and technologies that make ours obsolete or may use their greater resources to gain market share at our expense.

The biocatalysis industry and each of our target markets are characterized by rapid technological change. Our future success will depend on our ability to maintain a competitive position with respect to technological advances. In addition, as we enter new markets, we will face new competition and will need to adapt to competitive factors that may be different from those we face today.

We are aware that other companies, including Royal DSM, N.V. ("DSM"), BASF, and Novozymes have alternative methods for obtaining and generating genetic diversity or use mutagenesis techniques to produce genetic diversity. Academic institutions such as the California Institute of Technology, the Max Planck Institute and the Austrian Centre of Industrial Biotechnology are also working in this field. Technological development by others may result in our products and technologies, as well as products developed by our customers using our biocatalysts, becoming obsolete.

Our primary competitors in the biocatalysis for pharmaceutical products are companies marketing either conventional, non-enzymatic processes or biocatalytic enzymes to manufacturers of pharmaceutical intermediates and APIs, and also existing in-house technologies (both biocatalysts and conventional catalysts) within our client and potential client companies. The principal methods of competition and competitive differentiation in this market are price, product quality and performance, including manufacturing yield, safety and environmental benefits, and speed of delivery of product. Pharmaceutical manufacturers that use biocatalytic processes can face increased competition from manufacturers that use more conventional processes and/or manufacturers that are based in regions (such as India and China) with lower regulatory, safety and environmental costs.

The market for the manufacture and supply of APIs and intermediates is large with many established companies. These companies include many of our large innovator and generic pharmaceutical customers, such as Merck, GSK, Pfizer, Bristol Myers, Squibb and Teva Pharmaceutical Industries Ltd., which have significant internal research and development efforts directed at developing processes to manufacture APIs and intermediates. The processes used by these companies include classical conventional organic chemistry reactions, chemo catalytic reactions, biocatalytic reactions or combinations thereof. Our biocatalytic based manufacturing processes must compete with these internally developed routes. Additionally, we also face competition from companies developing and marketing conventional catalysts such as Solvias Inc., BASF and Takasago International Corporation.

The market for supplying enzymes for use in pharmaceutical manufacturing is quite fragmented. There is competition from large industrial enzyme companies, such as Novozymes, as well as subsidiaries of larger CRO/CMOs, such as DSM, Cambrex Corporation and Almac Group Ltd. There is also competition in the customized and optimized enzyme area from several smaller companies, such as BRAIN AG, Arzeda, c-LEcta GmbH, Gingko Bioworks and Evocatal GmbH.

We entered the fine chemicals market in 2013, by applying our protein engineering technology in the food market. We face similar forms of competition in this market as in the pharmaceutical markets with the exception that the risk of losing opportunities to larger competitors in fine chemicals is greater given the larger scale of opportunities available in the fine chemicals market compared to the pharmaceutical market. Our significant competitors in the fine chemicals markets include companies that have been in these marketplaces for many years, such as DuPont Industrial Biosciences (DuPont Genencor), DSM, Novozymes and A.B. Enzymes. These companies have greater resources in these markets than we do and have long-term supply arrangements already in place with customers. Our ability to compete in these markets may be limited by our relatively late entrance. We also face competition in both the fine chemicals and pharmaceutical markets from emerging companies offering whole cell metabolic pathway approaches to these markets.

There are numerous companies that participate in the biotherapeutics market generally and the PKU market specifically. Many of these companies are large, successful and well-capitalized. BioMarin Pharmaceutical Inc. ("BioMarin") and Daiichi Sankyo Company market Kuvan® in the United States, Europe and Japan for the treatment of a certain type of PKU. The FDA is currently reviewing a biologics license application ("BLA") from BioMarin for an injectable enzyme substitution therapy for the potential treatment of PKU. Shire Plc, Genzyme / Sanofi S.A. and other companies market or are actively developing new biotherapeutics. There are numerous companies that are developing other forms of therapeutics, such as small molecules and gene therapies, which could compete with biotherapeutics.

Our ability to compete successfully in any of these markets will depend on our ability to develop proprietary products that reach the market in a timely manner and are technologically superior to and/or are less expensive than other products on the market. Many of our competitors have substantially greater production, financial, research and development, personnel and marketing resources than we do. They also started developing products earlier than we did, which may allow them to establish blocking intellectual property positions or bring products to market before we can. In addition, certain of our competitors may also benefit from local government subsidies and other incentives that are not available to us. As a result, our competitors may

be able to develop competing and/or superior technologies and processes, and compete more aggressively and sustain that competition over a longer period of time than we could. Our technologies and products may be rendered obsolete or uneconomical by technological advances or entirely different approaches developed by one or more of our competitors. We cannot be certain that any products we develop in the future will compare favorably to products offered by our competitors or that our existing or future products will compare favorably to any new products that are developed by our competitors. As more companies develop new intellectual property in our markets, the possibility of a competitor acquiring patent or other rights that may limit our products or potential products increases, which could lead to litigation.

Our limited resources relative to many of our competitors may cause us to fail to anticipate or respond adequately to new developments and other competitive pressures. This failure could reduce our competitiveness and market share, adversely affect our results of operations and financial position, and prevent us from obtaining or maintaining profitability.

We must rely on our suppliers, contract manufacturers and customers to deliver timely and accurate information in order to accurately report our financial results in the time frame and manner required by law.

We need to receive timely, accurate and complete information from a number of third parties in order to accurately report our financial results on a timely basis. We rely on suppliers and certain contract manufacturers to provide us with timely and accurate information regarding our inventories and manufacturing cost information, and we rely on current and former collaborators to provide us with product sales and cost saving information in connection with royalties owed to us. Any failure to receive timely information from one or more of these third parties could require that we estimate a greater portion of our revenues and other operating performance metrics for the period, which could cause our reported financial results to be incorrect. Moreover, if the information that we receive is not accurate, our financial statements may be materially incorrect and may require restatement, and we may not receive the full amount of revenues that we are entitled to under these arrangements. Although we typically have audit rights with these parties, performing such an audit could be harmful to our collaborative relationships, expensive and time consuming and may not be sufficient to reveal any discrepancies in a timeframe consistent with our reporting requirements.

Our results of operations may be adversely affected by the results of regulatory tax examinations.

We are subject to value added tax, customs tax, sales and use tax, withholding tax, payroll tax, income tax and other taxes in connection with the operation of our business. Regulators from the various jurisdictions in which we operate periodically perform audits, and we are regularly subject to, and are currently undergoing, audits and assessments by tax authorities in the United States and foreign jurisdictions for prior tax years. Although we believe our tax estimates are reasonable, and we intend to defend our positions if necessary, the final outcome of tax audits and related proceedings is inherently uncertain and could be materially different than that reflected in our historical income tax provisions and accruals. Moreover, we could be subject to assessments of substantial additional taxes and/or fines or penalties relating to ongoing or future audits. The adverse resolution of any audits or related proceedings could have an adverse effect on our financial position and results of operations.

Business interruptions could delay us in the process of developing our products and could disrupt our sales.

Our headquarters is located in the San Francisco Bay Area near known earthquake fault zones and is vulnerable to significant damage from earthquakes. We are also vulnerable to other types of natural disasters and other events that could disrupt our operations, such as riot, civil disturbances, war, terrorist acts, flood, infections in our laboratory or production facilities or those of our contract manufacturers and other events beyond our control. We do not carry insurance for earthquakes and we may not carry sufficient business interruption insurance to compensate us for losses that may occur. Any losses or damages we incur could have a material adverse effect on our cash flows and success as an overall business.

Ethical, legal and social concerns about genetically engineered products and processes could limit or prevent the use of our products, processes, and technologies and limit our revenues.

Some of our products and processes are genetically engineered or involve the use of genetically engineered products or genetic engineering technologies. If we and/or our collaborators are not able to overcome the ethical, legal, and social concerns relating to genetic engineering, our products and processes may not be accepted. Any of the risks discussed below could result in increased expenses, delays, or other impediments to our programs or the public acceptance and commercialization of products and processes dependent on our technologies or inventions. Our ability to develop and commercialize one or more of our technologies, products, or processes could be limited by the following factors:

- public attitudes about the safety and environmental hazards of, and ethical concerns over, genetic research and genetically engineered products and processes, which could influence public acceptance of our technologies, products and processes;

- public attitudes regarding, and potential changes to laws governing ownership of genetic material, which could harm our intellectual property rights with respect to our genetic material and discourage collaborators from supporting, developing, or commercializing our products, processes and technologies; and
- governmental reaction to negative publicity concerning genetically modified organisms, which could result in greater government regulation of genetic research and derivative products. The subject of genetically modified organisms has received negative publicity, which has aroused public debate. This adverse publicity could lead to greater regulation and trade restrictions on imports of genetically altered products. The protein catalysts that we develop have significantly enhanced characteristics compared to those found in naturally occurring enzymes or microbes. While we produce our biocatalysts only for use in a controlled industrial environment, the release of such biocatalysts into uncontrolled environments could have unintended consequences. Any adverse effect resulting from such a release could have a material adverse effect on our business and financial condition, and we may have exposure to liability for any resulting harm.

If we engage in any acquisitions, we will incur a variety of costs and may potentially face numerous risks that could adversely affect our business and operations.

We have made acquisitions in the past, and if appropriate opportunities become available, we expect to acquire additional businesses, assets, technologies, or products to enhance our business in the future. For example, in October 2010, we acquired substantially all of the patents and other intellectual property rights associated with Maxygen's directed evolution technology.

In connection with any future acquisitions, we could:

- issue additional equity securities, which would dilute our current stockholders;
- incur substantial debt to fund the acquisitions;
- use our cash to fund the acquisitions; or
- assume significant liabilities including litigation risk.

Acquisitions involve numerous risks, including problems integrating the purchased operations, technologies or products, unanticipated costs and other liabilities, diversion of management's attention from our core businesses, adverse effects on existing business relationships with current and/or prospective collaborators, customers and/or suppliers, risks associated with entering markets in which we have no or limited prior experience and potential loss of key employees. We do not have extensive experience in managing the integration process and we may not be able to successfully integrate any businesses, assets, products, technologies, or personnel that we might acquire in the future without a significant expenditure of operating, financial and management resources, if at all. The integration process could divert management's time from focusing on operating our business, result in a decline in employee morale and cause retention issues to arise from changes in compensation, reporting relationships, future prospects or the direction of the business. Acquisitions may also require us to record goodwill and non-amortizable intangible assets that will be subject to impairment testing on a regular basis and potential periodic impairment charges, incur amortization expenses related to certain intangible assets, and incur large and immediate write offs and restructuring and other related expenses, all of which could harm our operating results and financial condition. In addition, we may acquire companies that have insufficient internal financial controls, which could impair our ability to integrate the acquired company and adversely impact our financial reporting. If we fail in our integration efforts with respect to any of our acquisitions and are unable to efficiently operate as a combined organization, our business and financial condition may be adversely affected.

We use hazardous materials in our business and we must comply with environmental laws and regulations. Any claims relating to improper handling, storage or disposal of these materials or noncompliance of applicable laws and regulations could be time consuming and costly and could adversely affect our business and results of operations.

Our research and development and commercial processes involve the use of hazardous materials, including chemical, radioactive, and biological materials. Our operations also produce hazardous waste. We cannot eliminate entirely the risk of accidental contamination or discharge and any resultant injury from these materials. Federal, state, local and foreign laws and regulations govern the use, manufacture, storage, handling and disposal of, and human exposure to, these materials. We may be sued for any injury or contamination that results from our use or the use by third parties of these materials, and our liability may exceed our total assets. Although we believe that our activities comply in all material respects with environmental laws, there can be no assurance that violations of environmental, health and safety laws will not occur in the future as a result of human error, accident, equipment failure or other causes. Compliance with applicable environmental laws and regulations may be expensive, and the failure to comply with past, present, or future laws could result in the imposition of fines, third party property damage, product liability and personal injury claims, investigation and remediation costs, the suspension of production, or a cessation of operations, and our liability may exceed our total assets. Liability under environmental laws can

be joint and several and without regard to comparative fault. Environmental laws could become more stringent over time imposing greater compliance costs and increasing risks and penalties associated with violations, which could impair our research, development or production efforts and harm our business. In addition, we may have to indemnify some of our customers or suppliers for losses related to our failure to comply with environmental laws, which could expose us to significant liabilities.

We may be sued for product liability.

The design, development, manufacture and sale of our products involve an inherent risk of product liability claims and the associated adverse publicity. For example, we may be named directly in product liability suits relating to drugs that are produced using our enzymes or that incorporate our intermediates and APIs. The biocatalysts, pharmaceutical intermediates and APIs that we produce or are produced for us by our manufacturing partners could be subject to quality control or contamination issues of which we are not aware. Claims could be brought by various parties, including customers who are purchasing products directly from us, other companies who purchase products from our customers or by the end users of the drugs. We could also be named as co-parties in product liability suits that are brought against our contract manufacturers who manufacture our enzymes, pharmaceutical intermediates and APIs. Insurance coverage is expensive and may be difficult to obtain, and may not be available in the future on acceptable terms, or at all. We cannot assure you that any contract manufacturer that we have used in the past or shall use in the future has or will have adequate insurance coverage to cover against potential claims. In addition, although we currently maintain product liability insurance for our products in amounts we believe to be commercially reasonable, if the coverage limits of these insurance policies are not adequate, a claim brought against us, whether covered by insurance or not, could have a material adverse effect on our business, results of operations, financial condition and cash flows. This insurance may not provide adequate coverage against potential losses, and if claims or losses exceed our liability insurance coverage, we may go out of business. Moreover, we have agreed to indemnify some of our customers for certain claims that may arise out of the use of our products, which could expose us to significant liabilities.

Uncertainties in the interpretation and application of the 2017 Tax Cuts and Jobs Act could materially affect our tax obligations and effective tax rate.

The 2017 Tax Cuts and Jobs Act (the "Tax Act") was enacted on December 22, 2017, and significantly changed how the U.S. imposes income tax on multinational corporations. Changes include, but are not limited to, a corporate tax rate decrease from 35% to 21% effective for tax years beginning after December 31, 2017, the transition of U.S. international taxation from a worldwide tax system to a partially territorial system, and a one-time transition tax on the mandatory deemed repatriation of accumulated foreign earnings as of December 31, 2017. The U.S. Department of Treasury has broad authority to issue regulations and interpretative guidance that may significantly impact how we will apply the law and impact our results of operations in the period issued. The Tax Act requires complex computations not previously required under U.S. tax law. As such, the application of accounting guidance for such items is currently uncertain. Further, compliance with the Tax Act and the accounting for such provisions require accumulation of information not previously required or regularly produced. As a result, we have provided a provisional estimate on the effect of the Tax Act in our financial statements. As additional regulatory guidance is issued by the applicable taxing authorities, as accounting treatment is clarified, and as we perform additional analysis on the application of the law, and refine estimates in calculating the effect of the Tax Act, our final analysis, which will be recorded in the period completed, may be different from our current provisional amounts, which could materially affect our tax obligations and effective tax rate.

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

In general, under Section 382 of the Internal Revenue Code of 1986, as amended (the "Code"), a corporation that undergoes an "ownership change" is subject to limitations on its ability to utilize its pre-change net operating loss carryforwards ("NOLs"), to offset future taxable income. If the Internal Revenue Service challenges our analysis that our existing NOLs are not subject to limitations arising from previous ownership changes, our ability to utilize NOLs could be limited by Section 382 of the Code. Future changes in our stock ownership, some of which are outside of our control, could result in an ownership change under Section 382 of the Code. Furthermore, our ability to utilize NOLs of companies that we may acquire in the future may be subject to limitations. For these reasons, we may not be able to utilize a material portion of the NOLs reflected in our financial statements, even if we attain profitability.

Risks Related to Owning our Common Stock

We are subject to anti-takeover provisions in our certificate of incorporation and bylaws and under Delaware law that could delay or prevent an acquisition of our company, even if the acquisition would be beneficial to our stockholders.

Provisions in our amended and restated certificate of incorporation and our bylaws may delay or prevent an acquisition of us. Among other things, our amended and restated certificate of incorporation and bylaws provide for a board of directors which is divided into three classes, with staggered three-year terms and provide that all stockholder action must be effected at a duly called meeting of the stockholders and not by a consent in writing, and further provide that only our board of directors, the chairman of the board of directors, our chief executive officer or president may call a special meeting of the stockholders. In addition, our amended and restated certificate of incorporation allows our board of directors, without further action by our stockholders, to issue up to 5,000,000 shares of preferred stock in one or more series and to fix the rights, preferences, privileges and restrictions thereof. These provisions may also frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors, who are responsible for appointing the members of our management team. Furthermore, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law which prohibits, with some exceptions, stockholders owning in excess of 15% of our outstanding voting stock from merging or combining with us. Finally, our charter documents establish advanced notice requirements for nominations for election to our board of directors and for proposing matters that can be acted upon at stockholder meetings. Although we believe these provisions together provide for an opportunity to receive higher bids by requiring potential acquirers to negotiate with our board of directors, they would apply even if an offer to acquire our company may be considered beneficial by some stockholders.

Concentration of ownership among our existing officers, directors and principal stockholders may prevent other stockholders from influencing significant corporate decisions and depress our stock price.

Based on the number of shares outstanding as of December 31, 2017, our officers, directors and stockholders who hold at least 5% of our stock together beneficially own approximately 39% of our outstanding common stock. If these officers, directors, and principal stockholders or a group of our principal stockholders act together, they will be able to exert a significant degree of influence over our management and affairs and control matters requiring stockholder approval, including the election of directors and approval of mergers or other business combination transactions. The interests of this concentration of ownership may not always coincide with our interests or the interests of other stockholders. For instance, officers, directors, and principal stockholders, acting together, could cause us to enter into transactions or agreements that we would not otherwise consider. Similarly, this concentration of ownership may have the effect of delaying or preventing a change in control of our company otherwise favored by our other stockholders. As of December 31, 2017, one stockholder beneficially owned approximately 14% of our common stock in the aggregate.

Our share price may be volatile which may cause the value of our common stock to decline and subject us to securities class action litigation.

The market price of shares of our common stock could be subject to wide fluctuations in response to many risk factors listed in this section, and others beyond our control, including:

- actual or anticipated fluctuations in our financial condition and operating results;
- the position of our cash, cash equivalents and marketable securities;
- actual or anticipated changes in our growth rate relative to our competitors;
- actual or anticipated fluctuations in our competitors' operating results or changes in their growth rate;
- announcements of technological innovations by us, our collaborators or our competitors;
- announcements by us, our collaborators or our competitors of significant acquisitions or dispositions, strategic partnerships, joint ventures or capital commitments;
- additions or losses of one or more significant pharmaceutical products;
- announcements or developments regarding pharmaceutical products manufactured using our protein catalysts and intermediates;
- the entry into, modification or termination of collaborative arrangements;
- additions or losses of customers;
- additions or departures of key management or scientific personnel;
- competition from existing products or new products that may emerge;
- issuance of new or updated research reports by securities or industry analysts;

- fluctuations in the valuation of companies perceived by investors to be comparable to us;
- disputes or other developments related to proprietary rights, including patent litigation and our ability to obtain patent protection for our technologies;
- contractual disputes or litigation with our partners, customers or suppliers;
- announcement or expectation of additional financing efforts;
- sales of our common stock by us, our insiders or our other stockholders;
- share price and volume fluctuations attributable to inconsistent trading volume levels of our shares;
- general market conditions in our industry; and
- general economic and market conditions, including the recent financial crisis.

Furthermore, the stock markets have experienced extreme price and volume fluctuations that have affected and continue to affect the market prices of equity securities of many companies. These fluctuations often have been unrelated or disproportionate to the operating performance of those companies. These broad market and industry fluctuations, as well as general economic, political and market conditions such as recessions, interest rate changes or international currency fluctuations, may negatively impact the market price of shares of our common stock. In the past, companies that have experienced volatility in the market price of their stock have been subject to securities class action litigation. We may be the target of this type of litigation in the future. Securities litigation against us could result in substantial costs and divert our management's attention from other business concerns, which could seriously harm our business.

If securities or industry analysts do not publish research or reports about our business, or publish negative reports about our business, our stock price and trading volume could decline.

The trading market for our common stock will be influenced by the research and reports that securities or industry analysts publish about us or our business. We do not have any control over these analysts. If one or more of the analysts who cover us downgrade our stock or change their opinion of our stock in a negative manner, our stock price would likely decline. If one or more of these analysts cease coverage of our company or fail to regularly publish reports on us, we could lose visibility in the financial markets, which 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 is required to devote substantial time to compliance initiatives.

As a public company, we incur significant legal, accounting and other expenses. In addition, the Sarbanes-Oxley Act and the Dodd-Frank Wall Street Reform and Consumer Protection Act, as well as related rules implemented by the Securities and Exchange Commission and The NASDAQ Stock Market, impose various requirements on public companies that require our management and other personnel to devote a substantial amount of time to compliance initiatives.

In addition, the Sarbanes-Oxley Act requires, among other things, that we maintain effective internal control over financial reporting and disclosure controls and procedures. In particular, we must perform system and process evaluation and testing of our internal control over financial reporting to allow management and our independent registered public accounting firm to report on the effectiveness of our internal control over financial reporting, as required by Section 404 of the Sarbanes-Oxley Act. Our compliance with Section 404 requires that we incur substantial accounting expense and expend significant management time on compliance-related issues. Moreover, if we are not able to maintain compliance with the requirements of Section 404, our stock price could decline, and we could face sanctions, delisting or investigations by The NASDAQ Global Market, or other material adverse effects on our business, reputation, results of operations, financial condition or liquidity.

ITEM 1B. UNRESOLVED STAFF COMMENTS

Not applicable.

ITEM 2. PROPERTIES

Facilities

Our headquarters are located in Redwood City, California, where we lease approximately 107,200 square feet of office and laboratory space.

Our lease with Metropolitan Life Insurance Company ("MetLife") includes approximately 28,200 square feet of space located at 200 and 220 Penobscot Drive, Redwood City, California (the "Penobscot Space"), approximately 37,900 square feet of space located at 400 Penobscot Drive, Redwood City, California (the "Building 2 Space"), and approximately 29,900 square feet of space located at 101 Saginaw Drive, Redwood City, California (the "Saginaw Space"). The term of the lease of the Penobscot Space, the Building 2 Space and the Saginaw Space lasts until January 31, 2020, and we have options to extend for two additional five year periods. In February 2014, we agreed to sublease approximately 26,500 square feet of the Saginaw Space to a subtenant for a period of three years. The subtenant has exercised an option to extend the sublease term until April 14, 2019. In January 2015, we agreed to sublease approximately 3,400 square feet of the Saginaw Space to a subtenant for a period which ended on May 31, 2017. In October 2015, we agreed to sublease approximately 20,200 square feet of the Penobscot Space to a subtenant through November 30, 2019.

We also lease approximately 11,200 square feet of space located at 501 Chesapeake Drive, Redwood City, California (the "501 Chesapeake Space"). In September 2012, we entered into a Sixth Amendment to Lease (the "Sixth Amendment") with MetLife with respect to the 501 Chesapeake Space to extend the term of the lease of the 501 Chesapeake Space to January 31, 2017. Pursuant to the Sixth Amendment, we have two consecutive options to extend the term of the lease for the 501 Chesapeake Space for an additional period of five years per option. In October 2016, we entered into the Seventh Amendment to Lease pursuant to which we exercised the first of our options to extend the term of the lease for the 501 Chesapeake Space for an additional five years, commencing on February 1, 2017 and expiring on January 31, 2022.

We believe that the facilities that we currently lease in California are adequate for our needs for the immediate future and that, should it be needed, additional space can be leased to accommodate any future growth.

ITEM 3. LEGAL PROCEEDINGS

We are not currently a party to any material pending litigation or other material legal proceedings.

In February 2018, we and EnzymeWorks, Inc. (U.S.), Suzhou Hanmei Biotechnology Co. Ltd, d/b/a EnzymeWorks, Inc. (China) (collectively, "EnzymeWorks"), Junhua Tao, and Andrew Tao reached a settlement concerning the lawsuit filed by us in February 2016 against EnzymeWorks, Junhua Tao, and Andrew Tao in the United States District Court for the Northern District of California. The parties have entered into a settlement agreement, the terms of which are confidential. The parties have also stipulated to a judgment of patent infringement of all asserted patents against EnzymeWorks, and a permanent injunction barring any future infringement. The remaining claims against EnzymeWorks, and all claims against Junhua Tao, and Andrew Tao including trade secret misappropriation, breach of contract and voidable transfer have been dismissed with prejudice.

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 is quoted on The NASDAQ Global Select Market ("NASDAQ"), under the symbol "CDXS." The following table sets forth the high and low sales prices per share of the common stock as reported on NASDAQ. Such quotations represent inter dealer prices without retail markup, markdown or commission and may not necessarily represent actual transactions.

Fiscal 2017	High	Low
First Quarter	$ 5.29	$ 3.60
Second Quarter	5.45	3.95
Third Quarter	6.70	4.80
Fourth Quarter	8.55	5.70

Fiscal 2016	High	Low
First Quarter	$ 4.50	$ 2.93
Second Quarter	4.34	3.00
Third Quarter	4.63	3.87
Fourth Quarter	5.25	4.31

As of February 28, 2018, there were approximately 133 stockholders of record. A substantially greater number of stockholders may be "street name" or beneficial holders, whose shares are held of record by banks, brokers and other financial institutions.

Dividend Policy

We have never declared or paid cash dividends on our common stock, and currently do not plan to declare dividends on shares of our common stock in the foreseeable future. We expect to retain our future earnings, if any, for use in the operation and expansion of our business. In addition, unless waived, the terms of our credit facility prohibit us from paying any cash dividends and other distributions. The payment of cash dividends in the future, if any, will be at the discretion of our board of directors and will depend upon such factors as earnings levels, capital requirements, our overall financial condition and any other factors deemed relevant by our board of directors.

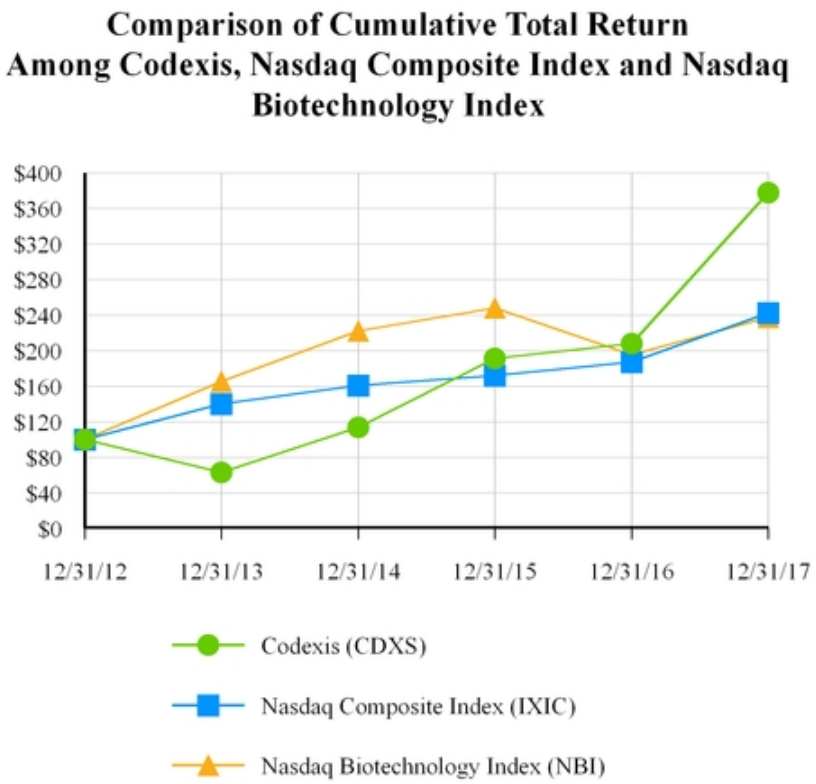
Credit Facility

Effective June 30, 2017, we entered into a credit facility consisting of a term debt note for loans totaling up to $10.0 million, and advances under a revolving line of credit totaling up to $5.0 million. Covenants in the credit facility limit our ability to pay dividends or make other distributions. For additional information see Note 13 "Commitments and Contingencies" in the accompanying notes to the consolidated financial statements.

Stock Price Performance Graph

The following tabular information and graph compare our total common stock return with the total return for (i) the NASDAQ Composite Index and (ii) the NASDAQ Biotechnology Index for the period December 31, 2012 through December 31, 2017. The figures represented below assume an investment of $100 in our common stock at the closing price on December 31, 2012 and in the NASDAQ Composite Index and the NASDAQ Biotechnology Index on December 31, 2012 and the reinvestment of dividends into shares of common stock. The comparisons in the table and graph are required by the SEC and are not intended to forecast or be indicative of possible future performance of our common stock. The tabular information and graph shall not be deemed "soliciting material" or to be "filed" for purposes of Section 18 of the Exchange Act or otherwise subject to the liabilities under that Section, and shall not be deemed to be incorporated by reference into any of our filings under the Securities Act or the Exchange Act.

		December 31,					
$100 investment in stock or index	**Ticker**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Codexis, Inc.	CDXS	$ 100.00	$ 63.35	$ 114.03	$ 191.40	$ 208.14	$ 377.83
Nasdaq Composite Index	IXIC	$ 100.00	$ 140.12	$ 160.78	$ 171.97	$ 187.22	$ 242.71
Nasdaq Biotechnology Index	NBI	$ 100.00	$ 165.61	$ 222.08	$ 248.21	$ 195.22	$ 237.45



ITEM 6. SELECTED FINANCIAL DATA

The following selected consolidated financial data should be read together with our consolidated financial statements and accompanying notes and "Management's Discussion and Analysis of Financial Condition and Results of Operations" appearing elsewhere in this Annual Report on Form 10-K. The selected consolidated financial data in this section is not intended to replace our consolidated financial statements and the accompanying notes. Our historical results are not necessarily indicative of our future results.

We derived the consolidated statements of operations data for the fiscal years ended December 31, 2017, 2016, and 2015 and the consolidated balance sheets data as of December 31, 2017 and 2016 from our audited consolidated financial statements appearing elsewhere in this filing. The consolidated statements of operations data for the fiscal years ended December 31, 2014 and 2013 and the consolidated balance sheets data as of December 31, 2015, 2014 and 2013 have been derived from our audited consolidated financial statements not included in this filing. The data should be read in conjunction with the consolidated financial statements, related notes, and other financial information included herein.

SELECTED CONSOLIDATED FINANCIAL DATA

	Years Ended December 31,				
	2017	2016	2015	2014	2013
	(In Thousands, Except Per Share Amounts)				
Consolidated Statements of Operations Data:					
Revenues:					
Product sales	$ 26,685	$ 15,321	$ 11,376	$ 13,064	$ 20,423
Research and development revenues	20,748	31,316	25,599	14,945	6,868
Revenue sharing arrangement	2,591	2,200	4,829	7,298	4,631
Total revenues	50,024	48,837	41,804	35,307	31,922
Costs and operating expenses:					
Cost of product sales	14,327	9,753	6,586	9,726	14,554
Research and development	29,659	22,229	20,673	22,755	31,606
Selling, general and administrative	29,008	25,419	22,315	21,937	26,908
Total costs and operating expenses	72,994	57,401	49,574	54,418	73,068
Loss from operations	(22,970)	(8,564)	(7,770)	(19,111)	(41,146)
Interest income	147	60	19	18	60
Other expense	(92)	(94)	(168)	(234)	(304)
Loss before income taxes	(22,915)	(8,598)	(7,919)	(19,327)	(41,390)
Provision for (benefit from) income taxes	81	(40)	(338)	(256)	(87)
Net loss	$ (22,996)	$ (8,558)	$ (7,581)	$ (19,071)	$ (41,303)
Net loss per share, basic and diluted	$ (0.50)	$ (0.21)	$ (0.19)	$ (0.50)	$ (1.08)
Weighted average common shares used in computing net loss per share, basic and diluted	46,228	40,629	39,438	38,209	38,231

	December 31,				
	2017	2016	2015	2014	2013
Consolidated Balance Sheets Data:	(In Thousands)				
Cash, cash equivalents and short-term investments	$ 31,219	$ 19,240	$ 23,273	$ 26,487	$ 25,135
Working capital	20,087	14,860	17,998	19,272	24,582
Total assets	53,625	35,648	44,647	48,122	58,840
Total liabilities	29,078	16,549	21,768	21,811	17,357
Total stockholders' equity	24,547	19,099	22,879	26,311	41,483

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion and analysis should be read in conjunction with our audited consolidated financial statements and the related notes that appear elsewhere in this Annual Report on Form 10-K. This Annual Report on Form 10-K contains "forward-looking statements" within the meaning of Section 21E of the Exchange Act. These statements are often identified by the use of words such as "may," "will," "expect," "believe," "anticipate," "intend," "could," "should," "estimate," or "continue," and similar expressions or variations. Such forward-looking statements are subject to risks, uncertainties and other factors that could cause actual results and the timing of certain events to differ materially from future results expressed or implied by such forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those discussed in the section titled "Risk Factors," set forth in Part I, Item 1A of this Annual Report on Form 10-K and elsewhere in this report. The forward-looking statements in this Annual Report on Form 10-K represent our views as of the date of this Annual Report on Form 10-K. We anticipate that subsequent events and developments will cause our views to change. However, while we may elect to update these forward-looking statements at some point in the future, we have no current intention of doing so except to the extent required by applicable law. You should, therefore, not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this Annual Report on Form 10-K.

Business Overview

We discover, develop and sell proteins that deliver value to our clients in a growing set of industries. We view proteins as a vast untapped source of value-creating materials, and we are using our proven technologies, which have been continuously improved over our fifteen year history, to commercialize an increasing number of novel proteins, both as proprietary Codexis products and in partnership with our customers.

Many companies have historically used naturally occurring proteins to produce or enhance goods used in everyday life. Despite the growing number of commercial applications of naturally occurring proteins across many industries, the inherent limitations of naturally-occurring proteins frequently restrict their commercial use. Through the application of our proprietary CodeEvolver® protein engineering technology platform, we are able to engineer novel proteins to overcome these restrictions, thereby adding value or opening up new prospects for our potential clients' products, processes or businesses. We have developed new proteins that are significantly more stable and/or active in our commercial applications than proteins derived from nature.

We are also a pioneer in the harnessing of computational technologies to drive biology advancements. Over the last fifteen years, we have made substantial investments in the development of our CodeEvolver® protein engineering technology platform, the primary source of our competitive advantage. Our technology platform is powered by proprietary, artificial intelligence-based, computational algorithms that rapidly mine our large and continuously growing library of protein variants' performance attributes. These computational outputs enable increasingly reliable predictions for next generation protein variants to be engineered, enabling delivery of targeted performance enhancements in a time-efficient manner. In addition to its computational prowess, our CodeEvolver® protein engineering technology platform integrates additional modular competencies, including robotic high-throughput screening and genomic sequencing, organic chemistry and process development which are all coordinated to create our novel protein innovations.

We use our CodeEvolver® protein engineering technology platform to engineer custom enzymes. Most of our custom enzymes are intended for use as biocatalysts or protein catalysts. In simple terms, our protein catalysts can accelerate and/or improve yields of chemical reactions. We use our CodeEvolver® protein engineering technology platform to develop novel enzymes that enable industrial biocatalytic reactions and fermentations. Our technology platform has enabled commercially viable products and processes for the manufacture of pharmaceutical intermediates and active ingredients and fine chemicals.

Our approach to develop commercially viable biocatalytic manufacturing processes begins by conceptually designing the most cost-effective and practical process for a targeted product. We then develop optimized protein catalysts to enable that process design, using our CodeEvolver® protein engineering platform technology. Engineered protein catalyst candidates - many thousands for each protein engineering project - are then rapidly screened and validated in high throughput under relevant manufacturing operating conditions. This approach results in an optimized protein catalyst enabling cost-efficient processes that typically are relatively simple to run in conventional manufacturing equipment. This also allows for the efficient technical transfer of our process to our manufacturing partners.

The successful embodiment of our CodeEvolver® protein engineering technology platform in commercial manufacturing processes requires well-integrated expertise in a number of technical disciplines. In addition to those directly involved in practicing our CodeEvolver® protein engineering platform technology, such as molecular biology, enzymology, microbiology,

cellular engineering, metabolic engineering, bioinformatics, biochemistry and high throughput analytical chemistry, our process development projects also involve integrated expertise in organic chemistry, chemical process development, chemical engineering, fermentation process development and fermentation engineering. Our integrated, multi-disciplinary approach to biocatalyst and process development is a critical success factor for our company.

We initially commercialized our CodeEvolver® protein engineering technology platform and products in the pharmaceuticals market, which remains our primary business focus. Our customers, which include several large global pharmaceutical companies, use our technology, products and services in their manufacturing processes and process development.

We have also used the technology to develop protein catalysts for use in the fine chemicals market. The fine chemicals market consists of several large market verticals, including food and food ingredients, animal feed, flavors, fragrances, and agricultural chemicals.

More recently, we are also using the CodeEvolver® protein engineering technology platform to develop early stage, novel biotherapeutic product candidates, both for our customers and for our own business, most notably our lead program for the potential treatment of PKU in humans. PKU is an inherited metabolic disorder in which the enzyme that converts the essential amino acid phenylalanine into tyrosine is deficient. In October 2017, we announced a strategic collaboration with Nestec Ltd. (“Nestlé Health Science”) to advance CDX-6114, our own novel enzyme biotherapeutic candidate for the potential treatment of PKU disease. We have also developed a pipeline of other biotherapeutic drug candidates in which we expect to continue to make additional investments with the aim of generating additional product candidates targeting other therapeutic areas.

We have also used our technology to develop an enzyme for customers using NGS and PCR/qPCR for *in vitro* molecular diagnostic and genomic research applications.

Results of Operations Overview

Revenues were $50.0 million in 2017, a 2% increase from $48.8 million in 2016. Product sales, which consist primarily of sales of protein catalysts, pharmaceutical intermediates, and Codex® Biocatalyst Panels and Kits, were $26.7 million in 2017, an increase of 74% compared with $15.3 million in 2016. The increase was primarily due to higher customer demand from existing customers in 2017 as compared to 2016.

Research and development revenues, which include license, technology access and exclusivity fees, research service fees, milestone payments, royalties, and optimization and screening fees, totaled $20.7 million in 2017, a decrease of 34%, compared with $31.3 million in 2016. The revenue decrease in 2017 was primarily due to the presence of $22.5 million of non-recurring revenues from the technology transfer of our proprietary CodeEvolver® protein engineering platform technology to Merck and GSK in 2016.

Revenues from the revenue sharing arrangement were $2.6 million in 2017, an increase of 18%, compared with $2.2 million in 2016. The increase is primarily attributable to revenue of $1.5 million from Exela in 2017 for an exclusive license under Codexis licensed know-how technology in connection with the termination of our revenue sharing arrangement with them. We do not expect future revenues from our revenue sharing arrangement with Exela due to the termination of our arrangement in the fourth quarter of 2017.

Product gross margins increased to 46% in 2017, compared to 36% in 2016 due to improved sales mix.

Research and development expenses were $29.7 million in 2017, an increase of 33% from $22.2 million in 2016. The increase was primarily due to increased spending on development of CDX-6114, our product candidate for the potential treatment of PKU, and increased costs associated with higher headcount.

Selling, general and administrative expenses were $29.0 million in 2017, an increase of 14% compared to $25.4 million in 2016. The increase was primarily due to higher legal expenses relating to intellectual property and increased costs associated with higher headcount.

Net loss was $23.0 million, or a net loss of $0.50 per share, in 2017 compared to a net loss of $8.6 million, or a net loss of $0.21 per share, in 2016. The increases in net loss and net loss per share are primarily due to higher research and development expense and selling, general and administrative expense as noted above.

Cash and cash equivalents increased to $31.2 million as of December 31, 2017 compared to $19.2 million as of December 31, 2016. In addition, net cash used in operations was $8.8 million in 2017, as compared to net cash used in operations of $2.7 million in 2016.

We are actively collaborating with new and existing customers in the pharmaceutical, fine chemicals and other markets and we believe that we can utilize our products and services, and develop new products and services, to increase our revenue and gross margins in future periods. We believe that, based on our current level of operations, our existing cash, cash equivalents and marketable securities will provide adequate funds for ongoing operations, planned capital expenditures and working capital requirements for at least the next 12 months.

GSK Platform Technology Transfer, Collaboration and License Agreement

In July 2014, we entered into the GSK CodeEvolver® Agreement. Pursuant to the terms of the agreement, we granted GSK a non-exclusive license to use the CodeEvolver® Platform Technology to develop novel enzymes for use in the manufacture of GSK's pharmaceutical and health care products.

We received a $6.0 million up-front license fee upon execution of the GSK CodeEvolver® Agreement and subsequently a $5.0 million non-creditable, non-refundable milestone payment upon achievement of the first milestone in 2014. In September 2015, we achieved the second milestone and recognized the related milestone payment of $6.5 million. In April 2016, we completed the transfer of the CodeEvolver® protein engineering platform technology to GSK and earned milestone revenue of $7.5 million, for which payment was received in June 2016. In the third quarter of 2016, we earned the first contingent payment under the agreement related to the development of an enzyme for an already-commercialized GSK product. We also have the potential to receive additional cumulative contingent payments that range from $5.75 million to $38.5 million per project based on GSK’s successful application of the licensed technology.

The up-front license fee of $6.0 million was being recognized ratably over the three-year technology transfer period beginning in July 2014. As the technology transfer was completed earlier than anticipated, we recognized license fees of nil and $3.0 million, respectively, in 2017 and 2016, as research and development revenue. As of December 31, 2017 and 2016, all deferred revenue from GSK has been recognized upon completion of the technology transfer.

See Item 1, “Business-Our Market Opportunities-Licensing Our CodeEvolver® Protein Engineering Technology Platform-GlaxoSmithKline” for a more detailed description of the GSK CodeEvolver® Agreement.

Merck Platform Technology Transfer and License Agreement

In August 2015, we entered into a CodeEvolver® platform technology transfer and license agreement (the "Merck CodeEvolver® Agreement") with Merck, which allows Merck to use the CodeEvolver® protein engineering technology platform in the field of human and animal healthcare.

We received a $5.0 million up-front license fee upon execution of the Merck CodeEvolver® Agreement, which was being recognized ratably over the estimated two-year platform technology transfer period. In September 2015, we achieved the first milestone under the Merck CodeEvolver® Agreement and earned milestone revenue of $5.0 million. In September 2016, we completed the transfer of the engineering platform technology and earned milestone revenue of $8.0 million. We received the $8.0 million milestone payment in the fourth quarter of 2016. As the technology transfer was completed earlier than anticipated, we recognized license fees of $4.0 million and $1.0 million, respectively, in 2016 and 2015, as research and development revenue. There were no remaining up-front license fees or milestone payments to record in 2017. As of December 31, 2017 and 2016, all deferred revenue from Merck has been recognized upon completion of the technology transfer. Additionally, we recognized research and development revenue of $3.6 million and $3.0 million as of December 31, 2017 and 2016, respectively, for various research projects under our collaborative arrangement.

Following the completion of the technology transfer, we may be eligible to receive payments of up to a maximum of $15.0 million for each commercial API that is manufactured by Merck using one or more novel enzymes developed by Merck using the CodeEvolver® protein engineering technology platform.

See Item 1, “Business-Our Market Opportunities-Licensing Our CodeEvolver® Protein Engineering Technology Platform-Merck” for a more detailed description of the Merck CodeEvolver® Agreement.

Global Development, Option and License Agreement and Strategic Collaboration Agreement

In October 2017, we entered into a Global Development, Option and License Agreement (the “Nestlé Agreement”) with Nestlé Health Science pursuant to which we granted to Nestlé Health Science, under certain of our patent rights and know-how: (i) an option (the “Option”) to obtain an exclusive, worldwide, royalty-bearing, sublicensable license to develop and commercialize certain products (each, a “Product”) based on CDX-6114 and our other therapeutic enzyme product candidates for the treatment of hyperphenylalaninemia (“HPA”), and (ii) an exclusive right of first negotiation (the “Right of First Negotiation”) to obtain an

exclusive worldwide license to develop and commercialize up to two enzymes discovered by us for use in the field of the prevention, diagnosis, treatment and management of inborn errors of amino acid metabolism. HPA is a medical condition characterized by mildly or strongly elevated concentrations of the amino acid phenylalanine in the blood. In addition, under the Nestlé Agreement, we will perform development activities on CDX-6114 pursuant to an agreed-upon development plan, including a Phase 1a clinical study as well as development of solid dosage formulation objectives. The Option to obtain the license can be exercised by Nestlé Health Science (in its sole discretion) after the effectiveness of an Investigational New Drug Application ("IND") filed by us with the U.S. Food and Drug Administration ("FDA") for the study of the initial compound for the treatment of HPA and the completion of a Phase Ia clinical study (the "License Effective Date"). The Option will expire 60 days after the Option Trigger Date if unexercised by Nestlé Health Science. If Nestlé Health Science exercises the Option and determines that a filing under the Hart-Scott-Rodino Antitrust Improvements Act of 1976 ("HSR") is necessary in connection with the Option exercise, our obligation to grant the license under the Option will expire if the HSR filing does not receive clearance within 180 days of filing and such delay is not attributable to any material failure on our part to cooperate in the HSR review process.

We received an upfront cash payment of $14.0 million upon the execution of the Nestlé Agreement of which we recognized development fees of $7.2 million in 2017 as research and development revenue. As of December 31, 2017, we had deferred revenue related to the remaining $6.8 million of development fees. We are eligible to receive a $4.0 million progress payment after the commencement of Phase 1a clinical trial. In the event Nestlé Health Science exercises the Option, they will be obligated to pay us $3.0 million within 60 days after the License Effective Date. The upfront payment is being recognized using a proportional performance model based on the ratio of level of effort incurred to date compared to the total estimated level of effort required to complete all performance obligations under the agreement. Other potential payments from Nestlé Health Science under the Nestlé Agreement include (i) development and approval milestones of up to $86.0 million, (ii) sales-based milestones of up to $250.0 million in the aggregate, which aggregate amount is achievable if net sales exceed $1.0 billion in a single year, and (iii) tiered royalties, at percentages ranging from the middle single digits to low double-digits, of net sales of product.

In addition to the Nestlé Agreement, we and Nestlé Health Science concurrently entered into a Strategic Collaboration Agreement (the "Strategic Collaboration Agreement") pursuant to which we and Nestlé Health Science will collaborate to leverage the CodeEvolver® protein engineering technology platform to develop novel enzymes for Nestlé Health Science's established Consumer Care and Medical Nutrition business areas. Under the Strategic Collaboration Agreement, we recognized research and development fees of $0.5 million in 2017. As of December 31, 2017, we had deferred revenue of $1.1 million.

See Item 1, "Business-Our Market Opportunities-Pharmaceutical Market-Our Solutions for the Pharmaceutical Market-Self-Funded Biotherapeutic Product Development- Nestlé Health Science" for a more detailed description of the Nestlé Agreement.

Results of Operations

The following table shows the amounts from our consolidated statements of operations for the periods presented (in thousands):

	Years Ended December 31,			% of Total Revenues		
	2017	2016	2015	2017	2016	2015
Revenues:						
Product sales	$ 26,685	$ 15,321	$ 11,376	53 %	31 %	27 %
Research and development revenues	20,748	31,316	25,599	42 %	64 %	61 %
Revenue sharing arrangement	2,591	2,200	4,829	5 %	5 %	12 %
Total revenues	50,024	48,837	41,804	100 %	100 %	100 %
Costs and operating expenses:						
Cost of product sales	14,327	9,753	6,586	29 %	20 %	16 %
Research and development	29,659	22,229	20,673	59 %	46 %	49 %
Selling, general and administrative	29,008	25,419	22,315	58 %	52 %	53 %
Total costs and operating expenses	72,994	57,401	49,574	146 %	118 %	119 %
Loss from operations	(22,970)	(8,564)	(7,770)	(46)%	(18)%	(19)%
Interest income	147	60	19	— %	— %	— %
Other expense	(92)	(94)	(168)	— %	— %	— %
Loss before income taxes	(22,915)	(8,598)	(7,919)	(46)%	(18)%	(19)%
Provision for (benefit from) income taxes	81	(40)	(338)	— %	— %	(1)%
Net loss	$ (22,996)	$ (8,558)	$ (7,581)	(46)%	(18)%	(18)%

Revenues

Our revenues are comprised of product sales, research and development revenues and a revenue sharing arrangement.

- Product sales consist of sales of protein catalysts, pharmaceutical intermediates, and Codex® Biocatalyst Panels and Kits.
- Research and development revenues include license, technology access and exclusivity fees, research services fees, milestone payments, royalties, and optimization and screening fees.
- Revenue sharing arrangement is recognized based upon sales of licensed products by Exela.

				Change			
	Years Ended December 31,			2017		2016	
(In Thousands)	2017	2016	2015	$	%	$	%
Product sales	$ 26,685	$ 15,321	$ 11,376	$ 11,364	74 %	$ 3,945	35 %
Research and development revenues	20,748	31,316	25,599	(10,568)	(34)%	5,717	22 %
Revenue sharing arrangement	2,591	2,200	4,829	391	18 %	(2,629)	(54)%
Total revenues	$ 50,024	$ 48,837	$ 41,804	$ 1,187	2 %	$ 7,033	17 %

Revenues typically fluctuate on a quarterly basis due to the variability in our customers' manufacturing schedules and the timing of our customers' clinical trials. In addition, we have limited internal capacity to manufacture enzymes. As a result, we are dependent upon the performance and capacity of third party manufacturers for the commercial scale manufacturing of the enzymes used in our pharmaceutical and fine chemicals businesses.

We accept purchase orders for deliveries covering periods from one day up to approximately one year from the date on which the order is placed. However, purchase orders can generally be revised or cancelled by the customer without penalty. Considering these industry practices and our experience, we do not believe the total of customer purchase orders outstanding (backlog) provides meaningful information that can be relied on to predict actual sales for future periods.

2017 compared to 2016

Total revenues increased $1.2 million in 2017 to $50.0 million, as compared to 2016. The increase was driven by growth in product sales of $11.4 million or 74% and an increase of $0.4 million in revenue sharing arrangement, offset by a decrease of $10.6 million in research and development revenues.

Product sales, which consist primarily of sales of protein catalysts, pharmaceutical intermediates, and Codex® Biocatalyst Panels and Kits, were $26.7 million in 2017, an increase of 74% compared with $15.3 million in 2016. The increase was primarily due to higher customer demand in 2017 as compared to 2016, in particular higher sales of enzymes to the existing 2016 customer base.

Research and development revenues decreased $10.6 million in 2017 to $20.7 million, as compared to 2016. The revenue decrease in 2017 was primarily due to the absence of $22.5 million of non-recurring revenues from the technology transfer of our proprietary CodeEvolver® protein engineering platform technology to Merck and GSK in 2016, and was comprised of a milestone payment of $8.0 million from Merck, a milestone payment of $7.5 million from GSK and $7.0 million in recognition of license fees under both agreements. The revenue decrease in 2017 was partially offset by revenues of $13.1 million for research services under our agreements with Nestlé Health Sciences, Tate & Lyle and Novartis.

Revenue sharing arrangement increased $0.4 million in 2017 to $2.6 million, as compared to 2016. This includes $1.5 million in revenue from Exela in 2017 for granting them an exclusive license and for loss of agreed upon future revenues from the license agreement as a result of mutual termination of our revenue sharing arrangement. We do not expect future revenues from the revenue sharing arrangement due to the termination of the arrangement in the fourth quarter of 2017.

2016 compared to 2015

Total revenues increased $7.0 million in 2016 to $48.8 million, as compared to 2015. The increase was driven by an increase of $5.7 million in research and development revenues, plus growth in product sales of $3.9 million, partially offset by a decrease of $2.6 million in revenues from our revenue sharing arrangement.

Product sales increased $3.9 million in 2016 to $15.3 million, as compared to 2015. The increase was primarily due to higher customer demand in 2016 as compared to 2015, in particular higher sales of enzymes for Merck’s manufacture of Sitagliptin.

Research and development revenues increased $5.7 million in 2016 to $31.3 million, as compared to 2015. The increase was primarily due to the completion of the second and final phase in the transfer of our proprietary CodeEvolver® protein engineering platform technology to Merck under the Merck CodeEvolver® Agreement, which resulted in revenue recognition of an $8.0 million milestone payment and an increase of $3.0 million in revenue recognition from the early completion of the technology transfer, and the achievement of the third and final milestone in the transfer of our proprietary CodeEvolver® protein engineering platform technology to GSK under the GSK CodeEvolver® Agreement which resulted in revenue recognition of a $7.5 million milestone payment and an increase of $1.0 million in revenue recognition from the early completion of the technology transfer. The revenue increases in 2016 were partially offset by 2015 revenues from a $6.5 million milestone under the GSK CodeEvolver® Agreement, a $5.0 million milestone under the Merck CodeEvolver® Agreement and a $3.1 million final settlement of a royalty-related arrangement by a customer.

Revenue sharing arrangement decreased $2.6 million in 2016 to $2.2 million, as compared to 2015. The decrease was the result of the expiration of the formulation patent for Argatroban in June 2014, allowing for generic competition in the subsequent quarters.

Cost and Operating Expenses

				Change			
	Years Ended December 31,			2017		2016	
(In Thousands)	2017	2016	2015	$	%	$	%
Cost of product sales	$ 14,327	$ 9,753	$ 6,586	$ 4,574	47%	$ 3,167	48%
Research and development	29,659	22,229	20,673	7,430	33%	1,556	8%
Selling, general and administrative	29,008	25,419	22,315	3,589	14%	3,104	14%
Total operating expenses	$ 72,994	$ 57,401	$ 49,574	$ 15,593	27%	$ 7,827	16%

Cost of Product Sales

Cost of product sales comprises both internal and third-party fixed and variable costs, including materials and supplies, labor, facilities and other overhead costs associated with our product sales.

2017 compared to 2016

Cost of product sales increased $4.6 million in 2017 to $14.3 million, as compared to 2016. The increase was primarily due to higher product sales. Product gross margin increased to 46% in 2017 as compared to 36% in 2016 due to an increase in higher margin sales of enzymes to four customers.

2016 compared to 2015

Cost of product sales increased $3.2 million in 2016 to $9.8 million, as compared to 2015. The increase was primarily due to higher product sales. Product gross margin decreased to 36% in 2016 compared to 42% in 2015 due to an increase in lower margin sales of enzymes to Merck for Sitagliptin manufacturing and a decrease in higher margin sales to a customer in the fine chemicals market.

Research and Development Expenses

Research and development expenses consist of costs incurred for internal projects as well as collaborative research and development activities. These costs primarily consist of (i) employee-related costs, which include salaries and other personnel-related expenses (including stock-based compensation), (ii) various allocable expenses, which include occupancy-related costs, supplies, depreciation of facilities and laboratory equipment, and (iii) external costs. Research and development expenses are expensed when incurred.

2017 compared to 2016

Research and development expenses were $29.7 million in 2017 compared to $22.2 million in 2016, an increase of $7.4 million or 33%. The increase was primarily due to a $7.2 million increase in outside services, which were mostly related to the development project for CDX-6114, an increase of $1.5 million in costs associated with higher headcount relating to additional research and development projects, including the development of CDX-6114, and an increase of $0.7 million in lab supplies, which were partially offset by lower amortization of intangibles.

2016 compared to 2015

Research and development expenses were $22.2 million in 2016 compared to $20.7 million in 2015, an increase of $1.6 million or 8%. The increase was primarily due to higher consulting fees related to the evaluation of potential new drug development targets, higher outside services related to enzyme biotherapeutic product development projects, and increased costs associated with higher headcount, which were partially offset by lower amortization of intangibles.

Selling, General and Administrative Expenses

Selling, general and administrative expenses consist of employee-related costs, which include salaries and other personnel-related expenses (including stock-based compensation), hiring and training costs, consulting and outside services expenses (including audit and legal counsel related costs), marketing costs, building lease costs, and depreciation and amortization expenses.

2017 compared to 2016

Selling, general and administrative expenses were $29.0 million in 2017 compared to $25.4 million in 2016, an increase of $3.6 million or 14%. The increase was primarily due to an increase of $1.9 million in costs associated with higher headcount, including stock-based compensation costs, an increase of $1.2 million in legal expenses relating to intellectual property and contracts and higher consulting fees, partially offset by lower depreciation expense.

2016 compared to 2015

Selling, general and administrative expenses were $25.4 million in 2016 compared to $22.3 million in 2015, an increase of $3.1 million or 14%. The increase was primarily due to higher legal expenses relating to intellectual property and higher consulting fees relating to exploration of new business development opportunities, and increased costs associated with higher headcount, partially offset by lower facilities costs due to sublease income received in 2016.

Other Income (Expense), net

	Years Ended December 31,			Change			
				2017		2016	
(In Thousands)	2017	2016	2015	$	%	$	%
Interest income	$ 147	$ 60	$ 19	$ 87	145 %	$ 41	216 %
Other expense	(92)	(94)	(168)	(2)	(2)%	(74)	(44)%
Total other income (expense), net	$ 55	$ (34)	$ (149)	$ (89)	(262)%	$ (115)	(77)%

Interest Income

Interest income increased by $87 thousand in 2017 compared to 2016, and increased by $41 thousand in 2016 compared to 2015. The changes were primarily due to higher interest rates on our cash equivalents and short-term investments portfolio.

Other Expense

Other expense decreased by $2 thousand in 2017 compared to 2016 and decreased by $74 thousand in 2016 compared to 2015. The changes were primarily due to fluctuations in foreign currency.

Provision for (benefit from) Income Taxes

	Years Ended December 31,			Change			
				2017		2016	
(In Thousands)	2017	2016	2015	$	%	$	%
Provision for (benefit from) income taxes	$ 81	$ (40)	$ (338)	$ (121)	(303)%	$ (298)	(88)%

The increase in income taxes for 2017 is primarily related to taxes on foreign earnings and an increase in the deferred tax liability for accrued future withholding taxes on dividends. The benefit from income taxes for 2016 is primarily related to a reduction in the deferred tax liability for accrued future withholding taxes on dividends. The benefit from income taxes for 2015 is primarily related to unrealized gains from changes in the fair value of our investment in CO_2 Solutions. We continue to maintain a full valuation allowance against our net deferred tax assets as we believe that it is more likely than not that the majority of our deferred tax assets will not be realized.

Net Loss

Net loss for 2017 was $23.0 million, or a net loss per basic and diluted share of $0.50. This compares to a net loss of $8.6 million, or a net loss per basic and diluted share of $0.21, for 2016. The increase in net loss for 2017 over 2016 is primarily related to a decrease in research and development revenues and an increase in research and development expenses which were partially offset by an increase in revenues from product sales. The increase in net loss for 2016 over a net loss of $7.6 million, or a net loss per basic and diluted share of $0.19, for 2015 is primarily related to an increase in research and development expenses and selling, general and administrative expenses which were partially offset by an increase in revenues from product sales and from research and development.

Liquidity and Capital Resources

Liquidity is the measurement of our ability to meet working capital needs and to fund capital expenditures. We have historically funded our operations primarily through cash generated from operations, stock option exercises and public offerings of our common stock. We also have the ability to borrow up to $15.0 million under our Credit Facility. We actively manage our cash usage and investment of liquid cash to ensure the maintenance of sufficient funds to meet our working capital needs. The majority of our cash and investments are held in U.S. banks, and our foreign subsidiaries maintain a limited amount of cash in their local banks to cover their short-term operating expenses.

The following summarizes our cash and cash equivalents balance and working capital as of December 31, 2017, 2016 and 2015:

(In Thousands)	December 31, 2017	2016	2015
Cash and cash equivalents	$ 31,219	$ 19,240	$ 23,273
Working capital	20,087	14,860	17,998

In addition to our existing cash and cash equivalents, we are eligible to earn milestone and other contingent payments for the achievement of defined collaboration objectives and certain royalty payments under our collaboration agreements. Our ability to earn these milestone and contingent payments and the timing of achieving these milestones is primarily dependent upon the outcome of our collaborators' research and development activities and is uncertain at this time. In the third quarter of 2016, we completed the final phase in the transfer of CodeEvolver® technology to Merck under the Merck CodeEvolver® Agreement. Following the completion of the technology transfer to Merck, we are now eligible to receive payments of up to $15.0 million for each commercial API that is manufactured by Merck using one or more novel enzymes developed by Merck using the CodeEvolver® technology. In addition, depending upon GSK's successful application of the licensed technology, we have the potential to receive additional contingent payments that range from $5.75 million to $38.5 million per project.

We are actively collaborating with new and existing customers in the pharmaceutical and food industries. We believe that we can utilize our current products and services, and develop new products and services, to increase our revenues and gross margins in future periods.

We have historically experienced negative cash flows from operations as we continue to invest in key technology development projects and improvements to our CodeEvolver® protein engineering technology platform, and expand our business development and collaboration with new customers. Our cash flows from operations will continue to be affected principally by sales and gross margins from licensing our technology to major pharmaceutical companies, product sales and collaborative research and development services provided to customers, as well as our headcount costs, primarily in research and development. Our primary source of cash flows from operating activities is cash receipts from licensing our technology to major pharmaceutical companies, and our customers for purchases of products and/or collaborative research and development services. Our largest uses of cash from operating activities are for employee-related expenditures, rent payments, inventory purchases to support our product sales and non-payroll research and development costs.

We are eligible to earn milestone and other contingent payments for the achievement of defined collaboration objectives and certain royalty payments under our collaboration agreements. Our ability to earn these milestone and contingent payments and the timing of achieving these milestones is primarily dependent upon the outcome of our collaborators' research and development activities and is uncertain at this time.

On December 9, 2016, we filed a registration statement on Form S-3 with the SEC, under which we may sell an aggregate of up to $80.0 million of common stock, preferred stock, debt securities, warrants, purchase contract and/or units. The SEC declared the registration statement effective on January 10, 2017. Subsequently, in April 2017, we completed an underwritten public offering of approximately 6.3 million shares of our common stock at an offering price of $4.00 per share. The net proceeds to us were approximately $23.2 million after deducting offering costs and the underwriting discounts and commissions.

In June 2017, we entered into the Credit Facility, which consists of term debt for loans that allow us to borrow up to $10.0 million and a revolving credit facility that allows us to borrow up to $5.0 million with a certain eligible accounts receivable borrowing base of 80% of eligible accounts receivable. We may draw on the term debt at any time prior to June 30, 2018, subject to customary conditions for funding including, among others, that no event of default exists. Draws on the Credit Facility are secured by a lien on substantially all of our personal property other than our intellectual property. No amounts were drawn down under the credit facility as of December 31, 2017. At December 31, 2017, we were in compliance with the covenants for the Credit Facility. The Credit Facility requires us to maintain compliance with certain financial covenants including attainment of certain lender-approved projections or maintenance of certain minimum cash levels. Restrictive covenants in the Credit Facility restrict the payment of dividends or other distributions. For additional information about our contractual obligations, see Note 13 "Commitments and Contingencies" in the accompanying notes to the consolidated financial statements.

On October 12, 2017 (the "Effective Date"), we entered into a Global Development, Option and License Agreement (the Nestlé "Agreement") with Nestec Ltd. ("Nestlé Health Science").

Pursuant to the Nestlé Agreement, Nestlé Health Science paid us an upfront cash payment of $14.0 million and they are also obliged to pay us an additional $4.0 million upon the initiation of a Phase 1 trial in 2018. In the event Nestlé Health Science exercises the option, to obtain an exclusive, worldwide, royalty-bearing, sublicensable license to develop and commercialize CDX-6114 and other products for the treatment of HPA, they will be obliged to pay us $3.0 million. Other potential payments

from Nestlé Health Science to us under the Nestlé Agreement include (i) development and approval milestones of up to $86.0 million, (ii) sales-based milestones of up to $250.0 million in the aggregate, which aggregate amount is achievable if net sales exceed $1.0 billion in a single year, and (iii) tiered royalties, at percentages ranging from the middle single digits to low double-digits, of net sales of Product.

As of December 31, 2017, we had cash and cash equivalents of $31.2 million and $15.0 million available to borrow under our Credit Facility. Our liquidity is dependent upon our cash and cash equivalents, cash flows provided by operating activities and the continued availability of borrowings under our Credit Facility. We may need additional capital if our current plans and assumptions change. Our need for additional capital will depend on many factors, including the financial success of our business, the spending required to develop and commercialize new and existing products, the effect of any acquisitions of other businesses, technologies or facilities that we may make or develop in the future, our spending on new market opportunities, and the potential costs for the filing, prosecution, enforcement and defense of patent claims, if necessary.

We believe that, based on our current level of operations, our existing cash and cash equivalents will provide adequate funds for ongoing operations, planned capital expenditures and working capital requirements for at least the next 12 months.

However, we may need additional capital if our current plans and assumptions change. Our need for additional capital will depend on many factors, including the financial success of our business, the spending required to develop and commercialize new and existing products, the effect of any acquisitions of other businesses, technologies or facilities that we may make or develop in the future, our spending on new market opportunities, and the potential costs for the filing, prosecution, enforcement and defense of patent claims, if necessary. If our capital resources are insufficient to meet our capital requirements, and we are unable to enter into or maintain collaborations with partners that are able or willing to fund our development efforts or commercialize any products that we develop or enable, we will have to raise additional funds to continue the development of our technology and products and complete the commercialization of products, if any, resulting from our technologies. If future financings involve the issuance of equity securities, our existing stockholders would suffer dilution. If we raise debt financing or enter into credit facilities, we may be subject to restrictive covenants that limit our ability to conduct our business. We may not be able to raise sufficient additional funds on terms that are favorable to us, if at all. If we fail to raise sufficient funds and fail to generate sufficient revenues to achieve planned gross margins and to control operating costs, our ability to fund our operations, take advantage of strategic opportunities, develop products or technologies, or otherwise respond to competitive pressures could be significantly limited. If this happens, we may be forced to delay or terminate research or development programs or the commercialization of products resulting from our technologies, curtail or cease operations or obtain funds through collaborative and licensing arrangements that may require us to relinquish commercial rights, or grant licenses on terms that are not favorable to us. If adequate funds are not available, we will not be able to successfully execute our business plan or continue our business.

Cash Flows

The following is a summary of cash flows for the years ended December 31, 2017, 2016 and 2015:

	Years Ended December 31,		
(In Thousands)	**2017**	**2016**	**2015**
Net cash used in operating activities	$ (8,763)	$ (2,701)	$ (433)
Net cash used in investing activities	(908)	(842)	(1,257)
Net cash provided by (used in) financing activities	21,650	(490)	(1,524)
Net increase (decrease) in cash and cash equivalents	$ 11,979	$ (4,033)	$ (3,214)

Cash Flows from Operating Activities

Cash used in operating activities was $8.8 million in 2017, which resulted from a net loss of $23.0 million adjusted for non-cash depreciation and amortization of $1.0 million and stock-based compensation of $7.1 million, as well as changes in operating assets and liabilities. The net change in operating assets and liabilities included increases in deferred revenue of $11.0 million primarily related to the Nestlé Agreement, an increase in accounts receivable of $5.7 million, and an increase in other accrued liabilities of $1.4 million, offset by lower accounts payable of $0.8 million due to the timing of payment of invoices.

Cash used in operating activities was $2.7 million in 2016, which resulted from a net loss of $8.6 million adjusted for non-cash depreciation and amortization of $4.5 million and stock-based compensation of $5.7 million, as well as changes in operating assets and liabilities. The net change in operating assets and liabilities included decreases in deferred revenue of $6.4 million primarily related to revenue recognition on the achievement of milestones from collaborative arrangements with Merck and GSK, an increase of $0.8 million in restricted cash reflecting the funding of a reserve to satisfy the funding obligations of our

subsidiary in India, partially offset by a decrease in accounts receivable of $1.4 million, and increases in accrued compensation of $1.0 million primarily due to higher payroll costs and higher accounts payable of $0.9 million due to the timing of payment of invoices.

Cash used in operating activities was $0.4 million in 2015, which resulted from a net loss of $7.6 million adjusted for non-cash depreciation and amortization of $5.4 million and stock-based compensation of $5.1 million, as well as changes in operating assets and liabilities. The net change in operating assets and liabilities included increases in accounts receivable of $3.5 million due primarily to an accrual of a settlement payment from a customer relating to past-due payments and a buy-out of future payments, increases in deferred revenue of $1.9 million due mainly to the CodeEvolver® technology transfer to Merck, and decreases in accounts payable of $1.3 million due to the timing of payment of invoices.

Cash Flows from Investing Activities

Cash used in investing activities was $0.9 million in 2017 primarily due to the purchase of property and equipment. We expect capital spending for 2018 to be approximately $1.0 million primarily for replacement and upgrades of lab equipment.

Cash used in investing activities was $0.8 million in 2016, primarily due to the purchase of property and equipment.

Cash used investing activities was $1.3 million in 2015, primarily due to the purchase of property and equipment.

Cash Flows from Financing Activities

Cash provided by financing activities was $21.7 million in 2017, primarily due to net proceeds from our offering of common stock after deducting underwriting discounts and commission and related costs and proceeds from the exercises of employee stock options which were partially offset by the payment of taxes related to the net share settlement of equity awards.

Cash used in financing activities was $0.5 million in 2016, which was the result of the payment of taxes related to the net share settlement of equity awards, partially offset by the proceeds from the exercises of employee stock options.

Cash used in financing activities was $1.5 million in 2015, which was the result of the payment of taxes related to the net share settlement of equity awards, partially offset by the proceeds from the exercises of employee stock options.

Contractual Obligations

The following table summarizes our significant contractual obligations at December 31, 2017 (in thousands):

	Payments due by period			
(in Thousands)	**Total**	**Less than 1 year**	**1 to 3 years**	**4 to 5 years**
Capital lease obligations	$ 565	$ 252	$ 313	$ —
Operating leases obligations [1]	7,708	3,185	3,992	531
Total [2]	$ 8,273	$ 3,437	$ 4,305	$ 531

(1) Represents future minimum lease payments under non-cancellable operating leases in effect as of December 31, 2017 for our facilities in Redwood City, California. The minimum lease payments above do not include common area maintenance charges or real estate taxes. In addition, amounts have not been reduced by future minimum sublease rentals of $1.2 million to be received under non-cancellable subleases.

(2) Excludes $0.7 million of uncertain tax liabilities for which we cannot make a reasonably reliable estimate of the period of cash settlement.

Other Commitments

We have other commitments related to supply and service arrangements entered into in the normal course of business. For additional information about other commitments, see Note 13 "Commitments and Contingencies" in the accompanying notes to the consolidated financial statements. Future minimum payments reflect amounts those obligations are expected to have on our

liquidity and cash flows in future period and include obligations subject to risk of cancellation by us (in thousands):

Other Commitment Agreement Type	Agreement Date	Future Minimum Payment
Manufacture and supply agreement with expected future payment date of December 2022	April 2016	$ 1,693
Service agreement for the development of manufacturing process	April 2017	1,082
Service agreement for stability study	July 2017	398
Service agreement for clinical trial	December 2017	294
Total other commitments		$ 3,467

On June 30, 2017, we entered into the Credit Facility which consists of term loans totaling up to $10.0 million, and advances under a revolving line of credit totaling up to $5.0 million with an accounts receivable borrowing base of 80% of certain eligible accounts receivable. We may draw on the term debt at any time prior to June 30, 2018, subject to customary conditions for funding including, among others that no event of default exists. We may draw on the revolving line of credit at any time prior to the maturity date. The Credit Facility terminates July 1, 2021. Term debt loans bear interest through maturity at a variable rate based on the London Interbank Offered Rate plus 3.60%. Advances under the revolving line of credit bear interest at a variable annual rate equal to the greater of (i) 1.00% above the prime rate and (ii) 5.00%. No amounts were drawn down under the Credit Facility as of December 31, 2017. For additional information about our credit facility, see Note 13 "Commitments and Contingencies" in the accompanying notes to the consolidated financial statements.

Off-Balance Sheet Arrangements

As of December 31, 2017, we had no off-balance sheet arrangements as defined in Item 303(a)(4) of Regulation S-K as promulgated by the SEC.

Critical Accounting Policies and Estimates

Management’s discussion and analysis of our financial condition and results of operations are based upon our consolidated financial statements. The consolidated financial statements have been prepared in conformity with generally accepted accounting principles in the United States and include our accounts and the accounts of our wholly-owned subsidiaries. The preparation of our consolidated financial statements requires our management to make estimates, assumptions, and judgments that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the applicable periods. Management bases its estimates, assumptions and judgments on historical experience and on various other factors that are believed to be reasonable under the circumstances. Different assumptions and judgments would change the estimates used in the preparation of our consolidated financial statements, which, in turn, could change the results from those reported. Our management evaluates its estimates, assumptions and judgments on an ongoing basis.

The critical accounting policies requiring estimates, assumptions, and judgments that we believe have the most significant impact on our consolidated financial statements are described below.

Revenue Recognition

We recognize revenue from the sale of our products, collaborative research and development agreements and revenue sharing arrangements. Revenue is recognized when the related costs are incurred and the four basic criteria of revenue recognition are met: (1) persuasive evidence of an arrangement exists; (2) delivery has occurred or services have been rendered; (3) the fee is fixed or determinable; and (4) collectability is reasonably assured. Where the revenue recognition criteria are not met, we defer the recognition of revenue by recording deferred revenue until such time that all criteria of revenue recognition are met.

We account for revenues from multiple element arrangements, such as license and platform technology transfer agreements in which a licensee may purchase several deliverables, in accordance with Financial Accounting Standards Board (“FASB”) Accounting Standards Codification (“ASC”) Subtopic 605-25, “Multiple Element Arrangements.” For new or materially amended multiple element arrangements, we identify the deliverables at the inception of the arrangement and each deliverable within a multiple deliverable revenue arrangement is accounted for as a separate unit of accounting if both of the following criteria are met: (1) the delivered item or items have value to the customer on a standalone basis and (2) for an arrangement that

includes a general right of return relative to the delivered item(s), delivery or performance of the undelivered item(s) is considered probable and substantially in our control. Revenue allocated to each element is then recognized based on when the basic four revenue recognition criteria are met for each element.

Where a portion of non-refundable up-front fees or other payments received are allocated to continuing performance obligations under the terms of a collaborative arrangement, they are recorded as deferred revenue and recognized as revenue ratably over the term of our estimated performance period under the agreement or using the proportional performance method based on the ratio of the level of effort incurred to date compared to the total estimated level of effort required to complete our performance obligations under the agreement. Determining the total estimated level of effort required to complete all performance obligations requires management judgment and estimation including assumptions regarding the number of internal hours required to complete the project and external effort incurred. We determine the estimated performance periods, and they are periodically reviewed based on the progress of the related program. The effect of any change made to an estimated performance period and, therefore, to revenue recognized, would occur on a prospective basis in the period that the change was made.

Product Sales

Product sales consist of sales of protein catalysts, pharmaceutical intermediates, and Codex® Biocatalyst Panels and Kits. Product sales are recognized once passage of title and risk of loss has occurred and contractually specified acceptance criteria, if any, have been met, provided all other revenue recognition criteria have also been met. Shipping and handling costs charged to customers are recorded as revenue.

Research and Development Revenues

Collaborative research and development agreements typically provide us with multiple revenue streams, including: research services fees for full time employee (“FTE”) research services, up-front license fees, technology access, contingent payments upon achievement of contractual criteria, and royalty fees based on the licensee’s product sales or cost savings achieved by our customers.

We perform collaborative research and development activities as specified in each respective customer agreement. Payments for services received are not refundable. Certain research agreements are based on a contractual reimbursement rate per FTE working on the project. We recognize revenue from research services as those services are performed over the contractual performance periods. When up-front payments are combined with FTE services in a single unit of accounting, we recognize the up-front payments using the proportionate performance method of revenue recognition based upon the actual amount of research labor hours incurred relative to the amount of the total expected labor hours to be incurred by us, up to the amount of cash received. In cases where the planned levels of research services fluctuate substantially over the research term, we are required to make estimates of the total hours required to perform our obligations.

We recognize research and development revenues from non-refundable, up-front license fees or technology access payments that are not dependent on any future performance by us when such amounts are earned. If we have continuing obligations to perform under the arrangement, such fees are recorded as deferred revenues and recognized over the estimated period of continuing performance. Estimated performance periods are periodically reviewed based on the progress of the related program. The effect of any change made to an estimated performance period, and therefore to revenue recognized, would occur on a prospective basis in the period that the change was made.

A payment that is contingent upon the achievement of a substantive milestone is recognized in its entirety in the period in which the milestone is achieved. A milestone is an event (i) that can only be achieved based in whole or in part on either our performance or on the occurrence of a specific outcome resulting from our performance, (ii) for which there is, as of the date the arrangement is entered into, substantive uncertainty that the event will be achieved and (iii) results in additional payments being due to us. Milestones are considered substantive when the consideration earned from the achievement of the milestone (i) is commensurate with either our performance to achieve the milestone or the enhancement of the value of the item delivered as a result of a specific outcome resulting from its performance, (ii) relates solely to past performance and (iii) is reasonable relative to all deliverable and payment terms in the arrangement.

We recognize revenue from other contingent payments based on passage of time or when earned as the result of a customer’s performance in accordance with the contractual terms and when such payments can be reasonably estimated and collectability of such payments is reasonably assured.

We recognize revenue from royalties based on licensees’ sales of our products or products using our technologies. Royalties are recognized as earned in accordance with the contract terms when royalties from licensees can be reasonably estimated and

collectability is reasonably assured. For the majority of our royalty revenue, estimates are made using notification of the sale of licensed products from the licensees.

Revenue Sharing Arrangement

We recognize revenues from a revenue sharing arrangement based upon sales of licensed products by our revenue sharing partner Exela PharmSci, Inc. (“Exela”) (see Note 14 - Related Party Transactions to our consolidated financial statements). We recognize revenues net of product and selling costs upon notification from our revenue sharing partner of our portion of net profit based on the contractual percentage from the sale of licensed product.

Allowances

Allowances against receivable balances primarily relate to product returns and prompt pay sales discounts, and are recorded in the same period that the related revenue is recognized, resulting in a reduction in product sales and the reporting of accounts receivable net of allowances.

We estimate an allowance for doubtful accounts through specific identification of potentially uncollectible accounts receivable based on an analysis of our accounts receivable aging. Uncollectible accounts receivable are written off against the allowance for doubtful accounts when all efforts to collect them have been exhausted. Recoveries are recognized when they are received. Actual collection losses may differ from our estimates and could be material to our consolidated financial position, results of operations, and cash flows.

Stock-Based Compensation

We use the Black-Scholes-Merton option pricing model to estimate the fair value of options granted under our equity incentive plans. The Black-Scholes-Merton option pricing model requires the use of assumptions, including the expected term of the award and the expected stock price volatility. We have, due to insufficient historical data, used the “simplified method,” as described in Staff Accounting Bulletin No. 107, “Share-Based Payment,” to determine the expected term of all stock options granted from the inception of our equity plans through the first half of 2015. Beginning in the third quarter of 2015, we believe we have sufficient historical data to calculate expected terms for stock options granted. Thus, the expected term was based on historical exercise behavior on similar awards, giving consideration to the contractual terms, vesting schedules and expectations of future employee behavior. We used historical volatility to estimate expected stock price volatility. The risk-free rate assumption was based on United States Treasury instruments whose terms were consistent with the expected term of the stock options. The expected dividend assumption was based on our history and expectation of dividend payouts.

Restricted Stock Units (“RSUs”), Restricted Stock Awards (“RSAs”), performance based options (“PBOs”), and performance-contingent restricted stock units (“PSUs”) are measured based on the fair market values of the underlying stock on the dates of grant. The vesting of PBOs and PSUs awarded is conditioned upon the attainment of one or more performance objectives over a specified period and upon continued employment through the applicable vesting date. At the end of the performance period, shares of stock subject to the PBOs and PSUs vest based upon both the level of achievement of performance objectives within the performance period and continued employment through the applicable vesting date.

Stock-based compensation expense is calculated based on awards ultimately expected to vest and is reduced for estimated forfeitures at the time of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates. The estimated annual forfeiture rates for stock options, RSUs, PSUs, PBOs and RSAs are based on our historical forfeiture experience.

The estimated fair value of stock options, RSUs and RSAs are expensed on a straight-line basis over the vesting term of the grant and the estimated fair value of PSUs and PBOs are expensed using an accelerated method over the term of the award once management has determined that it is probable that performance objective will be achieved. Compensation expense is recorded over the requisite service period based on management’s best estimate as to whether it is probable that the shares awarded are expected to vest. Management assesses the probability of the performance milestones being met on a continuous basis.

We have not recognized, and do not expect to recognize in the near future, any excess income tax benefits related to employee stock-based compensation expense as a result of the full valuation allowance on our deferred tax assets including deferred tax assets related to net operating loss carryforwards.

Impairment of Long-Lived Assets

Our long-lived assets include property and equipment and fully amortized acquired technology. We determined that we have a single entity wide asset group ("Asset Group"). The directed evolution technology patent portfolio acquired from Maxygen ("Core IP") is an important component of the Asset Group since it is the base technology for all aspects of our research and development activities, and represents the basis for all of our identifiable cash flow generating capacity. However, the Core IP became fully amortized in 2016 and there are no finite-lived intangible assets with a net carrying value on our consolidated balance sheet as of December 31, 2017.

We evaluate the carrying value of long-lived assets, including property and equipment, whenever events, changes in business circumstances or our planned use of long-lived assets indicate that their carrying amounts may not be fully recoverable or that their useful lives are no longer appropriate. If these facts and circumstances exist, we assess for recovery by comparing the carrying values of long-lived assets with their future net undiscounted cash flows. If the comparison indicates that impairment exists, long-lived assets are written down to their respective fair value based on discounted cash flows. Significant management judgment is required in the forecast of future operating results that are used in the preparation of expected undiscounted cash flows.

No impairment charges for long-lived assets were recorded during the year ended December 31, 2017, 2016 and 2015.

Goodwill

We determined that we operate in one segment and reporting unit under the criteria in ASC 280, “Segment Reporting.” Accordingly, our review of goodwill impairment indicators is performed at the consolidated level. We review goodwill impairment annually at each fiscal year end and whenever events or changes in circumstances indicate the carrying value of goodwill may not be recoverable.

The goodwill impairment test consists of a two-step process. The first step of the goodwill impairment test, used to identify potential impairment, compares the fair value of the reporting unit to carrying value. If the fair value of the reporting unit exceeds its carrying amount, goodwill of the reporting unit is considered not impaired, and the second step of the impairment test is not required.

The second step, if required, compares the implied fair value of the reporting unit goodwill with the carrying amount of that goodwill. If the carrying amount of the reporting unit’s goodwill exceeds its implied fair value, an impairment charge is recognized in an amount equal to that excess. Implied fair value is the excess of the fair value of the reporting unit over the fair value of all identified assets and liabilities. We base our fair value estimates on assumptions we believe to be reasonable. Actual future results may differ from those estimates.

Goodwill amounts have been recorded as the excess purchase price over tangible assets, liabilities and intangible assets acquired based on their estimated fair value, by applying the acquisition method. Goodwill is not subject to amortization. Goodwill was tested for impairment at fiscal year-end of 2017 and concluded that the fair value of the reporting unit exceeded the carrying value and no impairment existed. During 2017, 2016 and 2015, we did not record impairment charges related to goodwill.

Income Taxes

We use the liability method of accounting for income taxes, whereby deferred tax asset or liability account balances are calculated at the balance sheet date using current tax laws and rates in effect for the year in which the differences are expected to affect taxable income. Valuation allowances are provided when necessary to reduce deferred tax assets to the amount that will more likely than not be realized.

We make certain estimates and judgments in determining income tax expense for financial statement purposes. These estimates and judgments occur in the calculation of tax credits, benefits and deductions and in the calculation of certain tax assets and liabilities, which arise from differences in the timing of recognition of revenues and expenses for tax and financial statement purposes. Significant changes to these estimates may result in an increase or decrease to our tax provision in a subsequent period.

In assessing the realizability of deferred tax assets, we consider whether it is more likely than not that some portion or all of the deferred tax assets will be realized on a jurisdiction by jurisdiction basis. The ultimate realization of deferred tax assets is dependent upon the generation of taxable income in the future. We have recorded a valuation allowance against these deferred tax assets in jurisdictions where ultimate realization of deferred tax assets is more likely than not to occur. As of December 31,

2017, we maintain a full valuation allowance in all jurisdictions against the net deferred tax assets as we believe that it is more likely than not that the majority of deferred tax assets will not be realized.

Effective December 31, 2015, we elected to early adopt Accounting Standards Update ("ASU") 2015-17 “Income Taxes (Topic 740), Balance Sheet Classification of Deferred Taxes” on a prospective basis. Adoption of this ASU resulted in a reclassification of our net current deferred tax asset to the net non-current deferred tax asset in our consolidated balance sheets as of December 31, 2015. No prior periods were retrospectively adjusted.

We make estimates and judgments about our future taxable income that are based on assumptions that are consistent with our plans and estimates. Should the actual amounts differ from our estimates, the amount of our valuation allowance may be materially impacted. Any adjustment to the deferred tax asset valuation allowance would be recorded in the income statement for the periods in which the adjustment is determined to be required.

We account for uncertainty in income taxes as required by the provisions of ASC Topic 740, which clarifies the accounting for uncertainty in income taxes recognized in an enterprise’s financial statements. The first step is to evaluate the tax position for recognition by determining if the weight of available evidence indicates that it is more likely than not that the position will be sustained on audit, including resolution of related appeals or litigation processes, if any. The second step is to estimate and measure the tax benefit as the largest amount that is more than 50% likely of being realized upon ultimate settlement. It is inherently difficult and subjective to estimate such amounts, as this requires us to determine the probability of various possible outcomes. We consider many factors when evaluating and estimating our tax positions and tax benefits, which may require periodic adjustments and may not accurately anticipate actual outcomes.

The Tax Reform Act of 1986 and similar state provisions limit the use of NOL carryforwards in certain situations where equity transactions result in a change of ownership as defined by Code Section 382. In the event we should experience such an ownership change, as defined, utilization of our federal and state NOL carryforwards could be limited.

We maintain a full valuation allowance against net deferred tax assets as we believe that it is more likely than not that the majority of deferred tax assets will not be realized.

Changes to Tax Law

On December 22, 2017, the Tax Cuts and Jobs Act of 2017 (the “Tax Act”) was signed into law making significant changes to the Code. The Tax Act makes broad and complex changes to the U.S. tax code, including, but not limited to, (i) reducing the U.S. federal statutory tax rate from 35% to 21%; (ii) requiring companies to pay a one-time transition tax on certain un-repatriated earnings of foreign subsidiaries; (iii) generally eliminating U.S federal income taxes on dividends from foreign subsidiaries; (iv) requiring a current inclusion in U.S. federal taxable income of certain earnings of controlled foreign corporations; (v) eliminating the corporate alternative minimum tax (AMT) and changing how existing AMT credits can be realized; (vi) creating the base erosion anti-abuse tax (BEAT), a new minimum tax; (vii) creating a tax on global intangible low-taxed income (GILTI) of foreign subsidiaries; (viii) creating a new limitation on deductible interest expense; (ix) changing rules related to uses and limitations of net operating loss carryforwards created in tax years beginning after December 31, 2017; and (x) modifying the officer’s compensation limitation.

In December 2017, the SEC issued Staff Accounting Bulletin No. 118 (“SAB 118”), which provided a measurement period of up to one year from the enactment date of the Tax Act for companies to complete the accounting for the Tax Act and its related impacts. The income tax effects of the Tax Act for which the accounting is incomplete include: the impact of the transition tax, the revaluation of deferred tax assets and liabilities to reflect the 21% corporate tax rate, and the impact to the aforementioned items on state income taxes. We have made reasonable provisional estimates for each of these items; however these estimates may be affected by other analyses related to the Tax Act, including but not limited to, any deferred adjustments related to the filing of our 2017 federal and state income tax returns and further guidance yet to be issued.

Because ASC 740-10-25-47 requires the effect of a change in tax laws or rates to be recognized as of the date of enactment, we remeasured our deferred tax assets and liabilities and offsetting valuation allowance in the current period. There was no impact to tax expense as the remeasurement of net deferred tax assets was completely offset by a corresponding change in valuation allowance. The provisional reduction to U.S. deferred tax assets and the offsetting valuation allowance was $34.1 million. While we were able to make a reasonable estimate of the impact of the reduction in corporate rate, this estimate may be affected by other analyses related to the Tax Act, including, but not limited to, any deferred adjustments related to the filing of our 2017 federal and state tax returns and our calculation of the state tax effect of adjustments made to federal temporary differences. We have not yet completed our calculation of the total post-1986 foreign earnings and profits (“E&P”) for our foreign subsidiaries as E&P will not be finalized until the federal income tax return is filed. However, we have prepared a

provisional estimate and do not expect to incur a taxable income inclusion from the deemed repatriation of accumulated foreign earnings due to an accumulated deficit in foreign earnings and profits.

The GILTI provisions in the Tax Act will require us to include, in our U.S. income tax return, foreign subsidiary earnings in excess of an allowable return on the foreign subsidiary's tangible assets. We are currently assessing the GILTI provisions and have not yet selected an accounting policy for its application; however, we do not anticipate that it will have a material impact on our future tax expense as the operations of our non-U.S. subsidiaries are not material.

The BEAT provisions in the Tax Act eliminates the deduction of certain base-erosion payments made to related foreign corporations, and imposes a minimum base erosion anti-abuse tax if greater than regular tax. We do not expect to be subject to this tax based on its assessment of the BEAT provisions.

Recent Accounting Pronouncements

For information on recent accounting pronouncements, see Note 2 to the Consolidated Financial Statements set forth in Item 8 of this Annual Report on Form 10-K.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Interest Rate Sensitivity

We had unrestricted cash and cash equivalents totaling $31.2 million at December 31, 2017. These amounts were invested primarily in money market funds and are held for working capital purposes. We do not enter into investments for trading or speculative purposes. We believe we do not have material exposure to changes in fair value as a result of changes in interest rates. Declines in interest rates, however, will reduce future investment income. If overall interest rates fell by 10% in 2017, our results of operations and cash flows would not be materially affected.

Foreign Currency Risk

We have sales activities outside the United States with foreign currency denominated assets and liabilities, primarily in Euro and Indian rupee. Our results of operations and cash flows are subject to fluctuations due to changes in foreign currency exchange rates. In periods when the United States dollar declines in value as compared to the foreign currencies in which we incur expenses, our foreign-currency based expenses increase when translated into United States dollars. Although substantially all of our sales are denominated in United States dollars, future fluctuations in the value of the United States dollar may affect the price competitiveness of our products outside the United States. The effect of a 10% unfavorable change in exchange rates on foreign denominated receivables and cash as of December 31, 2017 would have had foreign exchange losses of approximately $0.1 million recognized as a component of other expense in our consolidated statement of operations. We did not engage in hedging transactions in 2017, 2016 and 2015.

Equity Price Risk

As described further in Note 5 to the Consolidated Financial Statements, we have an investment in common shares of CO_2 Solutions Inc., a company based in Quebec, Canada ("CO_2 Solutions"), whose shares are publicly traded in Canada on the TSX Venture Exchange. As of December 31, 2017, the fair value of our investment in CO_2 Solutions' common stock was $0.7 million with an unrealized gain of $0.1 million.

This investment is exposed to fluctuations in both the market price of CO_2 Solutions' common shares and changes in the exchange rates between the United States dollar and the Canadian dollar. The effect of a 10% adverse change in the market price of CO_2 Solutions' common shares as of December 31, 2017 would have been an unrealized loss of approximately $0.1 million, recognized as a component of our consolidated statement of comprehensive loss. The effect of a 10% unfavorable change in the exchange rates between the United States dollar and the Canadian dollar as of December 31, 2017 would have been an unrealized loss of approximately $0.1 million, recognized as a component of our consolidated statements of comprehensive loss.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Codexis, Inc.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

Report of Independent Registered Public Accounting Firm

Shareholders and Board of Directors
Codexis, Inc.
Redwood City, California

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Codexis, Inc. (the “Company”) and subsidiaries as of December 31, 2017 and 2016, the related consolidated statements of operations, comprehensive loss, stockholders’ equity, and cash flows for each of the three years in the period ended December 31, 2017, and the related notes (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company and subsidiaries at December 31, 2017 and 2016, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2017, in conformity with accounting principles generally accepted in the United States of America.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (“PCAOB”), the Company's internal control over financial reporting as of December 31, 2017, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”) and our report dated March 15, 2018 expressed an unqualified opinion thereon.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on the Company’s consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ BDO USA, LLP

We have served as the Company's auditor since 2013.

San Jose, California

March 15, 2018

Report of Independent Registered Public Accounting Firm

Shareholders and Board of Directors
Codexis, Inc.
Redwood City, California

Opinion on Internal Control over Financial Reporting

We have audited Codexis, Inc.'s (the "Company's") internal control over financial reporting as of December 31, 2017, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (the "COSO criteria"). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2017, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated balance sheets of the Company and subsidiaries as of December 31, 2017 and 2016, the related consolidated statements of operations, comprehensive loss, stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2017, and our report dated March 15, 2018 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit of internal control over financial reporting in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

A company's 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 generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ BDO USA, LLP

San Jose, California

March 15, 2018

Codexis, Inc.

Consolidated Balance Sheets
(In Thousands, Except Per Share Amounts)

	December 31,	
	2017	2016
Assets		
Current assets:		
Cash and cash equivalents	$ 31,219	$ 19,240
Accounts receivable, net of allowances of $34 at December 31, 2017 and $421 at December 31, 2016	11,800	5,924
Inventories	1,036	825
Prepaid expenses and other current assets	984	1,238
Total current assets	45,039	27,227
Restricted cash	1,557	1,624
Marketable securities	671	1,142
Property and equipment, net	2,815	2,155
Goodwill	3,241	3,241
Other non-current assets	302	259
Total assets	$ 53,625	$ 35,648
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	$ 3,545	$ 4,232
Accrued compensation	4,753	4,314
Other accrued liabilities	4,362	2,111
Deferred revenue	12,292	1,710
Total current liabilities	24,952	12,367
Deferred revenue, net of current portion	1,501	1,066
Lease incentive obligation, net of current portion	460	885
Financing obligation, net of current portion	302	—
Other long-term liabilities	1,863	2,231
Total liabilities	29,078	16,549
Commitments and contingencies (Note 13)		
Stockholders' equity:		
Preferred stock, $0.0001 par value per share; 5,000 shares authorized, none issued and outstanding	—	—
Common stock, $0.0001 par value per share; 100,000 shares authorized; 48,365 and 41,255 shares issued and outstanding at December 31, 2017 and December 31, 2016, respectively	5	4
Additional paid-in capital	340,079	311,164
Accumulated other comprehensive loss	(472)	—
Accumulated deficit	(315,065)	(292,069)
Total stockholders' equity	24,547	19,099
Total liabilities and stockholders' equity	$ 53,625	$ 35,648

See Accompanying Notes to Consolidated Financial Statements

Codexis, Inc.

Consolidated Statements of Operations
(In Thousands, Except Per Share Amounts)

	Years Ended December 31,		
	2017	2016	2015
Revenues:			
Product sales	$ 26,685	$ 15,321	$ 11,376
Research and development revenues	20,748	31,316	25,599
Revenue sharing arrangement	2,591	2,200	4,829
Total revenues	50,024	48,837	41,804
Costs and operating expenses:			
Cost of product sales	14,327	9,753	6,586
Research and development	29,659	22,229	20,673
Selling, general and administrative	29,008	25,419	22,315
Total costs and operating expenses	72,994	57,401	49,574
Loss from operations	(22,970)	(8,564)	(7,770)
Interest income	147	60	19
Other expense	(92)	(94)	(168)
Loss before income taxes	(22,915)	(8,598)	(7,919)
Provision for (benefit from) income taxes	81	(40)	(338)
Net loss	$ (22,996)	$ (8,558)	$ (7,581)
Net loss per share, basic and diluted	$ (0.50)	$ (0.21)	$ (0.19)
Weighted average common shares used in computing net loss per share, basic and diluted	46,228	40,629	39,438

See Accompanying Notes to Consolidated Financial Statements

Codexis, Inc.

Consolidated Statements of Comprehensive Loss
(In Thousands)

	Years Ended December 31,		
	2017	2016	2015
Net loss	$ (22,996)	$ (8,558)	$ (7,581)
Other comprehensive income (loss):			
Unrealized gain (loss) on marketable securities, net of tax [1]	(472)	(405)	547
Other comprehensive income (loss)	(472)	(405)	547
Total comprehensive loss	$ (23,468)	$ (8,963)	$ (7,034)

[1] Net of benefit from income taxes of $0, $0, and $314 in 2017, 2016 and 2015, respectively.

See Accompanying Notes to Consolidated Financial Statements

Codexis, Inc.

Consolidated Statements of Stockholders' Equity
(In Thousands)

	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
December 31, 2014	39,563	$ 4	$ 302,379	$ (142)	$ (275,930)	$ 26,311
Exercise of stock options	172	—	289	—	—	289
Cancellation of shares	(444)	—	(1,813)	—	—	(1,813)
Release of stock awards	1,052	—	—	—	—	—
Employee stock-based compensation	—	—	5,122	—	—	5,122
Non-employee stock-based compensation	—	—	4	—	—	4
Total comprehensive loss	—	—	—	547	(7,581)	(7,034)
December 31, 2015	40,343	4	305,981	405	(283,511)	22,879
Exercise of stock options	398	—	1,034	—	—	1,034
Cancellation of shares	(397)	—	(1,524)	—	—	(1,524)
Release of stock awards	911	—	—	—	—	—
Employee stock-based compensation	—	—	5,673	—	—	5,673
Total comprehensive loss	—	—	—	(405)	(8,558)	(8,963)
December 31, 2016	41,255	4	311,164	—	(292,069)	19,099
Exercise of stock options	86	—	266	—	—	266
Cancellation of shares	(397)	—	(1,671)	—	—	(1,671)
Release of stock awards	1,096	—	—	—	—	—
Employee stock-based compensation	—	—	7,048	—	—	7,048
Non-employee stock-based compensation	—	—	43	—	—	43
Issuance of common stock, net of issuance costs	6,325	1	23,229	—	—	23,230
Total comprehensive loss	—	—	—	(472)	(22,996)	(23,468)
December 31, 2017	48,365	$ 5	$ 340,079	$ (472)	$ (315,065)	$ 24,547

See Accompanying Notes to Consolidated Financial Statements

Codexis, Inc.

Consolidated Statements of Cash Flows
(In Thousands)

	Years Ended December 31,		
	2017	**2016**	**2015**
Operating activities:			
Net loss	$ (22,996)	$ (8,558)	$ (7,581)
Adjustments to reconcile net loss to net cash used in operating activities:			
Amortization of intangible assets	—	2,812	3,374
Depreciation and amortization	1,042	1,734	2,035
Stock-based compensation	7,091	5,673	5,126
Loss (gain) on disposal of property and equipment	9	(42)	32
Gain from extinguishment of asset retirement obligation	(207)	—	—
Income tax benefit related to marketable securities	—	—	(314)
Changes in operating assets and liabilities:			
Accounts receivable, net	(5,651)	1,405	(3,459)
Inventories	(210)	167	403
Prepaid expenses and other current assets	157	7	10
Restricted cash	(8)	(841)	—
Other assets	(44)	52	(16)
Accounts payable	(801)	942	(1,274)
Accrued compensation	439	983	385
Other accrued liabilities	1,399	(593)	(1,062)
Deferred revenue	11,017	(6,442)	1,908
Net cash used in operating activities	(8,763)	(2,701)	(433)
Investing activities:			
Purchase of property and equipment	(985)	(888)	(1,199)
Proceeds from disposal of property and equipment	2	42	18
Changes in restricted cash	75	4	(76)
Net cash used in investing activities	(908)	(842)	(1,257)
Financing activities:			
Proceeds from exercises of stock options	266	1,034	289
Proceeds from issuance of common stock in connection with public offering, net of underwriting discounts and commission	23,782	—	—
Costs incurred in connection with public offering	(553)	—	—
Principal payments on capital lease obligations	(175)	—	—
Taxes paid related to net share settlement of equity awards	(1,670)	(1,524)	(1,813)
Net cash provided by (used in) financing activities	21,650	(490)	(1,524)
Net increase (decrease) in cash and cash equivalents	11,979	(4,033)	(3,214)
Cash and cash equivalents at the beginning of the year	19,240	23,273	26,487
Cash and cash equivalents at the end of the year	$ 31,219	$ 19,240	$ 23,273
Supplemental disclosure of cash flow information:			
Interest paid	$ 141	$ 14	$ —
Income taxes	$ 32	$ 5	$ 8
Supplemental non-cash financing activities:			
Equipment acquired under capital leases	$ 862	$ —	$ —

See Accompanying Notes to Consolidated Financial Statements

Codexis, Inc.

Notes to Consolidated Financial Statements

Note 1. Description of Business

In these notes to the consolidated financial statements, the “Company,” “we,” “us,’” and “our” refers to Codexis, Inc. and its subsidiaries on a consolidated basis.

We discover, develop and sell proteins that deliver value to our clients in a growing set of industries. We view proteins as a vast untapped source of value-creating materials, and we are using our proven technologies, which have been continuously improved over our fifteen year history, to commercialize an increasing number of novel proteins, both as proprietary Codexis products and in partnership with our customers.

Many companies have historically used naturally occurring proteins to produce or enhance goods used in everyday life. Despite the growing number of commercial applications of naturally occurring proteins across many industries, the inherent limitations of naturally-occurring proteins frequently restrict their commercial use. Through the application of our proprietary CodeEvolver® protein engineering technology platform, we are able to engineer novel proteins to overcome these restrictions, thereby adding value or opening up new prospects for our potential clients’ products, processes or businesses. We have developed new proteins that are significantly more stable and/or active in our commercial applications than proteins derived from nature.

We are also a pioneer in the harnessing of computational technologies to drive biology advancements. Over the last fifteen years, we have made substantial investments in the development of our CodeEvolver® protein engineering technology platform, the primary source of our competitive advantage. Our technology platform is powered by proprietary, artificial intelligence-based, computational algorithms that rapidly mine our large and continuously growing library of protein variants’ performance attributes. These computational outputs enable increasingly reliable predictions for next generation protein variants to be engineered, enabling delivery of targeted performance enhancements in a time-efficient manner. In addition to its computational prowess, our CodeEvolver® protein engineering technology platform integrates additional modular competencies, including robotic high-throughput screening and genomic sequencing, organic chemistry and process development which are all coordinated to create our novel protein innovations.

We use our CodeEvolver® protein engineering technology platform to engineer custom enzymes. Most of our custom enzymes are intended for use as biocatalysts or protein catalysts. In simple terms, our protein catalysts can accelerate and/or improve yields of chemical reactions. We use our CodeEvolver® protein engineering technology platform to develop novel enzymes that enable industrial biocatalytic reactions and fermentations. Our technology platform has enabled commercially viable products and processes for the manufacture of pharmaceutical intermediates and active ingredients and fine chemicals.

Our approach to develop commercially viable biocatalytic manufacturing processes begins by conceptually designing the most cost-effective and practical process for a targeted product. We then develop optimized protein catalysts to enable that process design, using our CodeEvolver® protein engineering platform technology. Engineered protein catalyst candidates - many thousands for each protein engineering project - are then rapidly screened and validated in high throughput under relevant manufacturing operating conditions. This approach results in an optimized protein catalyst enabling cost-efficient processes that typically are relatively simple to run in conventional manufacturing equipment. This also allows for the efficient technical transfer of our process to our manufacturing partners.

The successful embodiment of our CodeEvolver® protein engineering technology platform in commercial manufacturing processes requires well-integrated expertise in a number of technical disciplines. In addition to those directly involved in practicing our CodeEvolver® protein engineering platform technology, such as molecular biology, enzymology, microbiology, cellular engineering, metabolic engineering, bioinformatics, biochemistry and high throughput analytical chemistry, our process development projects also involve integrated expertise in organic chemistry, chemical process development, chemical engineering, fermentation process development and fermentation engineering. Our integrated, multi-disciplinary approach to biocatalyst and process development is a critical success factor for our company.

We initially commercialized our CodeEvolver® protein engineering technology platform and products in the pharmaceuticals market, which remains our primary business focus. Our customers, which include several large global pharmaceutical companies, use our technology, products and services in their manufacturing processes and process development.

We have also used the technology to develop protein catalysts for use in the fine chemicals market. The fine chemicals market consists of several large market verticals, including food and food ingredients, animal feed, flavors, fragrances, and agricultural chemicals.

More recently, we are also using the CodeEvolver® protein engineering technology platform to develop early stage, novel biotherapeutic product candidates, both for our customers and for our own business, most notably our lead program for the potential treatment of PKU in humans. PKU is an inherited metabolic disorder in which the enzyme that converts the essential amino acid phenylalanine into tyrosine is deficient. In October 2017, we entered into a Global Development, Option and License Agreement with Nestec, Ltd. ("Nestlé Health Science") to advance CDX-6114, our enzyme biotherapeutic product candidate for the potential treatment of PKU disease.

We have also used our technology to develop an enzyme for customers using NGS and PCR/qPCR for *in vitro* molecular diagnostic and genomic research applications.

Note 2. Basis of Presentation and Summary of Significant Accounting Policies

Basis of Presentation and Principles of Consolidation

The consolidated financial statements have been prepared in accordance with generally accepted accounting principles in the United States of America ("GAAP") and the applicable rules and regulations of the Securities and Exchange Commission ("SEC") and include the accounts of Codexis, Inc. and its wholly-owned subsidiaries. All significant intercompany balances and transactions have been eliminated in consolidation.

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, disclosures of contingent liabilities at the date of the consolidated financial statements, and the reported amounts of revenue and expenses during the reporting period. We regularly assess these estimates which primarily affect revenue recognition, accounts receivable, inventories, the valuation of marketable securities, assets held for sale, goodwill arising out of business acquisitions, accrued liabilities, stock awards and the valuation allowances associated with deferred tax assets. Actual results could differ from those estimates and such differences may be material to the consolidated financial statements.

Segment Reporting

Operating segments are defined as components of an enterprise about which separate financial information is available that is evaluated regularly by the chief operating decision maker, or decision making group, in deciding how to allocate resources and in assessing performance. Our chief operating decision maker is our Chief Executive Officer. The Chief Executive Officer reviews financial information presented on a consolidated basis for purposes of evaluating financial performance. We have one business activity and there are no segment managers who are held accountable for operations, operating results beyond revenue goals or plans for levels or components below the consolidated unit level. Accordingly, we have a single operating and reporting segment.

Foreign Currency Translation

The United States dollar is the functional currency for our operations outside the United States. Accordingly, nonmonetary assets and liabilities originally acquired or assumed in other currencies are recorded in United States dollars at the exchange rates in effect at the date they were acquired or assumed. Monetary assets and liabilities denominated in other currencies are translated into United States dollars at the exchange rates in effect at the balance sheet date. Translation adjustments are recorded in other expense in the consolidated statements of operations. Gains and losses realized from non-U.S. dollar transactions, including intercompany balances not considered as permanent investments, denominated in currencies other than an entity's functional currency are included in other expense in other expense in the accompanying consolidated statements of operations.

Revenue Recognition

We recognize revenue from the sale of our products, collaborative research and development agreements and revenue sharing arrangements. Revenue is recognized when the related costs are incurred and the four basic criteria of revenue recognition are met: (1) persuasive evidence of an arrangement exists; (2) delivery has occurred or services have been rendered; (3) the fee is fixed or determinable; and (4) collectability is reasonably assured. Where the revenue recognition criteria are not met, we defer the recognition of revenue by recording deferred revenue until such time that all criteria of revenue recognition are met.

We account for revenue from multiple element arrangements, such as license and platform technology transfer agreements in which a licensee may purchase several deliverables, in accordance with Financial Accounting Standards Board ("FASB")

Accounting Standards Codification (“ASC”) Subtopic 605-25, “Multiple Element Arrangements.” For new or materially amended multiple element arrangements, we identify the deliverables at the inception of the arrangement and each deliverable within a multiple deliverable revenue arrangement is accounted for as a separate unit of accounting if both of the following criteria are met: (1) the delivered item or items have value to the customer on a standalone basis and (2) for an arrangement that includes a general right of return relative to the delivered item(s), delivery or performance of the undelivered item(s) is considered probable and substantially in our control. Revenue allocated to each element is then recognized based on when the basic four revenue recognition criteria are met for each element.

Where a portion of non-refundable up-front fees or other payments received are allocated to continuing performance obligations under the terms of a collaborative arrangement, they are recorded as deferred revenue and recognized as revenue ratably over the term of our estimated performance period under the agreement or using the proportional performance method based on the ratio of the level of effort incurred to date compared to the total estimated level of effort required to complete our performance obligations under the agreement. Determining the total estimated level of effort required to complete all performance obligations requires management judgment and estimation including assumptions regarding the number of internal hours required to complete the project and external costs to be incurred. We determine the estimated performance periods, and they are periodically reviewed based on the progress of the related program. The effect of any change made to an estimated performance period and, therefore, to revenue recognized, would occur on a prospective basis in the period that the change was made.

Product Sales

Product sales consist of sales of protein catalysts, pharmaceutical intermediates, and Codex® Biocatalyst Panels and Kits. Product sales are recognized once passage of title and risk of loss has occurred and contractually specified acceptance criteria, if any, have been met, provided all other revenue recognition criteria have also been met. Shipping and handling costs charged to customers are recorded as revenue.

Research and Development Revenues

Research and development agreements typically provide us with multiple revenue streams, including research services fees for full time employee (“FTE”) research services, up-front licensing fees, technology access, contingent payments upon achievement of contractual criteria, and royalty fees based on the licensee’s product sales or cost savings achieved by our customers.

We perform research and development activities as specified in each respective customer agreement. Payments for services received are not refundable. Certain research agreements are based on a contractual reimbursement rate per FTE working on the project. We recognize revenue from research services as those services are performed over the contractual performance periods. When up-front payments are combined with FTE services in a single unit of accounting, we recognize the up-front payments as revenue using the proportionate performance method of revenue recognition based upon the actual amount of research labor hours incurred relative to the amount of the total expected labor hours to be incurred by us, up to the amount of cash received. In cases where the planned levels of research services fluctuate substantially over the research term, we are required to make estimates of the total hours required to perform our obligations.

We recognize revenue from non-refundable, up-front license fees or technology access payments that are not dependent on any future performance by us when such amounts are earned. If we have continuing obligations to perform under the arrangement, such fees are recorded as deferred revenues and recognized over the estimated period of performance. Estimated performance periods are periodically reviewed based on the progress of the related program. The effect of any change made to an estimated performance period, and therefore to revenue recognized, would occur on a prospective basis in the period that the change was made.

A payment that is contingent upon the achievement of a substantive milestone is recognized in its entirety in the period in which the milestone is achieved. A milestone is an event (i) that can only be achieved based in whole or in part on either our performance or on the occurrence of a specific outcome resulting from our performance, (ii) for which there is, as of the date the arrangement is entered into, substantive uncertainty that the event will be achieved and (iii) results in additional payments being due to us. Milestones are considered substantive when the consideration earned from the achievement of the milestone (i) is commensurate with either our performance to achieve the milestone or the enhancement of the value of the item delivered as a result of a specific outcome resulting from its performance, (ii) relates solely to past performance and (iii) is reasonable relative to all deliverable and payment terms in the arrangement.

We recognize revenue from other contingent payments based on the passage of time or when earned as the result of a customer’s performance in accordance with contractual terms and when such payments can be reasonably estimated and collectability of such payments is reasonably assured.

We recognize revenue from royalties based on licensees' sales of our products or products using our technologies. Royalties are recognized as earned in accordance with the contractual terms when royalties from licensees can be reasonably estimated and collectability is reasonably assured. For the majority of our royalty revenue, estimates are made using notification of the sale of licensed products from the licensees.

Revenue Sharing Arrangement

We recognize revenue from a revenue sharing arrangement based upon sales of licensed products by our revenue sharing partner Exela PharmSci, Inc. ("Exela") (see Note 14 - Related Party Transactions). We recognize revenue net of product and selling costs upon notification from our revenue sharing partner of our portion of net profit based on the contractual percentage from the sale of licensed product.

Sales Allowances

Sales allowances primarily relate to product returns and prompt pay sales discounts, and are recorded in the same period that the related revenues are recognized, resulting in a reduction in product sales.

Cost of Product Sales

Cost of product sales comprises both internal and third party fixed and variable costs including materials and supplies, labor, facilities and other overhead costs associated with our product sales. Shipping costs are included in our cost of product sales. Such charges were not significant in any of the periods presented.

Cost of Research and Development Services

Cost of research and development expenses related to FTE services under the research and development agreements approximate the research funding over the term of the respective agreements and are included in research and development expense. Costs of services provided under license and platform technology transfer agreements are included in research and development expenses and are expensed in the periods in which such costs are incurred.

Research and Development Expenses

Research and development expenses consist of costs incurred for internal projects as well as partner-funded collaborative research and development activities, as well as license and platform technology transfer agreements, as mentioned above. These costs include our direct and research-related overhead expenses, which include salaries and other personnel-related expenses (including stock-based compensation), occupancy-related costs, supplies, depreciation of facilities and laboratory equipment and amortization of acquired technologies, as well as external costs, and are expensed as incurred. Costs to acquire technologies that are utilized in research and development and that have no alternative future use are expensed when incurred.

Advertising

Advertising costs are expensed as incurred and included in selling, general and administrative expenses in the consolidated statements of operations. Advertising costs were $0.7 million in 2017, $0.5 million in 2016 and $0.3 million in 2015.

Stock-Based Compensation

We use the Black-Scholes-Merton option pricing model to estimate the fair value of options granted under our equity incentive plans. The Black-Scholes-Merton option pricing model requires the use of assumptions, including the expected term of the award and the expected stock price volatility. The expected term is based on historical exercise behavior on similar awards, giving consideration to the contractual terms, vesting schedules and expectations of future employee behavior. We use historical volatility to estimate expected stock price volatility. The risk-free rate assumption is based on United States Treasury instruments whose terms are consistent with the expected term of the stock options. The expected dividend assumption is based on our history and expectation of dividend payouts.

Restricted Stock Units ("RSUs"), Restricted Stock Awards ("RSAs"), performance based options ("PBOs"), and performance-contingent restricted stock units ("PSUs") are measured based on the fair market values of the underlying stock on the dates of grant. The vesting of PBOs and PSUs awarded is conditioned upon the attainment of one or more performance objectives over a specified period and upon continued employment through the applicable vesting date. At the end of the performance period, shares of stock subject to the PBOs and PSUs vest based upon both the level of achievement of performance objectives within the performance period and continued employment through the applicable vesting date.

Stock-based compensation expense is calculated based on awards ultimately expected to vest and is reduced for estimated forfeitures at the time of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates. The estimated annual forfeiture rates for stock options, RSUs, PSUs, PBOs, and RSAs are based on historical forfeiture experience.

The estimated fair value of stock options, RSUs and RSAs are expensed on a straight-line basis over the vesting term of the grant and the estimated fair value of PSUs and PBOs are expensed using an accelerated method over the term of the award once management has determined that it is probable that the performance objective will be achieved. Compensation expense is recorded over the requisite service period based on management's best estimate as to whether it is probable that the shares awarded are expected to vest. Management assesses the probability of the performance milestones being met on a continuous basis.

We have not recognized, and do not expect to recognize in the near future, any excess income tax benefits related to employee stock-based compensation expense as a result of the full valuation allowance on our deferred tax assets including deferred tax assets related to our net operating loss carryforwards.

Cash and Cash Equivalents

We consider all highly liquid investments with maturity dates of three months or less at the date of purchase to be cash equivalents. Cash and cash equivalents consist of cash on deposit with banks and money market funds. The majority of cash and cash equivalents is maintained with major financial institutions in North America. Deposits with these financial institutions may exceed the amount of insurance provided on such deposits. Cash and cash equivalents totaled $31.2 million and comprised of cash of $24.4 million and money market funds of $6.8 million at December 31, 2017. Cash and cash equivalents totaled $19.2 million, comprised of cash of $8.0 million and money market funds of $11.2 million at December 31, 2016.

Restricted Cash

In 2016, we began the process of liquidating our Indian subsidiary. The local legal requirements for liquidation required us to maintain our subsidiary's cash balance in an account managed by a legal trustee to satisfy our financial obligations. This balance is recorded as non-current restricted cash on the consolidated balance sheets and totaled $0.8 million at December 31, 2017 and 2016.

In addition, pursuant to the terms of the lease agreement for our Redwood City, CA facilities, our letters of credit are collateralized by deposit balances of $0.8 million as of December 31, 2017 and 2016, which is recorded as non-current restricted cash on the consolidated balance sheets (see Note 13 - Commitments and Contingencies for details).

Marketable Securities

We invest in equity securities and we classify those investments as available-for-sale. These securities are carried at estimated fair value (see Note 5 - Cash Equivalents and Marketable Securities) with unrealized gains and losses included in accumulated other comprehensive loss in stockholders’ equity. Available-for-sale equity securities with remaining maturities of greater than one year or which we currently do not intend to sell are classified as long-term.

We review several factors to determine whether a loss is other-than-temporary. These factors include, but are not limited to, the intent and ability to retain the investment in the issuer for a period of time sufficient to allow for any anticipated recovery in market value, the length of time and the extent to which the market value of the investment has been less than cost and the financial condition and near-term prospects of the issuer. Unrealized losses are charged against “Other expense” when a decline in fair value is determined to be other-than-temporary. No charge for the other-than-temporary impairment has been recorded in any of the periods presented.

Amortization of purchase premiums and accretion of purchase discounts and realized gains and losses of debt securities are included in interest income. The cost of securities sold is based on the specific-identification method.

Fair Value Measurements

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. In determining fair value, we utilize valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs to the extent possible and we consider counterparty credit risk in our assessment of fair value. Carrying amounts of financial instruments, including cash equivalents, marketable

investments, accounts receivable, accounts payable and accrued liabilities, approximate their fair values as of the balance sheet dates because of their generally short maturities.

The fair value hierarchy distinguishes between (1) market participant assumptions developed based on market data obtained from independent sources (observable inputs) and (2) an entity's own assumptions about market participant assumptions developed based on the best information available in the circumstances (unobservable inputs). The fair value hierarchy consists of three broad levels, giving the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). The three levels of the fair value hierarchy are described below:

- Level 1: Inputs that are unadjusted, quoted prices in active markets for identical assets or liabilities at the measurement date.
- Level 2: Inputs that are either directly or indirectly observable for the asset or liability through correlation with market data at the measurement date and for the duration of the instrument's anticipated life.
- Level 3: Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities and which reflect management's best estimate of what market participants would use in pricing the asset or liability at the measurement date.

See Note 6 - Fair Value Measurements to our consolidated financial statements.

Accounts Receivable and Allowance for Doubtful Accounts

We currently sell primarily to pharmaceutical companies throughout the world by the extension of trade credit terms based on an assessment of each customer's financial condition. Trade credit terms are generally offered without collateral and may include a discount for prompt payment for specific customers. To manage our credit exposure, we perform ongoing evaluations of our customers' financial conditions. In addition, accounts receivable includes amounts owed to us under our collaborative research and development agreements. We recognize accounts receivable at invoiced amounts and we maintain a valuation allowance for doubtful accounts.

We estimate an allowance for doubtful accounts through specific identification of potentially uncollectible accounts receivable based on an analysis of our accounts receivable aging. Uncollectible accounts receivable are written off against the allowance for doubtful accounts when all efforts to collect them have been exhausted. Recoveries are recognized when they are received. Actual collection losses may differ from our estimates and could be material to our consolidated financial position, results of operations, and cash flows.

Concentrations of Credit Risk

Financial instruments that potentially subject us to significant concentrations of credit risk consist primarily of cash and cash equivalents, accounts receivable, marketable securities, and restricted cash. Cash that is not required for immediate operating needs is invested principally in money market funds. Cash and cash equivalents are invested through banks and other financial institutions in the United States, India and Netherlands. Such deposits in those countries may be in excess of insured limits.

Inventories

Inventories are stated at the lower of cost or net realizable value. Cost is determined using a weighted-average approach, assuming full absorption of direct and indirect manufacturing costs, or based on cost of purchasing from our vendors. If inventory costs exceed expected net realizable value due to obsolescence or lack of demand, valuation adjustments are recorded for the difference between the cost and the expected net realizable value. These valuation adjustments are determined based on significant estimates.

Concentrations of Supply Risk

We rely on a limited number of suppliers for our products. We believe that other vendors would be able to provide similar products; however, the qualification of such vendors may require substantial start-up time. In order to mitigate any adverse impacts from a disruption of supply, we attempt to maintain an adequate supply of critical single-sourced materials. For certain materials, our vendors maintain a supply for us. We outsource the large scale manufacturing of our products to contract manufacturers with facilities in Austria and Italy.

Property and Equipment

Property, equipment and leasehold improvements are stated at cost less accumulated depreciation and amortization and depreciated using the straight-line method over their estimated useful lives as follows:

Asset classification	Estimated useful life
Laboratory equipment	5 years
Computer equipment and software	3 to 5 years
Office equipment and furniture	5 years
Leasehold improvements	Lesser of useful life or lease term

Property and equipment classified as construction in process includes equipment that has been received but not yet placed in service. Normal repairs and maintenance costs are expensed as incurred.

Impairment of Long-Lived Assets

Our long-lived assets include property and equipment and fully amortized acquired technology. We determined that we have a single entity wide asset group ("Asset Group"). The directed evolution technology patent portfolio acquired from Maxygen ("Core IP") in 2010 is an important component of the Asset Group since it is the base technology for all aspects of our research and development activities, and represents the basis for all of our identifiable cash flow generating capacity. However, the Core IP became fully amortized in 2016 and there are no finite-lived intangible assets with a net carrying value on our consolidated balance sheet as of December 31, 2017.

We evaluate the carrying value of long-lived assets, including property and equipment, whenever events, changes in business circumstances or our planned use of long-lived assets indicate that their carrying amounts may not be fully recoverable or that their useful lives are no longer appropriate. If these facts and circumstances exist, we assess for recovery by comparing the carrying values of long-lived assets with their future net undiscounted cash flows. If the comparison indicates that impairment exists, long-lived assets are written down to their respective fair value based on discounted cash flows. Significant management judgment is required in the forecast of future operating results that are used in the preparation of expected undiscounted cash flows.

As of December 31, 2017 and 2016, there were no events or changes in circumstances which indicated that the carrying amount of our Asset Group might not be recoverable. We concluded that the fair value of the reporting unit exceeded the carrying value and no impairment existed. No impairment charges for long-lived assets were recorded during the years ended December 31, 2017, 2016 and 2015.

Goodwill

We determined that we operate in one operating segment and reporting unit under the criteria in ASC 280, “Segment Reporting.” Accordingly, our review of goodwill impairment indicators is performed at the consolidated level. We review goodwill impairment annually at each fiscal year end and whenever events or changes in circumstances indicate the carrying value of goodwill may not be recoverable.

The goodwill impairment test consists of a two-step process. The first step of the goodwill impairment test, used to identify potential impairment, compares the fair value of the reporting unit to its carrying value. If the fair value of the reporting unit exceeds its carrying amount, goodwill of the reporting unit is considered not impaired, and the second step of the impairment test is not required.

The second step, if required, compares the implied fair value of the reporting unit goodwill with the carrying amount of that goodwill. If the carrying amount of the reporting unit’s goodwill exceeds its implied fair value, an impairment charge is recognized in an amount equal to that excess. Implied fair value is the excess of the fair value of the reporting unit over the fair value of all identified assets and liabilities. We base our fair value estimates on assumptions we believe to be reasonable. Actual future results may differ from those estimates.

Goodwill represents the excess of cost over the fair value of net assets acquired in a business combination. Goodwill is not amortized. We tested goodwill for impairment at December 31, 2017 and concluded that the fair value of the reporting unit

exceeded the carrying value and therefore no impairment existed. During 2017, 2016 and 2015, we did not record impairment charges related to goodwill.

Income Taxes

We use the liability method of accounting for income taxes, whereby deferred tax asset or liability account balances are calculated at the balance sheet date using current tax laws and rates in effect for the year in which the differences are expected to affect taxable income. Valuation allowances are provided when necessary to reduce deferred tax assets to the amount that will more likely than not be realized.

We make certain estimates and judgments in determining income tax expense for financial statement purposes. These estimates and judgments occur in the calculation of tax credits, benefits and deductions and in the calculation of certain tax assets and liabilities, which arise from differences in the timing of recognition of revenue and expenses for tax and financial statement purposes. Significant changes to these estimates may result in an increase or decrease to our tax provision in a subsequent period.

In assessing the realizability of deferred tax assets, we consider whether it is more likely than not that some portion or all of the deferred tax assets will be realized on a jurisdiction by jurisdiction basis. The ultimate realization of deferred tax assets is dependent upon the generation of taxable income in the future. We have recorded a valuation allowance against these deferred tax assets in jurisdictions where ultimate realization of deferred tax assets is more likely than not to occur. As of December 31, 2017, we maintain a full valuation allowance in all jurisdictions against the net deferred tax assets as we believe that it is more likely than not that the majority of deferred tax assets will not be realized.

Effective December 31, 2015, we elected to early adopt Accounting Standards Update ("ASU") 2015-17 “Income Taxes (Topic 740), Balance Sheet Classification of Deferred Taxes” on a prospective basis. Adoption of this ASU resulted in a reclassification of our net current deferred tax asset to the net non-current deferred tax asset in our consolidated balance sheets as of December 31, 2015. No prior periods were retrospectively adjusted.

We make estimates and judgments about our future taxable income that are based on assumptions that are consistent with our plans and estimates. Should the actual amounts differ from our estimates, the amount of our valuation allowance may be materially impacted. Any adjustment to the deferred tax asset valuation allowance would be recorded in the income statement for the periods in which the adjustment is determined to be required.

We account for uncertainty in income taxes as required by the provisions of ASC Topic 740, which clarifies the accounting for uncertainty in income taxes recognized in an enterprise’s financial statements. The first step is to evaluate the tax position for recognition by determining if the weight of available evidence indicates that it is more likely than not that the position will be sustained on audit, including resolution of related appeals or litigation processes, if any. The second step is to estimate and measure the tax benefit as the largest amount that is more than 50% likely of being realized upon ultimate settlement. It is inherently difficult and subjective to estimate such amounts, as this requires us to determine the probability of various possible outcomes. We consider many factors when evaluating and estimating our tax positions and tax benefits, which may require periodic adjustments and may not accurately anticipate actual outcomes.

The Tax Reform Act of 1986 and similar state provisions limit the use of NOL carryforwards in certain situations where equity transactions result in a change of ownership as defined by Code Section 382. In the event we should experience such a change of ownership, utilization of Codexis’ federal and state NOL carryforwards could be limited.

We maintain a full valuation allowance against net deferred tax assets as we believe that it is more likely than not that the majority of deferred tax assets will not be realized.

Changes to Tax Law

On December 22, 2017, the Tax Cuts and Jobs Act of 2017 (the “Tax Act”) was signed into law making significant changes to the Internal Revenue Code. The Act makes broad and complex changes to the U.S. tax code, including, but not limited to, (i) reducing the U.S. federal statutory tax rate from 35% to 21%; (ii) requiring companies to pay a one-time transition tax on certain un-repatriated earnings of foreign subsidiaries; (iii) generally eliminating U.S. federal income taxes on dividends from foreign subsidiaries; (iv) requiring a current inclusion in U.S. federal taxable income of certain earnings of controlled foreign corporations; (v) eliminating the corporate alternative minimum tax (AMT) and changing how existing AMT credits can be realized; (vi) creating the base erosion anti-abuse tax (BEAT), a new minimum tax; (vii) creating a tax on global intangible low-taxed income (GILTI) of foreign subsidiaries; (viii) creating a new limitation on deductible interest expense; (ix) changing rules related to uses and limitations of net operating loss carryforwards created in tax years beginning after December 31, 2017; and (x) modifying the officer’s compensation limitation.

In December 2017, the SEC issued Staff Accounting Bulletin No. 118 (“SAB 118”), which provided a measurement period of up to one year from the enactment date of the Tax Act for companies to complete the accounting for the Tax Act and its related impacts. The income tax effects of the Tax Act for which the accounting is incomplete include: the impact of the transition tax, the revaluation of deferred tax assets and liabilities to reflect the 21% corporate tax rate, and the impact to the aforementioned items on state income taxes. We have made reasonable provisional estimates for each of these items; however these estimates may be affected by other analyses related to the Tax Act, including but not limited to, any deferred adjustments related to the filing of our 2017 federal and state income tax returns and further guidance yet to be issued.

Because ASC 740-10-25-47 requires the effect of a change in tax laws or rates to be recognized as of the date of enactment, we remeasured our deferred tax assets and liabilities, and offsetting valuation allowance in the current period. There was no impact to tax expense as the remeasurement of net deferred tax assets was completely offset by a corresponding change in valuation allowance. The provisional reduction to U.S. deferred tax assets and the offsetting valuation allowance was $34.1 million. While we were able to make a reasonable estimate of the impact of the reduction in corporate rate, this estimate may be affected by other analyses related to the Tax Act, including, but not limited to, any deferred adjustments related to the filing of our 2017 federal and state tax returns and our calculation of the state tax effect of adjustments made to federal temporary differences. We have not yet completed our calculation of the total post-1986 foreign earnings and profits (“E&P”) for our foreign subsidiaries as E&P will not be finalized until the federal income tax return is filed. However, we have prepared a provisional estimate and do not expect to incur a taxable income inclusion from the deemed repatriation of accumulated foreign earnings due to an accumulated deficit in foreign earnings and profits.

The GILTI provisions in the Tax Act will require us to include, in our U.S. income tax return, foreign subsidiary earnings in excess of an allowable return on the foreign subsidiary’s tangible assets. We are currently assessing the GILTI provisions and have not yet selected an accounting policy for its application; however, we do not anticipate that it will have a material impact on our future tax expense as the operations of our non-U.S. subsidiaries are not material.

The BEAT provisions in the Tax Act eliminates the deduction of certain base-erosion payments made to related foreign corporations, and imposes a minimum base erosion anti-abuse tax if greater than regular tax. We do not expect to be subject to this tax based on its assessment of the BEAT provisions.

Recent Accounting Pronouncements

Recently adopted accounting pronouncement

In August 2014, the FASB issued Accounting Standards Update ("ASU") 2014-15, "*Presentation of Financial Statements - Going Concern (Subtopic 205-40)*: Disclosure of Uncertainties about an Entity's Ability to Continue as a Going Concern." ASU 2014-15 defines management's responsibility to evaluate whether there is substantial doubt about an organization's ability to continue as a going concern and provide related disclosures. ASU 2014-15 is effective for annual reporting periods ending after December 15, 2016, and interim periods within annual periods beginning after December 15, 2016. We adopted ASU 2014-15 in the first quarter of 2017, and its adoption had no impact on our consolidated financial statements.

In July 2015, the FASB issued ASU 2015-11, "*Inventory (Topic 330): Simplifying the Measurement of Inventory*," which simplifies the subsequent measurement of inventory by requiring inventory to be measured at the lower of cost and net realizable value. Net realizable value is the estimated selling price of inventory in the ordinary course of business, less reasonably predictable costs of completion, disposal, and transportation. This ASU is effective for public business entities for fiscal years beginning after December 15, 2016, and interim periods within those fiscal years. We adopted ASU 2015-11 in the first quarter of 2017. Its adoption had no impact on our financial statements.

In March 2016, the FASB issued ASU 2016-09, "*Improvements to Employee Share-Based Payment Accounting*," changing certain aspects of accounting for share-based payments to employees (Topic 718), as well as affecting the accounting classification within the statement of cash flows. The new guidance will require all income tax effects of awards to be recognized in the income statement when the awards vest or are settled. It will allow a policy election to account for forfeitures as they occur and will allow an employer to repurchase more of an employee’s shares than it can today for tax withholding purposes without triggering liability accounting. This ASU is effective for public business entities for fiscal years beginning after December 15, 2016, and interim periods within those fiscal years. Early adoption is permitted. We adopted ASU 2016-09 in the first quarter of 2017. No cumulative-effect adjustment was recorded to our accumulated deficit balance as the U.S. deferred tax assets from previously unrecognized excess tax benefits were fully offset by a full valuation allowance; and we did not elect to change our policy of estimating expected forfeitures.

Recently issued accounting pronouncements not yet adopted

In May 2014, the FASB issued ASU No. 2014-09, "*Revenue from Contracts with Customers (Topic 606)*." The standard outlines a single comprehensive model for entities to use in accounting for revenue arising from contracts with customers and supersedes most current revenue recognition guidance in U.S. GAAP when it becomes effective and permits the use of either the retrospective or cumulative effect transition method. The FASB subsequently issued a one-year deferral of the effective date for the new revenue reporting standard for entities reporting under U.S. GAAP (ASU 2015-14, "*Revenue from Contracts with Customers (Topic 606): Deferral of the Effective Date*,"). In accordance with the deferral, the guidance is effective for annual reporting periods beginning after December 15, 2017. Subsequently, the FASB issued ASU 2016-08, *"Revenue from Contracts with Customers (Topic 606): Principal versus Agent Considerations"*; ASU 2016-10, *"Revenue from Contracts with Customers (Topic 606): Identifying Performance Obligations and Licensing"*; ASU 2016-12, *"Revenue from Contracts with Customers (Topic 606): Narrow-Scope Improvements and Practical Expedients";* and ASU No. 2017-13, "*Revenue Recognition (Topic 605), Revenue from Contracts with Customers (Topic 606), Leases (Topic 840), and Leases (Topic 842)*," We will adopt FASB Topic 606 in the first quarter of 2018 on a modified retrospective basis and we have elected to apply the modified retrospective method only to contracts that have not been completed as of January 1, 2018. A completed contract is a contract for which all (or substantially all) of the revenue was recognized in accordance with the revenue guidance that is in effect before the date of initial application. Under the modified retrospective method, incremental disclosures will be provided to present each financial statement line item in 2018 under the prior standard. The adoption of ASC 606 could have a material effect on our consolidated financial statements primarily relating to revenue recognition of grants of licenses to functional intellectual property in conjunction with collaboration arrangements, variable consideration relating to product sales under certain supply agreements and capitalization of incremental costs to obtain customer contracts. We have completed most of our assessment in connection with our research and development revenues and product revenues which would result in the decrease of $1.2 million - $2.2 million in our accumulated deficit. We have not completed our evaluation of the impact of the standard on a limited number of collaboration arrangements for which the impact of adoption could be material. Our evaluation of such arrangements will be completed in the first quarter of fiscal year 2018. We are also evaluating the impact the standard will have on our disclosures and are implementing changes to our current policies and practices, and internal controls over financial reporting to address the requirements of the standard.

In January 2016, the FASB issued ASU No. 2016-01, "*Financial Instruments-Overall: Recognition and Measurement of Financial Assets and Financial Liabilities*." This guidance principally affects accounting standards for equity investments, financial liabilities where the fair value option has been elected, and the presentation and disclosure requirements for financial instruments. Upon the effective date of the new guidance, all equity investments in unconsolidated entities, other than those accounted for using the equity method of accounting, will generally be measured at fair value through earnings. There will no longer be an available-for-sale classification and therefore, no changes in fair value will be reported in other comprehensive income (loss) for equity securities with readily determinable fair values. The new guidance on the classification and measurement will be effective for public business entities in fiscal years beginning after December 15, 2017, including interim periods within those fiscal years and early adoption is permitted. The Company is in the process of evaluating the impact of the adoption of ASU 2016-01 on the consolidated financial statements and currently anticipates the new guidance would impact its consolidated statements of operations and consolidated statements of comprehensive income as the Company's marketable equity securities, are currently classified as available-for-sale and are reported at fair value, with unrealized gains and losses, net of tax, recorded in accumulated other comprehensive income.

In February 2016, the FASB issued ASU 2016-02, "*Leases (Topic 842)*," which replaces prior lease guidance (Topic 840.) This guidance establishes a right-of-use ("ROU") model that requires a lessee to record a ROU asset and lease liability on the balance sheet for all leases with terms longer than 12 months. Leases will be classified as either finance or operating, with classification affecting the pattern of expense recognition in the Consolidated Statement of Operations. The guidance also eliminates today's real estate-specific provisions for all entities. For lessors, the guidance modifies the classification criteria and the accounting for sales-type and direct financing leases. Entities are required to use a modified retrospective approach for leases that exist or are entered into after the beginning of the earliest comparative period in the financial statements. Entities have the option to use certain practical expedients. Full retrospective application is prohibited. This ASU is effective for public business entities for fiscal years beginning after December 15, 2018, and interim periods within those fiscal years. Early adoption is permitted. We are currently evaluating the impact of this accounting standards updated on our Consolidated Financial Statements. We expect that upon adoption, ROU assets and lease liabilities will be recognized in the balance sheet in amounts that will be material.

In June 2016, the FASB issued ASU 2016-13, "*Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*," which amends the FASB's guidance on the impairment of financial instruments. The ASU adds to GAAP an impairment model (known as the "current expected credit loss model") that is based on expected losses rather than incurred losses. ASU 2016-13 is effective for annual reporting periods ending after December 15, 2019, including interim periods within those fiscal years. Early adoption is permitted for fiscal years beginning after December 15, 2018, including

interim periods within those fiscal years. The adoption of ASU 2016-13 is not expected to have a material impact on our consolidated financial statements and related disclosures.

In August 2016, the FASB issued ASU 2016-15, "*Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments*," which provides the FASB's guidance on certain cash flow statements items. ASU 2016-15 is effective for fiscal reporting periods beginning after December 15, 2017, including interim periods within those fiscal years. Early adoption is permitted including adoption in an interim period. The adoption of ASU 2016-15 is not expected to have a material impact on our consolidated financial statements and related disclosures.

In November 2016, the FASB issued ASU No. 2016-18, "*Statement of Cash Flows (Topic 230) Restricted Cash a consensus of the FASB Emerging Issues Task Force.*" The standard requires restricted cash and restricted cash equivalents to be included with cash and cash equivalents on the statement of cash flows. The new standard is expected to be effective for fiscal years, and interim periods within those years, beginning after December 15, 2017, with early adoption permitted. We are currently evaluating the impact of adopting ASU 2016-18 on our consolidated financial statements and related disclosures.

In January 2017, the FASB issued ASU No. 2017-01 "*Business Combinations (Topic 805): Clarifying the Definition of a Business*". The guidance requires the use of a framework to determine whether a set of assets and activities constitutes an acquired or a sold business. The guidance is effective January 1, 2018 and must be adopted prospectively. Early adoption is encouraged. The adoption of ASU 2017-01 is not expected to have a material impact on our consolidated financial statements and related disclosures.

In January 2017, the FASB issued ASU No. 2017-04, "*Intangibles - Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment.*" The amendments eliminate Step 2 from the goodwill impairment test. The annual, or interim, goodwill impairment test is performed by comparing the fair value of a reporting unit with its carrying amount. An impairment charge should be recognized for the amount by which the carrying amount exceeds the reporting unit’s fair value; however, the loss recognized should not exceed the total amount of goodwill allocated to that reporting unit. In addition, income tax effects from any tax deductible goodwill on the carrying amount of the reporting unit should be considered when measuring the goodwill impairment loss, if applicable. The amendments also eliminate the requirements for any reporting unit with a zero or negative carrying amount to perform a qualitative assessment and, if it fails that qualitative test, to perform Step 2 of the goodwill impairment test. An entity still has the option to perform the qualitative assessment for a reporting unit to determine if the quantitative impairment test is necessary. The new standard is expected to be effective for fiscal years beginning after December 15, 2019, with early adoption permitted. We do not expect the adoption of ASU 2017-04 to have any impact on our consolidated financial statements and related disclosures.

In May 2017, the FASB issued ASU No. 2017-09, "*Compensation-Stock Compensation (Topic 718): Scope of Modification Accounting.*" The amendments provide guidance on determining which changes to the terms and conditions of share-based payment awards require an entity to apply modification accounting under Topic 718. The new standard is effective for annual periods, including interim periods within those annual periods, beginning after December 15, 2017 with early adoption permitted. We are currently evaluating the impact of adopting ASU 2017-09 on our consolidated financial statements and related disclosures.

Note 3. Net Loss per Share

Basic net loss per share is computed by dividing net loss by the weighted-average number of shares of common stock outstanding, less RSAs subject to forfeiture. Diluted net loss per share is computed by dividing net loss by the weighted-average number of shares of common stock outstanding, less RSAs subject to forfeiture, plus all additional common shares that would have been outstanding, assuming dilutive potential common shares had been issued for other dilutive securities. For all periods presented, diluted and basic net losses per share were identical since potential common shares were excluded from the calculation, as their effect was anti-dilutive.

Anti-Dilutive Securities

In periods of net loss, the weighted average number of shares outstanding related to potentially dilutive securities, prior to the application of the treasury stock method, are excluded from the computation of diluted net loss per common share because including such shares would have an anti-dilutive effect.

The following shares were not included in the computation of diluted net loss per share (in thousands):

	Years Ended December 31,		
	2017	2016	2015
Shares issuable under Equity Incentive Plan	6,882	5,567	5,932
Shares issuable upon the conversion of warrants	—	73	75
Total anti-dilutive securities	6,882	5,640	6,007

Note 4. Collaborative Arrangements

GSK Platform Technology Transfer, Collaboration and License Agreement

In July 2014, we entered into a CodeEvolver® platform technology transfer collaboration and license agreement (the “GSK CodeEvolver® Agreement”) with GlaxoSmithKline (“GSK”). Pursuant to the terms of the agreement, we granted GSK a non-exclusive license to use the CodeEvolver® protein engineering technology platform to develop novel enzymes for use in the manufacture of GSK's pharmaceutical and health care products.

We received a $6.0 million up-front licensing fee upon signing the GSK CodeEvolver® Agreement and subsequently a $5.0 million non-creditable, non-refundable milestone payment upon achievement of the first milestone in 2014. In September 2015, we achieved the second milestone of the agreement and earned milestone revenue of $6.5 million. In April 2016, we completed the full transfer of the CodeEvolver® protein engineering platform technology and earned milestone revenue of $7.5 million, for which payment was received in June 2016. In the third quarter of 2016, we earned the first contingent payment under the agreement related to the development of an enzyme for an already-commercialized GSK product. We also have the potential to receive additional cumulative contingent back end milestone payments that range from $5.75 million to $38.5 million per project based on GSK’s successful application of the licensed technology. The contingent back end milestone payments are not deemed substantive milestones due to the fact that the achievement of the event underlying the payment predominantly relates to GSK’s performance of future development and commercialization activities.

In addition, we are eligible to receive royalties based on net sales, if any, of a limited set of products developed by GSK using the CodeEvolver® protein engineering technology platform.

The up-front license fee of $6.0 million was being recognized ratably over the technology transfer period of three years since July 2014. We recognized all deferred revenues from the up-front license fees from GSK upon completion of the technology transfer in April 2016 and there were no remaining up-front license fees recognized in 2017. We recognized $3.0 million and $2.0 million, respectively, in 2016 and 2015 as research and development revenue.

Merck Platform Technology Transfer and License Agreement

In August 2015, we entered into a CodeEvolver® platform technology transfer and license agreement (the "Merck CodeEvolver® Agreement") with Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc. (collectively, "Merck"). The Merck CodeEvolver® Agreement allows Merck to use the CodeEvolver® protein engineering technology platform in the field of human and animal healthcare.

We received a $5.0 million up-front license fee upon execution of the Merck CodeEvolver® Agreement, which was being recognized ratably over the estimated platform technology transfer period of two years. The technology transfer was completed in September 2016. We have the potential to receive payments of up to a maximum of $15.0 million for each commercial active pharmaceutical ingredient ("API") that is manufactured by Merck using one or more novel enzymes developed by Merck using the CodeEvolver® protein engineering technology platform.

The deferred revenues relating to the up-front license fees were fully recognized as of December 31, 2016, and there were no remaining up-front license fees recorded in 2017. We recognized license fees of none, $4.0 million, and $1.0 million in 2017, 2016 and 2015, respectively, as research and development revenue. Additionally, we recognized research and development revenues of $3.6 million, $3.0 million, and $1.9 million in 2017, 2016, and 2015, respectively, for various research projects under our collaborative arrangement.

Merck Sitagliptin Catalyst Supply Agreement

In February 2012, we entered into a five-year Sitagliptin Catalyst Supply Agreement (“Sitagliptin Catalyst Supply Agreement”) with Merck whereby Merck may obtain commercial scale enzyme for use in the manufacture of Januvia®, its product based on

the active ingredient Sitagliptin. In December 2015, Merck exercised its option under the terms of the Sitagliptin Catalyst Supply Agreement to extend the agreement for an additional five years through February 2022.

Effective as of January 2016, we and Merck amended the Sitagliptin Catalyst Supply Agreement to prospectively provide for variable pricing based on the cumulative volume of enzyme purchased by Merck under the Sitagliptin Catalyst Supply Agreement and to specify the third-party supplier from whom Merck would be allowed to purchase a percentage of its requirements for such enzyme. Merck has the right to terminate the Sitagliptin Catalyst Supply Agreement at any time after January 1, 2018 by giving us 24 months' advance written notice. In June 2017, we completed a contractual milestone by qualifying the specified third-party enzyme supplier and recognized $0.3 million as research and development revenues.

The Sitagliptin Catalyst Supply Agreement requires Merck to pay an annual license fee for the rights to the Sitagliptin technology each year for the term of the agreement. Amounts of annual license fees are based on contractually agreed prices and are on a declining scale. Prior to December 2015, the aggregate license fee for the initial five year period was being recognized ratably over the initial five year term of the Sitagliptin Catalyst Supply Agreement as collaborative research and development revenues. Due to the amendment entered in December 2015 as noted above, we revised our performance period in December 2015 and began recognizing the remaining unamortized portion of the license fee and the aggregate license fees for the second five year period over the revised period on a straight line basis.

We recognized license fees of $1.3 million, $1.3 million and $1.9 million in 2017, 2016 and 2015, respectively, as collaborative research and development revenue. As of December 31, 2017 and 2016, we had deferred revenue of $1.3 million and $1.0 million, respectively, from Merck related to the license fee. In addition, pursuant to the terms of the agreement, Merck may purchase supply from us for a fee based on contractually stated prices and we recognized $9.0 million, $6.0 million and $1.6 million, respectively, in 2017, 2016 and 2015 in product sales under this agreement.

Biopharmaceutical Collaborative Development Agreement

In May 2015, we entered into a collaborative development agreement with a leading global biopharmaceutical company. Under the terms of the agreement, we used our CodeEvolver® protein engineering platform technology to develop a novel enzyme for use in our partner's therapeutic development program. We recognized revenues of none, $1.8 million, and $0.5 million in 2017 2016, and 2015, respectively, as collaborative research and development revenues. The collaborative development agreement was terminated by mutual consent in August 2017.

Enzyme Supply Agreement

In November 2016, we entered into a supply agreement whereby our customer may purchase quantities of one of our proprietary enzymes for use in its commercial manufacture of a product. Pursuant to the supply agreement, we received an upfront payment of $0.75 million in December 2016, which we accordingly recorded as deferred revenues. Such upfront payment will be recognized over the period of the supply agreement as the customer purchases our proprietary enzyme. As of December 31, 2017 and 2016, we had deferred revenue from the supply agreement of $0.7 million. Under the agreement, we recognize product revenues for quantities of enzyme sold to our customer when all revenue recognition criteria are met.

Research and Development Agreement

In March 2017, we entered into a multi-year research and development services agreement with a fine chemicals customer. Under the agreement, we have the potential to receive research and development revenues and milestone payments based on the customer's decision to continue the development process. We received an upfront payment of $3.0 million, which is being recognized ratably over the maximum term of the services period of 21 months, of which we recognized revenue of $1.3 million in 2017. We also recognized $1.9 million of revenue for research and development services on a net payment received under the agreement in 2017. Total revenue recognized under the research and development agreement in 2017 was $3.2 million. As of December 31, 2017, we had deferred revenue from the development services agreement of $3.1 million.

Global Development, Option and License Agreement and Strategic Collaboration Agreement

In October 2017, we entered into a Global Development, Option and License Agreement (the "Nestlé Agreement") with Nestec Ltd. ("Nestlé Health Science") and, solely for the purpose of the integration and the dispute resolution clauses of the Agreement, Nestlé Health Science S.A.

We received an upfront cash payment of $14.0 million upon the execution of the Agreement for the development of our enzyme CDX-6114. We recognized development fees of $7.2 million in 2017 as research and development revenues. The upfront payment is being recognized using a proportional performance model based on the ratio of level of effort incurred to date compared to the total estimated level of effort required to complete all performance obligations under the agreement. As of

December 31, 2017, we had deferred revenue related to development fees of $6.8 million. We are eligible to receive a $4.0 million progress payment after the commencement of Phase 1a clinical trial. In addition, we are eligible to receive an additional $3.0 million in the event Nestlé Health Science exercises its option to obtain an exclusive, worldwide, royalty-bearing, sublicensable license to develop and commercialize CDX-6114 and other products for the treatment of HPA. Other potential payments from Nestlé Health Science to us under the Nestlé Agreement include (i) development and approval milestones of up to $86.0 million, (ii) sales-based milestones of up to $250.0 million in the aggregate, which aggregate amount is achievable if net sales exceed $1.0 billion in a single year, and (iii) tiered royalties, at percentages ranging from the middle single digits to low double-digits, of net sales of Product.

In addition to the Nestlé Agreement, we and Nestlé Health Science concurrently entered into a Strategic Collaboration Agreement (the "Strategic Collaboration Agreement") pursuant to which we and Nestlé Health Science will collaborate to leverage the CodeEvolver® protein engineering technology platform to develop novel enzymes for Nestlé Health Science's established Consumer Care and Medical Nutrition business areas. Under the Strategic Collaboration Agreement, we recognized research and development fees of $0.5 million in 2017. As of December 31, 2017, we had deferred revenue of $1.1 million.

Note 5. Cash Equivalents and Marketable Securities

Cash equivalents and marketable securities classified as available-for-sale at December 31, 2017 and 2016 consisted of the following (in thousands):

	December 31, 2017				
	Adjusted Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value	Average Contractual Maturities
					(in days)
Money market funds [1]	$ 6,778	$ —	$ —	$ 6,778	n/a
Common shares of CO_2 Solutions [2]	563	108	—	671	n/a
Total	$ 7,341	$ 108	$ —	$ 7,449	

	December 31, 2016				
	Adjusted Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value	Average Contractual Maturities
					(in days)
Money market funds [1]	$ 11,172	$ —	$ —	$ 11,172	n/a
Common shares of CO_2 Solutions [2]	563	579	—	1,142	n/a
Total	$ 11,735	$ 579	$ —	$ 12,314	

[1] Money market funds are classified in cash and cash equivalents on our consolidated balance sheets.

[2] Common shares of CO_2 Solutions are classified in marketable securities on our consolidated balance sheets.

As of December 31, 2017, the total cash and cash equivalents balance of $31.2 million was comprised of money market funds of $6.8 million and cash of $24.4 million held with major financial institutions worldwide. As of December 31, 2016, the total cash and cash equivalents balance of $19.2 million was comprised of money market funds of $11.2 million and cash of $8.0 million held with major financial institutions worldwide.

In December 2009, we purchased 10,000,000 common shares of CO_2 Solutions, a company based in Quebec, Canada, whose shares are publicly traded in Canada on TSX Venture Exchange. Our purchase represented approximately 16.6% of CO_2 Solutions' total common shares outstanding at the time of investment and was made in a private placement subject to a four-month statutory resale restriction. This restriction expired on April 15, 2010. Our investment in CO_2 Solutions is classified as available for sale and is recorded at its fair value (See Note 6 - Fair Value Measurements). Through December 31, 2017, we concluded that we did not have the ability to exercise significant influence over CO_2 Solutions' operating and financial policies.

As of December 31, 2017 and 2016, we had no marketable securities in an unrealized loss position.

Note 6. Fair Value Measurements

The following tables present the financial instruments that were measured at fair value on a recurring basis at December 31, 2017 and 2016 by level within the fair value hierarchy (in thousands):

	December 31, 2017			
	Level 1	Level 2	Level 3	Total
Money market funds	$ 6,778	$ —	$ —	$ 6,778
Common shares of CO_2 Solutions	—	671	—	671
Total	$ 6,778	$ 671	$ —	$ 7,449

	December 31, 2016			
	Level 1	Level 2	Level 3	Total
Money market funds	$ 11,172	$ —	$ —	$ 11,172
Common shares of CO_2 Solutions	—	1,142	—	1,142
Total	$ 11,172	$ 1,142	$ —	$ 12,314

We determine the fair value of Level 1 assets using quoted prices in active markets for identical assets. We estimated the fair value of our investment in 10,000,000 common shares of CO_2 Solutions using the market value of common shares as determined by trading on the TSX Venture Exchange, and we classified our investment in CO_2 Solutions as Level 2 assets due to the volatile and low trading volume. There were no transfers between Level 1 and Level 2 securities in the periods presented. (See also “Note 5 - Cash Equivalents and Marketable Securities”.)

Note 7. Balance Sheets Details

Accounts receivable

The following is a summary of activity in our allowance for doubtful accounts for the periods presented (in thousands):

	December 31,		
	2017	2016	2015
Allowance - beginning of period	$ (421)	$ (421)	$ (428)
Recoveries from bad debts	—	—	7
Write-offs and other [1]	387	—	—
Allowance - end of period	$ (34)	$ (421)	$ (421)

[1] The change in allowance for doubtful accounts was mainly related to the write-off of receivables from a foreign customer.

Inventories

Inventories consisted of the following (in thousands):

	December 31,	
	2017	2016
Raw materials [1]	$ 158	$ 118
Work in process [2]	53	59
Finished goods [2]	825	648
Total	$ 1,036	$ 825

[1] Raw materials include active pharmaceutical ingredients and other raw materials.

[2] Work-in-process and finished goods include third party manufacturing costs and labor and indirect costs we incur in the production process.

Property and Equipment, net

Property and equipment, net consisted of the following (in thousands):

	December 31,	
	2017	2016
Laboratory equipment [1]	$ 19,777	$ 18,849
Leasehold improvements	10,327	10,395
Computer equipment and software	3,695	3,267
Office equipment and furniture	1,185	1,171
Construction in progress [2]	85	124
Property and equipment	35,069	33,806
Less: accumulated depreciation and amortization	(32,254)	(31,651)
Property and equipment, net	$ 2,815	$ 2,155

[1] Fully depreciated laboratory equipment with a cost of $0.2 million and $2.3 million were retired during 2017 and 2016, respectively.

[2] Construction in progress includes equipment received but not yet placed into service pending installation.

Goodwill

There were no changes in the carrying value of goodwill of $3.2 million during 2017 and 2016.

Other Accrued Liabilities

Other accrued liabilities consisted of the following (in thousands):

	December 31,	
	2017	2016
Accrued purchases [1]	$ 941	$ 67
Accrued professional and outside service fees	2,393	746
Deferred rent	258	168
Lease incentive obligation	425	425
Other	345	705
Total	$ 4,362	$ 2,111

[1] Amount represents products and services received but have not been billed as of December 31, 2017 and 2016.

Note 8. Assets Held for Sale and Sale of Former Hungarian Subsidiary

In March 2014, we entered into an agreement with Intrexon Corporation to sell 100% of our equity interests in our Hungarian subsidiary, Codexis Laboratories Hungary Kft, as well as all assets of such subsidiary that were classified as held for sale. We received cash proceeds of $1.5 million from the sale.

Prior to the sale of our Hungarian subsidiary in March 2014, we transferred certain of the subsidiary's equipment to another of our European subsidiaries and incurred a reclaimable VAT liability of approximately $0.4 million. We paid this VAT amount in July 2014 and recorded a receivable, which is reflected in prepaid expenses and other current assets in our consolidated balance sheets at December 31, 2016. In 2016, we wrote off the receivable due to the uncertainty of collection of the reclaimable VAT.

In 2014, we expedited the disposition of assets held for sale in the United States by selling these assets through auction. As a result, we recognized a change in estimated fair value of $0.7 million in 2014, which is reflected in research and development expense.

As of December 31, 2017 and 2016, we had no assets classified as held for sale.

Note 9. Stock-based Compensation

Equity Incentive Plans

In March 2010, our board of directors (the "Board") and stockholders approved the 2010 Equity Incentive Award Plan (the "2010 Plan"), which became effective upon the completion of our initial public offering ("IPO") in April 2010. The number of shares of our common stock available for issuance under the 2010 Plan is equal to 1,100,000 shares plus any shares of common stock reserved for future grant or issuance under the Company's 2002 Stock Plan (the "2002 Plan") that remained unissued at the time of completion of the initial public offering. The 2010 Plan also provides for automatic annual increases in the number of shares reserved for future issuance. All grants will reduce the 2010 Plan reserve by one share for every share granted. As of December 31, 2017, total shares remaining available for issuance under the 2010 Plan were approximately 6.8 million shares.

The 2010 Plan provides for the grant of incentive stock options, non-statutory stock options, RSUs, RSAs, PSUs, PBOs, stock appreciation rights, and stock purchase rights to our employees, non-employee directors and consultants.

Incentive stock options may be granted with an exercise price of not less than the fair value of our common stock on the date of grant, and the nonstatutory stock options may be granted with an exercise price of not less than 85% of the fair value of our common stock on the date of grant, as determined by the Board. Stock options granted to a stockholder owning more than 10% of our voting stock must have an exercise price of not less than 110% of the fair value of the common stock on the date of grant. Stock options are granted with terms of up to 10 years and generally vest over a period of 4 years from the date of grant, of which 25% vest at the end of one year, and 75% vest monthly over the remaining three years. We may grant options with different vesting terms from time to time. Unless an employee's termination of service is due to disability or death, upon termination of service, any unexercised vested options will be forfeited at the end of the three months or the expiration of the option, whichever is earlier.

RSUs are granted to employees for no consideration (other than par value of a share of common stock). The fair values of RSUs are based upon the closing price of our common stock on the date of grant. RSUs generally vest over either a three year period with one-third of the shares subject to the RSUs vesting on each yearly anniversary of the vesting commencement date or over a four year period with 25% of the shares subject to the RSU vesting on each yearly anniversary of the vesting commencement date, in each case contingent upon such employee's continued service on such vesting date. RSUs are generally subject to forfeiture if employment terminates prior to the release of vesting restrictions. We may grant RSUs with different vesting terms from time to time.

In 2015 and 2016, the compensation committee of the Board approved, and, in February 2017 solely in respect of non-executive employees, delegated to our Chief Executive Officer the authority to approve grants of PSUs. In February 2017, the compensation committee of the Board also approved grants of PBOs and PSUs to our executives for no consideration (other than par value of a share of common stock). The fair values of PSUs and PBOs are based upon the closing price of our common stock on the date of grant. The PSUs and PBOs generally vest over two years based upon both the successful achievement of certain corporate operating milestones in specified timelines and continued employment through the applicable vesting date. When the performance goals are deemed to be probable of achievement for these types of awards, recognition of stock-based compensation expense commences.

In the first quarter of 2017, our compensation committee and Chief Executive Officer granted PSUs ("2017 PSUs") and our compensation committee granted PBOs ("2017 PBOs"), each of which commence vesting based upon the achievement of various weighted performance goals, including revenue growth, fundraising, service revenue, new platform license revenue, and strategic advancement of biotherapeutics pipeline. The number of shares underlying the 2017 PSUs and 2017 PBOs that are eligible to vest are based upon our achievement of the performance goals and, once the number of shares eligible to vest is determined, those shares vest in two equal installments with 50% vesting upon achievement and the remaining 50% vesting on the first anniversary of achievement, in each case, subject to the recipient's continued service through the applicable vesting date. If the performance goals are achieved at the threshold level, the number of shares eligible to vest in respect of the 2017 PSUs and the 2017 PBOs would be equal to half the number of 2017 PSUs granted and one-quarter the number of shares underlying the 2017 PBOs granted. If the performance goals are achieved at the target level, the number of shares eligible to vest in respect of the 2017 PSUs and 2017 PBOs would be equal to the number of 2017 PSUs granted and half of the shares underlying the 2017 PBOs granted. If the performance goals are achieved at the superior level, the number of shares eligible to vest in respect of the 2017 PSUs would be equal to two times the number of 2017 PSUs granted and equal to the number of 2017 PBOs granted. The number of shares issuable upon achievement of the performance goals at the levels between the threshold and target levels for the 2017 PSUs and 2017 PBOs or between the target level and superior levels for the 2017 PSUs would be determined using linear interpolation. Achievement below the threshold level would result in no shares being eligible to vest in respect of the 2017 PSUs and 2017 PBOs. As of December 31, 2017, we estimated that the 2017 PSU and 2017 PBOs

performance goals would be achieved at 134.2% of the target level. Accordingly, we recognized expense to reflect the target level.

In 2016, we awarded PSUs ("2016 PSUs") based upon the achievement of various weighted performance goals, including revenue growth, non-GAAP net income growth, new licensing collaborations, new research and development service revenue arrangements and novel therapeutic enzymes advancement. In the first quarter of 2017, we determined that the 2016 PSU performance goals had been achieved at 142.3% of the target level, and recognized expenses accordingly. Accordingly, one-half of the shares underlying the 2016 PSUs vested in the first quarter of 2017 and one-half of the shares underlying the 2016 PSUs will vest in the first quarter of 2018, in each case subject to the recipient's continued service on each vesting date. No PBOs were awarded in 2016.

In 2015, we awarded PSUs ("2015 PSUs") based upon the achievement of various weighted performance goals, including revenue growth, non-GAAP net income growth, new licensing collaborations, and securing a drug development partnership, with other terms similar to the 2014 PSUs and 2016 PSUs. In the first quarter of 2016, we determined that the 2015 PSU performance goals had been achieved at 92.8% of the target level, and recognized expenses accordingly. One-half of the shares underlying the 2015 PSUs vested in the first quarter of each of 2016 and 2017, subject to the recipient's continued service on each vesting date. No PBOs were awarded in 2015.

Stock-Based Compensation Expense:

Stock-based compensation expense is included in the consolidated statements of operations as follows (in thousands):

	Years Ended December 31,		
	2017	2016	2015
Research and development	$ 1,444	$ 1,033	$ 935
Selling, general and administrative	5,647	4,640	4,191
Total	$ 7,091	$ 5,673	$ 5,126

Grant Award Activities:

Stock Option Awards

We estimated the fair value of stock options using the Black-Scholes-Merton option-pricing model based on the date of grant. The following summarize the ranges of weighted-average assumptions used to estimate the fair value of employee stock options granted:

	Years Ended December 31,		
	2017	2016	2015
Expected life (years)	5.4	5.3	6.1
Volatility	62.2%	64.2%	66.1%
Risk-free interest rate	2.0%	1.3%	1.7%
Expected dividend yield [(1)]	0.0%	0.0%	0.0%

In October 2017, we granted an option to purchase 11,100 shares of common stock to a non-employee as compensation for services valued at $48,000. The option vests over a period of six months with one-sixth of total number of shares subject to the option vesting on each one month anniversary of the grant date. During the year ended December 31, 2016, we did not grant any options to purchase shares of common stock to non-employees.

For options granted to non-employees, the Black-Scholes option-pricing model was applied using the following assumptions during the year ended December 31, 2017:

	Year Ended December 31,
	2017
Remaining contractual option life (years)	9.78
Volatility	60.6%
Risk-free interest rate	2.4%
Expected dividend yield [1]	0.0%

[1] We do not currently pay dividends, and thus the dividend rate variable in the Black-Scholes-Merton option-pricing model is zero.

The following table summarizes stock option activities in 2017:

	Number of Shares	Weighted Average Exercise Price Per Share	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value
	(in thousands)		(in years)	(in thousands)
Balance at January 1, 2017	3,890	$ 4.40		
Granted	856	$ 4.57		
Exercised	(86)	$ 3.10		
Forfeited/Expired	(81)	$ 7.72		
Outstanding at December 31, 2017	4,579	$ 4.40	6.37	$ 19,188
Exercisable at December 31, 2017	3,006	$ 4.48	5.21	$ 12,722
Vested and expected to vest at December 31, 2017	4,372	$ 4.40	6.26	$ 18,357

The weighted average grant date fair value per share of stock options granted in 2017, 2016 and 2015 were $2.51, $2.32 and $2.09, respectively. The total intrinsic value of options exercised in 2017, 2016 and 2015 were $0.2 million, $0.6 million and $0.4 million, respectively.

As of December 31, 2017, there was $2.7 million unrecognized stock-based compensation cost related to non-vested options, which we expect to recognize over a weighted average period of 2.6 years.

Restricted Stock Awards (RSAs)

The following table summarizes RSA activity in 2017:

	Number of Shares	Weighted Average Grant Date Fair Value Per Share
	(in thousands)	
Non-vested balance at January 1, 2017	230	$ 3.82
Granted	143	$ 4.75
Vested	(214)	$ 3.81
Forfeited/Expired	—	$ —
Non-vested balance at December 31, 2017	159	$ 4.68

The weighted average grant date fair value per share of RSAs granted in 2017, 2016 and 2015 were $4.75, $4.21 and $4.10, respectively. The total fair value of RSAs vested in fiscal 2017, 2016 and 2015 were $1.0 million, $1.8 million and $2.3 million respectively.

As of December 31, 2017, there was $0.3 million unrecognized stock-based compensation cost related to non-vested RSAs, which we expect to recognize over a weighted average period of 0.5 years.

Restricted Stock Units (RSUs)

The following table summarizes RSU activities in 2017:

	Number of Shares	Weighted Average Grant Date Fair Value Per Share
	(in thousands)	
Non-vested balance at January 1, 2017	617	$ 3.69
Granted	275	$ 4.22
Vested	(302)	$ 3.40
Forfeited/Expired	(30)	$ 4.12
Non-vested balance at December 31, 2017	560	$ 4.08

The weighted average grant date fair value per share of RSUs granted in 2017, 2016 and 2015 were $4.22, $4.10 and $3.65, respectively. The total fair value of RSUs vested in fiscal 2017, 2016 and 2015 were $1.3 million, $1.0 million and $2.9 million respectively.

As of December 31, 2017, there was $1.1 million unrecognized stock-based compensation cost related to non-vested RSUs, which we expect to recognize over a weighted average period of 1.5 years.

Performance-Contingent Restricted Stock Units (PSUs)

The following table summarizes PSU activities in 2017:

	Number of Shares	Weighted Average Grant Date Fair Value Per Share
	(in thousands)	
Non-vested balance at January 1, 2017	831	$ 3.88
Granted	276	$ 4.25
Vested	(651)	$ 3.84
Forfeited/Expired	(27)	$ 3.65
Non-vested balance at December 31, 2017	429	$ 4.20

The weighted average grant date fair value per share of PSUs granted in 2017, 2016 and 2015 were $4.25, $4.10 and $3.45, respectively. The total fair value of PSUs vested in fiscal 2017, 2016, and 2015 were $2.7 million, $1.8 million, and $0.8 million, respectively.

As of December 31, 2017, there was $0.4 million unrecognized stock-based compensation cost related to non-vested PSUs, which we expect to recognize over a weighted average period of 0.4 years.

Performance Based Options (PBOs)

The following table summarizes PBO activities in 2017:

	Number of Shares	Weighted Average Grant Date Fair Value Per Share
	(in thousands)	
Non-vested balance at January 1, 2017	—	$ —
Granted	1,720	$ 2.54
Vested	—	$ —
Forfeited/Expired	—	$ —
Non-vested balance at December 31, 2017	1,720	$ 2.54

The weighted average grant date fair value per share of PBOs granted in 2017 was $2.54. We had no PBOs vested in 2017.

As of December 31, 2017, there was $1.1 million unrecognized stock-based compensation cost related to non-vested PBOs, which we expect to recognize over a weighted average period of 1.2 years.

Note 10. Capital Stock

Warrants

No warrants which were exercisable for common stock were exercised during 2017, 2016 or 2015. On September 28, 2017, warrants to purchase 72,727 shares of common stock, at an exercise price of $8.25 per share, expired. No warrants were outstanding as of December 31, 2017.

Public Offering

In April 2017, we completed a public offering in which we issued and sold 6.3 million shares of our common stock, par value $0.0001 per share, at a public offering price of $4.00 per share. We received net proceeds of approximately $23.2 million after deducting the underwriting discounts, commissions and other offering expenses of $0.6 million.

Note 11. 401(k) Plan

In January 2005, we implemented a 401(k) Plan covering certain employees. Currently, all of our United States based employees over the age of 18 are eligible to participate in the 401(k) Plan. Under the 401(k) Plan, eligible employees may elect to reduce their current compensation up to a certain annual limit and contribute these amounts to the 401(k) Plan. We may make matching or other contributions to the 401(k) Plan on behalf of eligible employees. We recorded employer matching contributions expense of $0.6 million, $0.4 million and $0.5 million, respectively, in 2017, 2016 and 2015.

Note 12. Income Taxes

Our loss before provision for income taxes was as follows (in thousands):

	Years Ended December 31,		
	2017	2016	2015
United States	$ (22,994)	$ (8,174)	$ (7,641)
Foreign	79	(424)	(278)
Loss before provision for income taxes	$ (22,915)	$ (8,598)	$ (7,919)

The tax provision for the years ended December 31, 2017, 2016 and 2015 consists primarily of taxes attributable to foreign operations and the tax effect of unrealized gains on our available for sale securities. The components of the provision for income taxes are as follows (in thousands):

	Years Ended December 31,		
	2017	2016	2015
Current provision (benefit):			
Federal	$ —	$ —	$ —
State	5	5	5
Foreign	64	(14)	(13)
Total current provision (benefit)	69	(9)	(8)
Deferred provision (benefit):			
Federal	—	—	(293)
State	—	—	(21)
Foreign	12	(31)	(16)
Total deferred provision (benefit)	12	(31)	(330)
Provision for (benefit from) income taxes	$ 81	$ (40)	$ (338)

Reconciliation of the provision for income taxes calculated at the statutory rate to our provision for (benefit from) income taxes is as follows (in thousands):

	Years Ended December 31,		
	2017	2016	2015
Tax benefit at federal statutory rate	$ (7,791)	$ (2,924)	$ (2,693)
State taxes	48	127	1,126
Research and development credits	(399)	(161)	(85)
Foreign operations taxed at different rates	(2)	30	31
Stock-based compensation	(216)	327	77
Other nondeductible items	399	660	(43)
Change in valuation allowance	(26,058)	1,901	1,249
Change in statutory tax rate	34,100	—	—
Provision for (benefit from) income taxes	$ 81	$ (40)	$ (338)

Deferred income taxes reflect the net tax effects of (a) temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes, and (b) operating losses and tax credit carryforwards.

Significant components of our deferred tax assets and liabilities are as follows (in thousands):

	December 31,	
	2017	2016
Deferred tax assets:		
Net operating losses	$ 53,901	$ 72,588
Credits	6,221	5,016
Deferred revenues	3,334	1,025
Stock-based compensation	2,872	3,750
Reserves and accruals	2,028	2,952
Depreciation	1,573	2,516
Intangible assets	3,172	5,536
Capital losses	576	933
Unrealized gain/loss	295	277
Other assets	78	110
Total deferred tax assets:	74,050	94,703
Deferred tax liabilities:		
Other	(115)	(103)
Total deferred tax liabilities:	(115)	(103)
Valuation allowance	(74,010)	(94,663)
Net deferred tax liabilities	$ (75)	$ (63)

ASC Topic 740 requires that the tax benefit of NOLs, 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 our ability to generate sufficient taxable income within the carryforward period. Because of our history of operating losses, management believes that recognition of the deferred tax assets arising from the above-mentioned future tax benefits is currently not more likely than not to be realized and, accordingly, has provided a valuation allowance against our deferred tax assets. Accordingly, the net deferred tax assets in all our jurisdictions have been fully reserved by a valuation allowance. The net valuation allowance decreased by $20.7 million during the year ended December 31, 2017; and increased by $1.9 million and $1.2 million, during the years ended December 31, 2016 and 2015, respectively. At such time as it is determined that it is more likely than not that the deferred tax assets are realizable, the valuation allowance will be reduced.

The following table sets forth our federal, state and foreign NOL carryforwards and federal research and development tax credits as of December 31, 2017 (in thousands):

	December 31, 2017	
	Amount	Expiration Years
Net operating losses, federal	$ 224,536	2022-2037
Net operating losses, state	110,802	2017-2037
Tax credits, federal	6,433	2022-2037
Tax credits, state	7,970	Do not expire
Net operating losses, foreign	382	Various

Current U.S. federal and California tax laws include substantial restrictions on the utilization of NOLs and tax credit carryforwards in the event of an ownership change of a corporation. Accordingly, the Company's ability to utilize NOLs and tax credit carryforwards may be limited as a result of such ownership changes. Such a limitation could result in the expiration of carryforwards before they are utilized.

Income tax expense or benefit from continuing operations is generally determined without regard to other categories of earnings, such as discontinued operations and other comprehensive income. An exception is provided in ASC Topic 740 when there is aggregate income from categories other than continuing operations and a loss from continuing operations in the current year. In this case, the tax benefit allocated to continuing operations is the amount by which the loss from continuing operations reduces the tax expenses recorded with respect to the other categories of earnings, even when a valuation allowance has been established against the deferred tax assets. In instances where a valuation allowance is established against current year losses, income from other sources, including gain from available-for-sale securities recorded as a component of other comprehensive income, is considered when determining whether sufficient future taxable income exists to realize the deferred tax assets. For the year ended December 31, 2017, the Company did not record a tax expense in other comprehensive income related to available-for-sale securities.

In 2014, we determined that the undistributed earnings of our India subsidiary will be repatriated to the United States, and accordingly, we have provided a deferred tax liability totaling $0.1 million as of December 31, 2017. We have not provided for U.S. federal and state income taxes on all of the remaining non-U.S. subsidiaries' undistributed earnings as of December 31, 2017 as the remaining foreign jurisdictions are in an accumulative loss position.

We apply the provisions of ASC Topic 740 to account for uncertainty in income taxes. A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows (in thousands):

	Rollforward Table (at Gross): As of December 31,		
	2017	2016	2015
Balance at beginning of year	$ 8,566	$ 8,152	$ 7,838
Additions based on tax positions related to current year	880	459	368
Reductions to tax provision of prior years	(24)	(45)	(54)
Balance at end of year	$ 9,422	$ 8,566	$ 8,152

We recognize interest and penalties as a component of our income tax expense. Total interest and penalties recognized in the consolidated statement of operations was $31,000, $35,000 and $24,000, respectively, in 2017, 2016 and 2015. Total penalties and interest recognized in the balance sheet was $323,000 and $292,000, respectively, in 2017 and 2016. The total unrecognized tax benefits that, if recognized currently, would impact the Company's effective tax rate were $0.4 million as of December 31, 2017 and 2016. We do not expect any material changes to our uncertain tax positions within the next 12 months. We are not subject to examination by United States federal or state tax authorities for years prior to 2002 and foreign tax authorities for years prior to 2010.

On December 22, 2017, the Tax Cuts and Jobs Act of 2017 (the "Act") was signed into law making significant changes to the Internal Revenue Code. The Act makes broad and complex changes to the U.S. tax code, including, but not limited to, (i) reducing the U.S. federal statutory tax rate from 35% to 21%; (ii) requiring companies to pay a one-time transition tax on certain un-repatriated earnings of foreign subsidiaries; (iii) generally eliminating U.S federal income taxes on dividends from foreign subsidiaries; (iv) requiring a current inclusion in U.S. federal taxable income of certain earnings of controlled foreign corporations; (v) eliminating the corporate alternative minimum tax (AMT) and changing how existing AMT credits can be

realized; (vi) creating the base erosion anti-abuse tax (BEAT), a new minimum tax; (vii) creating a tax on global intangible low-taxed income (GILTI) of foreign subsidiaries; (viii) creating a new limitation on deductible interest expense; (ix) changing rules related to uses and limitations of net operating loss carryforwards created in tax years beginning after December 31, 2017; and (x) modifying the officer's compensation limitation.

Because ASC 740-10-25-47 requires the effect of a change in tax laws or rates to be recognized as of the date of enactment, we remeasured our deferred tax assets and liabilities, and offsetting valuation allowance in the current period. There was no impact to tax expense as the remeasurement of net deferred tax assets was completely offset by a corresponding change in valuation allowance. The reduction to U.S. deferred tax assets and the offsetting valuation allowance was $34.1 million. We did not incur a tax liability from the deemed repatriation of accumulated foreign earnings due to an accumulated deficit in foreign earnings and profits.

The GILTI provisions in the Tax Act will require us to include, in our U.S. income tax return, foreign subsidiary earnings in excess of an allowable return on the foreign subsidiary's tangible assets. We are currently assessing the GILTI provisions and have not yet selected an accounting policy for its application; however, we do not anticipate that it will have a material impact on our future tax expense as the operations of our non-U.S. subsidiaries are not material.

The BEAT provisions in the Tax Act eliminates the deduction of certain base-erosion payments made to related foreign corporations, and imposes a minimum base erosion anti-abuse tax if greater than regular tax. We do not expect to be subject to this tax based on its assessment of the BEAT provisions.

Note 13. Commitments and Contingencies

Operating Leases

Our headquarters are located in Redwood City, California, where we occupy office and laboratory space in four buildings within the same business park from Metropolitan Life Insurance Company ("MetLife"). We entered into the initial lease with Met-Life for a portion of this space in 2004 and the lease has been amended multiple times since then to adjust space and amend the terms of the lease, with the latest amendment ("Seventh Amendment") in October 2016 which extended the lease term to January 2022 and waived our existing asset retirement obligation for one of our buildings. The various terms for the spaces under the lease have expiration dates that range from January 2020 through January 2022. Beginning in February 2014, we have subleased office space to different subtenants with separate options to extend the subleases. If all options to extend were exercised, these agreements would expire at various dates through November 2019.

We received certain lease incentives from MetLife in 2011 and 2012, which have been amortized on a straight line basis over the term of the lease as a reduction in rent expense. As of December 31, 2017 and 2016, we have an unamortized lease incentive obligation of $0.9 million and $1.3 million, respectively, of which the non-current portion of $0.5 million and $0.9 million, respectively, is included in lease incentive obligation on the consolidated balance sheets. Rent expense for the Redwood City properties is recognized on a straight-line basis over the term of the lease. Rent expense was $3.2 million in 2017, $2.9 million in 2016 and $2.9 million in 2015, partially offset by sublease income of $1.4 million in 2017, $1.2 million in 2016 and $0.6 million in 2015.

We are required to restore certain of the Redwood City facilities that we are renting to their original form. We are expensing the asset retirement obligation over the terms of the respective leases. We review the estimated obligation each reporting period and make adjustments if our estimates change. Since the Seventh Amendment waived our existing asset retirement obligation for one of our buildings, we recorded a $0.2 million decrease in our asset retirement obligation and a $0.2 million gain on extinguishment in asset retirement obligation in our consolidated statement of operations as sales, general and administrative expenses. As of December 31, 2017 and 2016, we have assets retirement obligations of $0.2 million and $0.4 million, respectively, which is included in other liabilities on the consolidated balance sheets.

Pursuant to the terms of the amended lease agreement, we exercised our right to deliver a letter of credit in lieu of a security deposit. The letters of credit are collateralized by deposit balances held by the bank in the amount of $0.7 million as of December 31, 2017 and 2016. These deposits are recorded as restricted cash on the consolidated balance sheets.

Capital Leases

In December 2016, we entered into a three-year financing lease agreement with a third party supplier for the purchase of laboratory equipment that was partially financed through a capital lease of approximately $0.4 million. The lease became

effective upon delivery of the equipment, which occurred in February 2017, and the term of the lease is three years from the effective date. This financing agreement was accounted for as a capital lease due to the bargain purchase option at the end of the lease.

In April 2017, we entered into a three-year financing lease agreement with a third party supplier for the purchase of information technology equipment for approximately $0.3 million. The effective date of the lease was May 19, 2017 and the term of the lease is three years. This financing agreement was accounted for as a capital lease due to the bargain purchase option at the end of the lease.

Leases

Future minimum payments under non-cancellable capital and operating leases at December 31, 2017 are as follows (in thousands):

Years ending December 31,	Capital Leases	Operating Leases
2018	$ 252	$ 3,185
2019	252	3,280
2020	60	712
2021	—	490
2022	—	41
Total minimum lease payments [1]	564	$ 7,708
Less: amount representing interest	(32)	
Present value of capital lease obligations	532	
Less: current portion	(230)	
Long-term portion of capital leases	$ 302	

[1] Minimum payments have not been reduced by future minimum sublease rentals of $1.2 million to be received under non-cancellable subleases.

Other Commitments

We enter into supply and service arrangements in the normal course of business. Supply arrangements are primarily for fixed-price manufacture and supply. Service agreements are primarily for the development of manufacturing processes and certain studies. Commitments under service agreements are subject to cancellation at our discretion which may require payment of certain cancellation fees. The timing of completion of service arrangements is subject to variability in estimates of the time required to complete the work.

The following table provides quantitative data regarding our other commitments. Future minimum payments reflect amounts that we expect to pay including potential obligations under services agreements subject to risk of cancellation by us (in thousands):

Other Commitment Agreement Type	Agreement Date	Future Minimum Payment
Manufacture and supply agreement with expected future payment date of December 2022	April 2016	$ 1,693
Service agreement for the development of manufacturing process	April 2017	1,082
Service agreement for stability study	July 2017	398
Service agreement for clinical trial	December 2017	294
Total other commitments		$ 3,467

Credit Facility

Effective June 30, 2017, we entered into a credit facility (the "Credit Facility") consisting of term loans ("Term Debt") totaling up to $10.0 million, and advances ("Advances") under a revolving line of credit ("Revolving Line of Credit") totaling up to $5.0 million with an accounts receivable borrowing base of 80% of eligible accounts receivable. At December 31, 2017, we have not drawn from the Credit Facility. We may draw on the Term Debt at any time prior to June 30, 2018, subject to customary conditions for funding including, among others that no event of default exists. We may draw on the Revolving Line of Credit at any time prior to the maturity date. On July 1, 2021, any loans for Term Debt mature and the Revolving Line of Credit terminate. Term Debt bears interest through maturity at a variable rate based on the London Interbank Offered Rate plus 3.60%. Advances under the Revolving Line of Credit bear interest at a variable annual rate equal to the greater of (i) 1.00% above the prime rate and (ii) 5.00%.

The Credit Facility allows for interest-only payments on Term Debt through August 1, 2019. Monthly payments of principal and interest on the Term Debt are required following the applicable amortization date. We may elect to prepay in full the Term Debt and Advances under the Revolving Line of Credit at any time. Prepayments of Term Debt and early termination of the Revolving Line of Credit are subject to prepayment and final payment fees are as follows:

	Term Debt	Revolving Line of Credit
Through and including the first anniversary of the funding date of the first Term Debt drawn	2.0%	
After the first anniversary of the funding date of the first Term Debt drawn and before the maturity date	1.0%	
On the earliest to occur of the maturity date, the acceleration of Term Debt drawn or prepayment of Term Debt drawn	5.5%	
Through and including the first anniversary of the closing date		3.0%
After the first anniversary of the closing date through and including the second anniversary of the closing date		2.0%
After the second anniversary of the closing date through and including the third anniversary of the closing date		1.0%

Our obligations under the Credit Facility are secured by a lien on substantially all of our personal property other than our intellectual property. The Credit Facility includes a number of customary covenants and restrictions which require us to comply with certain financial covenants including achieving consolidated product revenues levels at minimum levels as set forth in the Credit Facility through December 2018 and on and after January 2019, in each case unless we maintain certain minimum cash levels with the lender in an amount equal to or greater than six times the sum of the average six-month trailing operating cash flow net outlay plus the average monthly principal due and payable in the immediately succeeding three-month period. The Credit Facility places various restrictions on the Company's transferring collateral, incurring additional indebtedness, engaging in mergers or acquisitions, paying dividends or making other distributions, making investments, creating liens and selling assets and permitted assets to be held at foreign subsidiaries above specified caps, in each case subject to certain exceptions. A failure to comply with these covenants could permit the lender to exercise remedies against us and the collateral securing the Credit Facility, including foreclosure of our properties securing the Credit Facilities and our cash. At December 31, 2017, we were in compliance with the covenants for the Credit Facility.

Legal Proceedings

We are not currently a party to any material pending litigation or other material legal proceedings.

In February 2018, we and EnzymeWorks, Inc. (U.S.), Suzhou Hanmei Biotechnology Co. Ltd, d/b/a EnzymeWorks, Inc. (China) (collectively, "EnzymeWorks"), Junhua Tao, and Andrew Tao reached a settlement concerning the lawsuit filed by us in February 2016 against EnzymeWorks, Junhua Tao, and Andrew Tao in the United States District Court for the Northern District of California. The parties have entered into a settlement agreement, the terms of which are confidential. The parties have also stipulated to a judgment of patent infringement of all asserted patents against EnzymeWorks, and a permanent injunction barring any future infringement. The remaining claims against EnzymeWorks, and all claims against Junhua Tao, and Andrew Tao including trade secret misappropriation, breach of contract and voidable transfer have been dismissed with prejudice.

Indemnifications

We are required to recognize a liability for the fair value of any obligations we assume upon the issuance of a guarantee. We have certain agreements with licensors, licensees and collaborators that contain indemnification provisions. In such provisions, we typically agree to indemnify the licensor, licensee and collaborator against certain types of third party claims. The maximum amount of the indemnifications is not limited. We accrue for known indemnification issues when a loss is probable and can be reasonably estimated. There were no accruals for expenses related to indemnification issues for any periods presented.

Note 14. Related Party Transactions

Exela PharmSci, Inc.

We signed a commercialization agreement with Exela PharmSci, Inc. ("Exela") in 2007. Under the license agreement, as amended, we and Exela cross-licensed certain technology relating to the manufacture of Argatroban, an API, in exchange for rights to certain sublicensing fees or development payments and revenue sharing. The revenue sharing arrangement was terminated in December 2017.

Thomas R. Baruch, one of our directors, serves on the board of directors of Exela, and is a retired general partner in Presidio Partners 2007, L.P., which owns more than 10% of Exela's outstanding capital stock. As such, Mr. Baruch has an indirect pecuniary interest in the shares of Exela held by Presidio Partners 2007, L.P.

In December 2017, we and Exela mutually agreed to terminate the license and revenue share arrangement. In consideration for the sale of an exclusive license to Exela and termination of the previous license and revenue sharing agreement, Exela will pay us a total of $1.5 million in seven installments after the agreement effective date of December 14, 2017. We recognized $1.5 million revenue at December 31, 2017.

We recognized $2.6 million in 2017, $2.2 million in 2016 and $4.8 million in 2015, shown in the consolidated statement of operations as revenue sharing arrangement. We had $1.6 million and no receivables from Exela at December 31, 2017 and 2016, respectively.

AstraZeneca PLC

Pam P. Cheng, a member of our board of directors, joined AstraZeneca PLC as Executive Vice President, Operations and Information Technology in June 2015. We sell biocatalyst products to AstraZeneca PLC and to Alfa Aesar, which is a purchasing agent of AstraZeneca PLC.

We recognized $0.1 million and de minimis revenue of product revenue from AstraZeneca PLC in 2017 and 2016, respectively. We recognized nil and $0.4 million of product revenue from Alfa Aesar in 2017 and 2016, respectively. We had $0.1 million and no accounts receivable from AstraZeneca PLC at December 31, 2017 and 2016, respectively. We had no and $0.4 million in accounts receivable from Alfa Aesar at December 31, 2017 and 2016, respectively.

Note 15. Significant Customer and Geographic Information

Significant Customers

Customers that each contributed 10% or more of our total revenues were as follows:

	Percentage of Total Revenues For The Years Ended December 31,		
	2017	2016	2015
Merck	28%	47%	29%
GSK	*	22%	20%
Novartis	14%	*	*
Nestlé	15%	*	*
Exela	*	*	12%
Tate & Lyle	11%	*	*

Customers that each accounted for 10% or more of our accounts receivable balance for the period presented were as follows:

	Percentage of Accounts Receivables As Of December 31,	
	2017	2016
Merck	31%	54%
Pfizer	*	16%
Exela	14%	*
Tate & Lyle	16%	*
Novartis	15%	*

** Percentage was less than 10%*

Geographic Information

Geographic revenues are identified by the location of the customer and consist of the following (in thousands):

	Years Ended December 31,		
	2017	2016	2015
Revenues			
United States	$ 15,469	$ 21,310	$ 23,293
India	5,639	3,578	1,026
Singapore	6,165	3,836	963
United Kingdom	51	10,851	8,721
Switzerland	13,216	2,315	1,574
Rest of world [(2)]	9,484	6,947	6,227
Total revenues	$ 50,024	$ 48,837	$ 41,804

[(2)] No other country accounted for at least 10% of total revenue for the years above.

Geographic presentation of identifiable long-lived assets below shows those assets that can be directly associated with a particular geographic area and consist of the following (in thousands):

	December 31,	
	2017	2016
Long-lived assets		
United States	$ 3,117	$ 2,414

Selected Quarterly Financial Data (Unaudited)

The following table provides the selected quarterly financial data for 2017 and 2016 (in thousands):

Condensed Consolidated Statements of Operations
(In Thousands, Except Per Share Amounts)

	Quarter Ended [1]							
	December 31, 2017 [3]	September 30, 2017	June 30, 2017	March 31, 2017	December 31, 2016 [3]	September 30, 2016	June 30, 2016	March 31, 2016
Revenues:								
Product sales	$ 7,551	$ 6,948	$ 6,600	$ 5,586	$ 4,249	$ 4,052	$ 3,280	$ 3,740
Research and development revenues	12,427	2,929	3,391	2,001	5,345	10,373	12,064	3,534
Revenue sharing arrangement	1,744	107	356	384	375	445	658	722
Total revenues	$ 21,722	$ 9,984	10,347	7,971	$ 9,969	$ 14,870	$ 16,002	$ 7,996
Costs and operating expenses:								
Cost of product sales	$ 3,559	$ 3,976	$ 3,790	$ 3,002	$ 2,287	$ 2,756	$ 2,221	$ 2,489
Research and development	9,417	8,055	6,348	5,839	5,964	5,467	5,112	5,686
Selling, general and administrative	7,867	7,989	6,546	6,606	6,968	5,229	6,420	6,802
Total costs and operating expenses	$ 20,843	$ 20,020	$ 16,684	$ 15,447	$ 15,219	$ 13,452	$ 13,753	$ 14,977
Income (loss) before income taxes	$ 919	$ (10,076)	$ (6,322)	$ (7,436)	$ (5,285)	$ 1,437	$ 2,213	$ (6,963)
Net income (loss)	$ 970	$ (10,226)	$ (6,280)	$ (7,460)	$ (5,260)	$ 1,437	$ 2,239	$ (6,974)
Net income (loss) per share, basic	$ 0.02	$ (0.21)	$ (0.13)	$ (0.18)	$ (0.13)	$ 0.04	$ 0.06	$ (0.17)
Net income (loss) per share, diluted	$ 0.02	$ (0.21)	$ (0.13)	$ (0.18)	$ (0.13)	$ 0.03	$ 0.05	$ (0.17)
Weighted average common shares used in computing net income (loss) per share, basic [2]	48,187	48,147	47,232	41,250	41,002	40,940	40,495	40,072
Weighted average common shares used in computing net income (loss) per share, diluted[2]	50,599	48,147	47,232	41,250	41,002	42,134	41,568	40,072

(1) The 2017 and 2016 amounts were computed independently for each quarter, and the sum of the quarters may not total the annual amounts.

(2) The full year net loss per share of common stock, basic and diluted, may not equal the sum of the quarters due to weighting of outstanding shares.

(3) PSUs, PBOs, and cash bonus awards are granted to certain employees and executives and are subject to our performance in achieving pre-determined criteria approved by our board of directors. Based on the actual achievement of the annual goals, we updated the calculation of the annual expense in the fourth quarter which resulted in an additional true-up charge of approximately $0.1 million in 2017 and $0.3 million in 2016, primarily in selling, general and administrative expense.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURES

None.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Our management, under the supervision of our Chief Executive Officer and Chief Financial Officer and with the participation of our disclosure committee, evaluated the effectiveness of the design and operation of our disclosure controls and procedures as of December 31, 2017. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure. Based on this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective as of December 31, 2017 at the reasonable assurance level.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f) and 15d-15(f). 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 reporting purposes in accordance with United States generally accepted accounting principles.

Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2017 based on the guidelines established in *Internal Control-Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on the results of our evaluation, our management concluded that our internal control over financial reporting was effective as of December 31, 2017. We reviewed the results of management's assessment with our Audit Committee.

Our internal control over financial reporting as of December 31, 2017 has been audited by BDO USA, LLP, an independent registered public accounting firm, as stated in their report which is included in Item 8 of this Annual Report.

Inherent Limitations on Effectiveness of Controls

In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, even if determined effective and no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives to prevent or detect misstatements. In addition, the design of disclosure controls and procedures must reflect the fact that there are resource constraints and that management is required to apply judgment in evaluating the benefits of possible controls and procedures relative to their costs. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting (as defined in Rule 13a-15(f) of the Exchange Act) identified in connection with the evaluation required by paragraph (d) of Rule 13a-15 of the Exchange Act, which occurred during the fourth fiscal quarter of the year ended December 31, 2017, which has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

Not applicable.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this item concerning our directors, executive officers, compliance with Section 16 of the Exchange Act, our code of ethics and our Nominating and Corporate Governance Committee, and our Audit Committee is incorporated by reference from the information that will be set forth in the sections under the headings “Election of Directors,” “Other Matters—Section 16(a) Beneficial Ownership Reporting Compliance” and “Corporate Governance Matters” in our Definitive Proxy Statement to be filed with the Securities and Exchange Commission in connection with the Annual Meeting of Stockholders to be held in 2018 (the “2018 Proxy Statement”).

ITEM 11. EXECUTIVE COMPENSATION

The information required by this item concerning executive compensation is incorporated by reference from the information that will be set forth in the 2018 Proxy Statement under the headings “Executive Compensation,” and “Corporate Governance Matters.”

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information required by this item concerning securities authorized for issuance under equity compensation plans and security ownership of certain beneficial owners and management is incorporated by reference from the information that will be set forth in the 2018 Proxy Statement under the headings “Executive Compensation—Equity Compensation Plan Information” and “Information Concerning Voting and Solicitation—Security Ownership of Certain Beneficial Owners and Management.”

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by this item concerning transactions with related persons and director independence is incorporated by reference from the information that will be set forth in the 2018 Proxy Statement under the headings “Certain Relationships and Related Transactions” and “Corporate Governance Matters.”

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The information required by this item is incorporated by reference from the information that will be set forth in the 2018 Proxy Statement under the heading “Ratification of Independent Registered Public Accounting Firm—Principal Accounting Fees and Services.”

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

1. Financial Statements: See “Index to Consolidated Financial Statements” in Part II, Item 8 of this Annual Report on Form 10-K
2. Exhibits: The exhibits listed in the accompanying index to exhibits are filed or incorporated by reference as part of this Annual Report on Form 10-K.

EXHIBIT INDEX

Exhibit No.	Description
3.1	Amended and Restated Certificate of Incorporation of Codexis, Inc. filed with the Secretary of the State of the State of Delaware on April 27, 2010 and effective as of April 27, 2010 (incorporated by reference to Exhibit 3.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2010, filed on May 28, 2010).
3.2	Certificate of Designations of Series A Junior Participating Preferred Stock of Codexis, Inc., filed with the Secretary of State of the State of Delaware on September 4, 2012 (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K, filed on September 4, 2012).
3.3	Amended and Restated Bylaws of Codexis, Inc. effective as of April 27, 2010 (incorporated by reference to Exhibit 3.2 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2010, filed on May 28, 2010).
4.1	Form of the Registrant's Common Stock Certificate (incorporated by reference to Exhibit 4.1 to the Company's Quarterly Report for the quarter ended June 30, 2012, filed on August 9, 2012).
10.1A*	Lease Agreement by and between the Company and Metropolitan Life Insurance Company dated as of February 1, 2004.
10.1B*	Amendment to Lease Agreement by and between the Company and Metropolitan Life Insurance Company dated as of June 1, 2004.
10.1C*	Amendment to Lease Agreement by and between the Company and Metropolitan Life Insurance Company dated as of March 9, 2007.
10.1D*	Amendment to Lease Agreement by and between the Company and Metropolitan Life Insurance Company dated as of March 31, 2008.
10.1E	Fourth Amendment to Lease Agreement by and between the Company and Metropolitan Life Insurance Company dated as of September 17, 2010 (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2010, filed on November 4, 2010).
10.1F	Fifth Amendment to Lease Agreement by and between the Company and Metropolitan Life Insurance Company dated as of March 16, 2011 (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2011, filed on May 6, 2011).
10.1G	Sixth Amendment to Lease by and between the Company and Metropolitan Life Insurance Company dated as of September 27, 2012 (incorporated by reference to Exhibit 10.6 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2012, filed on November 7, 2012).
10.1H	Seventh Amendment to Lease by and between the Company and Metropolitan Life Insurance Company dated as of October 17, 2016 (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2016, filed on November 8, 2016).
10.2+*	Codexis, Inc. 2002 Stock Plan, as amended, and Form of Stock Option Agreement.
10.3+*	Codexis, Inc. 2010 Equity Incentive Award Plan and Form of Stock Option Agreement.
10.4*	Form of Indemnification Agreement between the Company and each of its directors, officers and certain employees.
10.5A+*	Form of Change of Control Severance Agreement between the Company and certain of its officers.
10.5B+	Form of Amended and Restated Change of Control Severance Agreement by and between Codexis, Inc. and certain of its officers (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, filed on October 13, 2016).

Exhibit No.	Description
10.5C+	Form of Amendment to Change of Control Severance Agreement by and between Codexis, Inc. and certain of its officers
10.6	Asset Purchase Agreement, dated October 28, 2010, by and among the Company, Codexis Mayflower Holdings, LLC and Maxygen, Inc. (incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K, filed on October 28, 2010).
10.7A†	Manufacture and Supply Agreement, dated May 16, 2011, by and between the Company and Lactosan GmbH & Co. KG (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2011, filed on August 3, 2011).
10.7B	Amendment No. 1 to the Manufacture and Supply Agreement by and between the Company and Lactosan GmbH & Co. KG dated as of March 9, 2012 (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2012, filed on May 10, 2012).
10.8A+	Employment Agreement by and between the Company and John Nicols effective as of May 28, 2012 (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2012, filed on August 9, 2012).
10.8B+	John Nicols Stock Option Grant Notice and Stock Option Agreement dated June 13, 2012 between John J. Nicols and the Company (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2012, filed on August 9, 2012).
10.8C+	John Nicols Restricted Stock Grant Notice and Restricted Stock Agreement dated June 13, 2012 between John J. Nicols and the Company (incorporated by reference to Exhibit 10.4 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2012, filed on August 9, 2012).
10.8D+	Amendment to Employment Agreement between the Company and John Nicols, dated April 21, 2016 (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2016).
10.8E+	Amendment to Employment Agreement between the Company and John Nicols, dated November 16, 2017.
10.9A†	Sitagliptin Catalyst Supply Agreement by and between Merck Sharp and Dohme Corp. and the Company dated as of February 1, 2012 (incorporated by reference to Exhibit 10.25 to the Company's Annual Report on Form 10-K for the year ended December 31, 2012, filed on April 2, 2013).
10.9B†	Amendment to Sitagliptin Catalyst Supply Agreement between Merck Sharp and Dohme Corp. and the Company dated as of October 1, 2013 (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2013, filed on November 12, 2013).
10.9C	Amendment No. 2 to Sitagliptin Catalyst Supply Agreement between Merck Sharp and Dohme Corp. and the Company dated as of February 25, 2015 (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2015, filed on May 7, 2015).
10.9D	Amendment No. 3 to Sitagliptin Catalysts Supply Agreement between Merck Sharp and Dohme Corp. and the Company dated as of December 17, 2015.
10.9E	Amendment No. 4 to Sitagliptin Catalysts Supply Agreement, effective as of January 1, 2016, by and between the Company and Merck Sharp and Dohme Corp. (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2016, filed on November 8, 2016).
10.10†	Global Development, Option and License Agreement by and among the Company, Nestec Ltd. and Nestlé Health Science S.A., effective as of October 12, 2017.

Exhibit No.	Description
10.11†	Platform Technology Transfer, Collaboration and License Agreement by and between the Company and GlaxoSmithKline Intellectual Property Limited, effective as of July 10, 2014 (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 31, 2014, filed on November 6, 2014).
10.12+	Offer Letter Agreement by and between the Company and Gordon Sangster effective as of July 11, 2014 (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 31, 2014, filed on November 6, 2014).
10.13†	Platform Technology Transfer and License Agreement by and between the Company and Merck Sharp & Dohme Corp., dated as of August 3, 2015 (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 31, 2015, filed on November 6, 2015).
10.14+	Offer Letter, dated as of October 12, 2016, by and between the Company and Michael Aldridge (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2016).
10.15†	Loan and Security Agreement effective as of June 30, 2017 by and between the Company and Western Alliance Bank (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2017).
10.15A†	First Amendment to Loan and Security Agreement effective as of September 28, 2017 by and between the Company and Western Alliance Bank (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2017).
10.15B	Second Amendment to Loan and Security Agreement effective as of November 7, 2017 by and between the Company and Western Alliance Bank.
12.1	Statement Regarding the Computation of Ratio of Earnings to Fixed Charges.
21.1	List of Subsidiaries.
23.1	Consent of BDO USA, LLP, independent registered public accounting firm
24.1	Power of Attorney (see signature page to this Annual Report on Form 10-K).
31.1	Certification of Principal Executive Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended.
31.2	Certification of Principal Financial Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended.
32.1**	Certification of Principal Executive Officer and Principal Financial Officer Required Under Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, and 18 U.S.C. §1350.
101	The following materials from Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2017, formatted in Extensible Business Reporting Language (XBRL) includes: (i) Consolidated Balance Sheets at December 31, 2017 and December 31, 2016, (ii) Consolidated Statements of Income for the years ended December 31, 2017, December 31, 2016 and December 31, 2015, (iii) Consolidated Statements of Comprehensive Loss for the years ended December 31, 2017, December 31, 2016 and December 31, 2015, (iv) Consolidated Statements of Cash Flows for the years ended December 31, 2017, December 31, 2016 and December 31, 2015, (v) Consolidated Statements of Stockholders' Equity for the years ended December 31, 2017, December 31, 2016 and December 31, 2015 and (vi) Notes to Consolidated Financial Statements.

+ Indicates a management contract or compensatory plan or arrangement.

† Confidential treatment has been granted for certain information contained in this exhibit. Such information has been omitted and filed separately with the Securities and Exchange Commission.

* Filed as exhibits to the registrant's Registration Statement on Form S-1 (File No. 333-164044), effective April 21, 2010, and incorporated herein by reference.

** Pursuant to Item 601(b)(32) of Regulation S-K this exhibit is furnished rather than filed with this report.

ITEM 16. FORM 10-K SUMMARY

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

CODEXIS, INC.

Date: March 15, 2018

By: /s/ John J. Nicols
President and Chief Executive Officer
(Principal Executive Officer)

POWER OF ATTORNEY

Each person whose individual signature appears below hereby authorizes and appoints John J. Nicols, Gordon T. B. Sangster, and Richard A. Sabalot, and each of them, with full power of substitution and resubstitution and full power to act without the other, as his or her true and lawful attorney-in-fact and agent to act in his or her name, place and stead and to execute in the name and on behalf of each person, individually and in each capacity stated below, and to file any and all amendments to this annual report on Form 10-K and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing, ratifying and confirming all that said attorneys-in-fact and agents or any of them or their or his substitute or substitutes may lawfully do or cause to be done by virtue thereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

SIGNATURE	TITLE		DATE
/s/ John J. Nicols John J. Nicols	President, Chief Executive Officer and Director (Principal Executive Officer)	Date:	March 15, 2018
/s/ Gordon T. B. Sangster Gordon T. B. Sangster	Senior Vice President and Chief Financial Officer (Principal Financial and Accounting Officer)	Date:	March 15, 2018
/s/ Bernard J. Kelley Bernard J. Kelley	Chairman of the Board of Directors	Date:	March 15, 2018
/s/ Thomas R. Baruch Thomas R. Baruch	Chairman Emeritus, Director	Date:	March 15, 2018
/s/ Pam P. Cheng Pam P. Cheng	Director	Date:	March 15, 2018
/s/ Byron L. Dorgan Byron L. Dorgan	Director	Date:	March 15, 2018
/s/ Kathleen S. Glaub Kathleen S. Glaub	Director	Date:	March 15, 2018
/s/ David V. Smith David V. Smith	Director	Date:	March 15, 2018
/s/ Dennis P. Wolf Dennis P. Wolf	Director	Date:	March 15, 2018
/s/ Patrick Y. Yang Patrick Y. Yang	Director	Date:	March 15, 2018

Codexis, Inc.
200 Penobscot Drive
Redwood City, CA 94063
Tel: +1 (650) 421-8100
Fax: +1 (650) 421-8102
www.codexis.com

November 16, 2017
[Executive First Name, Last Name]
200 Penobscot Drive
Redwood City, CA 94063

Re: Amendment to Change in Control Severance Agreement

Dear _____,

You and Codexis, Inc. (the "Company") are currently parties to a Change in Control Severance Agreement, dated as of _____, 201_, as amended on _____, 201__ (the "CIC Agreement") which provides, among other things, that you will be entitled to receive certain severance payments and benefits upon certain qualifying terminations of employment with the Company. Effective as of the date of this amendment (this "Amendment"), you and the Company hereby agree to amend the CIC Agreement as follows:

The last sentence of Section 4(b) of the CIC Agreement is deleted and replaced in its entirety by the following:

"Notwithstanding the foregoing, any outstanding performance stock units or performance vesting options held by Executive shall automatically become vested with respect to: (i) in the event of a Change of Control that occurs prior to the applicable Measurement Date, such number of shares of Company common stock corresponding to the target performance level for any applicable performance goals; or (ii) in the event of a Change of Control that occurs on or after the Measurement Date, such number of shares of Company common stock corresponding the Company's actual achievement of any applicable performance goals;"

The last sentence of Section 5(a) of the CIC Agreement is deleted and replaced in its entirety by the following:

"For purposes of determining the number of shares subject to any outstanding performance stock units or performance vesting options held by Executive that would otherwise vest on the next vesting date pursuant to the foregoing sentence, the applicable performance goals shall be deemed achieved; (i) in the event of a termination due to death or Disability that occurs prior to the applicable Measurement Date, such number of shares of Company common stock corresponding to the target performance level for any applicable performance goals; or (ii) in the event of a termination due to death or Disability that occurs on or after the Measurement Date, such number of shares of Company common stock corresponding the Company's actual achievement of any applicable performance goals;"

Section 9(h) of the CIC Agreement is deleted and replaced in its entirety by the following:

"Measurement Date. 'Measurement Date,' with respect to an award of performance stock units or performance vesting options, shall mean the date the Compensation Committee of the Board of Directors determines the final performance factor and/or performance goal achievement for the applicable performance period."

All terms and provisions of the CIC Agreement not amended hereby, either expressly or by necessary implication, shall remain in full force and effect. From and after the date of this Amendment, all references to the term "CIC Agreement" in this Amendment or the original CIC Agreement shall include the terms contained in this Amendment.

Please indicate your acceptance of and agreement to the terms and conditions set forth in this Amendment by signing in the space below and returning the executed Amendment to the Company.

Sincerely,

Codexis, Inc.

By: /s/ John J. Nicols
Name: John J. Nicols
Title: President and CEO

Accepted by:

/s/ Executive Officer

16 November 2017
Date

Codexis, Inc.
200 Penobscot Drive
Redwood City, CA 94063
Tel: +1 (650) 421-8100
Fax: +1 (650) 421-8102
www.codexis.com

November 16, 2017

John Nicols
200 Penobscot Drive
Redwood City, CA 94063

Re: Amendment to Employment Agreement

Dear John,

You and Codexis, Inc. (the "Company") are currently parties to an Employment Agreement, dated as of May 28, 2012, as amendment on April 21, 2016 (the "Employment Agreement"), which sets forth the terms of your employment with the Company and provides, among other things, that you will be entitled to receive certain severance payments and benefits upon certain qualifying terminations of employment with the Company. Effective as of the date of this amendment (this "Amendment"), you and the Company hereby agree to amend the Employment Agreement as follows:

Section 1(j) through (l) of the Employment Agreement is deleted and replaced in its entirety by the following:

"(j) 'Measurement Date,' with respect to an award of performance stock units or performance vesting options, shall mean the date the Compensation Committee of the Board of Directors determines the final performance factor and/or performance goal achievement for the applicable performance period.

(k) 'Person' shall mean any individual, natural person, corporation (including any non-profit organization), general partnership, limited partnership, limited liability partnership, join venture, estate, trust, company (including and company limited by shares, limited liability company or joint sto0ck company), incorporated or unincorporated association, governmental authority, firm, society or other enterprise, organization or other entity of any nature.

(l) 'Section 409A' shall mean 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."

The last provision of the first sentence of Section 5©9iii) of the Employment Agreement is deleted and replaced in its entirety by the following:

"provided that, any outstanding performance stock units or performance vesting options held by Executive shall automatically become vested with respect to (i) in the event of a Change of Control that occurs prior to the applicable Measurement Date, such number of shares of Company common stock corresponding to the target performance level for any applicable performance goals; or (ii) in the event of

a Change of Control that occurs on or after the Measurement Date, such number of shares of Company common stock corresponding to the Company's actual achievement of any applicable performance goals;"

All terms and provisions of the Employment Agreement not amended hereby, either expressly or by necessary implication, shall remain in full force and effect. From and after the date of this Amendment, all references to the term "Employment Agreement" in this Amendment or the original Employment Agreement shall include the terms contained in this Amendment.

Please indicate your acceptance of and agreement to the terms and conditions set forth in this Amendment by signing in the space below and returning the executed Amendment to the Company.

Sincerely,

Codexis, Inc.

By: /s/ Bernard Kelley
Name: Bernard Kelley
Title: Chairman

Accepted by:

/s/ John Nicols
John Nicols

16 November 2017
Date

GLOBAL DEVELOPMENT, OPTION AND LICENSE AGREEMENT

between

NESTEC LTD.

and

CODEXIS, INC.

[***] Certain information in this document has been omitted and filed separately with the Securities and Exchange Commission. Confidential treatment has been requested with respect to the omitted portions.

TABLE OF CONTENTS

Exhibits

GLOBAL DEVELOPMENT, OPTION AND LICENSE AGREEMENT

This GLOBAL DEVELOPMENT, OPTION AND LICENSE AGREEMENT (this "**Agreement**") is made as of October 12, 2017 (the "**Effective Date**"), by and between NESTEC LTD., a limited company organized and existing under the laws of Switzerland, having an office located at Avenue Nestlé 55, 1800 Vevey, Switzerland ("**NHSc**"), and CODEXIS, INC., a corporation incorporated and existing under the laws of the State of Delaware, having an office located at 200 Penobscot Drive, Redwood City, CA 94063, USA ("**Codexis**"). NHSc and Codexis are sometimes referred to herein individually as a "**Party**" and collectively as the "**Parties**."

RECITALS

WHEREAS, Codexis is developing, and owns or controls certain patent rights, technology, know-how and other intellectual property relating to a novel therapeutic oral enzyme product candidate for the treatment of HPA (as defined herein);

WHEREAS, NHSc wishes to obtain, and Codexis wishes to grant to NHSc, an option to obtain a license under such intellectual property of Codexis in respect of such product candidate and related enzymes, as set forth in this Agreement; and

WHEREAS, NHSc wishes to obtain from Codexis, and Codexis wishes to grant to NHSc, exclusive rights of first negotiation to obtain a license to additional product candidates developed from time to time by Codexis in the field of inborn errors of amino acid metabolism and related enzymes, as set forth in this Agreement.

NOW, THEREFORE in consideration of the foregoing and the mutual agreements set forth below, the Parties agree as follows:

Article 1
DEFINITIONS

1.1 Definitions. The terms in this Agreement with initial letters capitalized, whether used in the singular or the plural, shall have the respective meanings either set forth below or in another part of this Agreement.

"**Affiliate**" of a Party means an entity that (directly or indirectly) is controlled by, controls, or is under common control with such Party where control means the direct or indirect ownership of voting securities entitled to cast at least fifty percent (50%) of the votes in the election of directors, or such other relationship as results in the power to control the management, business, assets and affairs of an entity.

2 "**Agreement**" has the meaning set forth in the preamble hereto.

3 "**Bankruptcy Code**" means, as applicable, the U.S. Bankruptcy Code, as amended from time to time, and the rules and regulations and guidelines promulgated thereunder or the bankruptcy laws of any Governmental Authority, as amended from time to time, and the rules and regulations and guidelines promulgated thereunder or any applicable bankruptcy laws of any other

country or competent Governmental Authority, as amended from time to time, and the rules and regulations and guidelines promulgated thereunder.

4 "**Biocatalyst**" means an enzyme that is used as a catalyst or processing aid for the production of a compound in a discovery, research, development or commercial manufacturing setting. An enzyme shall not be deemed to be a Biocatalyst if it [***]. For the avoidance of doubt, [***] may be present in such [***], so long as such [***].

5 "**Biosimilar Product**" means, with respect to Product in a particular country, another therapeutic product that: (A) has received Regulatory Approval as a biosimilar product or bioequivalent product to such Product, based on a biologic product license application submitted under Section 351(k) of the Public Health Service Act, 42 U.S.C. Section 262(k), any Law having similar effect in the United States that replaces such Law, or corresponding legislation outside of the United States, using such Product as a reference product; and (B) is sold in such country by a Third Party that is not a licensee or sublicensee of NHSc, or its Affiliates or sublicensees.

6 "**BLA**" means (i) in the United States, a Biologics License Application, as defined in the United States Public Health Service Act (42 U.S.C. § 262), and applicable regulations promulgated thereunder by the FDA, or any equivalent application that replaces such application, (ii) in the EU, a marketing authorization application, as defined in applicable regulations of the EMA, and (iii) in any other country, the relevant equivalent to the foregoing.

7 "**Bulk Drug Substance**" means the formulation of the Initial Compound as [***] for use in a Phase Ib Clinical Trial, which formulation shall be the same as that used in the Phase Ia Clinical Trial of the Initial Compound.

8 "**Business Combination**" has the meaning set forth in Section 14.3.

9 "**Business Day**" means a day other than Saturday, Sunday or any day on which commercial banks located in New York, New York or Geneva, Switzerland, are authorized or obligated by applicable Law to close.

10 "**Calendar Quarter**" means, with respect to any given Calendar Year, the respective periods of three (3) consecutive calendar months ending on March 31, June 30, September 30 or December 31.

11 "**Calendar Year**" means each successive period of twelve (12) consecutive months commencing on January 1 and ending on December 31.

12 "**Challenge Proceeding**" has the meaning set forth in Section 9.4.3.

13 "**Claim**" means any charge, complaint, action, suit, proceeding, hearing, investigation, claim or demand.

14 "**Claimed PAL Compound**" means any enzyme, other than the Specified Compounds, that is covered by a claim included as of the Effective Date in U.S. Patent No. [***], U.S. Patent Application No. [***] or U.S. Patent Application No. [***], or any applications that

claim priority to U.S. Patent No. [***], U.S. Patent Application No. [***] or U.S. Patent Application No. [***], but excluding [***] Compounds.

15 "**Clinical Trial**" means a clinical trial in human subjects that, to the extent required by applicable Law, has been approved by a Regulatory Authority and an institutional review board or ethics committee, and is designed to measure the safety and/or efficacy of Product. Clinical Trials shall include Phase Ia Clinical Trials, Phase Ib Clinical Trials, Phase II Clinical Trials and Phase III Clinical Trials.

16 "**CMC**" means the chemistry, manufacturing and controls sections (together with all supporting documentation and records) of any BLA or the comparable portions of other applications for Regulatory Approval.

17 "**Codexis**" has the meaning set forth in the preamble hereto.

18 "**Codexis Competing Product**" means any therapeutic product that is an enzyme or contains an enzyme as an active ingredient and that has been or is to be developed or commercialized for the treatment of HPA.

19 "**Codexis Methods**" means Codexis' proprietary tools, processes and methods for Protein Engineering that are covered or claimed by Patents or Know-How Controlled by Codexis, including without limitation (i) tools, processes and methods used to identify, select, optimize, isolate, modify, engineer and develop proteins, including enzymes, through the recombination, rearrangement and/or mutation of genetic material for the creation of genetic diversity using any methods, including but not limited to bioinformatics, in silico, in vitro, and/or in vivo technologies, (ii) screening techniques, methodologies and/or processes of using the resulting genes and/or proteins, including enzymes, to identify and assess their potential utility, (iii) gene expression methods applicable in high throughput screening, (iv) techniques for cultivation of microorganisms, (v) techniques for producing, harvesting, and/or purifying proteins, including enzymes, and (vi) bioinformatics methods and algorithms, including those known as "Mosaic®," "ProSAR™", "Harvester", "Sage™", and "LIMS" (in each case (clauses (i) through (vi), for clarity, as used in Protein Engineering); provided however that Codexis Methods shall not include any Information, tools, processes or methods that are specifically related to, or are otherwise necessary for the Exploitation of, a Compound, Product, ROFN Compound or ROFN Product, as applicable.

"**Combination Product**" means a package of therapeutic products containing Product and one (1) or more products that are not the Product (an "**Other Product**") where Product and such Other Product(s) are packaged together and sold for a single invoiced price. For clarity, a Combination Product shall not include a Product that is co-formulated with an Other Product.

20 "**Commencement**" means, with respect to a Clinical Trial, the first dosing of the first patient enrolled in such Clinical Trial.

21 "**Commercialization**" means any and all activities relating specifically to the preparation for sale of, offering for sale of, or sale of a product, including activities related to launching, marketing, promoting, distributing, detailing, importing, pricing, reimbursement, and advertising such product, and interacting with Regulatory Authorities regarding any of the foregoing,

but excluding any activities relating to Manufacture. When used as a verb, "**Commercialize**" and "**Commercializing**" means to engage in Commercialization, and "**Commercialized**" has a correlative meaning.

22 "**Commercially Reasonable Efforts**" means, with respect to either Party, efforts that are consistent with the type and scope of efforts that a company within the biopharmaceutical industry similarly situated to, as applicable, Codexis (in the case of Codexis' obligations hereunder) or the Nestlé Health Unit (in the case of NHSc's obligations hereunder) would devote to a compound or product of similar type, launch timing, risk profile and profit potential as the applicable Compound or Product, but in no event less than the type and scope of efforts that Codexis and its Affiliates or the Nestlé Health Unit, as applicable, would devote to any of its other compounds or products of similar type, launch timing, risk profile and profit potential as the applicable Compound or Product, but without taking into account any Competing Products being developed or commercialized by or on behalf of Codexis or NHSc or their Affiliates or licensees or sublicensees, as applicable. Without limiting the foregoing, in relation to Commercialization activities, Commercially Reasonable Efforts shall be determined on a country-by-country basis.

23 "**Competing Product**" means, as applicable, a Codexis Competing Product or a NHSc Competing Product.

24 "**Compounds**" means, collectively, the Specified Compounds as well as any enzyme that is a Claimed PAL Compound and "**Compound**" means any of the foregoing.

25 "**Confidential Information**" means any and all technical, business or other Information, or data of a Party or its Affiliates provided orally, visually, in writing, graphically, electronically, or in another form by or on behalf of such Party or its Affiliates to the other Party or its Affiliates in connection with this Agreement, including the terms of this Agreement, the Compounds or any Product, any Exploitation of the Compounds or any Product, any know-how with respect thereto developed by or on behalf of the disclosing Party or its Affiliates, or the scientific, regulatory or business affairs or other activities of either Party. Notwithstanding the foregoing, (i) [***] and (ii) [***] to (x) [***] or (y) [***] (for clarity, clauses (x) and (y)) [***] Notwithstanding anything to the contrary, Confidential Information of Codexis or its Affiliates relating [***] to the Codexis Methods shall not become Confidential Information of NHSc.

26 "**Controlled**" or "**Control**", when used in reference to any intellectual property, intellectual property right, material, know-how or information, means the legal authority or right of a Party hereto (or its Affiliates) to: (i) grant, or procure the grant of, a license or sublicense, to the extent provided for herein, of the intellectual property, intellectual property right, material, know-how or information to the other Party; or (ii) in relation to material, know-how and information only, disclose or provide access to, to the extent provided for herein, such material, know-how or information to the other Party, and in each case without (1) breaching the terms of any agreement with a Third Party, or (2) misappropriating the material, know-how, intellectual property, intellectual property rights, or information of a Third Party.

27 "**Covered**" has the meaning set forth in the definition of "Valid Claim." "**Cover**" and "**Covering**" have correlative meanings.

28 "**Debarred Person**" has the meaning set forth in Section 8.1.6.

29 "**Development**" means non-clinical and clinical drug development activities reasonably related to the development and submission of information to a Regulatory Authority or otherwise to the testing and validation of a therapeutic agent, including, without limitation, toxicology, pharmacology and pre-clinical efforts, test method development and stability testing, manufacturing process and CMC development, formulation development, delivery system development, quality assurance and quality control development, statistical analysis, clinical trials (including, without limitation, pre- and post-approval studies), whether for purposes of label expansion or otherwise. Development shall include post-approval Development activities. When used as a verb, "**Develop**" means to engage in Development.

30 "**Development Plan**" means the Development Plan contemplated by Section 4.2, as amended or modified from time to time in accordance with Section 4.2.

31 "**Disclosing Party**" has the meaning set forth in Section 10.1.

32 "**Dispute**" has the meaning set forth in Section 13.1.1.

33 "**DOJ**" means the United States Department of Justice, or any successor agency thereto.

34 "**Effective Date**" has the meaning set forth in the preamble hereto.

35 "**EMA**" means the European Medicines Agency, or any successor agency thereto.

36 "**European Union**" or "**EU**" means, at any given time during the Term, the then-current member states of the European Union; *provided* that the United Kingdom shall be deemed to be included in the EU for so long as it remains subject to the jurisdiction of the EMA, regardless of its actual membership in the EU.

37 "**Evaluation Period**" has the meaning set forth in Section 2.3.2.

38 "**Exploit**" means to make, have made, import, use, sell or offer for sale, including to Develop, Commercialize, Manufacture and have Manufactured. "**Exploitation**" has a correlative meaning.

39 "**FD&C Act**" means the United States Food, Drug and Cosmetic Act (21 U.S.C. § 301 *et seq*.), as amended from time to time, together with any rules, regulations and requirements promulgated thereunder (including all additions, supplements, extensions, and modifications thereto).

40 "**FDA**" means the U.S. Food and Drug Administration, or any successor agency thereto.

41 "**First Commercial Sale**" means, with respect to a particular country, the first commercial sale, transfer or other disposition by NHSc or its Affiliate or sublicensee in such country

of Product following the receipt of the requisite Product Approval for Product in such country [***], excluding any sale, transfer or disposition that would not constitute a sale for purposes of the definition of Net Sales.

42 "**Formulation Objectives**" means the objectives for the Solid Dosage Form Development Study that are set forth on Exhibit F.

43 "**FTC**" means the United States Federal Trade Commission, or any successor agency thereto.

44 "**GAAP**" means United States generally accepted accounting principles.

45 "**GCP**" means the then-current standards, practices and procedures promulgated or endorsed by the FDA as set forth in the guidelines entitled "Guidance for Industry E6 Good Clinical Practice: Consolidated Guidance," including related regulatory requirements imposed by the FDA and comparable regulatory standards, practices and procedures promulgated by the EMA or other applicable Regulatory Authorities, as such standards, practices and procedures may be updated from time to time, including applicable quality guidelines promulgated under the ICH.

46 "**GLP**" means the then-current good laboratory practice standards promulgated or endorsed by the FDA as defined in 21 C.F.R. Part 58, and comparable regulatory standards promulgated by the EMA or other applicable Regulatory Authorities, as such standards may be updated from time to time, including applicable quality guidelines promulgated under the ICH.

47 "**GMP**" means the standards relating to current Good Manufacturing Practices for fine chemicals, active pharmaceutical ingredients, intermediates, bulk products or finished pharmaceutical products set forth in (i) 21 U.S.C. 351(a)(2)(B), in FDA regulations at 21 C.F.R. Parts 210 and 211 and in The Rules Governing Medicinal Products in the European Community, Volume IV, Good Manufacturing Practice for Medicinal Products, or (ii) the ICH Guidelines relating to the manufacture of active ingredients and finished pharmaceuticals, as such standards may be updated from time to time, including applicable quality guidelines promulgated under the ICH.

48 "**Governmental Authority**" means any multi-national, federal, state, local, municipal, provincial or other governmental authority of any nature (including any governmental division, prefecture, subdivision, department, agency, bureau, branch, office, commission, council, court or other tribunal).

49 "**HPA**" means hyperphenylalaninemia. For avoidance of doubt, HPA includes PKU.

50 "**HPA Field**" means the prevention, diagnosis, treatment, and management of HPA.

51 "**HSR Act**" means the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, and the rules promulgated thereunder.

52 "**ICH**" means the International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use.

53 "**ICH Guidelines**" means the guidelines of the ICH.

54 "**IEM Enzymes**" has the meaning set forth in Section 2.5.

55 "**IFRS**" means the current International Financial Reporting Standards, as published by the International Accounting Standards Board.

56 "**IND**" means an Investigational New Drug Application (as such term is defined in the FD&C Act and the regulations promulgated thereunder), Clinical Trial Authorisation (as such term is defined in the Directive 2001/20/EC, as amended), clinical trial exemption, clinical trial notification, or similar application or submission for approval to conduct human clinical investigations that is filed with or submitted to a Regulatory Authority in conformance with the requirements of such Regulatory Authority.

57 "**Indemnified Party**" has the meaning set forth in Section 11.3.1.

58 "**Indemnifying Party**" has the meaning set forth in Section 11.3.1.

59 "**Indirect Taxes**" has the meaning set forth in Section 7.11.

60 "**Information**" means all technical, scientific and other know-how and information, inventions, discoveries, trade secrets, knowledge, technology, means, methods, processes, formulations, practices, formulae, instructions, skills, techniques, procedures, experiences, expressed ideas, technical assistance, designs, drawings, assembly procedures, computer programs, apparatuses, specifications, data, results, materials (including biological, chemical, pharmacological, toxicological, pharmaceutical, physical and analytical), pre-clinical, clinical, safety, manufacturing and quality control data and information (including study designs and protocols) and assays and biological methodology, in each case, whether or not confidential, proprietary or patentable and in written, electronic or any other form now known or hereafter developed.

61 "**Infringement Action**" has the meaning set forth in Section 9.3.1.

62 "**Initial Compound**" means the enzyme designated by Codexis as CDX-6114.

63 "**Invention**" means any new invention or discovery, whether or not patentable, that is first conceived, first made or first reduced to practice during the Term and as a result of, or in connection with, the Development, Manufacture or Commercialization of the Compounds or any Product pursuant to this Agreement.

64 "**JAMS**" has the meaning set forth in Section 13.1.2.

65 "**Joint Intellectual Property Rights**" has the meaning set forth in Section 9.1.2.

66 "**Joint Invention**" means any Invention that is jointly invented (as determined in accordance with United States patent Laws governing inventorship) by (i) one (1) or more

employees, consultants or contractors of Codexis or its Affiliates, and (ii) one (1) or more employees, consultants or contractors of NHSc or its Affiliates.

67 "**Joint Know-How**" has the meaning set forth in Section 9.1.2.

68 "**Joint Patents**" means any and all Patents based upon or otherwise arising from patent applications filed during or after the Term to claim one (1) or more Joint Inventions.

69 "**Joint Steering Committee**" or "**JSC**" means the Joint Steering Committee to be established by Codexis and NHSc in accordance with Section 3.1.

70 "**Knowledge**" means, with respect to a Party, the actual knowledge (a) for Codexis, of the [***] and (b) for NHSc, [***]. In relation to the Parties' representations and warranties set forth in Article 8, Knowledge shall refer to such applicable individuals' actual knowledge as of the Effective Date after having made reasonable inquiry of the individuals who have day-to-day responsibilities for the applicable subject matter including, as applicable, [***]; *provided, however,* reasonable inquiry shall not require undertaking any "freedom to operate" or comparable analysis relating to Patents.

71 "**Laws**" means all laws, statutes, rules, regulations, ordinances and other pronouncements having the effect of law of any federal, national, multinational, state, provincial, county, city or other political subdivision.

72 "**LCIA**" has the meaning set forth in Section 13.2.

73 "**License Effective Date**" has the meaning set forth in Section 2.1.2.

74 "**Licensed Know-How**" means all Information Controlled by Codexis or its Affiliates as of the License Effective Date or from time to time thereafter during the Term that is necessary or reasonably useful for the Exploitation of the Compounds or any Product; *provided* that Licensed Know-How shall exclude Codexis' and its Affiliates' interest in Joint Know-How. The Parties agree that Information covering the Codexis Methods is not to be considered Licensed Know-How.

75 "**Licensed Patents**" means all Patents that (i) are Controlled by Codexis or its Affiliates as of the License Effective Date or from time to time thereafter during the Term, and (ii) either (a) claim or cover the Compounds or any Product or the Exploitation thereof, or (b) claim or cover inventions, the practice of which are otherwise necessary or reasonably useful for the Exploitation of the Compounds or any Product; *provided* that Licensed Patents shall exclude Codexis' and its Affiliates' interest in Joint Patents. Licensed Patents shall include the Patents listed in Exhibit B hereto. The Parties agree that the Licensed Patents specifically exclude any Patents covering the Codexis Methods.

76 "**Losses**" means any and all damages (including, but not limited to, all loss of profits, diminution in value, and incidental, indirect, consequential, special, reliance, exemplary, punitive, statutory and treble damages), awards, deficiencies, settlement amounts, defaults, assessments,

fines, dues, penalties, costs, fees, liabilities, obligations, taxes, liens, losses and expenses (including, but not limited to, court costs, interest and reasonable fees of attorneys, accountants and other experts) incurred by or awarded to Third Parties and required to be paid to Third Parties with respect to a Claim by reason of any judgment, order, decree, stipulation or injunction, or any settlement entered into in accordance with the provisions of this Agreement, together with all documented out-of-pocket costs and expenses incurred in contesting any Third Party Claim or complying with any judgments, orders, decrees, stipulations or injunctions that arise from or relate to a Third Party Claim. For the avoidance of doubt, Losses shall not include taxes other than any taxes that represent a loss arising from a non-tax claim.

77 "**Major European Countries**" means, collectively, the [***] and "**Major European Country**" means any of the foregoing.

78 "**Manufacture**" and "**Manufacturing**" means all activities related to the production, manufacture, processing, formulation, filling, finishing, packaging, labeling, shipping, handling, and storage of a product or any intermediate thereof, including process development, process qualification and validation, scale-up, pre-clinical, clinical and commercial manufacture and analytic development, product characterization, stability testing, quality assurance and quality control.

79 "**Milestone Event**" means an event or occurrence described under the heading "Milestone Event" in Section 7.3.2, Section 7.3.3 or Section 7.3.4.

80 "**Milestone Payment**" means an amount contemplated in Section 7.3.1 or 7.3.2 or identified under the heading "Milestone Payment" in Section 7.3.3 or Section 7.3.4 to be paid upon the occurrence of the Milestone Event corresponding thereto.

81 "**Negotiation Period**" has the meaning set forth in Section 2.3.3.

82 "**Nestlé Health Unit**" means collectively, those personnel and resources of NHSc and its applicable Affiliates that are assigned to and comprise "Nestlé Health Science" for purposes of Nestlé S.A.'s internal reporting purposes.

83 "**Net Sales**" means the gross amounts invoiced or otherwise billed by NHSc, its Affiliates or any of its sublicensees for sales of Product to Third Party purchasers of Product, *less* the following deductions with respect to such sales to the extent that such amounts are either included in the billing as a line item as part of the gross amount invoiced, or otherwise documented to be specifically attributable to actual sales of Product:

(a) trade discounts, including trade, cash and quantity discounts or rebates, credits or refunds (including inventory management fees, discounts or credits);

(b) allowances or credits actually granted upon claims, returns or rejections of Product, including recalls, regardless of the Party requesting such recall;

(c) bad debts (not to exceed [***] of gross sales of Product in the Territory); *provided* that the amount of any bad debts deducted pursuant to this exception and actually collected in a subsequent Calendar Quarter shall be included in Net Sales for such subsequent Calendar Quarter;

(d) charges included in the gross sales price for freight, insurance, transportation, postage, handling and any other charges directly relating to the sale, transportation, delivery or return of Product;

(e) customs duties, sales, excise and use taxes and any other governmental charges (including value added tax) actually paid in connection with the transportation, distribution, use or sale of Product (but excluding taxes imposed on or measured by income); and

(f) rebates and chargebacks or retroactive price reductions made to federal, state or local governments (or their agencies), or any Third Party payor, administrator or contractor, including managed health organizations.

All gross sales and all of the foregoing deductions from the gross invoiced sales prices of Product will be determined in accordance with IFRS or GAAP, or such other accounting standard utilized by NHSc or its Affiliate or sublicensee, as consistently applied by NHSc or its Affiliate or sublicensee, as applicable, with respect to external reporting. In the event that NHSc, its Affiliates or any of its sublicensees makes any adjustments to such deductions after the associated Net Sales have been reported pursuant to this Agreement, the adjustments will be reported and reconciled in the next report and payment of any royalties will be due. If [***] that is [***], in each case by reference to the [***], as applicable, [***] or, in the [***], on the [***], as applicable, in [***], then the [***] shall be [***] so as to [***], to the [***].

For clarification, sale of Product by NHSc, its Affiliates or any of its sublicensees to another of such Persons for resale by such entity to a Third Party shall not be deemed a sale for purposes of this definition of "Net Sales" unless such Person is the end user of Product sold. Further, [***] (i) in connection with [***], (ii) for [***], (iii) for [***], or (iv) for [***] shall not, in each case, be deemed sales of Product for purposes of this definition of "Net Sales."

84 "**NHSc**" has the meaning set forth in the preamble hereto.

85 "**NHSc Competing Product**" means any prescription drug that contains [***] and that has been or is to be developed or commercialized for the treatment of HPA via the degradation of phenylalanine.

86 "[***]" has the meaning set forth in Section 9.6.

87 "**NHSc Parties**" has the meaning set forth in Section 6.3.

88 "**Notice of Dispute**" has the meaning set forth in Section 13.1.1.

89 "**Option**" has the meaning set forth in Section 2.1.

90 "**Option Exercise**" has the meaning set forth in Section 2.1.2.

91 "**Option Expiration Date**" has the meaning set forth in Section 2.1.3.

92 "**Option Trigger**" has the meaning set forth in Section 2.1.1.

93 "**Option Trigger Date**" has the meaning set forth in Section 2.1.1.

94 "**Other Product**" has the meaning set forth in the definition of "**Combination Product**."

95 "**Party**" or "**Parties**" has the meaning set forth in the preamble hereto.

96 "**Patent Committee**" has the meaning set forth in Section 3.7.1.

97 "**Patents**" means (a) all national, regional and international patents and patent applications, including provisional patent applications, (b) all patent applications filed either claiming priority to such patents, patent applications or provisional applications or from an application claiming priority from any of these, including divisionals, continuations, continuations-in-part, provisionals, converted provisionals and requests for continued examinations, (c) any and all patents that have issued or in the future issue from the foregoing patent applications ((a) and (b)), including utility models, innovation patents, petty patents and design patents and certificates of invention, (d) any and all extensions or restorations by existing or future extension or restoration mechanisms, including revalidations, reissues, re-examinations, *inter partes* review, oppositions, and extensions (including any supplementary protection certificates and the like) of the foregoing patents or patent applications ((a), (b) and (c)), and (e) any similar rights, including so-called pipeline protection or any importation, revalidation, confirmation or introduction patent or registration patent or patent of additions to any of such foregoing patent applications and patents.

98 "**Person**" means an individual, sole proprietorship, partnership, limited partnership, limited liability partnership, corporation, limited liability company, business trust, joint stock company, trust, unincorporated association, foundation, joint venture or other similar entity, organization or combination thereof, including a government or political subdivision, department, or agency.

99 "**Phase Ia Clinical Trial**" means a Clinical Trial of a compound, the principal purpose of which is a preliminary determination of safety and pharmacology parameters in healthy individuals or patients, as described in 21 C.F.R. 312.21(a), or a similar Clinical Trial prescribed by the Regulatory Authorities in a foreign country.

100 "**Phase Ib Clinical Trial**" means a Clinical Trial of a compound, the principal purpose of which is a further determination of safety and pharmacology of the compound after an initial Phase Ia Trial, and prior to Commencement of Phase II Clinical Trials or Phase III Clinical Trials, and which provides (itself or together with other available Data) sufficient evidence of safety to be included in filings for a Phase II Clinical Trial or a Phase III Clinical Trial with Regulatory Authorities, or a similar Clinical Trial prescribed by the Regulatory Authorities in a foreign country.

101 "**Phase II Clinical Trial**" means a Clinical Trial, the principal purpose of which is to make a preliminary determination as to whether a product is safe for its intended use and to obtain information about such product's efficacy, in a manner that is generally consistent with 21 C.F.R. § 312.21(b), as amended (or its successor regulation), sufficient to permit the design of further Clinical Trials.

102 "**Phase III Clinical Trial**" means a pivotal Clinical Trial with a defined dose or a set of defined doses of a therapeutic product designed to ascertain efficacy and safety of such product, in a manner that is generally consistent with 21 C.F.R. § 312.21(c), as amended (or its successor regulation), for the purpose of enabling the preparation and submission of a BLA or a foreign equivalent thereof.

103 "**PKU**" means phenylketonuria.

104 "**Pricing Approval**" means the governmental approval, agreement, determination or decision establishing prices for Product that can be charged in regulatory jurisdictions where the applicable Regulatory Authorities or other governmental authorities approve or determine the price of pharmaceutical products.

105 "**Prior CDA**" has the meaning set forth in Section 14.11.

106 "**Product**" means any product containing a Compound as its sole active ingredient.

107 "**Product Approval**" means, with respect to Product in a given country in the Territory, the grant or issuance of all Regulatory Approvals and Pricing Approvals necessary to import, distribute, market, promote, offer for sale and sell Product in such country in accordance with applicable Laws.

108 "**Product Literature**" means, with respect to a given country, any promotional, medical, informative and other information intended for distribution or use by sales representatives in connection with the detailing and promotion of Product in such country (whether in the form of written, printed, graphic, electronic, audio or video materials), and shall include, without limitation, all related sales representative training materials.

109 "**Prosecution**" means the filing, preparation, prosecution (including any interferences, reissue proceedings, reexaminations, and oppositions), *inter partes* review, post-grant review, and maintenance of Patents. When used as a verb, "**Prosecute**" and "**Prosecuting**" means to engage in Prosecution.

110 "**Protein Engineering**" means changing the polynucleotide sequence encoding an amino acid sequence of a protein to confer a desired function.

111 "**Publication**" has the meaning set forth in Section 10.5.1.

112 "**Receiving Party**" has the meaning set forth in Section 10.1.

113 "**Regulatory Approval**" means, with respect to Product in any country or regulatory jurisdiction, any and all approvals from the applicable Regulatory Authority sufficient for the import, distribution, marketing, use, offering for sale, and sale of Product in such country or jurisdiction in accordance with applicable Laws, but excluding any applicable Pricing Approvals.

114 "**Regulatory Authority**" means any national or supranational Governmental Authority (including, without limitation, the FDA and EMA) which has regulatory responsibility and authority in one (1) or more countries for review and approval of Development and Commercialization of therapeutic products.

115 "**Regulatory Documentation**" means all (i) Regulatory Filings and other registrations, licenses, authorizations, and approvals of or with Regulatory Authorities (including Regulatory Approvals); (ii) correspondence and reports submitted to or received from Regulatory Authorities (including minutes and official contact reports relating to any communications with any Regulatory Authority) and all supporting documents with respect thereto, including all regulatory drug lists, advertising and promotion documents, adverse event files, and complaint files; and (iii) clinical and other data contained or relied upon in any of the foregoing, in each case ((i), (ii), and (iii)) relating to the Development, Manufacture, or Commercialization of the Compound or any Product in a particular country or jurisdiction.

"**Regulatory Exclusivity**" means any applicable data or regulatory exclusivity rights granted by a Regulatory Authority for a therapeutic product, including without limitation orphan drug status, pediatric exclusivity or data exclusivity, in a country with respect to a therapeutic product (such as those periods listed under the BPCIA or periods under national implementations of Article 10.1(a)(iii) of Directive 2001/EC/83, and equivalents in other countries in the Territory). For the avoidance of doubt, "Regulatory Exclusivity" excludes patent term extensions, supplementary protection certificates, and international equivalents thereof.

116 "**Regulatory Filing**" means any and all regulatory applications and/or related documentation submitted on or before the Effective Date, or at any time during the Term, to a Regulatory Authority with respect to any Compound or any Product in connection with the initiation or conduct of Clinical Trials, and/or to seek Regulatory Approval for Product, including, without limitation, any INDs, drug master files, manufacturing master files, BLAs, or any supplements thereto.

117 "**Related Claims**" has the meaning set forth in Section 13.2.

118 "**Relevant Calendar Year**" has the meaning set forth in Section 6.3.

119 "**ROFN**" has the meaning set forth in Section 2.3.

120 "**ROFN Compound**" means any enzyme that Codexis or its Affiliate discovers, evolves or identifies, including through use of the Codexis Methods, which is reasonably expected to be useful in the ROFN Field.

121 "**ROFN Field**" means the prevention, diagnosis, treatment, and management of inborn errors of amino acid metabolism, including [***]. ROFN Field excludes [***].

122 "**ROFN Licensable Know-How**" means, with respect to a particular ROFN License Scope, all Information Controlled by Codexis or its Affiliates as of the date of the relevant ROFN Notice (for the ROFN License Scope in question), and from time to time thereafter, that is necessary or reasonably useful for the Exploitation of compounds comprising such ROFN License Scope (solely for incorporation into ROFN Products). The Parties agree that Information covering the Codexis Methods is excluded from the ROFN Licensable Know-How.

123 "**ROFN Licensable Patents**" means, with respect to a particular ROFN License Scope, all Patents that (i) are Controlled by Codexis or its Affiliates as of the date of the relevant ROFN Notice (for the ROFN License Scope in question), and from time to time thereafter, and (ii) either (a) claim or cover the ROFN License Scope, or a portion thereof, or the Exploitation of compounds comprising such ROFN License Scope (solely for incorporation into ROFN Products), or (b) claim or cover inventions, the practice of which are otherwise necessary or reasonably useful for the Exploitation of compounds comprising such License Scope (solely for incorporation into ROFN Products). The Parties agree that the ROFN Licensable Patents specifically exclude any Patents covering the Codexis Methods.

124 "**ROFN License Scope**" means a particular ROFN Compound, together with all variants thereof that the Parties agree shall be included within the ROFN License Scope for such ROFN Compound

125 "**ROFN Notice**" has the meaning set forth in Section 2.3.2.

126 "**ROFN Product**" means any product intended for use in the ROFN Field containing any compound included in the applicable ROFN License Scope as an active ingredient.

127 "**ROFN Term**" has the meaning set forth in Section 2.3.4.

128 "**ROFN Trigger**" has the meaning set forth in Section 2.3.1.

129 "**Royalty Term**" means, on a country-by-country basis, the period commencing with the First Commercial Sale of Product in such country and ending on the latest to occur of (i) the date of [***] in such country, (ii) expiration of [***] in such country, and (iii) in any country in which, at the time of the First Commercial Sale of such Product in such country, there is no [***] in such country and no [***] in such country, the date that is [***] after the date of the First Commercial Sale of Product in such country.

130 "**Rules**" has the meaning set forth in Section 13.2.

131 "**Senior Officers**" has the meaning set forth in Section 13.1.1.

132 "**Solid Dosage Form Development Study**" means research and Development activities to be conducted by Codexis with respect to a solid dosage form of the Product as set forth in Exhibit G.

133 "**Specified Compounds**" means the enzymes designated by Codexis as CDX-6114 and [***], and all other compounds that Codexis has evaluated in *in vivo* pharmacology models of HPA.

134 "**Successful Completion**" means, as to a given Clinical Trial, that all primary endpoints defined in the applicable study protocol for such Clinical Trial have been met.

135 "**Term**" has the meaning set forth in Section 12.1.

136 "**Territory**" means the entire world.

137 "**Third Party**" means any entity other than NHSc, Codexis and their respective Affiliates.

138 "**Third Party Claim**" has the meaning set forth in Section 11.3.1.

139 "**Trademark**" means any word, name, symbol, color, designation or device or any combination thereof that functions as a source identifier, including any trademark, trade dress, brand mark, service mark, trade name, brand name, logo or business symbol, whether or not registered.

140 "**Transfer**" means to sell or transfer to a Third Party, or to grant to a Third Party any option to acquire any rights in, to or under the Transferring Party's or its Affiliates' intellectual property or Patents or other intellectual property rights to Develop or Commercialize a compound or product.

141 "[***] **Compound**" means an enzyme, other than the Specified Compounds, covered by a claim in U.S. Patent No. [***] or U.S. Patent Application No. [***], or any applications that claim priority to U.S. Patent No. [***] or U.S. Patent Application No. [***] that degrades [***] to a clinically significant degree [***], unless the phenylalanine-degrading capability of such enzyme is ten (10) times or more than ten (10) times greater [***] than the [***] degrading capability of such enzyme (in which case such enzyme shall be a Claimed PAL Compound).

142 "**United States**" or "**U.S.**" means the United States of America, including its territories and possessions.

143 "**Valid Claim**" means, with respect to a Patent in a country, any claim of an (i) issued Patent that has not (a) expired, irretrievably lapsed or been abandoned, revoked, dedicated to the public or disclaimed or (b) been found to be unpatentable, invalid or unenforceable by an unreversed final decision of a Governmental Authority in such country or (ii) application for a Patent that (a) has been pending for less than [***] years from the earliest claimed priority date and is being prosecuted in good faith and has not been abandoned or finally disallowed and (b) has not been admitted to be invalid or unenforceable through reissue, reexamination, or equivalent process.

ARTICLE 2
OPTION; LICENSE AND RIGHT OF FIRST NEGOTIATION

2.1 Option. Subject to the terms and conditions of this Agreement, Codexis hereby grants to NHSc the exclusive right, exercisable at NHSc's sole discretion, to obtain an exclusive worldwide license under the Licensed Patents and Licensed Know-How in respect of the Compounds and any Products, as provided in Section 2.2 (the "**Option**"). The Option shall be exercisable subject to and in accordance with the following:

2.1.1 Option Trigger. The Option shall become exercisable at such time as both (i) an IND is filed by Codexis with the FDA in accordance with Section 4.1.1 in respect of the study of the Initial Compound for the treatment of HPA and such IND [***], and (ii) [***], following the completion of a Phase Ia Clinical Trial undertaken in accordance with Section 4.1.1 in respect of the Initial Compound for the treatment of HPA, a [***], [***] and [***] (the **"Option Trigger Date**"). [***] upon the occurrence of events described in clauses (i) and (ii), which [***], and a [***] by clause (i), in addition to [***] contemplated by clause (ii) (the "**Option Trigger**").

2.1.2 Option Exercise; Competition Clearance. Subject to Section 2.1.3, at any time after the occurrence of the Option Trigger and prior to the Option Expiration Date, NHSc shall be entitled, in its sole discretion to exercise the Option by providing written notice of exercise to Codexis ("**Option Exercise**"). Upon Codexis' receipt of NHSc's notice of Option Exercise, if applicable, as determined by NHSc in its sole discretion, Codexis agrees to cooperate with NHSc and to prepare and make appropriate filings under the HSR Act relating to this Agreement as soon as reasonably practicable. The Parties agree to cooperate in any antitrust clearance process determined by NHSc to be required and, if applicable, to furnish promptly to the FTC, the Antitrust Division of the DOJ and any other agency or authority, any information reasonably requested by them in connection with such filings. In the event [***], the Parties will [***]. [***]. The "**License Effective Date**" shall be either (i) if NHSc determines that no filing under the HSR Act is required in connection with the Option Exercise, the date on which NHSc notifies Codexis of Option Exercise or (ii) if NHSc determines that a filing under the HSR Act is required in connection with the Option Exercise, the date on which the waiting period provided by the HSR Act expires or is terminated without any action by the FTC or DOJ or challenge to the transaction or, in the event of any such action or challenge, the date on which such action or challenge is resolved in a manner that permits the license provided for in Section 2.2.1 to become effective.

2.1.3 Expiration of Option. The Option shall expire on the date that is sixty (60) days after the Option Trigger Date if Option Exercise has not occurred prior thereto or, if NHSc determines that a filing under the HSR Act is required in connection with the Option Exercise, if the Parties have submitted all filings required therefor but have not cleared the review process within one hundred eighty (180) days after submission and such delay is not attributable to any material failure on the part of Codexis to provide such cooperation with such review process as NHSc, the FTC or DOJ may have reasonably requested (the "**Option Expiration Date**"). If the License Effective Date does not occur prior to the Option Expiration Date, the License Effective Date shall not occur and Codexis shall have no further obligation to NHSc with respect to the Compounds or Product, and all rights to the Compounds and Product shall revert to Codexis. In such case, [***] therein, including [***].

2.2 License Terms.

2.2.1 Exclusive License. Subject to the terms and conditions of this Agreement, effective upon the License Effective Date, Codexis hereby grants to NHSc, and NHSc accepts, an exclusive (including as to Codexis and its Affiliates), perpetual, royalty-bearing license, with the right to grant sublicenses (through multiple tiers of sublicensees), under the Licensed Patents and the Licensed Know-How and Codexis' interest in any Joint Patents and Joint Know-How, to make, have made, use, register, sell, offer for sale, import, export, Manufacture, Develop, Commercialize and otherwise Exploit the Compounds, including any Products, anywhere in the Territory for all purposes other than use as Biocatalysts.

2.2.2 Sublicensing. NHSc shall have the right to grant sublicenses of the rights granted to it by Codexis under Section 2.2.1 to its Affiliates and to Third Parties; *provided*, *however*, that NHSc shall ensure that the terms of any sublicense granted pursuant to this Section 2.2.2 are not inconsistent with the terms and conditions of this Agreement and that the sublicense agreement imposes on the sublicensee such obligations as this Agreement contemplates will be imposed on sublicensees, the terms and conditions of which shall be materially consistent with the terms and conditions of this Agreement. NHSc shall at all times remain responsible for, and shall be liable under this Agreement with respect to, any breach of this Agreement resulting directly or indirectly from the performance by its Affiliates and Third Parties under any such sublicenses as if the actions of such Affiliates and Third Parties are actions of NHSc.

2.2.3 Use of Claimed PAL Compounds as Biocatalysts. Unless and until the Option expires prior to exercise in accordance with Section 2.1.3 or this Agreement is terminated, other than by NHSc pursuant to Section 12.2.2 or Section 12.2.3(a), (i) Codexis shall not Exploit any Specified Compound as a Biocatalyst and (ii) Codexis shall only Exploit Claimed PAL Compounds in accordance with, and subject to the limitations contained in, this Section 2.2.3. If Codexis desires to, or to permit its customer to, produce a Claimed PAL Compound [***] to confirm whether such compound has potential use as a Biocatalyst, Codexis shall so notify NHSc in writing, specifying the relevant Claimed PAL Compound. Any such notice may relate to more than one Claimed PAL Compound. Within [***] after NHSc receives such written notice, NHSc will confirm in writing to Codexis whether or not NHSc has, prior to the date NHSc receives such notice, commenced preclinical development of such notified Claimed PAL Compound. If NHSc confirms that it has not commenced preclinical development of such Claimed PAL Compound, or if NHSc does not respond to such notice within such [***] period, then Codexis and/or its customer shall have the right to use such Claimed PAL Compound as a Biocatalyst. If NHSc notifies Codexis within such [***] period that, prior to the date NHSc received such notice from Codexis, NHSc has commenced preclinical development of the relevant Claimed PAL Compound, then Codexis shall not have the right to use, or to permit its Affiliates or customers to use, such Claimed PAL Compound as a Biocatalyst. All disclosures made by Codexis to NHSc under this Section 2.2.3 shall be Codexis Confidential Information. As of the Effective Date, the Claimed PAL Compounds listed in Exhibit D hereto have been produced [***] and Codexis and its customer(s) shall have the right to use any of such listed compound(s) as a Biocatalyst without further notification to NHSc. If the License Effective Date occurs, NHSc shall from time to time promptly inform Codexis in writing of any determination made by NHSc to commence preclinical development of any Claimed PAL Compound(s). Such notice shall specify the relevant Claimed PAL Compound(s).

2.2.4 [***] Compounds. Codexis shall from time to time promptly inform NHSc in writing of any determination made by Codexis to commence, or to permit its Affiliate or any Third Party to commence, preclinical development of any [***] Compound(s). Such notice shall specify the relevant [***] Compound(s) and describe the basis on which Codexis has determined that each such noticed compound constitutes a [***] Compound.

2.2.5 No Implied Licenses. No license or other right is or shall be created or granted hereunder by implication, estoppel or otherwise. All such licenses and rights are or shall be granted only as expressly provided in this Agreement.

2.3 Right of First Negotiation. Subject to Section 2.4.2, NHSc shall have an exclusive right of first negotiation to obtain an exclusive worldwide license under the ROFN Licensable Patents that claim or cover, and the ROFN Licensable Know-How that relate to, a particular ROFN License Scope, to make, have made, use, register, sell, offer for sale, import, export, Manufacture, Develop, Commercialize and otherwise Exploit compounds comprising such ROFN License Scope for all purposes other than use as Biocatalysts, as provided in this Section 2.3 (the "**ROFN**"). For clarity, [***] to [***] and [***] for [***], and shall have [***] with respect thereto. For clarity, the provisions of this Section 2.3 shall not apply to the Compounds.

2.3.1 ROFN Trigger. The ROFN shall be triggered from time to time in respect of a particular ROFN License Scope, upon both (i) Codexis' written notice to NHSc that it has identified a ROFN Compound and (ii) Codexis' delivery to NHSc of a data package in respect thereof containing [***] in respect of such ROFN Compound then-available. Delivery of such notice contemplated by the foregoing clause (i) and such data package contemplated by the foregoing clause (ii) in respect of a particular ROFN Compound are referred to as the "**ROFN Trigger**" in respect of the ROFN License Scope corresponding to such ROFN Compound. Codexis shall provide such notice and deliver such data package [***] after Codexis identifies such ROFN Compound and such data package is available, or promptly after the Effective Date, in the case of any such ROFN Compounds Codexis has identified prior to the Effective Date for which such data package is available as of the Effective Date; *provided, however*, that Codexis shall not deliver any such notice prior to the date that is [***] after the Effective Date.

2.3.2 Evaluation Period. For a period of [***] following the date of a ROFN Trigger in respect of a particular ROFN License Scope (the "**Evaluation Period**"), Codexis shall discuss in good faith any questions NHSc may have regarding such ROFN Compound and ROFN License Scope or the data package in respect thereof and shall make available to NHSc any additional information or materials then in Codexis' Control that NHSc may reasonably request in relation thereto. At any time prior to the expiration of the Evaluation Period, NHSc may notify Codexis in writing that it wishes to enter into negotiations with Codexis to obtain a license in respect of such ROFN License Scope, as provided in Section 2.3.3 (such notice, a "**ROFN Notice**" in respect of the applicable ROFN License Scope).

2.3.3 Negotiation Period. If NHSc timely delivers a ROFN Notice in respect of a particular ROFN License Scope in accordance with Section 2.3.2, the Parties shall negotiate in good faith for a period of up to [***] (the "**Negotiation Period**") the terms of a definitive license agreement pursuant to which NHSc would obtain an exclusive, worldwide license under the ROFN Licensable

Patents and ROFN Licensable Know-How that relate to the particular ROFN License Scope to Exploit the compounds comprising such ROFN License Scope for all purposes other than use as Biocatalysts. In such negotiations, the Parties will discuss in good faith whether to include [***] to include [***] the ROFN Compound. If the Parties have not entered into a definitive agreement granting NHSc a license in respect of such ROFN License Scope as of the end of the Negotiation Period, Codexis would have no further obligations to NHSc with respect to such ROFN License Scope, and Codexis would be free to develop and commercialize the compounds comprising such ROFN License Scope and ROFN Products containing such compounds itself or with or through an Affiliate, partner or other Third Party or effect a Transfer with respect to such Compounds or ROFN Products containing such compounds to a Third Party.

2.3.4 Expiration. This Section 2.3 shall expire on the earliest to occur of (a) the date that is five (5) years after the Effective Date, (b) the date on which NHSc and Codexis have entered into definitive agreements pursuant to which NHSc has obtained licenses in respect of two (2) separate ROFN License Scopes or (c) the termination of this Agreement by Codexis pursuant to Section 12.2 (as applicable, the "**ROFN Term**"). After the ROFN Term, no further Codexis compounds shall be deemed ROFN Compounds. Notwithstanding the foregoing, to the extent that the ROFN Term expires (other than by virtue of a termination of this Agreement by Codexis pursuant to Section 12.2), Sections 2.3.2 and 2.3.3 shall survive and continue in accordance with its terms until the end of any then-ongoing Negotiation Period or any then-ongoing Evaluation Period and any Negotiation Period resulting from such Evaluation Period.

2.4 Exclusivity.

2.4.1 Unless and until the Option expires prior to exercise in accordance with Section 2.1.3, Codexis shall not, and shall ensure that its Affiliates do not, directly or indirectly: (a) effect any Transfer in respect of any Compound or any Product; (b) enter into any collaboration or license agreement with any Third Party in connection with the Development and/or Commercialization of any Compound or any Product other than Claimed PAL Compounds for use solely as a Biocatalyst subject to and in accordance with Section 2.2.3; (c) grant any right or license to any Third Party that conflicts with the rights granted to NHSc hereunder; (d) solicit from, discuss with or enter into any agreement in respect of any of the foregoing (clauses (a), (b) and (c)); or (e) except as provided for in this Agreement, research, Develop, Manufacture or Commercialize any Compound or any Product other than Claimed PAL Compounds for use solely as a Biocatalyst subject to and in accordance with Section 2.2.3. The foregoing will not limit Codexis' right to engage independent contractors performing work for Codexis or its Affiliates for purposes of performing its obligations under this Agreement.

2.4.2 During the term of NHSc's rights under Section 2.3, in respect of each ROFN License Scope, until the first to occur of (a) the expiration of the [***] period set forth in Section 2.3.2, if NHSc fails to deliver a ROFN Notice in respect of such ROFN License Scope after the ROFN Trigger in respect of such ROFN License Scope within such time period, or (b) the expiration of the Negotiation Period pursuant to Section 2.3.3, if NHSc has timely delivered a ROFN Notice in respect of such ROFN License Scope, Codexis shall not effect, or solicit from, discuss with, or enter into any agreement in respect of, any Transfer of any rights in any compound, candidate or

product discovered before or after the Effective Date that comprises such ROFN License Scope, or otherwise grant any right or license to any Third Party with respect to any such compound, candidate or product that conflicts with or precludes the rights granted to NHSc hereunder or would conflict with, or preclude the granting to NHSc of, the license contemplated by Section 2.3.3 with respect thereto. In addition, except for compounds falling within any ROFN License Scope that is no longer subject to the terms of Section 2.3 by virtue of clause (a) or clause (b) of this Section 2.4.2, until the expiration of the ROFN Term, Codexis shall not undertake on behalf of any Third Party any activities with the intent of, or directed to, identifying, discovering, evolving or otherwise Developing any compound that could reasonably be expected to be a ROFN Compound.

2.4.3 For the period from the Effective Date until the first to occur of (i) the Option Expiration Date, if NHSc has not exercised its Option pursuant to Section 2.1 prior to such date, (ii) the end of the Term, unless NHSc retains the right to Develop and Commercialize the Compounds and Products under this Agreement after the end of the Term, or (iii) if NHSc retains the right to Develop and Commercialize the Compounds and Products under this Agreement after the end of the Term, the expiration of any payment obligations NHSc may have under this Agreement with respect to the Compounds or Product, (x) Codexis will not and will ensure that its Affiliates do not, directly or indirectly, including through any collaboration or license agreement or sale or Transfer of the assets pertaining to a Codexis Competing Product, Develop, Manufacture, or Commercialize any Codexis Competing Product in the Territory and (y) NHSc will not, and will ensure that its Affiliates do not, directly or indirectly, including through any collaboration or license agreement or sale or Transfer of the assets pertaining to a NHSc Competing Product, Develop, Manufacture, or Commercialize any NHSc Competing Product in the Territory. If a Party or any of its Affiliates [***] on [***] with respect to [***] by which it would [***] in a Competing Product at any time when this Section 2.4.3 remains in effect, then it (or its applicable Affiliate) shall have [***] from the [***] to [***] itself of such [***] in the Competing Product and, during such [***] period, neither the [***] of such Competing Product shall be in violation of this Section 2.4.3. In the case of [***] under the preceding sentence, such [***] can occur by either (x) an [***] of all [***] in the Competing Product to a [***] on [***] or (y) a [***] on [***] to one or more [***] of the right to [***] such Competing Product so long as such Party and its Affiliates only [***] with respect to such Competing Product and do not [***] any [***] in any manner over the [***] of such Competing Product (other than the [***] or [***]).

2.5 Development Information for ROFN Compounds and IEM Enzymes. On the occurrence of each ROFN Trigger, during the subsequent Evaluation Period, upon written request from NHSc, Codexis will provide to and discuss with NHSc (i) information then in Codexis' [***] that NHSc may [***] with respect to the [***], with respect to [***] enzymes useful in the ROFN Field (except in respect of [***]), to be used for purposes of [***] and (ii) information then in Codexis' [***] that NHSc may [***] with respect to the [***], with respect to [***] enzymes for the prevention, diagnosis, treatment or management of inborn errors of metabolism included in the ROFN Field, as well as those outside of the ROFN Field (the latter, "**IEM Enzymes**"). All disclosures made pursuant to this Section 2.5 shall be Codexis' Confidential Information hereunder. Furthermore, Codexis' obligations to make the foregoing disclosures to NHSc shall be subject to any obligations of confidentiality or other obligations Codexis may have to Third Party(ies). For clarity, in no event shall any IEM Enzymes be considered ROFN Compounds, and such IEM

Enzymes shall be considered wholly outside the scope of this Agreement except for the information Codexis may share with respect thereto as expressly provided in this Section 2.5.

ARTICLE 3
GOVERNANCE PROVISIONS

3.1 Formation and Composition of the Joint Steering Committee. Within thirty [***] after the Effective Date, NHSc and Codexis shall establish a "**Joint Steering Committee**" or "**JSC**" to serve as the overall governing body for reviewing, monitoring, and approving all Development activities performed by Codexis in respect of the Compounds and Product under this Agreement and pursuant to the Development Plan. The JSC shall be comprised of [***] or more [***] of each Party. The JSC representatives shall be [***] of the appointing Party having appropriate expertise and decision-making authority, and each Party shall designate [***] of its JSC representatives to serve as a co-chairperson of the JSC. Either Party may replace any or all of its representatives, or designate additional individuals as its representatives, on the JSC at any time upon written notice to the other Party. Any member of the JSC may designate a substitute to attend and perform the functions of that member at any meeting of the JSC.

3.2 Role of JSC. The JSC shall be responsible for reviewing, monitoring, and approving all Development activities performed by Codexis in respect of the Compound and Product under this Agreement and pursuant to the Development Plan. Codexis shall report to the JSC all material developments and results in respect of its Development of the Compound. Without limiting the foregoing, Codexis shall provide written reports to the JSC at least [***] in advance of each quarterly JSC meeting, which reports shall summarize all matters in respect of the preceding Calendar Quarter on which Codexis is required to report or provide updates to the JSC pursuant hereto. The JSC shall also serve as a forum for sharing advice, progress, and results relating to the foregoing matters and shall attempt to facilitate the resolution of any disputes between the Parties, as described in Section 3.4. Each Party, through its representatives on the JSC, shall be permitted to provide advice and commentary with respect to activities reported to the JSC. Each Party shall take such advice and commentary into good faith consideration. More specifically, the JSC shall:

3.2.1 review and provide advice regarding the design and conduct of all pre-clinical studies undertaken by or on behalf of Codexis in respect of the Compound, including animal and toxicology studies;

3.2.2 review and provide advice regarding the design and conduct of the Phase Ia Clinical Trial to be undertaken by Codexis in respect of the Compound for the treatment of HPA in accordance with the Development Plan and any other Clinical Trials that may be conducted by or on behalf of Codexis prior to the first to occur of the Option Expiration Date or the License Effective Date;

3.2.3 review and provide advice regarding the filing and content of the IND to be filed by Codexis with the FDA in respect of the study of the Compound for the treatment of HPA, and any other Regulatory Filings made by Codexis in respect of the Compound or any Product; and

3.2.4 review the overall progress of Codexis in performing its Development obligations under this Agreement.

3.3 Meetings of JSC. The JSC will meet [***], or [***], if [***] by the JSC. The location of regularly scheduled meetings shall alternate between the offices of the Parties unless otherwise agreed by the JSC. Meetings of the JSC may also be held telephonically, by video conference or by any other means agreed to by the JSC. Members of the JSC shall have the right to participate in and vote at meetings by telephone or proxy. One (1) Party shall be responsible for appointing an individual to record the minutes of each JSC meeting, which minutes shall clearly document any decisions made by the JSC at such meeting. This responsibility shall alternate between the Parties every [***], with Codexis being responsible for the initial [***] following the Effective Date. JSC meeting minutes shall be circulated to the Parties within [***] following the meeting for review, comment and ratification by the Parties. Each Party shall be responsible for expenses incurred by its employees and its members of the JSC in attending or otherwise participating in JSC meetings, including travel and related costs. Any member of the JSC may invite additional representatives of the Party such member represents to attend JSC meetings, *provided* that they are subject to confidentiality and non-use obligations consistent with those in Article 10.

3.4 Decision-Making. Decisions of the JSC shall be made by [***]. Each of Codexis and NHSc shall be entitled to [***] per Party (as opposed to [***] of individual representatives from both Parties) on all matters coming before the JSC or any subcommittee or subgroup thereof. If the JSC is incapable of [***] on any matter, then either Party may refer such matter [***]. If the Parties' [***] are [***] in respect of any such matter that is [***], then, subject to Section 3.5, (a) prior to Option Exercise, and after the Option Expiration Date, [***] shall have the right to decide such matter in [***] if such matter relates to the Compound or Product, and (b) after Option Exercise, [***] shall have the right to decide such matter in [***] if such matter relates to the Compound or Product, unless the determination of such matter is [***] to [***] practice of the Licensed Know-How or Licensed Patents in [***] to the Compound or Product, in which case [***] shall have the right to decide such matter in [***]; *provided*, *however*, that [***], as applicable, may use [***] pursuant to this Section 3.4 to [***] of the [***] to [***] or [***] under or with respect to [***] or [***] the [***] under [***] in any [***]. If the JSC does not [***] any matter [***] and [***] has the right to decide such matter under subsections (a) or (b), then such matter shall be [***].

3.5 Authority; Duration. The JSC will have only the powers assigned expressly to it in this Article 3 and elsewhere in this Agreement, and will not have any power to amend, modify or waive compliance with this Agreement. In furtherance thereof, each Party will retain the rights, powers and discretion granted to it under this Agreement and no such rights, powers or discretion will be delegated to or vested in the JSC unless such delegation or vesting of rights is expressly provided for in this Agreement or the Parties expressly so agree in writing. The JSC shall be [***] on the [***] of the [***] or the [***].

3.6 JSC Subcommittees. The JSC may, in [***], establish subcommittees or working subgroups from time to time to handle specific matters within the scope of the JSC's area of authority and responsibility. Such subcommittees or subgroups shall have such authority and responsibility

as determined by the JSC from time to time, and decisions and recommendations of any such subcommittee or subgroup shall be made in accordance with Section 3.4 and Section 3.5.

3.7 Patent Committee.

3.7.1 Within [***] after the Effective Date, the Parties shall establish a patent committee (the "**Patent Committee**") to discuss and coordinate the Prosecution (or abandonment) of Licensed Patents, Patents on Inventions, enforcement of Licensed Patents, and defense against claims of infringement of Third Party patents relating to Joint Inventions.

3.7.2 The Patent Committee shall be composed of [***] from each of NHSc and Codexis knowledgeable in U.S. patent law and the technology areas that are the subject of this Agreement. The Patent Committee shall meet, in person, by teleconference, or by video-teleconference, [***], or [***] as the [***] shall [***]. In-person meetings shall alternate between Codexis and NHSc locations within the United States whenever possible unless otherwise agreed by the Parties. The first such meeting shall be [***] after the Effective Date. Any member of the Patent Committee may designate a substitute, who shall be an employee of the applicable Party or its Affiliate, to attend with prior written notice to the other Party. [***] may [***] at any Patent Committee meeting, *provided* that they are subject to confidentiality and non-use obligations consistent with those in Article 10. Each Party may replace its Patent Committee members with other of its or its Affiliate's employees with the qualifications set forth in this Section 3.7.2, at any time, upon written notice to the other Party.

3.7.3 The Patent Committee shall have no decision making authority under this Agreement except as otherwise provided herein, including in Section 9.2.2, and shall perform only those activities as are specifically delegated to it in this Agreement. Without limiting the generality of the foregoing, the Patent Committee shall have no power to amend this Agreement. The Patent Committee shall provide status updates to the JSC [***] as long as the JSC is [***] and, [***].

3.7.4 The Patent Committee shall [***] and, by [***], [***]. At any time when the Patent Committee [***], decisions to be made by the Patent Committee shall be [***].

ARTICLE 4
DEVELOPMENT AND REGULATORY MATTERS

4.1 Commitment to Development.

4.1.1 Prior to Option Exercise or Expiration. Subject to the terms and conditions of this Agreement, including Section 4.7, prior to the first to occur of the Option Expiration Date or the License Effective Date, Codexis will [***] to (i) file with the FDA an IND in respect of the study of the Initial Compound for the treatment of HPA in accordance with the Development Plan and [***] without [***], or if the [***], Codexis [***] to [***] and [***], and/or that Codexis [***] subject to [***] in [***], (ii) initiate a Phase Ia Clinical Trial in respect of the Initial Compound for the treatment of HPA, which Phase Ia Clinical Trial shall be conducted in accordance with the Development Plan in [***] in [***] and (iii) complete the Solid Dosage Form Development Study and achieve the Formulation Objectives. In the event that [***] that it would be [***] in respect

of the [***] prior to the [***], it shall so [***], whereupon [***] and [***] on which [***] to [***] prior to the [***], it being agreed that [***] shall not [***], or [***] to the [***] contemplated in this Agreement, in connection therewith.

4.1.2 Following License Effective Date. Following the License Effective Date, NHSc, subject to the terms and conditions of this Agreement, will [***] to (a) Develop a Product containing the Initial Compound for the treatment of HPA and (b) seek and obtain approval of a BLA for such Product for the treatment of HPA in [***] and in [***] through [***]; *provided, however*, that NHSc shall not be obligated to commence any Phase II Clinical Trial in respect of the Initial Compound or any Product if the Formulation Objectives are not met. Subject to the foregoing, all Development decisions and actions after the License Effective Date, including the design of any and all Clinical Trials and the determination of protocols therefor and the endpoints thereof, shall be in NHSc's or its Affiliates' or sublicensees' [***].

4.2 Development Plan. The Development Plan attached hereto as Exhibit A sets forth the details of the Development activities to be undertaken by Codexis pursuant hereto through the date of the Option Trigger and, thereafter in respect of the Solid Dosage Form Development Study, to the extent such Solid Dosage Form Development Study is not completed prior to the date of the Option Trigger. Codexis shall [***] to carry out the Development Plan in accordance with its terms. Either Party may propose to the JSC amendments or modifications to, or variations from, the Development Plan from time to time, which amendments, modifications and variations must be approved by the JSC in accordance with Section 3.4. For clarity, the Development Plan [***] following the [***], except to the [***], in which case the Development Plan shall [***]. Notwithstanding anything to the contrary herein**,** Codexis shall [***] the Solid Dosage Form Development Study [***] that is [***] after the Effective Date.

4.3 Development Assistance after Option Exercise.

4.3.1 Development Support. Without limiting Codexis' obligations pursuant to other provisions of this Agreement, following the License Effective Date, from time to time NHSc may propose in writing specific Development activities that Codexis would perform to support NHSc in furtherance of NHSc's Development activities in respect of Compounds and Products. If NHSc makes any such proposal from time to time, the Parties shall discuss in good faith for [***] the terms pursuant to which Codexis would perform the requested activities, and if they agree upon such terms, the Parties will enter into an additional agreement or agreements specifying the activities Codexis will perform and the [***]. Neither Party shall be obligated to enter into an agreement for such additional Development activities by Codexis absent the execution of a mutually acceptable definitive written agreement on such an arrangement. Notwithstanding the foregoing, Codexis shall provide such ordinary course support and assistance in respect of NHSc's Development activities in respect of Compounds and Product as NHSc may [***] from time to time; provided that (i) such support shall not [***] in respect of [***] and (ii) [***] shall not be [***], in the [***], for a [***] following the [***], to providing such support contemplated by this sentence and pursuant to its obligation pursuant to Section 5.1.3 to provide assistance after the initial technology transfer pursuant thereto. Codexis shall not [***] for providing support and assistance pursuant to the

immediately preceding sentence, however, NHSc shall [***] Codexis for [***] by Codexis in respect thereof [***].

4.3.2 Manufacturing. The Parties anticipate that following the License Effective Date, NHSc will, [***], elect to (i) establish (directly or through an Affiliate or sublicensee or subcontractor of NHSc) a manufacturing and supply arrangement with a Third Party Manufacturer of Compounds or any Product, and/or (ii) negotiate in good faith and enter into a supply agreement pursuant to which Codexis will supply NHSc or its designee with such quantities of Compounds or any Product as NHSc or its sublicensees or subcontractors may require in connection with the Development of Product upon reasonable and customary terms and conditions. Following the License Effective Date, Codexis shall, [***], provide such reasonable assistance as [***] in connection with [***] with respect to the [***] to [***], including, to the extent [***] to [***] with [***] relating [***] to [***]. Subject to the foregoing and without limiting any other provision of this Agreement, neither Party shall be obligated to enter into an assistance or support agreement or a manufacturing and supply arrangement with the other Party absent the execution of a mutually acceptable definitive written agreement on such an arrangement.

4.4 Development Reports. Without limiting Section 3.4, prior to the first to occur of the Option Expiration Date or the License Effective Date, Codexis will keep NHSc reasonably informed with respect to the progress and material results of the various Development activities for which it is responsible pursuant to this Agreement. Following the License Effective Date, NHSc will keep Codexis reasonably informed at least [***] with respect to the progress and material results of its Development pursuant to this Agreement, including, without limitation, any [***] or [***] regarding [***] in furtherance of [***].

4.5 Development Records. Each Party shall maintain, and require its Affiliates and Third Party subcontractors to maintain, complete and accurate records of (i) all work conducted by it or on its behalf in furtherance of the Development of the Compounds and any Product, and (ii) all results, data, Inventions and other developments generated in connection with conducting such activities; *provided* that the foregoing obligation shall no longer apply upon and after the Option Expiration Date. Such records shall be complete and accurate and shall fully and properly reflect all such work done and results achieved in sufficient detail and in good scientific manner appropriate for business, patent and regulatory purposes.

4.6 Development Costs. As between the Parties, [***] associated with its and its Affiliates' Development of the Compounds and any Product, unless otherwise agreed by the Parties in writing. Notwithstanding anything to the contrary in this Agreement, in no event shall Codexis be obligated to [***] in conducting the Solid Dosage Form Development Study.

4.7 Regulatory Matters.

4.7.1 Regulatory Filings and Regulatory Approvals. Prior to the first to occur of the Option Expiration Date or the License Effective Date, Codexis shall be responsible for filing and seeking effectiveness of an IND by the FDA to permit the clinical study of the Initial Compound for the treatment of HPA. Codexis shall submit such IND, as well as all supporting or underlying raw data, to the JSC for its review, comment and approval prior to Codexis submitting the IND to

the FDA. Following the License Effective Date, as between the Parties, NHSc shall be solely responsible for the preparation and submission of all Regulatory Filings relating to the Compounds or any Product. All Regulatory Approvals for Compounds or Product obtained after the License Effective Date shall be owned by and in the name of NHSc or its designee and NHSc or its designee shall have responsibility for all regulatory matters relating to the Compounds and any Product after the License Effective Date. Anything to the contrary notwithstanding, to the extent [***], [***] shall be [***] to [***] into [***], and to [***], including [***].

4.7.2 Communications with Regulatory Authorities. Prior to the first to occur of the Option Expiration Date or the License Effective Date, Codexis will promptly notify NHSc of all material communications or correspondence with or from Regulatory Authorities in connection with the Compounds or any Product and the substance thereof and Codexis will provide to NHSc copies of all substantive written communications received by Codexis (or its Affiliates) from any Regulatory Authority, or submitted by Codexis (or its Affiliates) to any Regulatory Authority, related to the Compounds or any Product. Codexis shall, prior to the first to occur of the Option Expiration Date or the License Effective Date, (i) provide NHSc with copies of any proposed written correspondence with or submission to a Regulatory Authority [***] prior to delivery of the same to the Regulatory Authority, (ii) consult with NHSc, and consider in good faith any comments NHSc may have regarding, any and all such communications and correspondence, provided that NHSc provides such comments within [***] after receiving such correspondence or submission to review, and (iii) [***] before making any commitment to any Regulatory Authority for which NHSc would be responsible after Option Exercise.

4.8 Compliance. During the Term, each Party shall maintain in full force and effect all necessary licenses, permits and other authorizations required by applicable Law to carry out its obligations under this Agreement. In addition, each Party shall be responsible for ensuring that all activities for which it is responsible under this Agreement related to the Development, Manufacture and/or Commercialization of Product are performed in accordance with all applicable Laws and, as applicable, GLP, GCP and GMP.

4.9 Compound-Related Contracts. In the event that Codexis proposes to enter into any material contract, material agreement, amendment to such material contract, or amendment to such material agreement (excluding any work orders, statements of work, or such equivalent contracts that do not relate to the Compounds or any rights or obligations of the parties thereto in relation to the Compounds, or agreements listed on Exhibit E hereto to which Codexis or its Affiliate is a party as of the Effective Date) relating to the Compounds or any Product prior to the first to occur of the Option Expiration Date or the License Effective Date, Codexis shall (i) provide NHSc with drafts of such contract, agreement, or amendment and any ancillary documents or materials and permit NHSc a reasonable opportunity to review the same prior to execution, (ii) consider in good faith all comments NHSc may have within [***] regarding all contracts, agreements, amendments and materials provided pursuant to clause (i) and (ii) [***] to include in such contract, agreement, or amendment [***] without the [***]. Without limiting the foregoing, in no event shall Codexis [***] relating to the Compounds or any Product that would [***] upon NHSc cwithout NHSc's prior written consent].

4.10 Debarred Persons. Without limiting Section 8.1.6, each Party shall notify the other Party promptly, but in no event later than [***], upon becoming aware that any of its employees or consultants involved in the Development contemplated by this Agreement is a Debarred Person. Each Party shall use Commercially Reasonable Efforts to ensure that no Debarred Persons are involved in the Development contemplated by this Agreement and shall promptly cause any such involvement to cease upon such Party becoming aware that any Debarred Person is involved in the Development contemplated by this Agreement. This Section 4.10 shall cease to apply with respect to activities conducted for Compound and Product upon and after occurrence of the Option Expiration Date.

4.11 Subcontracting. Either Party may perform any specific activities for which it is responsible in connection with the Development of Compounds or any Product through subcontracting to an Affiliate or a Third Party contractor (including a contract service organization or contract research organization). The subcontracting Party shall: (i) ensure that any Third Party subcontractor to whom a Party discloses Confidential Information of the other Party is bound by an appropriate written agreement obligating such Third Party to obligations of confidentiality and restrictions on use of the other Party's Confidential Information that are no less restrictive than the obligations in this Agreement (except that the term of confidentiality for such Party's agreements with subcontractors engaged prior to the Effective Date may be less than the term of confidentiality provided for in this Agreement); (ii) [***] that such Affiliate or Third Party is [***] to such Party [***] by such Third Party or its employees or agents in performing such services for such Party that are necessary to the Development of Product; and (iii) [***] and [***] under this Agreement with respect to [***] of such subcontractor.

ARTICLE 5
TRANSITION AFTER OPTION EXERCISE

5.1 Technology Transfer.

5.1.1 Within [***] days after the License Effective Date, Codexis, [***], shall disclose to NHSc or its designee all then-existing Licensed Know-How in Codexis' Control as of such date. All such Licensed Know-How that is capable of being conveyed in writing will be delivered in any digital format reasonably requested by NHSc to the extent practicable, and otherwise in hard copy. NHSc shall reasonably cooperate with Codexis in effecting the foregoing technology transfer obligations during the [***] days after the License Effective Date.

5.1.2 From time to time until the [***] of the License Effective Date, Codexis shall disclose to NHSc or its designee all Licensed Know-How that was inadvertently not included in the disclosures previously made by Codexis, to the extent later discovered.

5.1.3 After the initial transfer of Licensed Know-How pursuant to Section 5.1.1, subject to Sections 4.3.1, Codexis will provide reasonable assistance to NHSc or its designee in connection with understanding and using the Licensed Know-How within the scope of the license granted hereunder. Such reasonable assistance shall include, to the extent reasonably requested by NHSc, [***] in connection with the transfer of such Licensed Know-How. All such reasonable assistance shall be provided [***] to NHSc or its designee.

5.2 Transfer of Development Activities. As soon as practicable following the License Effective Date, Codexis, in cooperation with NHSc or its designee, shall use Commercially Reasonable Efforts to effect an orderly transition, [***], to NHSc or NHSc's designee of all Development activities then-being undertaken by or on behalf of Codexis in connection with the Compound or any Product, pursuant to the Development Plan and this Agreement.

5.3 Transfer of Regulatory Filings. Promptly after the License Effective Date, Codexis will assign or transfer to NHSc the ownership and sponsorship of the IND in respect of the Initial Compound and all existing Regulatory Filings for the Initial Compound, any Product containing the Initial Compound, and, as applicable, any other Compound or any Product containing any other Compound. For clarity, if a Compound permitted under Section 2.2.3 to be used as a Biocatalyst is disclosed, in the context of its intended use as a Biocatalyst, in an IND, DMF, NDA or any other Regulatory Filing, then Codexis will not be obligated to transfer or assign such Regulatory Filing to NHSc hereunder.

5.4 Assignment of Contracts. As soon as practicable after the License Effective Date, at NHSc's request, Codexis shall use Commercially Reasonable Efforts to assign to NHSc or its designated Affiliate any agreement solely relating to the Development, Commercialization or Manufacture of the Compounds or any Product, *provided* that each such agreement is in effect as of the License Effective Date. To the extent any such agreement is not assigned to NHSc, then after the License Effective Date, at NHSc's request, Codexis or its Affiliate shall continue to exercise its rights under and in accordance with such agreement with respect to the Compounds or any Product, as directed by and for the benefit of NHSc until such time as NHSc obtains an agreement with such Third Party, but not more than a commercially reasonable period of time.

5.5 Transfer of Records. Following the License Effective Date, upon request by NHSc, and without limiting the foregoing, Codexis will, [***], deliver to NHSc (or its designee) all manufacturing batch records, Development reports, analytical results, filings and correspondence with any Regulatory Authority (including notes or minutes of any meetings with any Regulatory Authority) and other Regulatory Documentation, raw material and excipient sourcing information, quality audit findings and any other relevant technical information in Codexis' Control relating solely to the Compounds and/or any Product.

5.6 Transfer of Initial Compound. Within [***] following the License Effective Date, Codexis shall deliver to NHSc or its designee (EXW manufacturing or storage site (per INCOTERMS 2010)), and NHSc or its designee shall accept, all quantities of the Initial Compound in Codexis' possession for use by NHSc or its designee in connection with its Development activities under this Agreement. Without limiting the foregoing, the Initial Compound delivered pursuant to this Section 5.6 shall include [***] which has, at all times prior to delivery to NHSc in accordance with the foregoing, been handled, stored and transported in accordance with industry standard practices.

5.7 Completion of Transition to NHSc. Except as set forth in Sections 5.1.2 and 5.1.3, the Parties will use their Commercially Reasonable Efforts to complete all transition activities under this Article 5 within [***] after the License Effective Date.

ARTICLE 6
COMMERCIALIZATION

6.1 Commercialization Generally. As between the Parties and subject to the terms and conditions of this Agreement, after the License Effective Date, NHSc shall be solely responsible for Commercializing Product, either directly or through its Affiliates, sublicensees or distributors. For clarity, if the Option Expiration Date occurs, then Codexis shall have the sole right, directly or with or through Affiliates, licensees or subcontractors or other Third Parties, to Commercialize Product.

6.2 NHSc Diligence Obligation.

6.2.1 Following the License Effective Date, NHSc shall use Commercially Reasonable Efforts to achieve First Commercial Sale of a Product for the treatment of HPA (a) in [***], after receipt of requisite Regulatory Approval from [***] and (b) in [***] of the Major European Countries after receipt of requisite Regulatory Approval in the European Union pursuant to the centralised authorisation procedure. Furthermore, following First Commercial Sale of an initial Product in a country by NHSc, its Affiliate, sublicensee or subcontractor, NHSc shall use Commercially Reasonable Efforts to Commercialize such Product in such country; *provided, however*, that, for clarity, sale of a Product in a particular country in the European Union shall not give rise to an obligation for NHSc to use Commercially Reasonable Efforts to achieve First Commercial Sale of Product in all member countries of the European Union.

6.2.2 The Parties recognize that the application of Commercially Reasonable Efforts [***]. In addition, NHSc shall be permitted to [***] if [***] for the [***] generally.

6.2.3 Following the License Effective Date, NHSc will notify Codexis within [***] and prior to public announcement by NHSc or its Affiliate of (i) NHSc's first receipt of written notice from the FDA that a Product has received Regulatory Authority in the United States, (ii) NHSc's first receipt of written notice of from the EMA that a Product has received Regulatory Authority in the EU, (iii) the occurrence of any Milestone Event triggering a Milestone Payment contemplated by Section 7.3.3, and (iv) the occurrence of the First Commercial Sale of the first Product in the US and in each Major European Country. Subject to the express terms of this Agreement, after the License Effective Date, any Commercialization of Product in the Territory shall be in NHSc's [***].

6.3 [***] Estimates. NHSc shall use Commercially Reasonable Efforts to provide Codexis, at least [***] prior to the First Commercial Sale of Product in the Territory, with an estimate [***]. Thereafter, no later than [***] preceding any subsequent Calendar Year commencing after such First Commercial Sale (each, the "**Relevant Calendar Year**"), NHSc shall provide to Codexis with an estimate [***]. NHSc shall be under no obligation to update, supplement or correct any estimate provided pursuant to this Section 6.3.

Codexis agrees and acknowledges, with respect to all estimates provided under this Section 6.3, that (i) such estimates [***] and, without limitation, [***] that [***] therefrom, (ii) no such estimates are [***] in many respects, (iii) such estimates [***] as such, (iv) neither NHSc nor any of its

Affiliates or any of NHSc's or its Affiliates' directors, officers, employees, consultants or representatives (collectively, "**NHSc Parties**") [***], (v) no NHSc Party [***], including in relation to [***], (vi) Codexis [***] contemplated by clause (v) of this Section 6.3 and (vii) Codexis [***] of any such estimates [***]; *provided that* for purposes of clause (vii) of this Section 6.3, Codexis [***] on any [***] by any NHSc Party.

ARTICLE 7
FINANCIAL TERMS

7.1 Upfront Payment. Subject to the terms and conditions of this Agreement, within thirty (30) days after the Effective Date, NHSc shall pay to Codexis a one-time, non-refundable, non-creditable fee of fourteen million U.S. dollars ($14,000,000).

7.2 Option Exercise Payment. In consideration of the licenses and rights granted to NHSc as of the License Effective Date, subject to the terms of this Agreement, NHSc shall pay to Codexis a one-time, non-refundable, non-creditable option exercise payment in the amount of three million U.S. dollars ($3,000,000) within sixty (60) days after the License Effective Date.

7.3 Milestone Payments.

7.3.1 Development Milestone Payment Prior to Option Exercise. Subject to the terms and conditions of this Agreement, within [***] after Commencement of a Phase Ia Clinical Trial in respect of the Initial Compound for the treatment of HPA, NHSc shall make a one-time, non-refundable, non-creditable Milestone Payment to Codexis in the amount of four million U.S. dollars ($4,000,000).

7.3.2 Solid Dosage Form Development Milestone. Subject to the terms and conditions of this Agreement, within [***] after the later of (i) achievement of the Formulation Objectives and (ii) the License Effective Date, NHSc shall pay to Codexis [***]. Such amount shall not be payable in the event the Formulation Objectives are not achieved. If Codexis believes the Formulation Objectives have been achieved, it shall so notify NHSc. The Parties shall promptly discuss whether the Formulation Objectives have been achieved. In the event that the Parties do not agree that the Formulation Objectives have been achieved, [***] whether the Formulation Objectives have been achieved, *provided, however*, if [***] that the Formulation Objectives have been achieved, but [***] nevertheless [***] as a part of the Formulation Objectives, then the Solid Dosage Form Development Milestone shall, upon the date of Commencement of a Phase II Clinical Trial, become payable and NHSc shall make such Milestone Payment to Codexis within [***] after Commencement of such Phase II Clinical Trial.

7.3.3 Development Milestone Payments After Option Exercise. Subject to the terms of this Agreement, after the License Effective Date, within [***] (except as otherwise expressly provided below in this Section 7.3.3) after the achievement of a Milestone Event set forth below, NHSc shall make a one-time, non-refundable, non-creditable Milestone Payment to Codexis in the amount below corresponding to such Milestone Event (which Milestone Payments contemplated by this Section 7.3.3 shall not exceed, in the aggregate, eighty-five million U.S. dollars ($85,000,000)).

Milestone Event	**Milestone Payment**
[***]*	[***]
[***]	[***]
[***]	[***]
[***]	[***]
[***]	[***]

*[***] for purposes of this Milestone Event shall mean the date upon which [***] containing all [***] to [***] in relation to the [***] to such [***]. The Milestone Payment corresponding to this Milestone Event shall be made by NHSc within [***] after the achievement of such Milestone Event, notwithstanding anything to the contrary in this Section 7.3.3. NHSc may elect not to pay such Milestone Payment within such [***] period without being deemed in breach of this Agreement; *provided*, *however*, that any failure by NHSc to make such Milestone Payment within such [***] shall be deemed, effective upon the day immediately following the expiration of such [***] period, to have provided notice to Codexis that NHSc has elected to terminate this Agreement pursuant to Section 12.2.4 (without regard to the notice period contemplated therein). Notwithstanding the foregoing, in the event that NHSc Commences a Phase II Clinical Trial of Product for the treatment of HPA prior to the achievement of this Milestone Event, the Milestone Payment corresponding to this Milestone Event shall thereupon become payable and NHSc shall make such Milestone Payment to Codexis within [***] after Commencement of such Phase II Clinical Trial.

For purposes of clarity, the achievement of any Milestone Event set forth in this Section 7.3.3 prior to achievement of one or more preceding Milestone Event(s) set forth in this Section 7.3.3 shall result in such preceding Milestone Event(s) set forth in this Section 7.3.3 being deemed to have been achieved at the same time. Without limiting the foregoing, if the Milestone Event [***] is achieved before the Milestone Payment corresponding to [***] is paid, such Milestone Payment corresponding to [***] shall then become payable.

7.3.4 Commercialization Milestone Payments. Subject to the terms of this Agreement, following the License Effective Date, within [***] after the final day of the Calendar Quarter in which a Milestone Event set forth below is achieved, NHSc shall make a one-time, non-refundable, non-creditable Milestone Payment to Codexis in the amount below corresponding to such Milestone Event (which Milestone Payments pursuant to this Section 7.3.4 shall not exceed, in the aggregate, two hundred fifty million U.S. dollars ($250,000,000)):

Milestone Event (Annual Net Sales)	**Milestone Payment**
Aggregate Net Sales of Product in a single Calendar Year exceed [***]	[***]
Aggregate Net Sales of Product in a single Calendar Year exceed [***]	[***]
Aggregate Net Sales of Product in a single Calendar Year exceed [***]	[***]
Aggregate Net Sales of Product in a single Calendar Year exceed $1,000,000,000	[***]

For purposes of clarity, one or more Milestone Events set forth in this Section 7.3.4 can occur during the same single Calendar Year. The achievement of any Milestone Event set forth in this Section 7.3.4 prior to achievement of one or more preceding Milestone Event(s) set forth in this Section 7.3.4 shall result in such preceding Milestone Event(s) being deemed to have been achieved.

7.3.5 Notice. Codexis shall promptly (and in any event within [***]) notify NHSc in writing in the event that the Milestone Event contemplated in Section 7.3.1 or Section 7.3.2 has been achieved. NHSc shall promptly (and in any event within [***]) notify Codexis in writing in the event that it achieves a Milestone Event contemplated in Section 7.3.3.

7.4 Royalties. Subject to the terms of this Agreement, including Section 7.5, and in addition to any Milestone Payments due under Section 7.3, during the Royalty Term, NHSc shall make tiered non-refundable, non-creditable royalty payments to Codexis in respect of Net Sales of Product in the Territory during each Calendar Year, as set forth below.

Calendar Year Net Sales	**Royalties (% of Calendar Year Net Sales)**
[***]	[***]%
[***]	[***]%
[***]	[***]%
[***]	[***]%

7.5 Additional Royalty Terms.

7.5.1 Biosimilar Product Step-Down. In the event that one or more Biosimilar Products are sold by a Third Party in a country in the Territory in any given Calendar Quarter, and the sales of such Biosimilar Products ([***]), exceed [***] of the aggregate sales of Product and all Biosimilar Products (each on a unit basis) sold in such country over [***] Calendar Quarters (the "**Target Percentage**"), then, subject to Section 7.5.3, commencing prospectively with the Calendar Quarter subsequent to such Biosimilar Products reaching the Target Percentage, and for

the remaining period of the Royalty Term applicable to Product in such country, the royalties payable to Codexis on Net Sales of Product in such country shall be reduced by [***] of those otherwise payable pursuant to Section 7.4 commencing in the Calendar Quarter after the Target Percentage has been achieved, and continuing for [***] in such country.

7.5.2 Royalty Stacking. If during the Royalty Term, NHSc enters into or becomes subject to any arms-length written agreement or equivalent arrangement (including any license agreement, settlement or award or judgment) with a Third Party under which NHSc obtains a license or other right (including any covenant not to sue or similar equivalent arrangement), under any Patent or other intellectual property (other than Trademarks) of such Third Party in a particular country in the Territory that, [***], is necessary for NHSc, its Affiliates or any sublicensee to Exploit Product(s) in such country, then, upon entry into any such agreement or arrangement and thereafter during the remainder of the period during which NHSc owes royalties to such Third Party pursuant to such agreement or arrangement and to Codexis under this Agreement based upon sales of Product in such country, the Net Sales of Product(s) in such country to be included in Net Sales for the purpose of the calculation of the royalties due under Section 7.4 shall be reduced, subject to Section 7.5.3, by an amount that is [***] of all payments made by NHSc to any Third Party that are owed pursuant to such agreement or arrangement in consideration for the grant of such license or right under such Patent or other intellectual property (other than Trademarks) by the applicable Third Party; *provided* that, if NHSc is unable to offset from the royalties owing to Codexis during any Calendar Quarter the full amount paid to such Third Party or Third Parties in such Calendar Quarter, NHSc may [***] in accordance with the foregoing.

7.5.3 In no event shall the royalties payable by NHSc pursuant to Section 7.4 be less than [***] of those otherwise due pursuant to Section 7.4 in the relevant payment period after applying Sections 7.5.1 and/or 7.5.2.

7.5.4 Combination Products. If Product is sold in the form of a Combination Product, then Net Sales for such Combination Product shall be determined on a country-by-country basis as follows:

(a) If Product and the Other Product are [***], the royalty payments due on the Net Sales of the Combination Product shall be [***] where [***] and [***].

(b) If Product and the Other Product are [***], but the [***], the [***] on the [***] wherein [***] and [***].

(c) If Product and the Other Product are [***], but the [***], the [***] on the [***] is the [***].

(d) If Product and the Other Product are [***], but the [***] of [***], [***] shall be [***]. If the Parties are [***], the [***].

7.6 Royalty Payments and Reports. NHSc shall make all royalty payments owed under this Agreement within [***] following the end of each Calendar Quarter for Net Sales during such Calendar Quarter, and together with such payment, shall submit to Codexis a written report setting

forth (i) [***] for such Calendar Quarter [***] upon which such royalty payments are based [***] in arriving at the same, (ii) [***] hereunder, and (iii) any [***] to [***] such Net Sales and royalty payments.

7.7 Certain Limitations. Each of the Milestone Payments shall only be payable once, upon the first occurrence of the corresponding Milestone Event, and no additional payment will be due in the event of any repeated occurrence of such Milestone Event, including in relation to more than [***]. The payments expressly set forth in this Article 7 shall constitute the sole consideration for Option, the license and other rights contemplated hereunder and any and all Development conducted by Codexis in respect of the Compound.

7.8 Payment Terms. For clarity, any and all dollar amounts referred to in this Agreement shall mean U.S. dollars. Except as otherwise specifically provided in this Agreement, any and all payments due from one (1) Party to the other pursuant to this Agreement shall be made in U.S. dollars by wire transfer of immediately available funds to such account or accounts and in accordance with such instructions as are provided by the payee Party from time to time.

7.9 Interest on Late Payments. Any amount required to be paid by a Party under this Agreement which is not paid on the date due shall bear interest at an annual rate equal to [***] above the [***], as reported by [***] for the [***] of such month. Such interest shall be accrued daily.

7.10 Currency Conversion. In the event that any Net Sales or other amounts in respect of which payments from one (1) Party to the other Party are owing hereunder are denominated in a currency other than U.S. dollars, such Net Sales or other amounts shall be converted into U.S. dollars at the rate of exchange as used by NHSc for its internal and external financial reporting.

7.11 Taxes and Withholding. Notwithstanding any other provision of this Agreement, if any taxes are required by applicable Law to be withheld by NHSc from a payment made to Codexis pursuant to this Agreement, NHSc will: (i) deduct such taxes from the payment made to Codexis; (ii) timely pay the taxes to the proper taxing authority for the account of Codexis; (iii) send proof of payment to Codexis; and (iv) reasonably cooperate with Codexis in its efforts to obtain a credit for such tax payment; provided, however, that before making any such deduction or withholding, NHSc shall give Codexis reasonable notice of its intention to make such deduction or withholding (such notice, shall include the method of calculation for the proposed deduction or withholding). Each Party agrees to reasonably assist the other Party in lawfully claiming exemptions from and/or minimizing such deductions or withholdings under an applicable tax treaty and any applicable Law. Notwithstanding anything to the contrary in this Agreement, if NHSc assigns or sublicenses its rights or obligations under this Agreement (other than a sublicense or assignment (i) requested by Codexis, (ii) to which Codexis consents in writing, or (iii) required pursuant to the terms of this Agreement or any related document) and to the extent that, as a result of such sublicense or assignment, a payment under this Agreement is subject to withholding tax or an increased withholding tax, the sum payable to Codexis shall be increased to the extent necessary to ensure that Codexis receives a sum equal to the sum which it would have received had no such sublicense or assignment occurred. For the avoidance of doubt, amounts payable under this Agreement are exclusive of value added tax, sales tax, consumption tax and other similar taxes ("**Indirect Taxes**").

If any Indirect Taxes are chargeable in respect of any payments made under this Agreement, such Indirect Taxes shall be borne and paid by NHSc. The Parties shall cooperate in accordance with applicable Law to minimize Indirect Taxes incurred in connection with this Agreement. This Section 7.11 (and all relevant definitions) shall survive expiration or termination of this Agreement for any reason, and each Party shall indemnify, defend and hold harmless the other Party against all taxes (including for this purpose interest, penalties and additions to tax) and reasonable and documented related out-of-pocket expenses arising from any breach by the indemnifying Party of this Section 7.11.

7.12 Books and Records; Audit. NHSc shall keep and maintain reasonably detailed books and records of Net Sales of Product in the Territory and each component of such Net Sales. Codexis shall have the right to examine and audit NHSc's relevant books and records to verify the accuracy of any reports and/or payments prepared and/or delivered by NHSc pursuant to this Agreement. Any such audit shall be on at least [***] prior written notice. Codexis' rights to perform an audit under this Section 7.12 shall be limited to not more than [***] in any Calendar Year and shall be limited to the pertinent books and records for any Calendar Year ending not more than [***] before the date of the request. The audit shall be performed at [***] by an independent certified public accounting firm of internationally recognized standing that is selected by Codexis and reasonably acceptable to the audited Party. The accounting firm shall be required to enter into a reasonable and customary confidentiality agreement with NHSc to protect the confidentiality of its books and records. NHSc shall make the relevant books and records reasonably available during normal business hours for examination by the accounting firm. Except as may otherwise be agreed, the accounting firm shall be provided access to such books and records at NHSc's and/or its Affiliates' facilities where such books and records are normally kept. Upon completion of the audit, the accounting firm shall provide both Parties a written report disclosing whether or not the relevant reports and/or payments are correct, and the specific details concerning any discrepancies. The accounting firm shall not provide Codexis with any additional information or access to NHSc's confidential information. If the accounting firm conducting an audit pursuant to this Section 7.12 concludes as a result of such audit that any additional amounts were due and payable to a Party, such additional amounts shall be paid to such Party within [***] of the date that the Parties receive such accountant's written report. In the event that the total amount of any underpayments by NHSc to Codexis for the audited period exceeds [***] of the aggregate total amount that was properly due and payable to Codexis for such period, then NHSc shall also [***] for the [***], except to the extent that such underpayment was due to any inaccurate or incomplete information provided to NHSc by Codexis.

ARTICLE 8
REPRESENTATIONS AND WARRANTIES

8.1 Mutual Representations and Warranties. Codexis and NHSc each represents and warrants to the other, as of the Effective Date, as follows:

8.1.1 Organization. It is duly organized, validly existing, and in good standing under the laws of the jurisdiction of its organization, and has all requisite power and authority, corporate or otherwise, to execute, deliver, and perform this Agreement.

8.1.2 Authorization. The execution and delivery of this Agreement and the performance by it of its obligations contemplated hereby have been duly authorized by all necessary corporate or similar action on the part of such Party, and do not violate (i) such Party's charter documents, bylaws, or other organizational documents, (ii) any agreement, instrument, or contractual obligation to which such Party is bound, or (iii) any requirement of any applicable Law.

8.1.3 Binding Agreement. This Agreement is a legal, valid, and binding obligation of such Party enforceable against it in accordance with its terms and conditions, subject to the effects of bankruptcy, insolvency, or other laws of general application affecting the enforcement of creditor rights, judicial principles affecting the availability of specific performance, and general principles of equity (whether enforceability is considered a proceeding at law or equity).

8.1.4 Consents and Approvals. Except as contemplated in Section 2.1.2, and except for antitrust and competition filings other than those contemplated by Section 2.1.2, no consent, approval, waiver, order or authorization of, or registration, declaration or filing with, any Third Party or any Governmental Authority is required in connection with the execution, delivery and performance of this Agreement by such Party or the performance by such Party of its obligations contemplated hereby or thereby.

8.1.5 No Conflict. The execution and delivery of this Agreement, the performance of such Party's obligations hereunder and the licenses and sublicenses to be granted pursuant to this Agreement (i) do not and will not conflict with or violate any requirement of applicable Law or any order, writ, judgment, injunction, decree, determination, or award of any court or governmental agency presently in effect applicable to such Party; (ii) do not and will not conflict with or violate the certificate of incorporation, by-laws or other organizational documents of such Party; and (iii) do not and will not conflict with, violate, breach or constitute a default under any contractual obligations of such Party or any of its Affiliates.

8.1.6 No Debarment. Neither such Party nor its Affiliates' employees who have been, or who such Party currently expects to be, involved in the Exploitation of the Compounds or any Product, or, to such Party's Knowledge, any of their respective licensees, contractors, agents and consultants or their respective employees, consultants or contractors who have been, or who such Party currently expects to be, involved, on behalf of such Party, in the Exploitation of the Compound or any Product:

(a) is debarred under Section 306(a) or 306(b) of the FD&C Act or by the analogous applicable Laws of any Regulatory Authority;

(b) has, to such Party's Knowledge, been charged with, or convicted of, any felony or misdemeanor within the ambit of 42 U.S.C. §§ 1320a-7(a), 1320a-7(b)(l)-(3), or pursuant to the analogous applicable Laws of any Regulatory Authority, or is proposed for exclusion, or the subject of exclusion or debarment proceedings by a Regulatory Authority; and

(c) is excluded, suspended or debarred from participation, or otherwise ineligible to participate, in any U.S. or non-U.S. healthcare programs (or has been convicted of a

criminal offense that falls within the scope of 42 U.S.C. §1320a-7 but not yet excluded, debarred, suspended, or otherwise declared ineligible), or excluded, suspended or debarred by a Regulatory Authority from participation, or otherwise ineligible to participate, in any procurement or non-procurement programs. All of the persons contemplated by the foregoing clauses (a), (b) or (c) are referred to as "**Debarred Persons**."

8.2 Additional Representations and Warranties of Codexis. Codexis further represents and warrants to NHSc, as of the Effective Date, as follows:

8.2.1 Title; Encumbrances; Conflicting Grants. Codexis has the right to grant the Option to NHSc hereunder and, upon Option Exercise, the license specified herein and has not granted to any Third Party any rights or licenses conflicting with the rights Codexis purports to grant to NHSc pursuant to this Agreement. The Licensed Patents and Licensed Know-How are not subject to any liens in favor of, or claims of ownership by, any Third Party.

8.2.2 Good Practices. Codexis and its Affiliates have, and, to Codexis' Knowledge, their respective contractors, agents and consultants have, conducted all Development with respect to the Specified Compounds and any Product containing a Specified Compound that has been conducted prior to the Effective Date in accordance with GLP, GCP, and GMP, to the extent applicable and required.

8.2.3 Licensed Patents.

(a) Exhibit B sets forth a true and correct listing of all Patents Controlled by Codexis as of the Effective Date that claim or cover or, as to patent applications, if issued as they currently exist, would claim or cover, the Compounds or any Product as they exist as of the Effective Date, including the use and methods of Manufacture of the Compounds as they exist as of the Effective Date. [***] in the [***] where [***], the [***] have been [***] and [***] and [***] or [***], except as [***] of [***], any [***] in respect of [***] or [***] and [***].

(b) To Codexis' Knowledge, no [***] and [***] (or [***]) to [***] or [***] of the [***] of the [***] or [***] to [***] that the [***] are [***].

(c) To Codexis' Knowledge, [***] to [***] are [***].

(d) [***] that [***] have been [***], and [***] have been [***], in each case to the extent [***] the [***] in the [***] is [***], and the [***].

(e) Codexis (i) [***] in which [***], its [***] to [***] that [***] on a [***], and to [***] in connection therewith with [***] on [***], in each case to the extent necessary [***] in [***] and (ii) has no Knowledge that [***] to [***] or [***] or [***].

(f) The [***] in the [***] of the [***] are, to Codexis' Knowledge, all of the [***] for [***] and [***], or is [***], to [***] of [***] to [***] and the [***].

(g) Codexis has [***] with all [***] in connection with [***] the [***] containing the [***] or [***], including the [***] and [***] to [***] pursuant to such [***]; provided that notwithstanding the foregoing, Codexis [***] to its [***] with respect to [***].

8.2.4 [***] of [***]. To Codexis' Knowledge, [***]. Codexis has not [***] from any [***] that (i) any [***] of any [***] or any [***] by [***] to the [***] of such [***] or (ii) the [***] pursuant to this Agreement would [***].

8.2.5 [***] of [***]. To Codexis' Knowledge, [***]. There are no [***] with respect thereto [***] relating to the [***].

8.2.6 [***] by [***]. To Codexis' Knowledge, [***] the [***] the [***] by reason of the [***]. Neither [***] has [***] of any [***] by any [***], of any of the [***] or [***] with respect to the [***].

8.2.7 Material Contracts. [***], other than pursuant to agreements [***], which do [***].

8.2.8 Regulatory Matters.

(a) Codexis has made available to NHSc all material Regulatory Documentation requested by NHSc and Controlled by Codexis regarding or related to the Specified Compounds or any Product containing any Specified Compound, including, [***] relating to the Specified Compounds or any Product containing any Specified Compound that is [***] or [***] and such [***] in accordance with the [***], as applicable, to the extent required, and [***], and to Codexis' Knowledge, such [***].

(b) [***] has [***], with respect to any [***], any [***] and, there is [***] or, to Codexis' Knowledge, [***], in each case alleging that with respect to [***], [***] is not [***] with [***]. Neither [***] has [***] from [***] that the [***] is not [***].

(c) To Codexis' Knowledge, none of [***], or any of [***], with respect to [***], an [***] to any [***] or [***].

8.2.9 [***]. In those jurisdictions in which Codexis has filed applications for Licensed Patents, excluding ordinary course patent prosecution procedures and communications, [***], and to Codexis' Knowledge, [***] or [***] any [***], involving the [***] or the [***], nor to Codexis' Knowledge [***] or [***] the past [***], in each case, which has been [***] any of [***] and to any [***] in connection with [***].

8.2.10 [***]. All [***] and [***] of [***] who are or have been [***] of [***] and [***] have [***] or are otherwise [***] and [***] and to [***] of or [***] under the [***].

8.2.11 [***]. Codexis has [***] the [***] that is not [***] only pursuant to [***] to [***] for [***].

ARTICLE 9
INTELLECTUAL PROPERTY

9.1 Ownership of Intellectual Property.

9.1.1 Ownership of Inventions and Information. As between the Parties, each Party shall solely own all right, title, and interest in and to any and all Inventions and Information that are conceived, discovered, or otherwise made solely by one (1) or more employees, consultants, contractors or subcontractors of a Party or its Affiliates or sublicensees in the course of performing activities contemplated in this Agreement, whether or not patented or patentable, and any and all Patents and other intellectual property rights therein.

9.1.2 Ownership of Joint Patents and Joint Know-How. As between the Parties, each Party shall each own an equal, undivided interest in any and all (i) Inventions and Information that are conceived, discovered, or otherwise made jointly by or on behalf of one (1) or more employees, consultants, contractors or subcontractors of NHSc or its Affiliates or sublicensees, on the one hand, and one (1) or more employees, consultants, contractors or subcontractors of Codexis, on the other hand, in the course of performing activities contemplated in this Agreement, whether or not patented or patentable, including Joint Inventions (the "**Joint Know-How**"), and (ii) Joint Patents and other intellectual property rights in the Joint Know-How (such Joint Patents and other intellectual property rights, together with the Joint Know-How, the "**Joint Intellectual Property Rights**"). Each Party shall promptly disclose to the other Party in writing, and shall cause its Affiliates and sublicensees to so disclose, the discovery, making, conception or reduction to practice of any Joint Know-How. Subject to the license granted under Section 2.2 and the terms of this Article 9, each Party may, and may permit, through sublicenses or otherwise, [***]. Subject to the rights granted under this Agreement, each Party shall have the right to practice and exploit Joint Intellectual Property Rights, without any obligation to account to the other for profits, or to obtain any approval of the other Party to license, assign, or otherwise exploit Joint Intellectual Property Rights, by reason of joint ownership thereof, and each Party [***]. Each Party agrees to be named as a party, if necessary, to bring or maintain a lawsuit involving a Joint Intellectual Property Right.

9.1.3 [***] Law. The determination of whether Information and Inventions are conceived, discovered or otherwise made by a Party for the purpose of allocating proprietary rights (including Patent, copyright or other intellectual property rights) therein, shall, for purposes of this Agreement, be made in accordance with applicable Law [***] as such Law exists as of the Signing Date irrespective of where such conception, discovery, or making occurs.

9.1.4 Assignment Obligation. Each Party shall cause all Persons who perform activities for such Party under this Agreement or in connection with the subject matter hereof to automatically assign their rights in any Inventions resulting therefrom to such Party.

9.1.5 Inventors. As between the Parties, [***] to the inventors named in the Licensed Patents, pursuant to applicable Patent Law. Each Party shall [***], pursuant to applicable Patent Law. [***] who are inventors of Inventions owned [***], pursuant to applicable Patent Law and [***] who are inventors of Inventions owned [***]. This Section 9.1.5 shall not limit [***] under [***].

9.2 Maintenance and Prosecution of Patents.

9.2.1 Prior to the License Effective Date, and after the occurrence of the Option Expiration Date, [***], [***], shall be responsible for the Prosecution of the Licensed Patents (excluding for clarity the Joint Patents).

9.2.2 The Patent Committee shall discuss and determine which Party shall be responsible for the Prosecution of the Joint Patents, the [***], except as provided in Section 9.2.3. Following the License Effective Date, except as provided in Section 9.2.3, [***] shall Prosecute all Licensed Patents at the direction of the Patent Committee and shall be [***], except as provided in Section 9.2.3. The Patent Committee shall determine the overall strategy for, and all material aspects of, the Prosecution of the Licensed Patents and Joint Patents, including where and when applications for Patents will be filed, and claims to be included, excluded or modified in Patent applications. The Patent Committee shall also confer regarding the selection of external patent counsel or patent agents to be used for filing, prosecuting and maintaining Licensed Patents and Joint Patents outside of the United States that are first engaged by [***] after the Effective Date. If the Patent Committee is unable to reach a consensus decision on a matter that is within its decision-making authority within [***] after it has met and attempted to reach such decision, then such matter shall be [***]; *provided, however*, that in such event, [***], who, for purposes of any dispute contemplated by this Section 9.2.2, [***].

9.2.3 The [***] will not [***] which [***], or [***] for which it has [***] or [***] for the [***], without the [***] first being [***] to [***] for the [***] or the [***] in accordance with this Section 9.2.3. The [***] shall provide [***] with [***] within [***], and [***], and the [***] shall provide the [***] with [***] as to whether the [***] to [***]. In the event that the [***] decides either (a) [***] or [***] or (b) [***] or [***] to [***], the [***] with [***] at least [***] prior to any [***] thereof or, if earlier, [***], as applicable. In such event, the [***] shall provide the [***] with an [***] for the [***] and any [***] (such [***], as set forth above). In the event that the [***] assumes [***], the [***] shall have [***] for such [***] to [***] by it and [***] and, in such case, Sections 9.2.4 through 9.2.6 shall apply to such [***] (with such [***] for such purposes). Such [***] shall otherwise [***] in the same manner and to the same extent as the [***] except as otherwise provided in this Section 9.2.3. In such event, the [***] shall [***] with the [***] in the [***] including, if applicable, [***] and [***] as may be [***] to the [***] all of [***] to any such [***], and upon such [***] such [***] shall be [***]. In the event that the [***] either (i) [***] of any such [***] or [***] in [***] or (ii) not to [***], the [***] shall comply with the terms of this Section 9.2.3 (with such [***] then [***] for such purposes). Notwithstanding anything to the contrary above, if the [***] occurs, then thereafter, [***] shall have sole right and responsibility to Prosecute the Licensed Patents and [***] shall have no rights with respect to Licensed Patents except as otherwise provided in this Section 9.2.3.

9.2.4 The Prosecuting Party shall be entitled to use patent counsel selected by it and reasonably acceptable to the non-Prosecuting Party (for avoidance of doubt, all references in this Article 9 to “patent counsel” shall include inside patent counsel as well as outside patent counsel), for the Prosecution of the Patents. The [***] shall keep the [***] of the [***] of its [***] and [***] with copies of [***] relating to [***] of any [***] being [***] by such [***]. The [***] may [***]

with respect to any [***] to be taken by the [***], and the [***] shall take such [***] into [***] and [***] to [***] into [***]. The [***] shall [***] with the [***] before [***] that would have [***] on the [***] within the [***], as applicable, and the [***] shall take [***] of the [***] into [***]. Notwithstanding anything to the contrary above, if the [***] occurs, then thereafter, [***] shall have sole right and responsibility to Prosecute the Licensed Patents and [***] shall have no rights with respect to Licensed Patents under this Section 9.2.4.

9.2.5 In order to facilitate the [***], the [***] shall [***] of [***] and any [***] thereto by the [***] at least [***] prior to any [***], or within [***] of the [***] of any [***] if such [***] for [***] to [***], and the [***] shall [***] and in [***] to [***] to [***]. In no event shall the [***] be [***] to [***] past any [***].

9.2.6 [***] that [***] to [***] to [***] the [***] of the [***] or to [***] or [***] with respect to any [***], in any case, that would [***] with [***] hereunder.

9.3 Enforcement of Patents.

9.3.1 Notification. In the event that either Party has cause to believe that a Third Party may be infringing either any of the Licensed Patents in connection with the Exploitation of any compound or product that competes or could reasonably be expected to compete with any Compound or any Product, or any of the Joint Patents, or such Licensed Patent or Joint Patent is challenged in any action or proceeding (other than any oppositions, cancellations, interferences, reissue proceedings, or reexaminations, which are addressed above) (any of the foregoing, an "**Infringement Action**"), it shall promptly notify the other Party in writing, identifying the alleged infringer and the alleged infringement complained of and furnishing the information upon which such determination is based. Notwithstanding anything to the contrary above, if the [***] occurs, then thereafter, [***] shall have sole right and responsibility to enforce the Licensed Patents and [***] shall have no rights with respect to Licensed Patents under this Section 9.3.1.

9.3.2 Enforcement by [***].

(a) Prior to the [***], and if the [***] has occurred, at all times thereafter, [***] will have the first right, but not an obligation to, take action to enforce the Licensed Patents, but for clarity not the Joint Patents, in connection with an Infringement Action with respect to the Licensed Patents, [***], in its own name and entirely under its own direction and control, subject to Section 9.3.4.

(b) If [***] has the first right to enforce the Licensed Patents or the Joint Patents in connection with an Infringement Action with respect to the Licensed Patents or the Joint Patents pursuant to Section 9.3.3 and elects not to timely settle or bring any action as described therein, then [***] shall have the right, but not the obligation, to enforce the Licensed Patents or Joint Patents in connection with such Infringement Action [***], in its own name and entirely under its own direction and control, subject to Section 9.3.4.

9.3.3 Enforcement by [***].

(a) [***] will have the first right, but not an obligation, to take action to enforce the Joint Patents in connection with any Infringement Action with respect to the Joint Patents, [***], in its own name and entirely under its own direction and control, subject to Section 9.3.4.

(b) Following the [***] and thereafter during the Term, [***] will have the first right, but not an obligation to, take action to enforce the Licensed Patents (excluding for clarity any Joint Patents, which are covered by Section 9.3.3(a)) in connection with any Infringement Action with respect to the Licensed Patents, [***], in its own name and entirely under its own direction and control, subject to Section 9.3.4.

(c) If [***] has the first right to take action to enforce the Licensed Patents in connection with any Infringement Action with respect to the Licensed Patents pursuant to Section 9.3.2(a) and elects not to timely settle or bring any action as described therein, then [***] shall have the right, but not the obligation, to bring such action [***], in its own name and entirely under its own direction and control, subject to Section 9.3.4.

9.3.4 Procedure for Enforcement.

(a) The non-enforcing Party pursuant to Sections 9.3.2 and 9.3.3 shall reasonably assist the enforcing Party (at the enforcing Party's expense) in any such action if so requested, and shall lend its name to such actions if reasonably requested by such enforcing Party or required by Law. The non-enforcing Party shall have the right to participate and be represented in any such action by its own counsel [***]. The non-enforcing Party shall cooperate, [***], with the enforcing Party in investigating or terminating any suspected infringement, whether through legal action, negotiation, being joined as a party plaintiff or otherwise, including by [***], and [***], upon the request of the enforcing Party. The enforcing Party will keep the non-enforcing Party reasonably informed of the status of the action. The enforcing Party will have [***] and will [***] from the [***] into [***] with respect to the infringement, claim construction, or defense of the validity or enforceability of any claim in a Licensed Patent or Joint Patent. The enforcing Party shall [***] relating to the [***] of the involved Licensed Patent or Joint Patent promptly upon their being filed or received.

(b) If Codexis is the enforcing Party, no settlement of any such Infringement Action, which [***] the [***] (or that would be [***]) by Codexis to NHSc under the terms of this Agreement (including the [***]), or [***] NHSc's rights under this Agreement or its [***], will be entered into by Codexis [***] of NHSc. If NHSc is the enforcing Party, no settlement of any such Infringement Action, which [***] the [***], of a [***] outside the [***] shall be [***] by NHSc without the [***], which [***].

9.3.5 Withdrawal. If either Party brings an action under this Section 9.3 and subsequently ceases to pursue or withdraws from such action, it shall promptly notify the other

Party and the other Party may substitute itself for the withdrawing Party under the terms of this Section 9.3.

9.3.6 Damages. In the event that either Party exercises the rights conferred in this Section 9.3 and recovers any damages or other sums in such action or in settlement thereof, such damages or other sums recovered shall [***], [***]. After such [***], if such recoveries are received in connection with the Licensed Patents and any funds shall remain from such damages or other sums recovered, the following shall apply: (a) to the extent such recoveries relate to an Infringement Action occurring prior to the [***], or if the [***], at any time during the Term, such funds shall be retained by or paid [***]; and (b) to the extent such recoveries relate to an Infringement Action occurring [***], such funds shall be retained by or paid [***], and shall be [***], such that [***]. Furthermore, after such reimbursement, if such recoveries are received in connection with the Joint Patents and any funds shall remain from such damages or other sums recovered, the [***] remaining amounts.

9.4 Infringement Claims by Third Parties; Challenge Proceedings.

9.4.1 Defense of Third Party Claims. If a Third Party asserts that a Patent or other intellectual property right owned or controlled by it is infringed by the Exploitation of the Compounds or any Product, the Party first obtaining Knowledge of such a claim shall promptly provide the other Party notice of such claim along with the related facts in reasonable detail. Prior to the [***], [***] the first right, but not the obligation, to defend such claim in consultation with the Patent Committee. If the [***], or if [***] fails to timely assume such defense, then thereafter [***] the first right, but not the obligation, to defend such claim in consultation with the Patent Committee. If [***] has the first right to defend such claim, and elects not to defend any such claim, then [***] shall have the right, but not the obligation, to defend such claim in consultation with [***] and using counsel reasonably acceptable to [***]. The Parties shall cooperate with one another in any such defense. The Party controlling the defense of any such claim shall [***] and shall [***] for its [***] in providing such assistance, upon such Party's request. Notwithstanding the foregoing, if the [***], then thereafter, [***] shall have the sole right, but not the obligation, to defend any such claim.

9.4.2 Settlement of Third Party Claims. The Party (or its Affiliate) defending against any Third Party claim pursuant to Section 9.4.1, shall have the right to settle such claim; *provided* that unless the Option Expiration Date has occurred, any such settlement that could adversely affect the other Party in any material respect shall be made only upon such other Party's written consent, not to be unreasonably withheld, delayed or conditioned, it being agreed that a settlement shall not be deemed to adversely affect the other Party, and shall not require consent, if such settlement involves solely an obligation to make a financial payment and/or the granting of a license or sublicense to intellectual property rights that is no more extensive than the applicable Party's rights, or retained rights, hereunder in such intellectual property hereunder.

9.4.3 Patent Oppositions and Challenges. If either Party wishes to challenge the validity of any Third Party's Patent in the Territory as [***] in connection with the [***] by [***] a pre-grant opposition (e.g., third-party observations), opposition, post-grant or inter partes proceeding (a "**Challenge Proceeding**") at a [***] or by otherwise [***], such Party shall so notify

the other Party through the Patent Committee. The Patent Committee shall [***], and the Parties shall [***], with the [***] of any such Challenge Proceeding, [***] with respect to the [***], and [***] of any such proceedings. After the [***], [***] shall have the first right, but not the obligation to bring a Challenge Proceeding in any country in the Territory with respect to such Third Party's Patent; *provided*, *however*, that [***] shall have a backup right to bring such Challenge Proceeding, upon [***] prior written notice to [***] in the event that [***] fails to initiate such Challenge Proceeding within [***] of the later of (i) [***] proposal that [***] do so and confirmation that [***] will do so if [***] does not, and (ii) the earliest date on which [***] legal counsel advises [***] that such Challenge Proceeding can reasonably be initiated (which date [***] shall specify in writing to [***] promptly after receiving such advice from such legal counsel); *provided* that such [***] period shall be shortened where applicable Law requires an earlier initiation of action. A Party bringing a Challenge Proceeding shall consult with the other Party with respect thereto and reasonably consider such other Party's comments thereon. Each Party shall cooperate with the other Party in connection with any Challenge Proceeding brought by such other Party as reasonably requested by such other Party. Subject to Section 9.6, the Party seeking the cooperation of the other Party under this Section 9.4.3 shall [***] for its [***].

9.4.4 Allocation of Costs and Recovery. Subject to Section 9.6, the Party defending, prosecuting or controlling any claim, filing, proceeding or action contemplated by this Section 9.4 shall [***].

9.4.5 Notwithstanding anything to the contrary above, if the Option Expiration Date occurs, then thereafter, this Section 9.4 shall no longer apply.

9.5 Invalidity or Unenforceability Defenses or Actions.

9.5.1 Third Party Defense or Counterclaim. If a Third Party asserts, as a defense or as a counterclaim in any infringement action under Section 9.3 that any Licensed Patent or Joint Patent is invalid or unenforceable, then the Party pursuing such infringement action shall promptly give written notice to the other Party. With respect to the Licensed Patents, [***] shall, through counsel reasonably acceptable to [***], respond to such defense and use Commercially Reasonable Efforts to defend against such counterclaim (as applicable) and, if [***] is pursuing the applicable infringement action under Section 9.3, [***] shall allow [***] to control such response or defense (as applicable). [***] with respect to such response or defense against such counterclaim with respect to Licensed Patents shall be [***], and the Parties shall [***] in the same manner as the Parties are [***] relating to prosecution and maintenance of Patents in accordance with Section 9.2. If [***] fails, notwithstanding the foregoing, to assume such defense and use Commercially Reasonable Efforts in respect thereof, [***] shall have the right to defend against such action or claim. With respect to the Joint Patents, the Patent Committee shall confer on such matter, and shall discuss which Party shall have the first right to defend against such counterclaim; provided that unless the Parties otherwise agree, [***] shall have the sole right, but not an obligation, to take all actions permitted under applicable Law with respect to such Joint Patents. [***] with respect to such response or defense against such counterclaim with respect to Joint Patents shall be [***].

9.5.2 Third Party Declaratory Judgment or Similar Action. If a Third Party asserts, in a declaratory judgment action or similar action or claim filed by such Third Party, that any

Licensed Patent or Joint Patent is invalid or unenforceable, then the Party first becoming aware of such action or claim shall promptly give written notice to the other Party. With respect to the Licensed Patents, [***] shall, through counsel reasonably acceptable to [***], use Commercially Reasonable Efforts to defend against such action or claim. [***] with respect to such defense with respect to Licensed Patents shall be [***], and the Parties shall [***], in the same manner as the Parties are [***] relating to prosecution and maintenance of Patents in accordance with Section 9.2. If [***] fails, notwithstanding the foregoing, to assume such defense and use Commercially Reasonable Efforts in respect thereof, [***] shall have the right to defend against such action or claim. With respect to any such action or claim involving the Joint Patents, the Patent Committee shall confer on such matter, and shall discuss which Party shall have the first right to defend against such counterclaim, provided that unless the Patent Committee decides otherwise, [***] shall have the right, but not an obligation, to take all actions permitted under applicable Law with respect to such Joint Patents. [***] with respect to such response or defense against such counterclaim with respect to Joint Patents shall be [***].

9.5.3 Assistance. Each Party shall provide to the other Party all reasonable assistance requested by the other Party in connection with any action, claim or suit under this Section 9.5, including allowing such other Party reasonable access to the assisting Party's files and documents and to the assisting Party's personnel who may have possession of relevant information. In particular, the assisting Party shall promptly make available to the other Party all relevant information in its possession or control that it is aware would assist the other Party in responding to any such action, claim or suit. Any such cooperation by either Party with respect to Licensed Patents shall be [***] and the [***] for such [***] upon the [***]. [***] for Joint Patents shall be [***].

9.5.4 Notwithstanding anything to the contrary above, if the Option Expiration Date occurs, then thereafter, this Section 9.5 shall no longer apply with respect to Licensed Patents.

9.6 [***]. [***] shall be entitled to [***] to [***] pursuant to [***] by [***] of [***] for which it [***], [***] (collectively, "[***]") in connection with any claims or actions contemplated by Section 9.4. For the sake of clarity, [***] shall have no right, pursuant to this Section 9.6, to [***] of [***] by [***] to [***] pursuant to [***].

9.1 Patent Listings. Following the License Effective Date, NHSc shall have the sole right to make all filings with Regulatory Authorities with respect to Licensed Patents in relation to any Product, including listings in the FDA's "Orange Book" or "Purple Book", listings under the national implementations of Article 10.1(a)(iii) of Directive 2001/EC/83, as amended, or other international equivalents; *provided* that NHSc shall consult with Codexis prior to making any such filing and consider Codexis' comments on such filing in good faith.

ARTICLE 10
CONFIDENTIAL INFORMATION; PUBLICATIONS

10.1 Nondisclosure. Each Party agrees that during the Term and for a period of [***] thereafter, a Party (the "**Receiving Party**") receiving Confidential Information of the other Party (the "**Disclosing Party**") (or that has received any such Confidential Information from the other

Party prior to the Effective Date) shall (i) maintain in confidence such Confidential Information using not less than the efforts such Receiving Party uses to maintain in confidence its own proprietary industrial information of similar kind and value, which shall be no less than a reasonable degree of care, (ii) not disclose such Confidential Information to any Third Party without the prior written consent of the Disclosing Party, except for disclosures expressly permitted below, and (iii) not use such Confidential Information for any purpose except those permitted by this Agreement (it being understood that this clause (iii) shall not create or imply any rights or licenses not expressly granted under Article 2 hereof). Each Party will promptly notify the other Party upon gaining Knowledge of any material use or disclosure of Confidential Information of the other Party not permitted pursuant to this Article 10. The Parties agree that any Proprietary Information (within the meaning of the Prior CDA) disclosed by the Parties or their Affiliates pursuant to the Prior CDA shall be Confidential Information within the meaning of, and shall be subject to, this Article 10.

10.1.1 Exceptions. The obligations in Section 10.1 shall not apply with respect to any portion of the Confidential Information that the Receiving Party may receive to the extent that such information:

(a) is publicly disclosed by the Disclosing Party, either before or after it is disclosed to the Receiving Party hereunder;

(b) was known to the Receiving Party or any of its Affiliates, without any obligation to keep it confidential or any restriction on its use, prior to disclosure by the Disclosing Party, and such prior knowledge can be properly documented by the Receiving Party;

(c) is subsequently disclosed to the Receiving Party or any of its Affiliates by a Third Party lawfully in possession thereof and without any obligation to keep it confidential or any restriction on its use;

(d) is published by a Third Party or otherwise becomes publicly available or enters the public domain, either before or after it is disclosed to the Receiving Party without the fault or cause of the Receiving Party; or

(e) is independently developed by employees or contractors of the Receiving Party or any of its Affiliates without the aid, application or use of Confidential Information of the Disclosing Party, and such independent development can be properly documented by the Receiving Party.

10.2 Authorized Disclosure. The Receiving Party may disclose Confidential Information belonging to the Disclosing Party only to the extent such disclosure is reasonably necessary in the following instances:

(a) to any relevant patent office in preparing, filing, prosecuting and maintaining patents in accordance with the provisions of Article 9;

(b) to Regulatory Authorities in order (i) to obtain authorizations to conduct Clinical Trials or post-approval studies in relation to Product, or (ii) to file, obtain and maintain Regulatory Approvals in respect of Product, or (iii) to Develop, Commercialize or manufacture Product, in each case in accordance with this Agreement;

(c) prosecuting or defending litigation or in establishing rights (whether through declaratory actions or other legal proceedings) or enforcing obligations under this Agreement;

(d) subject to Section 10.4, complying with applicable Laws and regulations (including, without limitation, the rules and regulations of the Securities and Exchange Commission or any national securities exchange) and with judicial process, if in the reasonable opinion of the Receiving Party's counsel, such disclosure is necessary for such compliance;

(e) disclosure to its Affiliates, and to its (actual or potential) permitted sublicensees, acquirers or assignees under Section 14.3 and subcontractors (and their advisors) and to investment bankers, investors, lenders, accountants and legal advisors and each of the Parties' respective directors, employees, contractors and agents, each of whom prior to disclosure must be bound by written obligations of confidentiality and non-use no less restrictive than the obligations set forth in this Article 10; *provided, however*, that the Receiving Party shall remain responsible for any failure by any Person who receives Confidential Information pursuant to this Section 10.2(e) to treat such Confidential Information as required under this Article 10; and

(f) to [***] who are [***] in order to [***], Product; *provided, however*, that, (i) in the case of any such disclosure prior to the [***], the [***] and (ii) in the case of any such disclosure by [***] after the [***], [***] such disclosure in writing and *provided further* that, prior to such disclosure, the [***] is bound by written obligations of confidentiality and non-use no less restrictive than the obligations set forth in this Article 10.

If and whenever any Confidential Information is disclosed in accordance with this Section 10.2, such disclosure shall not cause any such information to cease to be Confidential Information, except to the extent that such disclosure results in a public disclosure of such information (otherwise than by breach of this Agreement). Where reasonably possible and subject to Section 10.4 and other than pursuant to Section 10.2(e), the Receiving Party shall:

(a) give the Disclosing Party reasonable advance notice of the Receiving Party's intent to make such disclosure pursuant to this Section 10.2, to the extent practicable; and

(b) provide reasonable cooperation to the Disclosing Party regarding the timing and content of such disclosure and regarding any action which the Disclosing Party may deem appropriate to protect the confidentiality of the information by appropriate legal means.

10.3 Terms of this Agreement. The Parties acknowledge that the terms of this Agreement shall be treated as Confidential Information of both Parties.

10.4 Securities Filings. In the event either Party determines that it is required to file with the U.S. Securities and Exchange Commission (and/or the securities regulators of any state or other jurisdiction) a registration statement or any other disclosure document which describes any of the terms and conditions of this Agreement, such Party shall promptly notify the other Party of such intention. The Party required to make such filing shall provide [***] or such shorter period of time as may be required, under the circumstances, to comply with applicable Laws, including the rules and regulations of a securities exchange) prior to such filing (and any revisions to such portions of the proposed filing a reasonable time prior to the filing thereof), including any exhibits thereto relating to the terms and conditions of this Agreement. The Party required to file shall use Commercially Reasonable Efforts to obtain confidential treatment of the terms and conditions of this Agreement that such other Party requests be kept confidential, and shall only disclose Confidential Information which it is advised by legal counsel is legally required to be disclosed in order to comply. No such notice shall be required under this Section 10.4 if and to the extent that the specific information contained in the proposed filing has previously been included in any previous filing or disclosure made by either Party hereunder pursuant to this Article 10, or is otherwise approved in advance in writing by the other Party.

10.5 Publications.

10.5.1 While the JSC remains in effect, all publications, and other forms of public disclosure such as abstracts and presentations, of results of studies carried out under this Agreement or otherwise relating to Product (each of the foregoing, a "**Publication**") will comply with the strategy, if any established by the JSC. Except as permitted under Section 10.2, no Publications by either Party will contain the Confidential Information of the other Party without the other Party's advance written consent.

10.5.2 Prior to the License Effective Date, Codexis may submit for publication, publish or present a Publication to any Third Party only with NHSc's prior written consent, except to the extent any Publication is required by applicable Laws or rules and regulations of a securities exchange. Codexis may submit any such Publication to NHSc for review and comment thereon (subject to Section 10.5.4) at least [***] prior to its intended submission for publication or presentation. NHSc shall provide Codexis with written confirmation that NHSc is consenting to, or withholding consent to, such Publication within [***] after receipt of such Publication, and for any Publication submitted to it by Codexis to which NHSc so consents, NHSc shall provide its comments (if any) thereon within such [***] period. Prior to the License Effective Date, NHSc shall have no right to submit for publication, publish or present a Publication.

10.5.3 After the License Effective Date, the following shall apply, subject to Section 10.5.4: Neither Party nor their Affiliates may submit for publication, publish or present a Publication without the opportunity for prior review by the other Party, and for any Publication proposed by Codexis, consent by NHSc, in each case except to the extent required by applicable Laws or rules and regulations of a securities exchange. A Party seeking, or whose Affiliate is seeking, to submit, publish, or present a Publication shall provide the other Party the opportunity to review and comment

on the proposed Publication at least [***] prior to its intended submission for publication or presentation. The other Party shall provide the Party seeking, or whose Affiliate is seeking, to publish or present with its comments in writing, if any, within [***] after receipt of such proposed Publication. If the other Party fails to provide its comments to the Party seeking, or whose Affiliate is seeking, to publish or present with its comments, or if NHSc fails to provide its written consent to Codexis, as applicable, within the foregoing [***] period, the other Party shall be deemed not to have any comments, and subject to Section 10.5.4, the Party seeking, or whose Affiliate is seeking, to publish or present shall be free to submit such Publication in accordance with this Section 10.5 after the [***] period has elapsed. Notwithstanding the foregoing, NHSc's obligations under this Section 10.5.3 shall end upon payment of the final Milestone Payment contemplated by Section 7.3.3.

10.5.4 The Party seeking, or whose Affiliate is seeking, to publish or present shall provide the other Party a copy of the Publication at the time of the submission or presentation, as applicable. Each Party agrees to acknowledge the contributions of the other Party and its Affiliates and their employees in all Publications, as scientifically appropriate. The Party seeking, or whose Affiliate is seeking, to publish, or present shall consider in good faith any comments thereto provided by the other Party and shall comply with the other Party's request to remove any and all of such other Party's Confidential Information from the proposed Publication. In addition, the Party seeking, or whose Affiliate is seeking, to publish, or present shall delay the submission for a period of up to [***] in the event that the other Party can demonstrate reasonable need for such delay in order to prepare and file a patent application for which it has prosecution control pursuant to this Agreement.

10.6 Return of Confidential Information. Upon termination of this Agreement, any and all Confidential Information possessed in a tangible form by a Receiving Party, its Affiliates, sublicensees or subcontractors and belonging to a Disclosing Party shall, upon written request, be returned or destroyed to the extent practicable, except to the extent necessary to practice rights and licenses surviving such termination, with written confirmation of such destruction, *provided*, *however*, that a Party may retain one (1) copy of any Confidential Information solely for archival purposes. Notwithstanding the Receiving Party's return or destruction of Confidential Information, the Receiving Party shall continue to be bound by its obligations of confidentiality and non-use under this Agreement.

10.7 Previously Disclosed Confidential Information. Promptly following the Effective Date, to the extent that Codexis has heretofore, as of the Effective Date, disclosed Confidential Information relating to the Specified Compounds to Third Parties for the purpose of evaluating, or as part of any discussions regarding, any potential transaction involving the acquisition or licensing of any Specified Compound, Codexis shall use Commercially Reasonable Efforts to exercise any rights it may have, pursuant to and subject to the terms of confidentiality, non-disclosure or similar agreements with such Third Parties, to cause such Third Parties to return to Codexis or destroy such Confidential Information.

ARTICLE 11
INDEMNIFICATION; LIABILITY LIMITATIONS; WAIVER

11.1 Indemnification of NHSc. Subject to Section 11.3, Codexis shall indemnify, defend and hold harmless NHSc and its Affiliates and each of their officers, directors, shareholders, employees, successors and permitted assigns from and against all Third Party Claims, and pay all associated Losses, arising out of (i) any violation of applicable Law in connection with the Development, Manufacture, use, handling, storage or disposition of the Compounds or any Product by Codexis, its agents, subcontractors or sublicensees (other than NHSc, its Affiliates or sublicensees) prior to the License Effective Date or, if the Option Expiration Date occurs, during the Term, (ii) any breach by Codexis of any of its representations, warranties or covenants under this Agreement, or (iii) any personal injury, death or property damage or other Third Party Claim resulting from the Development, Manufacture, use, handling, storage, or disposition of the Compounds or any Product by Codexis, its Affiliates, its agents, subcontractors or sublicensees (other than NHSc, its Affiliates or sublicensees) prior to the License Effective Date or, if the Option Expiration Date occurs, during the Term. Notwithstanding the preceding sentence, Codexis shall have no obligation with respect to Third Party Claims or associated Losses to the extent they are subject to NHSc's indemnification obligations pursuant to Section 11.2 or to the extent otherwise attributable to any of the circumstances set forth in clauses (i) through (iii) thereof.

11.2 Indemnification of Codexis. Subject to Section 11.3, NHSc shall indemnify, defend and hold harmless Codexis and its Affiliates and each of their officers, directors, shareholders, employee's, successors and permitted assigns from and against all Third Party Claims, and pay all associated Losses, to the extent arising out of (i) any violation of applicable Law in relation to the Development, Commercialization, Manufacture, use, handling, storage, marketing, sale, distribution or other disposition of the Compounds or any Product by NHSc, its agents, subcontractors or sublicensees after the License Effective Date, (ii) any breach by NHSc of any of its representations, warranties or covenants under this Agreement, or (iii) any personal injury, death or property damage or other Third Party Claim resulting from the Development, Commercialization, Manufacture, use, handling, storage, marketing, sale, distribution or other disposition of the Compounds or any Product by NHSc, its Affiliates, its agents, subcontractors or sublicensees after the License Effective Date. Notwithstanding the preceding sentence, NHSc shall have no obligation with respect to Third Party Claims or associated Losses to the extent they are subject to Codexis' indemnification obligations pursuant to Section 11.1 or to the extent otherwise attributable to any of the circumstances set forth in clauses (i) through (iii) thereof.

11.3 Procedure for Indemnification.

11.3.1 Notice. Each Party ("**Indemnified Party**") will notify promptly the other Party ("**Indemnifying Party**") in writing if it becomes aware of a Claim (actual or potential) by any Third Party or any proceeding commenced by a Third Party (including any investigation by a Governmental Authority) (any of the foregoing, a "**Third Party Claim**") for which indemnification may be sought and will give such related information as the Indemnifying Party shall reasonably request; *provided*, *however*, that no failure or delay in giving such notice shall limit the Indemnified Party's right to indemnification hereunder except to the extent that the Indemnifying Party is prejudiced thereby.

11.3.2 Defense of Claim. The Indemnifying Party shall defend or control the defense of Third Party Claims. The Indemnifying Party shall be responsible for satisfying and discharging any award made to or settlement reached with the Third Party pursuant to the terms of this Agreement. The Indemnifying Party shall retain counsel reasonably acceptable to the Indemnified Party (such acceptance not to be unreasonably withheld, refused, conditioned or delayed) to represent the Indemnified Party and shall pay the fees and expenses of such counsel related to such proceeding. In any such proceeding, the Indemnified Party shall have the right to participate in, but not control, the defense of such proceeding at its own cost and expense, and shall have the right to retain its own counsel, at its own cost and expense. Neither Party shall settle any Third Party Claim without the prior written consent of the other Party, which consent shall not be unreasonably withheld, refused, conditioned or delayed. The Indemnified Party shall cooperate in all reasonable respects in the defense of such Third Party Claim, as requested by the Indemnifying Party. The Indemnifying Party shall not, without the written consent of the Indemnified Party (which consent shall not be unreasonably withheld, refused, conditioned or delayed), effect any settlement of any such Third Party Claim, unless such settlement includes an unconditional release of the Indemnified Party from all liability on such Claims. Notwithstanding the foregoing, if the Indemnifying Party notifies the Indemnified Party in writing that it does not intend to assume the defense of any Third Party Claim subject to indemnification hereunder in accordance with the foregoing or fails to assume the defense of any Third Party Claim at least [***] before any deadline the passing of which could adversely affect the outcome without responsive action by or on behalf of the Indemnified Party (or, if the Indemnifying Party receives less than [***] notice of such deadline, if it fails to assume such defense as soon as practicable following receipt of notice), the Indemnified Party shall have the right to assume and control such defense and shall have the right to settle or compromise the same without the Indemnifying Party's consent, and the fees and expenses incurred by the Indemnified Party in connection therewith, including its reasonable legal fees and expenses, will be included in the indemnifiable Losses in connection with such Third Party Claim.

11.4 Insurance. During the Term of this Agreement, the Parties shall [***] at [***], an [***] to [***] and [***] and upon such terms (including [***]) as are [***] in such Party's territory. The Party maintaining any [***] shall [***] is [***] and shall [***] to the [***].

11.5 LIMITATION OF LIABILITY; WAIVER OF IMPLIED WARRANTIES.

11.5.1 EXCEPT FOR (I) A BREACH OF ARTICLE 10 AND (II) CLAIMS OF A THIRD PARTY THAT ARE SUBJECT TO INDEMNIFICATION UNDER SECTION 11.1 AND SECTION 11.2, NEITHER PARTY SHALL BE LIABLE TO THE OTHER PARTY WITH RESPECT TO ANY SUBJECT MATTER OF THIS AGREEMENT, WHETHER UNDER ANY CONTRACT, TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR OTHER LEGAL OR EQUITABLE THEORY, FOR ANY INCIDENTAL, INDIRECT, SPECIAL, EXEMPLARY, PUNITIVE, OR CONSEQUENTIAL DAMAGES (INCLUDING WITHOUT LIMITATION LOST PROFITS, LOSS OF USE, DAMAGE TO GOODWILL, OR LOSS OF BUSINESS), IRRESPECTIVE OF WHETHER THAT PARTY HAS BEEN ADVISED OF OR MIGHT HAVE ANTICIPATED THE POSSIBILITY OF SUCH LOSS OR DAMAGE.

11.5.2 THE PARTIES ACKNOWLEDGE AND AGREE THAT THE REPRESENTATIONS AND WARRANTIES OF THE PARTIES EXPRESSLY SET FORTH IN THIS AGREEMENT ARE THE EXCLUSIVE REPRESENTATIONS AND WARRANTIES OF THE PARTIES WITH RESPECT TO THE SUBJECT MATTER OF THIS AGREEMENT AND ARE IN LIEU OF ANY IMPLIED REPRESENTATIONS AND WARRANTIES, WITH RESPECT TO THE SUBJECT MATTER OF THIS AGREEMENT.

ARTICLE 12
TERM AND TERMINATION

12.1 Effectiveness; Term. This Agreement is binding and effective as of the Effective Date and shall continue in force from and after the Effective Date and expire (i) if the Option Exercise occurs, upon the expiration of all of NHSc's payment obligations under this Agreement, and (ii) if Option Exercise does not occur, upon the first to occur of the date that is five (5) years after the Effective Date, or the date on which NHSc and Codexis have entered into definitive agreements pursuant to Section 2.4 under which NHSc has obtained licenses under two (2) separate ROFN Compounds, unless this Agreement is earlier terminated in accordance with the terms hereof or by mutual written agreement of the Parties (the "**Term**"). If this Agreement expires in accordance with clause (i) of this Section 12.1, the license granted to NHSc hereunder shall remain in effect and shall thereupon become fully-paid, irrevocable and perpetual.

12.2 Termination Rights.

12.2.1 Termination by NHSc for Serious Safety Issue. NHSc shall have the right to terminate this Agreement upon [***] prior written notice to Codexis in the event that NHSc reasonably determines that a Compound or Product that is being Developed, Commercialized or Manufactured by NHSc or its Affiliates or sublicensees poses a serious safety or public health risk or concern, as demonstrated by clinically relevant and documented events; *provided* that the Parties shall, promptly after Codexis' receipt of such notice, commence discussions of and require the Parties to engage in an orderly process in which to wind down the Parties' activities with respect to the Compounds and Product in compliance with applicable Laws, and *further provided* that such termination right shall lapse in relation to any such issue if not exercised within [***] following the date on which such issue is identified by NHSc or NHSc is given written notice thereof which includes sufficient details to enable NHSc to reasonably evaluate the severity of such issue. Notwithstanding any longer period prior to termination specified in NHSc's written notice under this Section 12.2.1, this Agreement will terminate automatically [***] from the date Codexis receives NHSc's written notice to Codexis. Anything to the contrary notwithstanding, after providing notice of termination pursuant to this Section 12.2.1, NHSc shall not be deemed to be in breach of or in non-compliance with this Agreement based upon its taking or failing to take (or its sublicensees' or subcontractors' taking or failing to take) any action in respect of or in relation to the applicable Compound(s) or any Product(s) that it is reasonably necessary or prudent in order to protect patient health and safety or prevent personal injury following notice of any such safety or public health issue.

12.2.2 Insolvency. Either Party shall have the right to terminate this Agreement in its entirety upon immediate written notice if the other Party (i) files for protection under bankruptcy

or insolvency laws, (ii) makes an assignment for the benefit of creditors, (iii) appoints or suffers appointment of a receiver or trustee over substantially all of its property that is not discharged within [***] after such filing, (iv) proposes a written agreement of composition or extension of its debts, (v) proposes or is a party to any dissolution or liquidation, (vi) files a petition under any bankruptcy or insolvency act relating to bankruptcy, insolvency, reorganization, winding-up, or composition or readjustment of debts or has any such petition filed against that is not discharged within [***] of the filing thereof, (vii) commences a voluntary case under the Bankruptcy Code of any country, (viii) fails to controvert in a timely and appropriate manner, or acquiesce in writing to, any petition filed against it in any involuntary case under the Bankruptcy Code of any country, (ix) takes any corporate action for the purpose of effecting any of the foregoing, (x) has a proceeding or case commenced against it in any court of competent jurisdiction, seeking (A) its liquidation, reorganization, dissolution or winding-up, or the composition or readjustment of its debts, (B) the appointment of a trustee, receiver, custodian, liquidator or the like of all or any substantial part of its assets, or (C) similar relief under the Bankruptcy Code of any country, or an order, judgment or decree approving any of the foregoing is entered and continues unstayed for a period of [***], or (xi) has an order for relief against it entered in an involuntary case under the Bankruptcy Code of any country.

12.2.3 Termination for Material Breach.

(a) Breach. Subject to Section 12.2.3(b) below, a Party shall have the right to terminate this Agreement, upon delivery of written notice to the other Party in the event of any material breach by such other Party of this Agreement, *provided* that such breach has not been cured within [***] after written notice thereof is given by the terminating Party specifying the nature of the alleged material breach in reasonable detail. Notwithstanding the foregoing, if such material breach, by its nature cannot be cured within the foregoing cure period or is incurable, but the consequences of such breach can be reasonably alleviated but not within the foregoing cure period, then such cure period shall be extended if, prior to the end of the initial [***] cure period, the non-terminating Party provides a reasonable written plan for curing or reasonably alleviating the consequences of such material breach and thereafter uses Commercially Reasonable Efforts to cure or alleviate such material breach in accordance with such written plan; *provided* that no such extension shall exceed [***] after the end of the initial [***] cure period without the consent of the terminating Party.

(b) Disputed Breach. If a Party disputes in good faith (i) the existence or materiality of a material breach specified in a notice provided by the other Party pursuant to Section 12.2.3(a), (ii) any assertion by the other Party that such Party has failed to cure or reasonably alleviate any such material breach, or (iii) any assertion by the other Party that such Party has failed to use its Commercially Reasonable Efforts to cure or reasonably alleviate any such material breach in accordance with any relevant written plan, and, in each case, such Party provides notice to the other Party of such dispute within the applicable cure period, the other Party shall not have the right to terminate this Agreement, unless and until the existence of such material breach or failure by such Party has been determined in accordance with Article 13. It is understood and acknowledged that, subject to Section 12.3,

during the pendency of such a dispute, all of the terms and conditions of this Agreement shall remain in effect and the Parties shall continue to perform all of their respective obligations hereunder, except that any payments due under this Agreement that are the subject of such dispute (if applicable) may be withheld to the extent they are in dispute until the arbitrator determines pursuant to Section 13.2 that such payments are to be paid by one (1) Party to the other Party.

12.2.4 Termination by NHSc for Convenience. At any time after the [***] of the Effective Date, NHSc may terminate this Agreement for any reason or no reason upon [***] prior written notice to Codexis. Notwithstanding any longer period prior to termination specified in NHSc's written notice under this Section 12.2.4, this Agreement will terminate automatically [***] from the date Codexis receives NHSc's written notice. During such [***] notice period, except as the Parties may otherwise agree, NHSc will continue to perform its obligations under this Agreement; *provided that* NHSc will not be obligated to commence any new Clinical Trial and further provided that once NHSc completes its applicable obligations under Section 12.3.2, NHSc will be relieved from any further obligations with respect to such activities.

12.2.5 Termination for Patent Challenge by NHSc. Codexis shall have the right to terminate this Agreement immediately upon written notice if NHSc or its Affiliate challenges in a court of competent jurisdiction, the validity, scope or enforceability of, or otherwise opposes, any Patent covering the Compounds included in the Licensed Patents in the Territory (other than in connection with NHSc's or its Affiliate's defense of any claim brought against it that is not a claim by Codexis that NHSc's or its Affiliate's Exploitation of the Licensed Patents is outside the scope of the license granted hereunder) and fails to withdraw or rescind such challenge or opposition within [***] after written notice from Codexis. If a sublicensee of NHSc or its Affiliate challenges the validity, scope or enforceability of or otherwise opposes any Patent covering the Compounds included in the Licensed Patents in the Territory under which such sublicensee is sublicensed (other than in connection with such sublicensee's defense of any claim brought against it that is not a claim by Codexis that such sublicensee's Exploitation of the Licensed Patents is outside the scope of the permitted sublicenses hereunder) and fails to withdraw or rescind such challenge or opposition within [***] after written notice from Codexis to NHSc, NHSc shall, within [***] after such written notice from Codexis, terminate such sublicense. NHSc and its Affiliates shall use reasonable efforts to include provisions in all agreements under which a Third Party obtains a license under any Patent covering the Compounds included in the Licensed Patents providing that, if the sublicensee challenges the validity or enforceability of or otherwise opposes any such Patent under which the sublicensee is sublicensed in the manner contemplated in this Section 12.2.5, then NHSc or such Affiliate may terminate such sublicense agreement with such sublicensee, and NHSc or such Affiliate shall, upon request by Codexis, enforce such right if such sublicensee breaches such restriction and fails to cure such breach by withdrawing or rescinding such challenge or opposition within the time period contemplated by this Section 12.2.5.

12.3 Effect of Termination.

12.3.1 Milestone Payments. Except as set forth in Section 12.3.3(d), in the event of any termination of this Agreement by either Party pursuant to Section 12.2, NHSc shall not be

obligated to make any Milestone Payment that would otherwise be owing in respect of any Milestone Event achieved after the terminating Party notifies the other Party in writing of its intention to so terminate; *provided, however*, that if this Agreement is not ultimately terminated pursuant to such notice, any such Milestone Payments that would have become due following such notice shall be due and payable at such time as it is determined that such termination shall not occur.

12.3.2 Termination by Codexis or by NHSc under Sections 12.2.1 or 12.2.4. Within [***] after NHSc's receipt of a notice of termination by Codexis, or Codexis' receipt of a notice of termination by NHSc under Sections 12.2.1 or 12.2.4, the Parties will agree upon a transition plan to coordinate their obligations under this Section 12.3.2 in an efficient manner. Upon the effectiveness of any termination of this Agreement by Codexis, or by NHSc pursuant to Sections 12.2.1 or 12.2.4, all rights and licenses granted to NHSc in respect of the Licensed Patents and Licensed Know-How pursuant to Article 2 shall terminate, all rights of NHSc under the Licensed Patents and Licensed Know-How shall revert to Codexis, and NHSc shall cease all use of the Licensed Patents and Licensed Know-How; and the following shall apply:

(a) If such termination is effective after the [***]: (i) to the extent that [***] or its Affiliates [***] for [***], all of [***] and its Affiliates' [***] be [***] and/or [***] or its designee; (ii) [***], to the extent [***], as [***] as of the [***], and [***] and its Affiliates' [***], [***] to [***] or its designee; and (iii) [***] or its Affiliates and [***] that are [***], and [***] and its Affiliates' [***], shall at [***] option be [***] to [***] or its designee, to the extent permissible pursuant to the terms thereof;

(b) subject to Section 12.3.1, [***] to [***], or that [***], [***] to the [***] of [***] shall [***]; but (except as otherwise expressly provided herein) [***] based on [***] the [***] of such [***];

(c) If such termination is effective after the License Effective Date and NHSc or its Affiliates own or control any inventory of any Product suitable for use or sale in the Territory, NHSc shall notify Codexis in writing and Codexis shall have the right (but not the obligation) to purchase Product from NHSc at a price [***], except that NHSc shall be entitled to retain such quantity of Product as it requires in order to (x) [***] and (y) [***] from a [***] entered into by NHSc or any of its Affiliates prior to the date of termination. NHSc, if requested by Codexis, shall use reasonable efforts to cause its sublicensees to sell any inventory of Product they may own or control to Codexis in accordance with and subject to the foregoing terms. For the avoidance of doubt, the [***] by NHSc or any of its Affiliates to any [***] following the date of termination in [***] of [***] for [***] from that [***] entered into by NHSc prior to the date of termination shall not constitute a breach of this Agreement or an infringement of any intellectual property rights Controlled by Codexis (provided [***] in respect thereof as provided in this Agreement);

(d) If such termination is effective after the [***], [***] shall [***] (or, if applicable, cause its Affiliate [***]) to [***] all of [***] (and such Affiliates') [***] and to [***], [***] or [***] that is [***] to [***], [***], except that, other than in the case of [***] by [***] pursuant to [***], [***] shall [***] with respect to [***] by [***] in connection with (i) [***] any [***] of the same [***], and (ii) such [***];

(e) If such termination is effective after the [***], [***] shall [***] to [***] an [***], with [***], under all [***] and [***] by [***] or its Affiliates as of the [***] that, [***] the [***] in this Section 12.3.2(e), would be [***] by the [***] in any [***] in the [***] then [***] by [***] or its Affiliate, to [***] in the [***] any [***] being [***] by [***] or its Affiliate as of the [***];

(f) [***] shall [***] to [***] an [***], with the [***], under all [***] in the [***] to [***] in the [***] any [***] then being [***] by [***] or its Affiliate as of the [***];

(g) NHSc will transfer to Codexis or, upon election of Codexis, destroy all Product Literature, samples and other sales or sales training materials in the possession of NHSc and its sales representatives and sales management as promptly as practical after the date of termination;

(h) If such termination is effective after the License Effective Date, subject to Section 12.2.1, to the extent permissible pursuant to applicable Laws, NHSc shall transition all Development, Commercialization and other activities undertaken by NHSc and its Affiliates hereunder to Codexis or Codexis' designee and shall use Commercially Reasonable Efforts to cause to be transitioned any such activities undertaken by any of NHSc's sublicensees. Notwithstanding the foregoing, NHSc shall only transition any ongoing Development activities undertaken by NHSc or its Affiliates or sublicensees hereunder to Codexis or its designee upon Codexis' written notice to NHSc that Codexis or its designee intends to continue such Development following the effective time of such termination;

(i) the Parties will use Commercially Reasonable Efforts to complete all transfer and transition activities required in this Section 12.3.2 within [***] of the effective date of such termination pursuant to Section 12.2.1 or 12.2.4, as applicable;

(j) the Parties shall [***] the provisions of this Section 12.3.2, *provided*, *however*, that [***] following a [***] pursuant to [***]; and

(k) Nothing contained in this Section 12.3.2 shall [***] to [***] pursuant to [***] under this Agreement.

12.3.3 Other Termination by NHSc. Upon termination of this Agreement by NHSc, other than pursuant to Section 12.2.1 or 12.2.4:

(a) If such termination occurs after Option Exercise, from and after the License Effective Date, the license granted to NHSc pursuant to Section 2.2 shall continue in full force and effect in perpetuity;

(b) If such termination occurs before Option Exercise and prior to the Option Expiration Date, Codexis shall continue to perform its obligations hereunder with respect to the Initial Compound until the first to occur of the License Effective Date or the Option Expiration Date, as set forth in this Section 12.3.3(b), regardless of whether or not the Option

Trigger has occurred. If NHSc terminates this Agreement other than pursuant to Section 12.2.1 or 12.2.4, then (i) the Option Trigger Date shall be deemed to have occurred upon the effective date of such termination and the terms of Sections 2.1.1 and 2.1.2 shall apply, *mutatis mutandis*, with the Option Trigger deemed to have occurred upon the effective date of such termination and (ii) the Option Expiration Date shall in no event occur prior to the date that is [***] after the occurrence of conditions for the Option Trigger specified in clauses (i) and (ii) of Section 2.1.1 are met. Codexis shall promptly after the effective date of such termination provide to NHSc all documentation and information within its Control and reasonably requested by NHSc relating to the Development of the Compounds. If NHSc exercises the Option prior to the Option Expiration Date (as determined in Section 2.2.1 and this Section 12.3.3(b)), the license granted to NHSc pursuant to Section 2.2 shall continue in full force and effect in perpetuity, and the [***] in [***] to [***] upon the [***] shall be reduced by [***] of the [***].

(c) To the extent not completed prior thereto, Codexis shall remain obligated to perform its obligations pursuant to Article 5 (i) following effectiveness of termination, to the extent the termination is effective after the License Effective Date and (ii) from and after the License Effective Date, to the extent the termination is effective after the License Effective Date;

(d) NHSc shall make any Milestone Payments contemplated by Section 7.3.4 that become payable after the effective date of termination, but the amount of any such Milestone Payments shall be reduced by [***].

(e) Royalties payable to Codexis pursuant to Section 7.4, with respect to Net Sales of the Products from and after the effective date of termination shall be reduced by [***]. Sections 7.5 through 7.11 shall apply to all such royalties payable pursuant to this Section 12.3.3(e); and

(f) Nothing contained in this Section 12.3.3 shall limit NHSc's rights to pursue damages pursuant to a claim under this Agreement. In addition, without limiting any rights NHSc may have to pursue damages pursuant to a claim hereunder, [***] pursuant to this Agreement after the effective date of such termination [***] which [***] pursuant to [***] pursuant to Section 13.2 or pursuant to [***] (in each case, subject to the preceding sentence).

12.4 Further Effects of Termination. If this Agreement is terminated as provided in Section 12.2, this Agreement shall thereafter become void and have no effect, *provided* that (i) the following provisions hereof shall survive any such termination and remain in full force and effect in accordance with the terms thereof: Articles 1, 7, 13 and 14 and Sections 2.3, 3.7, 9.1, 9.2 (only to the extent relating to Joint Patents), 10.1-10.4, 10.6, 11.1-11.3, 11.5, the final sentence of Section 12.2.1 (to the extent such termination is pursuant to such Section), and Sections 12.3, 12.4 and 12.5; (ii) if such termination is by NHSc other than pursuant to Section 12.2.1 or Section 12.2.4, the following provisions (in addition to those specified in the foregoing clause (i) of this Section 12.4) shall survive such termination and remain in full force and effect in accordance with the terms thereof: Article 5, Section 2.1 (subject to and in accordance with Section 12.3.3(b)), Section 2.2.1 and Sections 2.2.3, 2.2.4, 2.2.5, 2.4, 4.1.1, 4.2, 4.3.2, 4.5, 4.6, 4.7, 4.9, 6.1, and 9.2-9.7; (iii) such

termination shall not relieve either Party of any obligation, or deprive either Party from any benefit, accruing prior thereto, and (iv) such termination shall be without prejudice to the rights and remedies of any party with respect to any antecedent breach of the provisions of this Agreement.

12.5 Bankruptcy. All rights and licenses granted under or pursuant to this Agreement by Codexis or NHSc are, and shall otherwise be deemed to be, for purposes of Section 365(n) of the Bankruptcy Code of the United States (or the corresponding provision of any applicable bankruptcy laws of any other country or competent Governmental Authority, as applicable), licenses of right to "intellectual property" as defined under Section 101 of the Bankruptcy Code of the United States (or the corresponding provision of any applicable bankruptcy laws of any other country or competent Governmental Authority, as applicable). The Parties agree that the Parties, as licensees of such rights under this Agreement, shall retain and may fully exercise all of their rights and elections under the Bankruptcy Code. The Parties further agree that, in the event of the commencement of a bankruptcy proceeding by or against either Party under the Bankruptcy Code, the Party hereto that is not a Party to such proceeding shall be entitled to a complete duplicate of (or complete access to, as appropriate) any such intellectual property and all embodiments of such intellectual property, which, if not already in the non-subject Party's possession, shall be promptly delivered to it (i) upon any such commencement of a bankruptcy proceeding upon the non-subject Party's written request therefor, unless the Party subject to such proceeding elects to continue to perform all of its obligations under this Agreement or (ii) if not delivered under (i) above, following the rejection of this Agreement by or on behalf of the Party subject to such proceeding upon written request therefor by the non-subject Party.

ARTICLE 13
DISPUTE RESOLUTION

13.1 Elevation of Issues for Resolution.

13.1.1 In the event the Parties or their representatives are unable to agree upon (i) any matter properly coming before the JSC or any subcommittee or subgroup thereof, which neither Party has the right to decide in its sole discretion, or (ii) any other dispute or disagreement between the Parties arising from or in connection with this Agreement, the construction hereof, or the rights, duties or liabilities of either Party hereunder (each of the disputes described in (i) and (ii), a "**Dispute**"), the Parties shall endeavor to resolve such Dispute in accordance with the terms of this Section 13.1. Upon the receipt of a written notice from one (1) Party to the other Party of the Dispute (the "**Notice of Dispute**"), except as otherwise provided in Section 9.2.2, authorized representatives of the Parties, each with authority to settle the Dispute, shall endeavor to discuss their respective positions and attempt to resolve the Dispute. In connection with such discussion, the Parties may agree to confer with [***] mutually acceptable independent Third Party experts having expertise in the relevant subject matter and both Parties shall consider in good faith the views of such Third Party(ies). If for any reason a written agreement signed by both Parties is not reached within [***] of the Notice of Dispute, the Parties shall promptly refer the Dispute to, as appropriate and except as otherwise provided in Section 9.2.2, for Codexis, [***] and, for NHSc, [***] (the "**Senior Officers**"), depending on the subject matter of the Dispute, which Senior Officers will have authority to settle the Dispute and shall be charged with resolving such Dispute. If for any reason a written

agreement signed by both Parties has not been reached within [***] after submission to the Senior Officers of such Dispute, the Parties shall promptly refer such Dispute to the [***] for resolution.

13.1.2 If such Dispute is not resolved by the Parties' [***] within [***] after the date the Dispute is referred to them, then the Dispute shall be submitted to nonbinding mediation as follows: Parties will exchange initial lists of up to [***] potential mediators within [***] after expiration of such [***] period. The Parties will endeavor for [***] to agree on one (1) mediator from such lists. If the Parties are unable to agree on such mediator within such period, a mediator will be selected in accordance with the Judicial Arbitration and Mediation Services (the "**JAMS**") rules governing mediation within [***] after the end of such [***] period. Such mediator shall convene, conduct and complete the mediation with the Parties within [***] after such mediator is so chosen. The Parties shall [***]. Any mediator shall have at least [***] experience in mediating or arbitrating cases in the bio-pharmaceutical industry and regarding the same or substantially similar subject matter as the Dispute between Codexis and NHSc, and shall be independent and have no prior or then-current personal or professional relationship, directly or indirectly, with either Party.

13.2 Arbitration. Any Dispute that is not resolved by an executed written agreement of the Parties in accordance with Section 13.1 or any Dispute about a Party's proper use of its casting vote in accordance with Section 3.4, as well as any related claims or other disputes arising out of or in connection with this Agreement including any question regarding its existence, validity or termination, whether for breach of contract, tortious conduct or otherwise and whether predicated on common law, statute or otherwise (collectively, the "**Related Claims**"), shall be referred to and finally resolved by arbitration under the London Court of International Arbitration (the "**LCIA**") rules (the "**Rules**"), which Rules are deemed to be incorporated by reference into this clause. The number of arbitrators shall be one (1), who shall be appointed in accordance with the Rules and shall be experienced in the application of New York law. The seat or legal place of arbitration shall be London, England. The language to be used in the arbitral proceedings shall be English.

(a) Within [***] after the appointment of the arbitrator by the LCIA, the arbitrator and the Parties shall meet, and each Party shall provide to the arbitrator a written summary of: (1) all issues within the scope of the Dispute and any Related Claims; (2) such Party's position on each such issue; and (3) such Party's proposed ruling on the merits of each such issue. The arbitrator shall set a date for a hearing, which shall be no later than [***] after the appointment of the arbitrator by the LCIA, for the presentation of evidence and legal arguments concerning each of the issues identified by the Parties; *provided*, *however*, that the Parties may jointly agree in writing to extend the foregoing deadlines, or the arbitrator may unilaterally extend this deadline if he or she determines in his or her sole discretion that this is required in the interests of justice.

(b) The arbitrator shall use his or her best efforts to rule on each disputed issue within [***] after the completion of the hearing described in Section 13.2(a); *provided*, *however*, that the Parties may jointly agree in writing to extend the foregoing deadlines, or the arbitrator may unilaterally extend this deadline if he or she determines in his or her sole discretion that this is required in the interests of justice. Nothing contained herein shall be construed to permit the arbitrator to: (i) award any indirect, punitive, special, consequential,

exemplary or any other similar damages; or (ii) to decide or rule on any issue or other matter that is not clearly with the scope of the Dispute and any Related Claims.

(c) The arbitration proceedings, the facts and circumstances surrounding the underlying dispute, and any awards issued by the arbitrator shall be kept confidential by the Parties, and the Parties shall work with the arbitrator to take such steps as are reasonably necessary to preserve the confidentiality thereof, except to the extent otherwise required by applicable Law.

(d) The arbitrator shall have the power to grant any remedy or relief that he or she deems just and equitable, including but not limited to injunctive relief, whether interim and/or final, and any provisional measures ordered by the arbitrator may be enforced by any court of competent jurisdiction. Notwithstanding the foregoing, nothing in this Agreement shall prevent either party from seeking any provisional/preliminary relief (including, but not limited to, injunctions, attachments or other such orders in aid of arbitration) from any court of competent jurisdiction, and any such application to a court for provisional/preliminary relief shall not be deemed incompatible with the agreement to arbitrate or a waiver of the right to arbitrate.

(e) Any award rendered by the arbitrator shall be final and binding on the Parties, and each Party hereto waives to the fullest extent permitted by law any right it may otherwise have under the laws of any jurisdiction to any form of appeal of, or collateral attack against, such award. Judgment upon any awards rendered by the arbitrator may be entered in any court having jurisdiction thereof, including any court having jurisdiction over any of the parties or their assets.

(f) Notwithstanding anything in this Article 13, any dispute to determine the validity or infringement of a Party's patent rights or other issues relating solely to the validity or infringement of a Party's intellectual property rights (but excluding, in any event, disputes relating to royalties or other amounts payable hereunder, whether or not involving questions of infringement or validity) shall be submitted exclusively to the courts in the jurisdiction of the relevant patent or intellectual property right, and the Parties hereby consent to the jurisdiction of such courts.

ARTICLE 14
MISCELLANEOUS

14.1 Severability. If and to the extent that any provision (or any part thereof) of this Agreement is held to be invalid, illegal or unenforceable, in any respect in any jurisdiction, the provision (or the relevant part thereof) shall be considered severed from this Agreement and shall not serve to invalidate the remainder of such provision or any other provisions hereof. The Parties shall make a good faith effort to replace any invalid, illegal or unenforceable provision (or any part thereof) with a valid, legal and enforceable provision such that the objectives contemplated by the Parties when entering this Agreement may be realized.

14.2 Notices. Any notice required or permitted to be given by the Parties pursuant to this Agreement shall be in writing and shall be (i) delivered by hand, (ii) delivered by overnight courier with tracking capabilities, (iii) mailed postage prepaid by first class, registered or certified mail, or (iv) transmitted by facsimile or electronic mail, with confirmation copy by mail as provided in (iii), and in each case addressed to the recipient Party as set forth below, unless changed by notice so given:

If to NHSc:

Nestec Ltd.
Avenue Nestlé 55
1800 Vevey
Switzerland
Attention: [***]

with a copy to:

Mayer Brown LLP
1221 Avenue of the Americas
New York, NY 10020
Attention: [***]
[***]

If to Codexis:

Codexis, Inc.
200 Penobscot Drive
Redwood City, CA 94063
Attention: [***]

with copies to:

Codexis, Inc.
200 Penobscot Drive
Redwood City, CA 94063
Attention: [***]

Latham & Watkins LLP
140 Scott Drive
Menlo Park, CA 94025
Attention: [***]
[***]

(A) with respect to any notice delivered pursuant to clauses (i) or (iv), such notice shall be deemed effective upon submission to such other Party, (B) with respect to any notice delivered pursuant to clause (ii), such notice shall be deemed effective the Business Day following the date of submission

to the carrier, and (C) with respect to any notice delivered pursuant to clause (iii), such notice shall be deemed effective five (5) Business Days after the date of submission of such facsimile or electronic mail, as applicable. A Party may add, delete, or change the person or address to whom notices should be sent at any time upon written notice delivered to the other Party in accordance with this Section 14.2.

14.3 Assignment. Neither this Agreement nor any of the rights or obligations hereunder may be assigned or transferred by either Party without the prior written consent of the other Party, such consent not to be unreasonably withheld, delayed or conditioned; *provided, however*, that (i) either Party may, without the other Party's consent, but with written notice to the other Party, assign or transfer all of its rights and obligations hereunder to any Affiliate, or to a Third Party with whom it completes a Business Combination or to whom it sells substantially all of such Party's assets relating to this Agreement, and (ii) this Section 14.3 shall not limit the rights of a Party to subcontract its obligations or sublicense its rights as otherwise permitted under this Agreement. The assigning Party shall in any event remain responsible for, and liable hereunder with respect to, the acts and omissions of its assignee in the performance of this Agreement. This Agreement shall inure to the benefit of and be binding on the Parties' successors and assigns. Any assignment or transfer in violation of the foregoing shall be null and void and wholly invalid, the assignee or transferee in any such assignment or transfer shall acquire no rights whatsoever, and the non-assigning non-transferring Party shall not recognize, nor shall it be required to recognize, such assignment or transfer. Notwithstanding anything to the contrary in this Agreement, with respect to any intellectual property rights controlled by the acquiring Third Party or its Affiliates (if other than one (1) of the Parties to this Agreement) involved in any Business Combination of either Party, or by a permitted Third Party assignee of a Party, such intellectual property rights shall not be included in the technology and intellectual property rights licensed to the other Party hereunder to the extent held by such acquirer or assignee or its Affiliate (other than the relevant Party to this Agreement and its preexisting Affiliates) prior to such transaction, or to the extent such technology is developed outside the scope of activities conducted pursuant to this Agreement. The Licensed Patents and Licensed Know-How shall exclude any intellectual property that is owned or controlled by a permitted assignee or successor and is developed outside the scope of activities conducted pursuant to this Agreement. For purposes of this Section 14.3, "**Business Combination**" means, with respect to a Party, any of the following events: (a) any Third Party (or group of Third Parties acting in concert) acquires, directly or indirectly, shares of such Party representing at least a majority of the voting power (where voting refers to being entitled to vote for the election of directors) then outstanding of such Party; (b) such Party consolidates with or merges into another corporation or entity which is a Third Party, or any corporation or entity which is a Third Party consolidates with or merges into such Party, in either event pursuant to a transaction in which at least a majority of the voting power of the acquiring or resulting entity outstanding immediately after such consolidation or merger is not held by the holders of the outstanding voting power of such Party immediately preceding such consolidation or merger; or (c) such Party conveys or transfers title to all or substantially all of its assets to a Third Party.

14.4 Performance by Affiliates. At a Party's election, any rights of such Party under this Agreement may be exercised, and any obligations of such Party under this Agreement may be performed, by one (1) or more of its Affiliates; *provided*, *however*, that such Party shall at all times

remain responsible and liable for the performance or non-performance of its Affiliates as though such performance or non-performance were of the Party itself.

14.5 Further Assurances. Each Party agrees, at its own expense, to do, or procure the doing of, all such further acts and things and shall execute and deliver such other agreements, certificates, instruments and documents as are reasonably necessary in order to give full effect to this Agreement.

14.6 Waivers and Modifications. No waiver, modification, release or amendment of any obligation under or provision of this Agreement shall be valid or effective unless in writing and signed by all Parties hereto. The failure of any Party to insist on the performance of any obligation hereunder shall not be deemed to be a waiver of such obligation. Waiver of any provision hereunder or of any breach of any provision hereof shall not be deemed to be a continuing waiver or a waiver of any other breach of such provision (or any other provision) on such occasion or any succeeding occasion.

14.7 Choice of Law. This Agreement (and any claims or disputes arising out of or relating hereto or to the transactions contemplated hereby or to the inducement of any Party to enter herein or therein, whether for breach of contract, tortious conduct or otherwise and whether predicated on common law, statute or otherwise) shall be governed by, enforced, and shall be construed in accordance with the laws of the State of New York, without regard to its conflicts of law provisions. The Parties hereby expressly disclaim the application of the United Nations Convention on the International Sale of Goods to this Agreement.

14.8 Injunctive Relief. Notwithstanding anything herein to the contrary, each party shall be entitled to seek injunctive relief and specific performance (including but not limited to any relief or recovery under this Agreement) in any court of competent jurisdiction in the world.

14.9 Publicity. Upon execution of this Agreement, the Parties shall jointly, or separately, issue a press release announcing the existence of this Agreement in the form attached hereto as Exhibit C. Subject to Section 10.4, each Party agrees not to issue any other press release or other public statement disclosing other information relating to this Agreement or the transactions contemplated hereby without the prior written consent of the other Party. Each Party shall use all reasonable efforts to provide to the other Party a copy of any public announcement regarding this Agreement or the subject matter hereof as soon as reasonably practicable under the circumstances prior to its scheduled release (but in no event less than [***] prior to its scheduled release, unless a shorter period is required to comply with applicable Law under the circumstances). Each Party shall have the right to expeditiously review and recommend changes to any such announcement and the Party whose announcement has been reviewed shall remove any Confidential Information of the reviewing Party that the reviewing Party reasonably deems to be inappropriate for disclosure except to the extent such disclosure is required by applicable Law or rules of a securities exchange or the Securities and Exchange Commission or the securities regulators of any state or other jurisdiction. The contents of any announcement or similar publicity, which has been reviewed and approved by the reviewing Party, (including the press release referred to at the beginning of this Section 14.9) can be re-released by either Party without a requirement for re-approval.

14.10 Relationship of the Parties. Each Party is an independent contractor under this Agreement. Nothing herein is intended or is to be construed so as to constitute Codexis and NHSc as partners, agents or joint venturers. Neither Party shall have any express or implied right or authority to assume or create any obligations on behalf of or in the name of the other Party or to bind the other Party to any contract, agreement or undertaking with any Third Party. There are no express or implied Third Party beneficiaries hereunder.

14.11 Entire Agreement. The Parties and Nestlé Health Science S.A. agree that this Agreement and the attached Exhibits constitutes the entire agreement between the Parties as to the subject matter of this Agreement, and hereby supersedes all prior negotiations, representations, agreements and understandings (whether written or verbal) regarding the same. Notwithstanding anything to the contrary in this Section 14.11, the Confidentiality Agreement, dated as of February 10, 2017, between Codexis and Nestlé Health Science S.A. (the "**Prior CDA**") shall remain in full force and effect, *provided* that all Proprietary Information (as defined therein) that relates to this Agreement or the subject hereof and that was disclosed or exchanged between the Parties under such Prior CDA prior to the Effective Date shall be deemed Confidential Information disclosed by the relevant Party pursuant to this Agreement and shall be governed solely by the terms of this Agreement. Each Party acknowledges that in entering into this Agreement it has not relied on, nor shall it be entitled to rely upon, any representation, warranty, collateral contract or other assurances made by or on behalf of the other Party except for those which are expressly set forth in this Agreement.

14.12 Counterparts. This Agreement may be executed in two or more counterparts, including counterparts delivered by facsimile or other electronic transmission, with the same effect as if both Parties had signed the same document. All such counterparts shall be deemed an original, shall be construed together and shall together constitute one and the same instrument.

14.13 Exports. Each Party agrees not to export or re-export, directly or indirectly, any information, technical data, the direct product of such data, samples or equipment received or generated under this Agreement in violation of any applicable export control Laws.

14.14 Amendments. Any amendment of this Agreement shall not be binding on the Parties unless set out in writing, expressed to amend this Agreement and signed by authorized representatives of each of the Parties.

14.15 Interpretation. Except where the context otherwise requires, wherever used, the singular shall include the plural, the plural the singular, the use of any gender shall be applicable to all genders and the word "or" is used in the inclusive sense (and/or). The captions of this Agreement are for convenience of reference only and in no way define, describe, extend, or limit the scope or intent of this Agreement or the intent of any provision contained in this Agreement. The term "including," "include," or "includes" as used herein shall mean including, without limiting the generality of any description preceding such term. Unless the context requires otherwise, (i) any definition of or reference to any agreement, instrument or other document herein will be construed as referring to such agreement, instrument or other document as from time to time amended, supplemented or otherwise modified (subject to any restrictions on such amendments, supplements or modifications set forth herein or therein), (ii) any reference to any applicable Laws herein will

be construed as referring to such Laws as from time to time enacted, repealed or amended, (iii) any reference herein to any person will be construed to include the person's successors and permitted assigns, (iv) the words "herein", "hereof" and "hereunder", and words of similar import, will be construed to refer to this Agreement in its entirety and not to any particular provision hereof, (v) any reference herein to the words "mutually agree" or "mutual written agreement" will not impose any obligation on either Party to agree to any terms relating thereto relating to such terms except as such Party may determine in such Party's sole discretion, (vi) all references herein to Sections or Exhibits will be construed to refer to Sections and Exhibits to this Agreement, (vii) the word "days" means calendar days unless otherwise specified, (viii) except as otherwise expressly provided herein all references to "$" or "dollars" refer to the lawful money of the U.S., and (ix) the words "copy" and "copies" and words of similar import when used in this Agreement include, to the extent available, electronic copies, files or databases containing the information, files, items, documents or materials to which such words apply. The headings of each Article and Section in this Agreement have been inserted for convenience of reference only and are not intended to limit or expand on the meaning of the language contained in the particular Article or Section. Each Party represents that it has been represented by legal counsel in connection with this Agreement and acknowledges that it has participated in the drafting hereof. In interpreting and applying the terms and provisions of this Agreement, the Parties agree that no presumption will apply against the Party which drafted such terms and provisions. The language in this Agreement is to be construed in all cases according to its fair meaning.

[*Signature page follows*]

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective duly authorized officers.

CODEXIS, INC.

By: [***]
(Signature)

Name: [***]

Title: [***]

NESTEC LTD.

By: [***]
(Signature)

Name: [***]

Title: [***]

Solely for purposes of Sections 13.1 and 14.11:

NESTLÉ HEALTH SCIENCE S. A.

By: [***]
(Signature)

Name: [***]

Title: [***]

Exhibit A

Development Plan

[***]

[***] Certain information in this document has been omitted and filed separately with the Securities and Exchange Commission. Confidential treatment has been requested with respect to the omitted portions.

Exhibit B

Initial Licensed Patents

[***]

[***] Certain information in this document has been omitted and filed separately with the Securities and Exchange Commission. Confidential treatment has been requested with respect to the omitted portions.

Confidential Treatment Requested by Codexis, Inc.

Exhibit C

Press Releases

[*See attached*.]

[***] Certain information in this document has been omitted and filed separately with the Securities and Exchange Commission. Confidential treatment has been requested with respect to the omitted portions.

Codexis and Nestlé Health Science Enter Into Healthcare Focused Protein Engineering Platform Partnership

- *Includes an option for the global development of CDX-6114 for PKU, marking Codexis' first partnership for an internally developed biotherapeutic product. Codexis receives an upfront payment of $14 million and potential milestones and royalties depending on product success*
- *In addition, the partnership adds strategic access to the CodeEvolver® platform for the discovery of additional enzyme therapies for other metabolic disorders requiring drug therapy, as well as novel enzymes for use in medical nutrition and consumer care products*

REDWOOD CITY, California (October xx, 2017) – Codexis, Inc. (NASDAQ: CDXS), a leading protein engineering company, and Nestlé Health Science announce a strategic collaboration encompassing multiple projects accessing Codexis' CodeEvolver® protein engineering platform. The collaboration includes an option for the global development of Codexis' novel, orally delivered, enzyme, CDX-6114, for the management of phenylketonuria (PKU), an orphan metabolic disorder. In addition, Nestlé Health Science has secured strategic access to the CodeEvolver® protein engineering platform for the discovery of biotherapeutics for other metabolic disorders, and for the development of novel enzyme products for Nestlé Health Science's Medical Nutrition and Consumer Care business areas.

Terms of the partnership
Under the terms of the option agreement, Nestlé Health Science will make an upfront payment of $14 million. Codexis will be eligible to receive clinical development, approval and commercial milestone payments related to CDX-6114 as well as tiered royalties on product sales. Codexis will be responsible for the clinical development costs for CDX-6114 up to and including phase 1 in healthy volunteers. Thereafter, Nestlé Health Science will have an option to obtain an exclusive global license to CDX-6114 and will be responsible for all future development and commercialization. Beyond CDX-6114, Nestlé Health Science secures a right of first negotiation over enzyme therapies for inborn errors of amino acid metabolism, which Codexis has in its pipeline or may discover over the next five years.

The partnership also includes a strategic collaboration where Codexis and Nestlé Health Science will leverage the CodeEvolver® platform technology to develop novel enzymes for Nestlé Health Science's established Consumer Care and Medical Nutrition business areas.

"This transaction validates our CodeEvolver® protein engineering platform technology as a biotherapeutic discovery engine, and also highlights our ability to establish customized partnerships for unlocking the power of proteins with a growing list of the world's great companies," said John Nicols, Codexis President and Chief Executive Officer. We look forward to a long term and very productive relationship with the team at Nestlé Health Science."

Greg Behar, Chief Executive Officer of Nestlé Health Science, stated, "Enzymes are key to healthy functioning. When enzymes are not present or not working properly there can be an impairment of a wide range of processes critical for human health. The partnership with Codexis strengthens our footprint in the

enzyme field, a fast developing part of the nutritional therapy innovation frontier that is changing the way we manage our health."

About Phenylketonuria (PKU)
PKU is an inborn metabolic disorder resulting from a mutation in the gene for the enzyme that converts the essential amino acid phenylalanine, present in almost all dietary protein, into tyrosine. As a result of this deficiency, phenylalanine builds up to levels that are toxic in the brain, causing serious neurological symptoms including intellectual disability, seizures and cognitive and behavioral disabilities. To avoid phenylalanine toxicity and the most severe disease symptoms, individuals with PKU must follow a strict, life-long diet that is low in phenylalanine and supplement their diet with a synthetic phenylalanine-free formula to provide sufficient nutrients. Maintaining a strict, life-long diet is a challenge for individuals with PKU. There are an estimated 50,000 people with PKU in the developed world.

About Nestlé Health Science
Nestlé Health Science, a wholly-owned subsidiary of Nestlé, is a health-science company engaged in advancing the role of nutrition therapy to change the course of health for consumers, patients and its partners in healthcare. Nestlé Health Science's portfolio of nutrition solutions, diagnostics, devices and drugs targets a number of health areas, such as inborn errors of metabolism, pediatric and acute care, obesity care, healthy aging, and gastrointestinal and brain health. Through investing in innovation and leveraging leading edge science, Nestlé Health Science brings forward innovative nutritional therapies with clinical, health economic value and quality of life benefits. Nestlé Health Science employs around 3,000 people worldwide and is headquartered in Epalinges (near Lausanne), Switzerland. For more information, please visit www.nestlehealthscience.com.

About Codexis, Inc.
Codexis, Inc. is a leading protein engineering company that applies its technology to the development of biocatalysts for commercial manufacture of pharmaceuticals and fine chemicals, as well as the development of enzymes as biotherapeutics and for molecular diagnostics. Codexis' proven technology enables implementation of biocatalytic solutions to meet customer needs for rapid, cost-effective and sustainable manufacturing. For more information, see www.codexis.com.

Forward-Looking Statements
This press release contains forward-looking statements relating to Codexis' partnership with Nestlé Health Science, including further validation of Codexis' CodeEvolver® protein engineering platform technology as a biotherapeutic discovery engine, Codexis' ability to establish customized partnerships for unlocking the power of proteins with a growing list of the world's great companies, and the long-term and productive nature of Codexis' relationship with Nestlé Health Science. You should not place undue reliance on these forward-looking statements because they involve known and unknown risks, uncertainties and other factors that are, in some cases, beyond Codexis' control and that could materially affect actual results. Factors that could materially affect actual results include Codexis' dependence on its licensees and collaborators; Codexis' dependence on a limited number of products and customers; potential adverse effects to Codexis' business if its customers' products are not received well in the markets; Codexis' ability to deploy its technology platform in new market spaces; Codexis' dependence on key personnel; Codexis' ability to compete may decline if it loses some of its intellectual property

[***] Certain information in this document has been omitted and filed separately with the Securities and Exchange Commission. Confidential treatment has been requested with respect to the omitted portions.

rights; third party claims that Codexis infringes third party intellectual property rights; and Codexis could face increased competition if third parties misappropriate Codexis biocatalysts. Additional factors that could materially affect actual results can be found in Codexis' Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 9, 2017 and Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on August 9, 2017, including under the caption "Risk Factors." Codexis expressly disclaims any intent or obligation to update these forward-looking statements, except as required by law.

Codexis Contact:
Gordon Sangster
Chief Financial Officer (650) 421-8115
gordon.sangster@codexis.com

Investor Relations Contact: LHA Investor Relations Jody Cain
(310) 691-7100
jcain@lhai.com

[***] Certain information in this document has been omitted and filed separately with the Securities and Exchange Commission. Confidential treatment has been requested with respect to the omitted portions.

News release

Nestlé Health Science and Codexis create partnership to accelerate enzyme innovation for multiple health conditions

- *2018 clinical trial for PKU candidate boosts pipeline for Nestlé Health Science's Vitaflo business*
- *Partnership to leverage Codexis' enzyme discovery platform to fuel therapeutic and nutritional innovation*

Epalinges, Switzerland, XX October 2017 – As part of its core strategy to advance the therapeutic role of nutrition, Nestlé Health Science (NHSc) is forming an innovation partnership with Codexis (NASDAQ: CDXS), a pioneer in protein engineering and enzyme optimization. The partnership will leverage and extend the application of Codexis' CodeEvolver® protein engineering platform, creating novel enzymes that will further fuel innovation for NHSc's subsidiary Vitaflo, specializing for inborn errors of metabolism, as well as for NHSc's Consumer Care and Medical Nutrition portfolio.

Under the terms of the partnership, Nestlé Health Science acquires an option for Codexis' lead candidate CDX-6114, an orally delivered enzyme designed to help better manage phenylketonuria (PKU). PKU is an inborn and lifelong metabolic disorder that impacts the ability of patients to process protein properly due to a malfunctioning or deficient enzyme that leads to impairment of neurodevelopment and neurological function. The CDX-6114 enzyme is designed to reduce the damaging build-up in the blood of the amino acid phenylalanine. The clinical development of CDX-6114 is expected to start in 2018 and provides a new dimension to the pipeline of Vitaflo, a leading provider of nutritional 'diets for life' for PKU patients and innovations for other inborn errors of metabolism.

Greg Behar, CEO of Nestlé Health Science, stated: "Enzymes are key to healthy functioning. When enzymes are not present or not working properly there can be an impairment of a wide range of processes critical for human health. The partnership with Codexis strengthens our footprint in the enzyme field, a fast developing part of the nutritional therapy innovation frontier that is changing the way we manage our health."

John Nicols, Codexis President and Chief Executive Officer, added, "The partnership with Nestlé Health Science highlights our ability to partner flexibly with industry leaders to create value with our CodeEvolver® protein engineering platform technology. In this case, to unlock the power of proteins for the development of novel biotherapeutics. We look forward to a long term and very productive relationship with Nestlé Health Science."

Terms of the agreement

Under the terms of the agreement, Nestlé Health Science will make an upfront payment of $ 14 million. Codexis will be eligible to receive clinical development, approval and commercial milestone payments related to CDX-6114 as well as tiered royalties. Codexis will be responsible for the clinical development costs for CDX-6114 up to and including phase 1 in healthy volunteers. Thereafter, Nestlé Health Science will have an option to obtain an exclusive global license to CDX-6114 and will be responsible for all future development and commercialization. Beyond CDX-6114, Nestlé Health Science secures a right of first negotiation over enzyme therapies for inborn errors of amino acid metabolism, which Codexis has in its pipeline or may discover over the next five years.

The partnership also includes a strategic collaboration where Codexis and Nestlé Health Science will leverage the CodeEvolver® platform technology to develop novel enzymes for Nestlé Health Science's established Consumer Care and Medical Nutrition business areas.

* * * * *

[***] Certain information in this document has been omitted and filed separately with the Securities and Exchange Commission. Confidential treatment has been requested with respect to the omitted portions.

About Nestlé Health Science
Nestlé Health Science, a wholly-owned subsidiary of Nestlé, is a health-science company engaged in advancing the role of nutrition therapy to change the course of health for consumers, patients and its partners in healthcare. Nestlé Health Science's portfolio of nutrition solutions, diagnostics, devices and drugs targets a number of health areas, such as inborn errors of metabolism, pediatric and acute care, obesity care, healthy aging, and gastrointestinal and brain health. Through investing in innovation and leveraging leading edge science, Nestlé Health Science brings forward innovative nutritional therapies with clinical, health economic value and quality of life benefits. Nestlé Health Science employs around 3,000 people worldwide and is headquartered in Epalinges (near Lausanne), Switzerland. For more information, please visit http://www.nestlehealthscience.com.

About Codexis
Codexis, Inc. is a leading protein engineering company that applies its technology to the development of biocatalysts for commercial manufacture of pharmaceuticals and fine chemicals, as well as the development of enzymes as biotherapeutics and for molecular diagnostics. Codexis' proven technology enables implementation of biocatalytic solutions to meet customer needs for rapid, cost-effective and sustainable manufacturing. For more information, visit http://www.codexis.com.

Forward-Looking Statement
This press release contains "forward-looking statements" regarding the development and commercialization of enzymes for use in various health conditions or disorders. Such forward-looking statements are based on current expectations and involve inherent risks and uncertainties, including factors that could delay, divert or change any of them, and could cause actual outcomes and results to differ materially from current expectations. No forward-looking statement can be guaranteed.

Contact:
Rodrigo Macip
Head of Corporate and Consumer Communications, Nestlé Health Science nestlehealthscience.external@nestle.com
Media Tel: + 41 21 924 22 00

Confidential Treatment Requested by Codexis, Inc.

Exhibit D

Claimed PAL Compounds

[***]

[***] Certain information in this document has been omitted and filed separately with the Securities and Exchange Commission. Confidential treatment has been requested with respect to the omitted portions.

Confidential Treatment Requested by Codexis, Inc.

Exhibit E

Compound-related Contracts

[***]

[***] Certain information in this document has been omitted and filed separately with the Securities and Exchange Commission. Confidential treatment has been requested with respect to the omitted portions.

Exhibit F

Formulation Objectives

[***]

[***] Certain information in this document has been omitted and filed separately with the Securities and Exchange Commission. Confidential treatment has been requested with respect to the omitted portions.

Exhibit G

Solid Dosage Form Development Study

Solid Dosage Form Development Study Plan:

[***]

[***] Certain information in this document has been omitted and filed separately with the Securities and Exchange Commission. Confidential treatment has been requested with respect to the omitted portions.

FIRST AMENDMENT TO LOAN AND SECURITY AGREEMENT

THIS FIRST AMENDMENT to Loan and Security Agreement (this "**Amendment**") is made effective as of September 28, 2017 (the "**Amendment Date**") and made by and among **WESTERN ALLIANCE BANK**, an Arizona corporation ("**Bank**") and **CODEXIS, INC.**, a Delaware corporation ("**Borrower**").

WHEREAS, Bank and Borrower have entered into that certain Loan and Security Agreement, dated as of June 30, 2017 (as amended, supplemented, restated or otherwise modified from time to time, the "**Loan Agreement**"); and

WHEREAS, Bank and Borrower desire to amend certain provisions of the Loan Agreement as provided herein and subject to the terms and conditions set forth herein;

NOW, THEREFORE, in consideration of the promises, covenants and agreements contained herein, and other good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, Bank and Borrower hereby agree as follows:

1. Capitalized terms used herein but not otherwise defined shall have the respective meanings given to them in the Loan Agreement.

2. Section 1.1 of the Loan Agreement is hereby amended by amending and restating the following definitions therein as follows:

"Permitted Indebtedness" means:

(a) Indebtedness of Borrower in favor of Bank arising under this Agreement or any other Loan Document;

(b) Indebtedness existing on the Closing Date and disclosed in the Perfection Certificate on the Closing Date;

(c) Indebtedness secured by a lien described in clause (c) of the defined term "Permitted Liens," provided (i) such Indebtedness does not exceed the lesser of the cost or fair market value of the equipment financed with such Indebtedness and (ii) such Indebtedness does not exceed $750,000 in the aggregate at any given time;

(d) Subordinated Debt;

(e) Unsecured Indebtedness to trade creditors incurred in the ordinary course of business;

(f) Indebtedness incurred as a result of endorsing negotiable instruments received in the ordinary course of business;

(g) intercompany Indebtedness constituting Permitted Investments;

(h) Indebtedness under corporate credit cards used in the ordinary course of business in an aggregate amount not to exceed Four Hundred Thousand Dollars ($400,000) at any given time;

(i) letters of credit in the ordinary course of business in connection with the leasing of real property in an aggregate amount not to exceed Seven Hundred Fifty Thousand Dollars ($750,000);

(j) Indebtedness (in the aggregate outstanding amount of not greater than Five Hundred Thousand Dollars ($500,000) at any given time) consisting of the financing of insurance premiums in the ordinary course of business;

(k) Indebtedness of Codexis Laboratories India Pte., Ltd. in connection with a bank guarantee in the aggregate amount of Indian Rupees 29,000,000 to comply with the applicable orders or requirements of the sales tax department of the Government of India;

(l) additional unsecured Indebtedness not to exceed Two Hundred Fifty Thousand dollars ($250,000) in the aggregate at any time; and

(m) extensions, refinancings, modifications, amendments and restatements of any items of Permitted Indebtedness (a) through (j) above, provided that the principal amount thereof is not increased or the terms thereof are not modified to impose more burdensome terms upon Borrower, or its Subsidiary, as the case may be.

3. The following subsection (e) is hereby added to Section 6.3 of the Loan Agreement:

(e) When requested by Bank, Borrower shall provide evidence to the Bank that Borrower is then current with respect to payment of the rent due for Borrower's headquarters.

4. The following Section 6.15 is hereby added to the Loan Agreement:

6.15 Electronic Access to Books. If Borrower is unable to comply with its obligation set forth in Section 3.3(i) above, commencing on the first Funding Date, Borrower shall provide Bank with continuous access to Borrower's books and corporate records by providing the Person designated, and for whom an email address is provided, by the Bank with electronic access to Borrower's books and corporate records; provided that Borrower shall not modify such access procedure or the location of such Borrower's books and corporate records without providing prior written notice to the Bank and ensuring that the Bank has continuous access to such Borrower's books and corporate records; provided, further, that such electronic access to Borrower's books and corporate records shall no longer be required when Borrower's books and corporate records are located at an office of Borrower for which Bank has an effective landlord waiver in such form and substance as are reasonably satisfactory to the Bank. For the purposes of clarification, upon Borrower's compliance with this Section 6.15, Borrower's failure to comply with Section 3.3(i) above shall not constitute and Event of Default under this Agreement.

5. Limitation of Amendment.

   a. The amendments set forth above are effective for the purposes set forth herein and shall be limited precisely as written and shall not be deemed to (a) be a consent to any amendment, waiver or modification of any other term or condition of any Loan Document, or (b) otherwise prejudice any right, remedy or obligation which the Bank or Borrower may now have or may have in the future under or in connection with any Loan Document, as amended hereby.

   b. This Amendment shall be construed in connection with and as part of the Loan Documents and all terms, conditions, representations, warranties, covenants and agreements set forth in the Loan Documents, except as herein amended, are hereby ratified and confirmed and shall remain in full force and effect.

6. To induce the Bank to enter into this Amendment, Borrower hereby represents and warrants to the Bank as follows:

a. Immediately after giving effect to this Amendment (a) the representations and warranties contained in the Loan Documents are true, accurate and complete in all material respects as of the date hereof (except to the extent such representations and warranties relate to an earlier date, in

which case they are true and correct in all material respects as of such date), and (b) no Event of Default has occurred and is continuing;

b. Borrower has the power and due authority to execute and deliver this Amendment and to perform its obligations under the Loan Agreement, as amended by this Amendment;

c. The organizational documents of Borrower delivered to the Bank on the Effective Date, and updated pursuant to subsequent deliveries by the Borrower to the Bank, if any, remain true, accurate and complete and have not been amended, supplemented or restated and are and continue to be in full force and effect;

d. The execution and delivery by Borrower of this Amendment and the performance by Borrower of its obligations under the Loan Agreement, as amended by this Amendment, do not and will not contravene (i) any law or regulation binding on or affecting Borrower, (ii) any contractual restriction with a Person binding on Borrower, (iii) any order, judgment or decree of any court or other governmental or public body or authority, or subdivision thereof, binding on Borrower, or (iv) the organizational documents of Borrower;

e. The execution and delivery by Borrower of this Amendment and the performance by Borrower of its obligations under the Loan Agreement, as amended by this Amendment, do not require any order, consent, approval, license, authorization or validation of, or filing, recording or registration by Borrower with, or exemption by any governmental or public body or authority, or subdivision thereof, binding on Borrower, except as already has been obtained or made; and

f. This Amendment has been duly executed and delivered by Borrower and is the binding obligation of Borrower, enforceable against Borrower in accordance with its terms, except as such enforceability may be limited by bankruptcy, insolvency, reorganization, liquidation, moratorium or other similar laws of general application and by general equitable principles.

7. Except as expressly set forth herein, the Loan Agreement shall continue in full force and effect without alteration or amendment. This Amendment and the Loan Documents represent the entire agreement about this subject matter and supersede prior negotiations or agreements.

8. This Amendment shall be deemed effective as of the Amendment Date upon the due execution and delivery to the Bank of this Amendment by each party hereto.

9. This Amendment may be executed in any number of counterparts, each of which shall be deemed an original, and all of which, taken together, shall constitute one and the same instrument.

10. This Amendment and the rights and obligations of the parties hereto shall be governed by and construed in accordance with the laws of the State of California.

[*Balance of Page Intentionally Left Blank*]

IN WITNESS WHEREOF, the parties hereto have caused this First Amendment to Loan and Security Agreement to be executed as of the date first set forth above.

BORROWER:

CODEXIS, INC., ADELAWARE CORPORATION

By_____
Name: CHRIS SAUGSTAD
Title: CFO

REVIEWED BY LEGAL

BANK:

WESTERN ALLIANCE BANK, AN ARIZONA CORPORATION

By_____
Name: Bill Wicklund
Title: VP, Director of Portfolio Mgmt

SECOND AMENDMENT TO LOAN AND SECURITY AGREEMENT

THIS SECOND AMENDMENT to Loan and Security Agreement (this "**Amendment**") is made effective as of November 7, 2017 (the "**Amendment Date**") and made by and among **WESTERN ALLIANCE BANK**, an Arizona corporation ("**Bank**") and **CODEXIS, INC.**, a Delaware corporation ("**Borrower**").

WHEREAS, Bank and Borrower have entered into that certain Loan and Security Agreement, dated as of June 30, 2017 (as amended by that certain First Amendment to Loan and Security Agreement, dated as of September 28, 2017, and as further amended, supplemented, restated or otherwise modified from time to time, the "**Loan Agreement**"); and

WHEREAS, Bank and Borrower desire to amend certain provisions of the Loan Agreement as provided herein and subject to the terms and conditions set forth herein;

NOW, THEREFORE, in consideration of the promises, covenants and agreements contained herein, and other good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, Bank and Borrower hereby agree as follows:

1. Capitalized terms used herein but not otherwise defined shall have the respective meanings given to them in the Loan Agreement.

2. Section 1.1 of the Loan Agreement is hereby amended by adding the following definition thereto in alphabetical order:

   "Exempt Account" means that certain brokerage account of Borrower with LEK SECURITIES CORPORATION.

   "Second Amendment Effective Date" means November 7, 2017.

3. Section 5.16 of the Loan Agreement is hereby amended and restated in its entirety as follows:

   5.16 Accounts. All of Borrower's or any Subsidiary's operating, depository or investment accounts maintained or invested with a Person other than Bank are set forth on the Perfection Certificate, provided that such accounts disclosed on the Perfection Certificate are hereby deemed updated with the updated Perfection Certificate delivered to Bank as of the Second Amendment Effective Date. On and after (i) the 60th day following the Closing Date and prior to July 1, 2018, at any time that the aggregate balance of Borrower's accounts held with Bank and Bank's Affiliates is less than $15,000,000 for three (3) successive Business Days or less than $14,000,000 on any given day, and (ii) July 1, 2018, at any time that the aggregate balance of Borrower's accounts held with Bank and Bank's Affiliates is less than the sum of (A) $5,000,000 plus (B) the outstanding aggregate principal amount of the Term Loans, for three (3) successive Business Days, none of Borrower's nor any domestic U.S. Subsidiary's operating, depository or investment accounts are maintained or invested with a Person other than Bank. Notwithstanding the foregoing, on and after the 60th day following the Closing Date, neither the Borrower nor any of its domestic Subsidiaries maintains any operating, depository or investment accounts maintained or invested with any Person other than the Bank unless such account (A) is subject to an account control agreement in favor of the Bank in such form and substance as is reasonably acceptable to the Bank, (B) is a deposit account exclusively used for payroll, payroll taxes and other employee wage and benefit payments to or for the benefit of Borrower's or any domestic U.S. Subsidiary's employees and identified to Bank by Borrower as such, or (C) is the Exempt Account (provided that such account and is maintained solely in connection with the Transfers of shares of CO2 Solutions, Inc. held by the Borrower on the Closing Date and any cash balance in such account in excess of One Hundred Thousand Dollars ($100,000.00) is transferred to another account of Borrower that is maintained in accordance with Section 6.7 within five (5) Business Days).

Furthermore, the aggregate amount of cash and cash equivalent assets held by direct and indirect Foreign Subsidiaries of Borrower in accounts not subject to a control agreement in favor of the Bank (and in such form and substance as is reasonably acceptable to the Bank) does not exceed One Million Two

Hundred Thousand Dollars ($1,200,000.00) (of which no more than Four Hundred Thousand Dollars ($400,000.00) may be maintained in accounts other than the accounts for Codexis Laboratories India Pte., Ltd.).

4. Section 6.7 of the Loan Agreement is hereby amended and restated in its entirety as follows:

6.7 Accounts. Borrower shall, on and after (i) the 60th day following the Closing Date and prior to July 1, 2018, at any time that the aggregate balance of Borrower's accounts held with Bank and Bank's Affiliates is less than $15,000,000 for three (3) successive Business Days or less than $14,000,000 on any given day, and (ii) July 1, 2018, at any time that the aggregate balance of Borrower's accounts held with Bank and Bank's Affiliates is less than the sum of (A) $5,000,000 plus (B) the then outstanding aggregate principal amount of the Term Loans, for three (3) successive Business Days: (A) maintain and shall cause each of its domestic U.S. Subsidiaries to maintain all of its depository, operating, and investment accounts with Bank and (B) endeavor to utilize and shall cause each of its domestic U.S. Subsidiaries to endeavor to utilize Bank's International Banking Division for any international banking services required by Borrower, including, but not limited to, foreign currency wires, hedges and swaps. On and after the date that is the
60th day following the Closing Date for each account that Borrower or any domestic U.S. Subsidiary maintains outside of Bank, Borrower shall cause the applicable bank or financial institution at or with which any such account is maintained to execute and deliver an account control agreement or other
appropriate instrument evidencing the perfection of Bank's security interest therein and control with respect thereto in form and substance reasonably satisfactory to Bank, other than (X) deposit accounts exclusively used for payroll, payroll taxes and other employee wage and benefit payments to or for the benefit of Borrower's or any domestic U.S. Subsidiary's employees and identified to Bank by Borrower as such, and (Y) the Exempt Account (provided that such account is maintained solely in connection with the Transfers of shares of CO2 Solutions, Inc. held by the Borrower on the Closing Date and any cash balance in such account in excess of One Hundred Thousand Dollars ($100,000.00) is transferred to another account of Borrower that is maintained in accordance with this Section 6.7 within five (5) Business Days).

Furthermore, the aggregate amount of cash and cash equivalent assets held by direct and indirect Foreign Subsidiaries of Borrower in accounts not subject to a control agreement in favor of the Bank (and in such form and substance as is reasonably acceptable to the Bank) does not exceed One Million Two Hundred Thousand Dollars ($1,200,000.00) (of which no more than Four Hundred Thousand Dollars ($400,000.00) may be maintained in accounts other than the accounts for Codexis Laboratories India Pte., Ltd.).

5. Limitation of Amendment.

   a. The amendments set forth above are effective for the purposes set forth herein and shall be limited precisely as written and shall not be deemed to (a) be a consent to any amendment, waiver or modification of any other term or condition of any Loan Document, or (b) otherwise prejudice any right, remedy or obligation which the Bank or Borrower may now have or may have in the future under or in connection with any Loan Document, as amended hereby.

   b. This Amendment shall be construed in connection with and as part of the Loan Documents and all terms, conditions, representations, warranties, covenants and agreements set forth in the Loan Documents, except as herein amended, are hereby ratified and confirmed and shall remain in full force and effect.

6. To induce the Bank to enter into this Amendment, Borrower hereby represents and warrants to the Bank as follows:

   a. Immediately after giving effect to this Amendment (a) the representations and warranties contained in Article 5 of the Loan Agreement are true, accurate and complete in all material respects as of the date hereof (except to the extent such representations and warranties relate to an earlier date, in

which case they are true and correct in all material respects as of such date), and (b) no Event of Default has occurred and is continuing;

b. Borrower has the power and due authority to execute and deliver this Amendment and to perform its obligations under the Loan Agreement, as amended by this Amendment;

c. The organizational documents of Borrower delivered to the Bank on the Closing Date, and updated pursuant to subsequent deliveries by the Borrower to the Bank, if any, remain true, accurate and complete and have not been amended, supplemented or restated and are and continue to be in full force and effect;

d. The execution and delivery by Borrower of this Amendment and the performance by Borrower of its obligations under the Loan Agreement, as amended by this Amendment, do not and will not contravene (i) any law or regulation binding on or affecting Borrower, (ii) any contractual restriction with a Person binding on Borrower, (iii) any order, judgment or decree of any court or other governmental or public body or authority, or subdivision thereof, binding on Borrower, or (iv) the organizational documents of Borrower;

e. The execution and delivery by Borrower of this Amendment and the performance by Borrower of its obligations under the Loan Agreement, as amended by this Amendment, do not require any order, consent, approval, license, authorization or validation of, or filing, recording or registration by Borrower with, or exemption by any governmental or public body or authority, or subdivision thereof, binding on Borrower, except as already has been obtained or made; and

f. This Amendment has been duly executed and delivered by Borrower and is the binding obligation of Borrower, enforceable against Borrower in accordance with its terms, except as such enforceability may be limited by bankruptcy, insolvency, reorganization, liquidation, moratorium or other similar laws of general application and by general equitable principles.

7. Except as expressly set forth herein, the Loan Agreement shall continue in full force and effect without alteration or amendment. This Amendment and the Loan Documents represent the entire agreement about this subject matter and supersede prior negotiations or agreements.

8. This Amendment shall be deemed effective as of the Amendment Date upon the due execution and delivery to the Bank of this Amendment by each party hereto.

9. This Amendment may be executed in any number of counterparts, each of which shall be deemed an original, and all of which, taken together, shall constitute one and the same instrument.

10. This Amendment and the rights and obligations of the parties hereto shall be governed by and construed in accordance with the laws of the State of California.

IN WITNESS WHEREOF, the parties hereto have caused this Second Amendment to Loan and Security Agreement to be executed as of the date first set forth above.

BORROWER:

CODEXIS, INC., A DELAWARE CORPORATION

By_____
Name:
Title:

Reviewed by Legal - RAS - 11-7-2017

BANK:

WESTERN ALLIANCE BANK, AN ARIZONA CORPORATION

By•____ Name:___
Title::_----------

IN WITNESS WHEREOF, the parties hereto have caused this Second Amendment to Loan and Security Agreement to be executed as of the date first set forth above.

BORROWER:

CODEXIS, INC., A DELAWARE CORPORATION

By___

Name: Title:

BANK:

WESTERN ALLIANCE BANK, AN ONACORPORATION

By

Name: fn..ol t..u.-

Title: ,;vP *Uk- ScJ(N\...._..*

Exhibit 12.1

CODEXIS, INC.

STATEMENT OF COMPUTATION OF RATIO OF EARNINGS TO FIXED CHARGES

(In Thousands)

	Years Ended December 31,				
	2013	**2014**	**2015**	**2016**	**2017**
Fixed charges:					
Interest Expense	$ 13	$ —	$ —	$ 14	$ 141
Total Fixed Charges	13	—	—	14	141
Earnings (deficiency) available for fixed charges:					
Pre-tax income(loss) from continuing operations	(41,390)	(19,327)	(7,919)	(8,598)	(23,239)
add: Fixed Charges	13	—	—	14	141
Earnings(deficiency of earnings) available to cover fixed charges	$ (41,377)	$ (19,327)	$ (7,919)	$ (8,584)	$ (23,098)
Ratio of earnings to fixed charges (1)	N/A	N/A	N/A	N/A	N/A

(1) Our earnings were inadequate to cover fixed charges for the years ended December 31, 2013 through December 31, 2017.

Exhibit 21.1

Subsidiaries of Codexis, Inc.

Name of Subsidiary	State or Jurisdiction in which Incorporated or Organized
Codexis Mayflower Holdings LLC	Delaware

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 (Nos. 333-216587, 333-210022, 333-202596, 333-194524, 333-187711, 333-179903, 333-172166, and 333-167752) and the Registration Statement of Form S-3 (No. 333-215025) of Codexis, Inc. of our reports dated March 15, 2018, relating to the consolidated financial statements, and the effectiveness of Codexis, Inc.'s internal control over financial reporting, which appears in this Form 10-K.

/s/ BDO USA, LLP

San Jose, California

March 15, 2018

Exhibit 31.1

CERTIFICATION

I, John J. Nicols, certify that:

1. I have reviewed this Annual Report on Form 10-K of Codexis, 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(s) 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(s) 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 15, 2018

/s/John J. Nicols

John J. Nicols

President and Chief Executive Officer

Exhibit 31.2

CERTIFICATION

I, Gordon Sangster, certify that:

1. I have reviewed this Annual Report on Form 10-K of Codexis, 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(s) 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(s) 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 15, 2018

/s/Gordon Sangster

Gordon Sangster

Senior Vice President and Chief Financial 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

In connection with the Annual Report of Codexis, Inc. (the "Company") on Form 10-K for the fiscal year ended December 31, 2017, as filed with the Securities and Exchange Commission (the "Report"), John J. Nicols, President and Chief Executive Officer of the Company and Gordon Sangster, Senior Vice President and Chief Financial Officer of the Company, respectively, do each hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

- The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- The information in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 15, 2018

/s/John J. Nicols

John J. Nicols

President and Chief Executive Officer

/s/Gordon Sangster

Gordon Sangster

Senior Vice President and Chief Financial Officer