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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, 2016
OR

☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from to .
Commission File No. 001-33093

LIGAND PHARMACEUTICALS INCORPORATED
(Exact name of registrant as specified in its charter)

Delaware	**77-0160744**
(State or other jurisdiction of incorporation or organization)	**(IRS Employer Identification No.)**
3911 Sorrento Valley Boulevard, Suite 110 San Diego, CA	**92121**
(Address of Principal Executive Offices)	**(Zip Code)**

Registrant's telephone number, including area code: (858) 550-7500
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 $.001 per share	The NASDAQ Global Market of The NASDAQ Stock Market LLC
Preferred Share Purchase Rights	The NASDAQ Global Market of The NASDAQ Stock Market LLC

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 Securities Exchange Act of 1934. 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 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, or a non-accelerated filer or a smaller reporting company. See definition of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

Large Accelerated Filer ☒	Accelerated Filer ☐ (Do not check if a smaller reporting company)	Non-accelerated Filer ☐	Smaller reporting company ☐

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

The aggregate market value of the Registrant's voting and non-voting stock held by non-affiliates was approximately $2.3 billion based on the last sales price of the Registrant's Common Stock on the NASDAQ Global Market of the NASDAQ Stock Market LLC on June 30, 2016. For purposes of this calculation, shares of Common Stock held by directors, officers and 10% stockholders known to the Registrant have been deemed to be owned by affiliates which should not be construed to indicate that any such person possesses the power, direct or indirect, to direct or cause the direction of the management or policies of the Registrant or that such person is controlled by or under common control with the Registrant.

As of February 9, 2017, the Registrant had 20,919,894 shares of Common Stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Proxy Statement for the Registrant's 2017 Annual Meeting of Stockholders to be filed with the Commission on or before May 1, 2017 are incorporated by reference in Part III of this Annual Report on Form 10-K. With the exception of those portions that are specifically incorporated by reference in this Annual Report on Form 10-K, such Proxy Statement shall not be deemed filed as part of this Report or incorporated by reference herein.

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GLOSSARY OF TERMS AND ABBREVIATIONS

Abbreviation	Definition
2019 Convertible Senior Notes	$245.0 million aggregate principal amount of convertible senior unsecured notes due 2019
ABSSSI	Acute bacterial skin and skin structure infections
ADHF	Acute decompensated heart failure
Amended ESPP	Employee Stock Purchase Plan, as amended and restated
Amgen	Amgen, Inc.
AML	Acute myeloid leukemia
ANDA	Abbreviated New Drug Application
AOCI	Accumulated Other Comprehensive Income
API	Active pharmaceutical ingredient
ASCT	Autologous Stem Cell Transplantation
ASU	Accounting Standards Update
Azure	Azure Biotech, Inc.
BACE	Beta-secretase
Baxter	Baxter International, Inc.
BMS	Bristol Myers Squibb
CStone	CStone Pharmaceuticals Co., Ltd
Cardioxyl	Cardioxyl Pharmaceuticals, Inc.
CFDA	China Food and Drug Administration
CIT	Chemotherapy-induced thrombocytopenia
CMC	Chemistry, Manufacturing and Controls
Coherus Biosciences	Coherus Biosciences, Inc.
CoM	Composition of Matter
Company	Ligand Pharmaceuticals Incorporated, including subsidiaries
COSO	Committee of Sponsoring Organizations of the Treadway Commission
CRO	Contract Research Organization
CURx	CURx Pharmaceuticals, Inc.
CVR	Contingent value right
CyDex	CyDex Pharmaceuticals, Inc.
Deciphera	Deciphera Pharmaceuticals, LLC
DMF	Drug Master File
EC	European Commission
Eli Lilly	Eli Lilly and Company
EPOR	Erythropoietin receptor
Ethicor	Ethicor Pharmaceuticals, Ltd
EU	European Union
FASB	Financial Accounting Standards Board
FDA	Food and Drug Administration
FSGS	Focal segmental glomerulosclerosis
GCSF	Granulocyte-colony stimulating factor
Hovione	Hovione FarmCiencia
IPR&D	In-Process Research and Development
IRAK-4	Interleukin-1 Receptor Associated Kinase-4
ITP	Chronic immune (idiopathic) thrombocytopenic purpura
IV	Intravenous

Ligand	Ligand Pharmaceuticals Incorporated, including subsidiaries
LSA	Loan and Security Agreement
LTP	Liver-targeted prodrug
Lundbeck	Lundbeck A/S
MDS	Myelodysplastic syndromes
Melinta	Melinta Therapeutics, Inc.
Merck	Merck & Co., Inc.
Merrimack	Merrimack Pharmaceuticals, Inc.
Millenium	Millenium Pharmaceuticals, Inc. (aka Takeda Oncology)
MLA	Master License Agreement
MRSA	Methicillin-resistant Staphylococcus aureu
NASH	Non-alcoholic steatohepatitis
NDA	New Drug Application
NOLs	Net Operating Losses
Novartis	Novartis AG
OMT	OMT, Inc. or Open Monoclonal Technology, Inc.
Omthera	Omthera Pharmaceuticals, Inc.
Orange Book	Publication identifying drug products approved by the FDA based on safety and effectiveness
Par	Par Pharmaceutical, Inc.
Pfizer	Pfizer Inc.
PPD	Post-Partum Depression
Retrophin	Retrophin Inc.
SAA	Severe Aplastic Anemia
SAGE	Sage Therapeutics, Inc.
SARM	Selective Androgen Receptor Modulator
Sedor	Sedor Pharmaceuticals, Inc., or RODES, Inc.
Selexis	Selexis, SA
Sermonix	Sermonix Pharmaceuticals, LLC
Spectrum	Spectrum Pharmaceuticals, Inc.
SRSE	Super-refractory status epilepticus
Takeda	Takeda Pharmaceuticals Company Limited
T2DM	Type 2 Diabetes Mellitis
TG Therapeutics	TG Therapeutics, Inc.
TPE	Third-party evidence
TR-β	Thyroid hormone receptor beta
VentiRx	VentiRx Pharmaceuticals Inc.
VIE	Variable interest entity
Viking	Viking Therapeutics
X-ALD	X-linked adrenoleukodystrophy
Zydus Cadila	Zydus Cadila Healthcare Ltd

PART I

Cautionary Note Regarding Forward-Looking Statements:

You should read the following together with the more detailed information regarding our company, our common stock and our financial statements and notes to those statements appearing elsewhere in this document or incorporated by reference.

This report contains forward-looking statements that involve a number of risks and uncertainties. Although our forward-looking statements reflect the good faith judgment of our management, these statements can only be based on facts and factors currently known by us. Consequently, these forward-looking statements are inherently subject to risks and uncertainties, and actual results and outcomes may differ materially from results and outcomes discussed in the forward-looking statements.

Forward-looking statements can be identified by the use of forward-looking words such as "believes," "expects," "may," "will," "plan," "intends," "estimates," "would," "continue," "seeks," "pro forma," or "anticipates," or other similar words (including their use in the negative), or by discussions of future matters such as those related to our royalties and milestones under license agreements, Capitsol materials sales, and product development, as well as other statements that are not historical. You should be aware that the occurrence of any of the events discussed under the caption "Risk Factors" could negatively affect our results of operations and financial condition and the trading price of our stock.

The cautionary statements made in this report are intended to be applicable to all related forward-looking statements wherever they may appear in this report. We urge you not to place undue reliance on these forward-looking statements, which speak only as of the date of this report. Except as required by law, we assume no obligation to update our forward-looking statements, even if new information becomes available in the future. This caution is made under the safe harbor provisions of Section 21E of the Securities Exchange Act of 1934, as amended.

References to "Ligand Pharmaceuticals Incorporated," "Ligand," the "Company," "we," "our" and "us" include Ligand Pharmaceuticals Incorporated and our wholly-owned subsidiaries.

Trademarks

Our trademarks, trade names and service marks referenced herein include Ligand®, Captisol®, Captisol-enabled™, LTP technology™, OmniAb®, OmniMouse®, OmniRat® and OmniFlic®. All other trademarks, trade names and service marks including Baxdela™, Carnexiv™, Conbriza®, Duavee®, Evomela®,Kyprolis®, Promacta®, Revolade®, SURE*technology* Platform™, and Viviant® are the property of their respective owners. Use or display by us of other parties' trademarks, trade dress or products is not intended to and does not imply a relationship with, or endorsement or sponsorship of, us by the trademark or trade dress owners.

Item 1. Business

Overview

We are a biopharmaceutical company focused on developing and acquiring technologies that help pharmaceutical companies discover and develop medicines. Over our more than 30 year history, we have employed research technologies such as nuclear receptor assays, high throughput computer screening, formulation science, liver targeted pro-drug technologies and antibody discovery technologies to assist companies in their work toward securing prescription drug approvals. We currently have partnerships and license agreements with over 95 pharmaceutical and biotechnology companies, and over 160 different programs under license with us are currently in various stages of commercialization and development. We have contributed novel research and technologies for approved medicines that treat cancer, osteoporosis, fungal infections and low blood platelets, among others. Our partners have programs currently in clinical development targeting seizure, coma, cancer, diabetes, cardiovascular disease, muscle wasting, liver disease, and kidney disease, among others. We have over 500 issued patents worldwide, and over 200 currently pending patent applications.

We have assembled our large portfolio of fully-funded programs either by licensing our own proprietary drug development programs, licensing our platform technologies such as Captisol or OmniAb to partners for use with their proprietary programs, or acquiring existing partnered programs from other companies. Fully-funded programs are those for which our partners pay all of the development and commercialization costs. For our internal programs, we generally plan to advance drug candidates through early-stage drug development or clinical proof-of-concept.

Our business model creates value for stockholders by providing a diversified portfolio of biotech and pharmaceutical product revenue streams that are supported by an efficient and low corporate cost structure. Our goal is to offer investors an opportunity to participate in the promise of the biotech industry in a profitable, diversified and lower-risk business than a typical biotech company. Our business model is based on doing what we do best: drug discovery, early-stage drug development, product reformulation and partnering. We partner with other pharmaceutical companies to leverage what they do best (late-stage development, regulatory management and commercialization) to ultimately generate our revenue. We believe that focusing on discovery and early-stage drug development while benefiting from our partners' development and commercialization expertise will reduce our internal expenses and allow us to have a larger number of drug candidates progress to later stages of drug development.

Our revenue consists of three primary elements: royalties from commercialized products, license and milestone payments and sale of Captisol material. In addition to discovering and developing our own proprietary drugs, we selectively pursue acquisitions to bring in new assets, pipelines, and technologies to aid in generating additional potential new revenue streams.

2016 Major Business Highlights for Ligand

Acquisitions

- Ligand acquired OMT in January 2016, conferring ownership of a large portfolio of licenses and the OmniAb platform, for $173.4 million in cash and stock.
- Ligand acquired the economic rights to multiple medical device programs owned by CorMatrix in May 2016. Ligand paid $17.5 million and in return received a portion of revenue (synthetic royalty) from CorMatrix's existing marketed products and will have the right to receive future synthetic royalties from potential future products.

Late-Stage Clinical Data

- On September 7, 2016, Retrophin announced results from the Phase 2 DUET study of sparsentan for the treatment of FSGS, a rare kidney disorder without an FDA-approved pharmacological treatment that often leads to end-stage renal disease. The study achieved statistical significance in the primary efficacy endpoint for the overall sparsentan treatment group, demonstrating a greater than two-fold reduction of proteinuria compared to irbesartan after the eight-week, double-blind treatment period.
- On December 6, 2016, Sage announced its expedited development plan for Sage-547 for treatment of postpartum depression, from a breakthrough therapy meeting with the FDA. The current Sage-547 program in PPD, along with prior Phase 2 data, were confirmed as supporting, if successful, a potential NDA. Sage's PPD clinical program, now in Phase 3, will require only minor modifications, including an increase in sample size.

- Merck announced that it stopped the Phase 2/3 EPOCH study evaluating verubecestat in people with mild-to-moderate Alzheimer's disease due to the conclusion that the efficacy endpoint could not be achieved. No safety concerns where noted. Results from EPOCH will be analyzed and presented at an upcoming scientific meeting. The external Data Monitoring Committee recommended that the ongoing Phase 3 APECS study, which is evaluating verubecestat in people with prodromal Alzheimer's disease, continue unchanged. Results from the APECS study are expected in February 2019.

NDA Submissions, Approvals or Label Expansion for Products Ligand is Entitled to Royalties

- On March 15, 2016, Spectrum announced that the FDA approved Evomela for use in two indications: as a high dose conditioning treatment prior to hematopoietic progenitor (stem) cell transplantation (ASCT) in patients with multiple myeloma and for the palliative treatment of patients with multiple myeloma for whom oral therapy is not appropriate.
- On April 7, 2016, the European Commission approved Promacta for the treatment of children one year and above with chronic immune thrombocytopenia who have not responded to other treatments.
- On July 3, 2016, Amgen announced that the European Commission approved an expanded indication for Kyprolis®, to be used in combination with dexamethasone alone, for adult patients with multiple myeloma who have received at least one prior therapy.
- On July 4, 2016, Ono Pharmaceuticals, holder of Kyprolis marketing rights in Japan, announced approval in Japan for treatment of patients with relapsed or refractory multiple myeloma.
- On October 7, 2016, Lundbeck announced approval of Carnexiv IV as a short-term replacement therapy for oral carbamazepine formulations in adults with certain seizure types when oral administration is temporarily not feasible. Carnexiv is the first FDA approved intravenous carbamazepine option.
- On October 24, 2016, Melinta Therapeutics announced it submitted a NDA for approval of IV Baxdela for the treatment of patients with acute bacterial skin and skin structure infections.
- On November 10, 2016, Amgen announced a collaboration with Janssen Biotech, Inc. to evaluate the combination of Amgen's Kyprolis (carfilzomib) and Janssen's DARZALEX® (daratumumab) in multiple clinical studies in patients with multiple myeloma. The first study initiated as part of this agreement is a Phase 3 registrational trial evaluating Kyprolis in combination with DARZALEX and dexamethasone compared to Kyprolis and dexamethasone alone in patients with multiple myeloma who have had one, two or three prior lines of therapy. The study is anticipated to start enrolling patients in April 2017.

Licensing Deals Ligand Entered into or Expanded in 2016

- Worldwide platform license agreement with Emergent Biosolutions for access to the OmniAb technology.
- Worldwide platform license agreement with Tizona for access to the OmniAb technology.
- Worldwide platform license agreement with ABBA Therapeutics for access to the OmniAb technology.
- Worldwide platform license agreement with F-Star for access to the OmniAb technology.
- Current OmniAb licensee exercised its option to expand access to the OmniAb platform.
- Wuxi sublicensed the Chinese rights of two antibodies developed with the OmniAb platform, including to CStone, a Chinese start-up developing an immuno-oncology therapy whose investigational new drug application has been accepted by the CFDA. The additional antibody is in preclinical development with an undisclosed partner.
- Worldwide platform license agreement with Gilead Sciences for access to the OmniAb technology.
- Newly formed Nucorion, co-founded by Ligand, licensed three programs utilizing Ligand's LTP technology and intends to pursue a pipeline of LTP-based programs for China and other markets.
- Worldwide license agreement with Teneobio for access to the OmniAb technology.
- License agreement of four programs including aplindore, a CRTH2 antagonist program, CE-acetaminophen, and an H3 receptor antagonist program with Seelos Therapeutics.
- Worldwide platform license agreement with Ono Pharmaceuticals for access to the OmniAb technology.
- Global license and supply agreement with Novartis for the development and commercialization of a CE-oral liquid formulation of trametinib.
- License agreement with Beloteca for the development and commercialization of CE-ziprasidone

Internal Pipeline Highlights

- Ligand announced that results from two Phase I clinical trials with LGD-6972, the Company's investigational glucagon receptor antagonist, were published online in the August issue of the journal Diabetes, Obesity and

Metabolism. The single- and multiple-dose Phase 1a and Phase 1b studies demonstrated favorable safety, tolerability and pharmacokinetics in normal healthy volunteers and in subjects with type 2 diabetes mellitus. The trial results also demonstrate a robust, dose-dependent reduction of fasting plasma glucose.

- Ligand announced initiation of a Phase 2 clinical trial with LGD-6972 for the treatment of T2DM. The randomized, double-blind, placebo-controlled study will evaluate the safety and efficacy of LGD-6972, as an adjunct to diet and exercise, in subjects with T2DM whose blood glucose levels are inadequately controlled with metformin. Ligand expects to report the results from the Phase 2 clinical trial in the third quarter of 2017.

Technologies

A variety of technology platforms that enable elements of drug discovery or development form the basis of our portfolio of fully-funded shots on goal. Platform technologies or individual drugs discovered by Ligand are related to a broad estate of intellectual property that includes over 500 issued patents and over 200 pending patent applications.

Captisol Technology

Captisol is Ligand's patented, uniquely-modified cyclodextrin that is specifically designed to maximize safety, while improving the solubility, stability and bioavailability of APIs. Captisol can enable faster and more efficient development paths for our partners, given its known regulatory acceptance. Ligand maintains both Type IV and Type V DMFs with the FDA. These DMFs contain manufacturing and safety information relating to Captisol that our licensees can reference when developing Captisol-enabled drugs. Ligand also filed a DMF in Japan in 2015. Captisol-enabled drugs are marketed in more than 60 countries, and over 45 partners have Captisol-enabled drugs in development.

OmniAb Technologies

In January of 2016, Ligand acquired OMT and the OmniAb Technologies. OmniAb includes three complementary and globally-branded platforms named OmniRat, OmniMouse and OmniFlic. The OmniAb platforms consist of genetically-engineered transgenic rodents that produce a broadly diversified repertoire of antibodies and enable novel fully-human antibody drug discovery and development by our OmniAb partners. Fully-human OmniAb antibodies provide advantages to our partners in that fully-human antibodies have reduced immunogenicity, streamline development timelines and costs, and accelerate novel antibody discovery. Currently, more than 25 partners are utilizing OmniAb animals in their drug discovery and development efforts

LTP Technology Platform

The LTP Technology platform is a novel prodrug technology designed to selectively deliver a broad range of pharmaceutical agents to the liver. A prodrug is a biologically inactive compound that can be metabolized in the body to produce an active drug. The LTP Technology works by chemically modifying biologically active molecules into an inactive prodrug, which will be administered to a patient and later activated by specific enzymes in the liver. The technology can be used to improve the safety and/or activity of existing drugs, develop new agents to treat certain liver-related diseases, and treat diseases caused by imbalances of circulating molecules that are controlled by the liver. The technology is especially applicable to metabolic and cardiovascular indications, among others. Currently 3 partners are utilizing the LTP Technology or related platform(s).

SUREtechnology Platform (owned by Selexis)

Ligand acquired economic rights to over 30 SURE*technology* Platform programs from Selexis in two separate transactions in 2013 and 2015, granting Ligand rights to downstream economics on novel biologics and biosimilars programs. The SURE*technology* Platform, developed and owned by Selexis, is a novel technology that improves the way that cells are utilized in the development and manufacturing of recombinant proteins and drugs. The technology is based on novel DNA-based elements that control the dynamic organization of chromatin within mammalian cells and allow for higher and more stable expression of recombinant proteins. The technology creates advantages over traditional approaches including accelerated development and manufacturing times, high yields and increased compound stability.

CorMatrix products and technologies/programs (owned by CorMatrix)

Ligand acquired economic rights to multiple programs owned by CorMatrix in May 2016, granting Ligand rights to receive a portion of revenue (synthetic royalty) from CorMatrix's existing marketed products and rights to future synthetic royalties from potential future products. Ligand receives a share of revenue from the currently marketed vascular, cardiac, and pericardial tissue repair products and the CanGaroo Envelope for cardiac implantable electronic devices. Additionally, Ligand has the rights to receive a share of potential future revenues from CorMatrix's developmental pipeline products.

Partners and Licensees

The following table lists our disclosed partners and licensees. In addition to these 83 Companies, we have over 12 additional undisclosed partners and licensees, mostly biotech companies.

Big Pharma	Ticker
AstraZeneca	AZN
Baxter	BAX
BMS	BMY
Daiichi Sankyo	DSKY
Eli Lilly	LLY
GSK	GSK
Janssen	JNJ
Merck	MRK
Merck KGaA	MRK
Novartis	NVS
Otsuka	4768
Pfizer	PFE
Sanofi	SNY
Takeda	4502

Specialty Pharma	Ticker
CorMatrix	Private
Cuda	Private
Gloria	Private
Lundbeck	LUN
Ono	4528
Sedor	Private
Sermonix	Private
Shire	SHPG
Spectrum	SPPI
Teva	TEVA
Vireo Health	Private
Upsher-Smith	Private

Generics	Ticker
Alvogen	Private
Avion	Private
BioCad	Private
Coherus	CHRS
Gedeon Richter	GEDSF
IBC Generium	Private
Oncobiologics	ONS
Zydus Cadila	CADILAHC

Biotech	Ticker
ABBA	Private
AiCuris	Private
Aldeyra	ALDX
Amgen	AMGN
ARMO	Private
Azure	Private
bluebird bio	BLUE
Cantex	Private
Celgene	CELG
Chiva	Private
C-Stone	Private
CURx	Private
Deciphera	Private
Aptevo	APVO
Exelixis	EXEL
Five Prime	FRPX
ForSight Vision	Private
F-Star	Private

Biotech, continued	Ticker
Genmab	GEN
Genekey Biotech	Private
Gilead Sciences	GILD
Hanall	9420
Harpoon	Private
Lubris	Private
Marinus	MRNS
MEI	MEIP
Melinta	Private
Meridian Labs	Private
Millennium	4502
Merrimack	MACK
Novogen	NVGN
Nucorion	Private
Opthea	OPT
Precision Biologics	Private
Retrophin	RTRX
ROAR	Private
SAGE	SAGE
Seattle Genetics	SGEN
Seelos	Private
Stemcentrx	ABBV
Symphogen	Private
Teneobio	Private
Tizona	Private
VentiRx	Private
Vertex	VRTX
Viking	VKTX
XTL Bio	XTLB
WuXi	Private

Portfolio

We have a large portfolio of current and future potential revenue-generating programs, over 155 of which are fully-funded by our partners. In addition to the table below, we also have more than 40 undisclosed programs.

Commercialized

Alvogen	Voriconazole
Amgen	Kyprolis
Baxter	Nexterone
CorMatrix Base	CorMatrix
Cangaroo Envelope	CorMatrix
Lundbeck	Carnexiv
Merck	Noxafil-IV
Novartis	Promacta
Pfizer	Viviant/Conbriza
Pfizer	Duavee
Pfizer	Vfend
Spectrum	Evomela
Zydus Cadila	Exemptia
Zydus Cadila	Vivitra

Regulatory Submission Stage

Biocad	Interferon beta-1a
Melinta	Baxdela
Sedor	CE-Fosphenytoin

Phase 3

Biocad	BCD-066
Coherus	CHS-0214
Exelixis/Daiichi-Sankyo	CS-3150
Merck	Verubecestat
Oncobiologics	ONS-3010
Oncobiologics	ONS-1045
SAGE	Brexanolone -SAGE-547

Color Legend

Blood Disorders
Cardiovascular
CNS
Infectious Disease
Inflamm/Metabolic
Severe and Rare
Cancer
Other / Undisclosed
Medical Device/Cardiology

Phase 2

Aldeyra	ADX-102
Cardioxyl / BMS	BMS986231-CXL-1427
Eli Lilly	LY2606368
Lubris Biopharma	Lubricin
Merrimack Pharma	MM-121
Merrimack Pharma	MM-141
Millennium/Takeda	MLN-4924
Novartis	KLM465
Opthea Ltd	OPT-302
Precision Biologics	NPC-1C
Retrophin	Sparsentan
Sanofi	SAR125844
Seelos	Aplindore
Sermonix Pharma	Lasofoxifene
Shire	BAX-69
VentiRx Pharma	VTX-2337
Vertex	VK-970
Viking	VK5211
Viking	TR Beta
Viking	VK0612
XTL Bio	hCDR1

Phase 1

Amgen	AMG-330
Biocad	EPOR Agonist
Chiva Pharma	Pradefovir
Chiva Pharma	MB07133
CURx Pharma	IV Topiramate
Deciphera Pharma	Altiratinib
Eli Lilly	LY3023703
Eli Lilly	Merestinib
Eli Lilly	Prexasertib
Exelixis/Daiichi-Sankyo	XL652
F-Star	F-102
Gedeon Richter	RGB-03
Gedeon Richter	Bevacizumab
Gedeon Richter	Trastuzumab
Gilead	GS-5734
IBC Generium	GNR-008

Pre-Clinical

ABBA	OmniAb
Stemcentryx/AbbVie	OmniAb
AiCuris GmBH	Undisclosed
Amgen	OmniAb
Aptevo	OmniAb
ARMO	OmniAb
Avion	CE programs
Azure	Lasofoxifene
C-Stone	PDL-1
Celgene	OmniAb
CorMatrix	CorMatrix Pipeline
Cuda Pharma	CE-Propofol
CURx Pharma	IV Lamotrigine
Exelixis (BMS)	XL652
Five Prime	OmniAb
F-Star	OmniAb
Genmab	OmniAb
Gilead	OmniAb
Gloria	PD-1 antibody
Hanall Biopharma	OmniAb
Janssen	OmniAb
Marinus Pharma	Ganaxalone IV
Merck KGaA	OmniAb
Merck KGaA	FGFR1
Merck KGaA	LRP-6
Nucorion	NUC-101
Nucorion	NUC-202
Nucorion	NUC-404
Omthera/AstraZeneca	LTP-O3FA
Oncobiologics	Rituximab
Oncobiologics	ONS4010
Ono Pharmaceuticals	OmniAb
Pfizer	OmniAb
SAGE	SAGE-689
Seattle Genetics	OmniAb
Sedor	CE-Meloxicam
Seelos	CE-Acetaminophen
Seelos	CRTH2 Antagonist

IBC Generium	Deplera
MEI Pharma	ME-344
MEI Pharma	ME-143
Merrimack Pharma	MM-151
Novartis	CE-Trametinib
Otsuka	OPC-269
ROAR Therapeutics	UC-961
Sedor	CE-Budesonide
Takeda	TAK-020
Upsher-Smith	CXCR4
VentiRx Pharma	VTX-1463

Seelos	H3 Receptor Antagonist
Symphogen	OmniAb
Teneobio	OmniAb
Teva	OmniAb
TG Therapeutics	IRAK4
Tizona	OmniAb
Upsher Smith	CXCR4
Viking	EPOR Agonist
Viking	DGAT-1 Inhibitor
Vireo Health	CE-Cannabinoids
WuXi	OmniAb

Selected Commercial Programs

We have multiple programs under license with other companies that have products that are already being commercialized. The following programs represent components of our current portfolio of revenue-generating assets and potential for near-term growth in royalty and other revenue. For information about the royalties owed to Ligand for these programs, see “Royalties” later in this business section.

Promacta (Novartis)

We are party to a license agreement with Novartis related to Promacta, which is an oral medicine that increases the number of platelets in the blood. Platelets are one of the three components of blood and facilitate clotting in the blood. Individuals with low platelets can be at significant risk of bleeding or death. Because of the importance of having a sufficient number of platelets, Promacta has broad potential applicability to a number of medical situations where low platelets exist.

Promacta is currently approved for three indications: (1) the treatment of thrombocytopenia in adult and pediatric patients 1 year and older with ITP who have had an insufficient response to corticosteroids, immunoglobulins or splenectomy, (2) Hepatitis-C associated thrombocytopenia and (3) SAA. Promacta was initially approved in 2008, and the product has been generating royalty revenue for Ligand since 2009. Promacta is known as Revolade in the EU and other non-US markets.

Novartis has been and continues to pursue globalization of the brand and currently markets Promacta in multiple countries for the three approved indications. Specifically, ITP is currently approved in more than 100 countries, the Hepatitis C-related indication is currently approved in more than 50 countries, and the SAA indication is approved in more than 45 counties.

Beyond the currently-approved indications, Novartis is also performing development activities to expand the brand into new indications, including a number of oncology-related indications including MDS, AML and CIT. As of January 2017, there are 23 open clinical trials related to Promacta (listed as recruiting or open, and not yet recruiting) on the clinicaltrials.gov website.

We are entitled to receive royalties related to Promacta during the life of the relevant patents or following patent expiry, at a reduced rate for ten years from the first commercial sale, whichever is longer, on a country-by-country basis. Novartis has listed a patent in the FDA’s, Orange Book for Promacta with an expiration date in 2029, and absent early termination for bankruptcy or material breach, the term of the agreement expires upon expiration of the obligation to pay royalties. There are no remaining milestones to be paid under the agreement.

Kyprolis (Amgen)

Ligand supplies Captisol to Amgen for use with carfilzomib, and granted an exclusive product-specific license under our patent rights with respect to Captisol. Kyprolis is formulated with Ligand’s Captisol technology and is approved in the U.S. for the following:

- In combination with dexamethasone or with lenalidomide plus dexamethasone for the treatment of patients with relapsed or refractory multiple myeloma who have received one to three lines of therapy.
- As a single agent for the treatment of patients with relapsed or refractory multiple myeloma who have received one or more lines of therapy.

Kyprolis is also approved in multiple countries and Amgen continues to invest significantly in Kyprolis to further expand its label and geography. Amgen's obligation to pay royalties does not expire until four years after the expiration of the last-to-expire patent covering Captisol. Our patents and applications relating to the Captisol component of Kyprolis are not expected to expire until 2033. Our agreement with Amgen may be terminated by either party in the event of material breach or bankruptcy, or unilaterally by Amgen with prior written notice, subject to certain surviving obligations. Absent early termination, the agreement will terminate upon expiration of the obligation to pay royalties. Under this agreement, we are entitled to receive remaining milestones of up to $2 million, revenue from clinical and commercial Captisol material sales and royalties on annual net sales of Kyprolis.

Evomela (Spectrum)

Ligand supplies Captisol to Spectrum for use with Evomela, which is a Captisol-enabled melphalan IV formulation. The FDA approved Evomela for use in two indications:

- A high-dose conditioning treatment prior to ASCT in patients with multiple myeloma
- For the palliative treatment of patients with multiple myeloma for whom oral therapy is not appropriate

Evomela has been granted Orphan Designation by the FDA for use as a high-dose conditioning regimen for patients with multiple myeloma undergoing ASCT. The Evomela formulation avoids the use of propylene glycol, which has been reported to cause renal and cardiac side-effects that limit the ability to deliver higher quantities of therapeutic compounds. The use of the Captisol technology to reformulate melphalan is anticipated to allow for longer administration durations and slower infusion rates, potentially enabling clinicians to safely achieve a higher dose intensity of pre-transplant chemotherapy.

Under the terms of the license agreement, we granted an exclusive license to Spectrum under our patent rights to Captisol relating to the product. We are eligible to receive over $50 million in potential milestone payments under this agreement and royalties on future net sales of the Captisol-enabled melphalan product. Spectrum's obligation to pay royalties will expire at the end of the life of the relevant patents or when a competing product is launched, whichever is earlier, but in no event within ten years of the commercial launch. Our patents and applications relating to the Captisol component of melphalan are not expected to expire until 2033. Absent early termination, the agreement will terminate upon expiration of the obligation to pay royalties. The agreement may be terminated by either party for an uncured material breach or unilaterally by Spectrum by prior written notice.

CorMatrix Portfolio (CorMatrix)

Ligand receives a share of revenue from the currently marketed CorMatrix portfolio of vascular, cardiac and pericardial tissue repair products. In addition, Ligand has the potential to receive a share of revenue and potential milestones from the currently marketed CorMatrix CanGaroo® ECM Envelope for cardiac implantable electronic devices. CorMatrix's products are medical devices that are designed to permit the development and regrowth of human tissue.

Duavee or Duavive (bazedoxifene/conjugated estrogens) and Viviant/Conbriza (Pfizer)

Pfizer is marketing bazedoxifene under the brand names Viviant and Conbriza in various territories for the treatment of postmenopausal osteoporosis. Pfizer is responsible for the registration and worldwide marketing of bazedoxifene, a synthetic drug specifically designed to reduce the risk of osteoporotic fractures while also protecting uterine tissue. Pfizer has combined bazedoxifene with the active ingredient in Premarin to create a combination therapy for the treatment of post-menopausal symptoms in women. Pfizer is marketing the combination treatment under the brand names Duavee and Duavive in various territories. Net royalties on annual net sales of Viviant/Conbriza and Duavee/Duavive are each payable to us through the life of the relevant patents or ten years from the first commercial sale, whichever is longer, on a country by country basis.

Carnexiv (Lundbeck)

Lundbeck's Carnexiv is a Captisol-enabled carbamazepine-IV that was approved by the FDA in October 2016. Carnexiv is indicated as replacement therapy for oral carbamazepine formulations, when oral administration is temporarily no feasible, in adults with certain seizure types. Under the terms of our agreement with Lundbeck, we may be entitled to development and regulatory milestones, royalties on potential future sales by Lundbeck and revenue from Captisol material sales. Lundbeck is responsible for all development costs related to the program.

Nexterone (Baxter)

We have a license agreement with Baxter, related to Baxter's Nexterone, a Captisol-enabled formulation of amiodarone, which is marketed in the United States and Canada. We supply Captisol to Baxter for use in accordance with the terms of the license agreement under a separate supply agreement. Under the terms of the license agreement we will continue to earn milestone payments, royalties, and revenue from Captisol material sales. We are entitled to earn royalties on sales of Nexterone through early 2033.

Noxafil-IV (Merck)

We have a supply agreement with Merck related to Merck’s NOXAFIL-IV, a Captisol-enabled formulation of posaconazole for IV use. NOXAFIL-IV is marketed in the United States, EU and Canada. We receive our commercial compensation for this program through the sale of Captisol, and we do not receive a royalty on this program.

Exemptia (Zydus Cadila)

Zydus Cadila’s Exemptia (adalimumab biosimilar) is marketed in India for autoimmune diseases. Zydus Cadila uses the Selexis technology platform for Exemptia. We are entitled to earn royalties on sales by Zydus Cadila for ten years following the first commercial sale.

Vivitra (Zydus Cadila)

Zydus Cadila’s Vivitra (trastuzumab biosimilar) is marketed in India for breast cancer. Zydus Cadila uses the Selexis technology platform for Vivitra. We are entitled to earn royalties on sales by Zydus Cadila for ten years following the first commercial sale.

Summary of Selected Development-stage Programs

We have multiple fully-funded partnered programs that are either in or nearing the regulatory approval process, or given the area of research or value of the license terms are considered particularly noteworthy. We are eligible to receive milestone payments and royalties off of these programs. This list does not include all of our partnered programs. For information about the royalties owed to Ligand for these programs, see “Royalties” later in this Business Overview section. In the case of Captisol-related programs, we are also eligible to receive revenue for the sale of Captisol material supply.

Baxdela (Melinta)

Our partner, Melinta , submitted an NDA for approval of a Captisol-enabled delafloxacin-IV in October 2016 for the development of Baxdela, a Captisol-enabled delafloxacin-IV. Delafloxacin is a novel hospital-focused fluoroquinolone antibiotic candidate with potency against a variety of disease-causing bacteria-gram-positives, gram-negatives, atypicals and anaerobes, including quinolone-resistant MRSA. Under the terms of the agreement, we may be entitled to up to $2.1 million of development and regulatory milestones, as well as a royalty on potential future sales by Melinta, and revenue from Captisol material sales. Melinta is responsible for all development costs related to the program.

Brexanolone-SAGE-547 (SAGE)

Our partner, SAGE, is conducting a Phase 3 clinical trial for the development of Captisol-enabled therapeutics for a broad range of debilitating central nervous system conditions. SAGE's lead clinical program, Captisol-enabled Brexanolone (SAGE-547), is an allosteric modulator of both synaptic and extra-synaptic GABAA receptors that is in clinical development as an adjunctive therapy, a therapy combined with current therapeutic approaches, for the treatment of SRSE. Brexanolone was granted Fast Track designation, which is intended to facilitate the development and expedite the review of drug candidates that are intended to treat serious or life-threatening conditions and demonstrate the potential to address unmet medical needs, and orphan drug designation, which is intended to facilitate drug development for rare diseases, by the FDA for SRSE. Ligand has the potential to receive milestone payments, royalties and revenue from Captisol material sales for Captisol-enabled programs. SAGE is responsible for all development costs related to the program.

SAGE is also conducting a Phase 3 clinical trial for the development of a Captisol-enabled treatment of PPD. In July 2016 SAGE reported top-line results from a Phase 2 placebo-controlled trial in women with severe PPD, in which SAGE-547 achieved a significant, rapid and durable reduction in depression scores. SAGE received Breakthrough Therapy Designation from the FDA for SAGE-547 in PPD in September, 2016. The Breakthrough Therapy Designation is intended to offer a potentially expedited development path and review for promising drug candidates, which includes increased interaction and guidance from the FDA.

Sparsentan (Retrophin)

Our partner, Retrophin, is developing sparsentan for orphan indications of severe kidney diseases, and has completed a Phase 2 clinical trial of sparsentan for the treatment of FSGS. Certain patient groups with severely compromised renal function, including those with FSGS, exhibit extreme proteinuria resulting in progression to dialysis and a high mortality rate. Sparsentan, with its unique dual blockade of angiotensin and endothelin receptors, is expected to provide meaningful clinical benefits in mitigating proteinuria in indications where there are no approved therapies. In January 2015, the FDA granted sparsentan orphan drug designation.

Under our license agreement with Retrophin we are entitled to receive potential net milestones of over $75 million in the future and net royalties on future worldwide sales by Retrophin. The royalty term is expected to be 10 years following the first commercial sale. Retrophin is responsible for all development costs related to the program.

Prexasertib- LY2606368 (Eli Lilly)

Our partner, Eli Lilly is conducting Phase 2 clinical trials for Captisol-enabled LY2606368 (Chk 1/2 inhibitor) for solid tumors. Under the terms of the agreement, we may be entitled to regulatory milestones, royalties on potential future sales by Eli Lilly and revenue from Captisol material sales.

CXL-1427 - BMS986231 (Cardioxyl /BMS)

Our partner, Cardioxyl (acquired by BMS in 2015) is conducting Phase 2 clinical trials for Captisol-enabled CXL-1427 (nitroxyl donor prodrug) for ADHF. Under the terms of the agreement, we may be entitled to development and regulatory milestones, and royalties on potential future sales by BMS and revenue from Captisol material sales.

Lasofoxifene (Azure Biotech, and Sermonix)

Our partner Azure is developing a novel formulation of lasofoxifene targeting an underserved market in women's health. Under the terms of our agreement with Azure, we are entitled to receive up to $2.6 million in potential development and regulatory milestones as well as royalties on future net sales through the later of the life of the relevant patents (currently expected to be at least until 2027) or 10 years after regulatory approval. Azure may terminate the license agreement at any time upon six months' prior notice.

Lasofoxifene is an estrogen partial agonist for osteoporosis treatment and other diseases, discovered through the research collaboration between us and Pfizer. Under the terms of the license agreement with Azure, we retained the rights to the oral formulation of lasofoxifene originally developed by Pfizer.

Our partner, Sermonix has a license for the development of oral lasofoxifene for the United States and additional territories. Under the terms of the agreement, we are entitled to receive up to $45 million in potential regulatory and commercial milestone payments as well as royalties on future net sales.

Verubecestat-MK-8931 (Merck)

Our partner, Merck is developing Verubecestat (MK-8931), a BACE inhibitor for the treatment of Alzheimer's disease. Alzheimer's disease is a chronic neurodegenerative disease and responsible for the majority of dementia cases. The leading hypothesis in the field postulates that plaques of amyloid-beta protein within the brain are the main cause of the disease. BACE is a key enzyme in the production of amyloid-beta protein and a BACE inhibitor is expected to reduce amyloid-beta protein generation in Alzheimer's disease patients to prevent plaques formation. Verubecestat is the leading BACE inhibitor in clinic. In February 2017, Merck halted the first Phase 3 trial in mild-to-moderate Alzheimer's disease for futility and expects initial data readout from the second Phase 3 trial in prodromal Alzheimer's disease in 2019. It is hoped that by attacking amyloid-beta plaque earlier in the disease, Verubecestat can still be effective. We are entitled to a royalty on potential future sales by Merck. Merck is responsible for all development costs related to the program

TR-Beta - ***VK2809 (Viking)***

Viking is developing VK2809, a novel selective TR-Beta agonist with potential in multiple indications, including hypercholesterolemia, dyslipidemia, NASH, and X-ALD. Viking initiated a Phase 2 trial for VK2809 in hypercholesterolemia and fatty liver disease in 2016 and expects primary outcome readout this year. Under the terms of the agreement with Viking, we may be entitled to up to $375 million of development, regulatory and commercial milestones and tiered royalties on potential future sales.

SARM - VK5211 (Viking)

Our partner Viking is developing VK5211, a novel, potentially best-in-class SARM for patients recovering from hip-fracture. SARMs retain the beneficial properties of androgens without undesired side-effects of steroids or other less selective androgens. Viking initiated a Phase 2 trial in hip fracture in 2015. Under the terms of the agreement with Viking, we may be entitled to up to $270 million of development, regulatory and commercial milestones as well as tiered royalties on potential future sales.

Merestinib- LY2801653 (Eli Lilly)

Our partner, Eli Lilly is conducting Phase 2 clinical trials for Captisol-enabled merestinib (LY2801653, formerly known as c-Met inhibitor) for treatment of cancer. Under the terms of the agreement, we may be entitled to regulatory milestones, royalties on potential future sales by Eli Lilly and revenue from Captisol material sales.

Pevonedistat - MLN-4924 (Millennium/Takeda)

Our partner, Millennium/Takeda is currently conducting Phase 2 trials for the development of pevonedistat (MLN-4924) for the treatment of hematological malignancies and solid tumors. Pevonedistat is a Captisol-enabled Nedd8-Activating Enzyme Inhibitor. Under the terms of the clinical-stage agreement, we may be entitled to development milestones from Millennium/Takeda and revenue from Captisol material sales.

Motolimod - VTX-2337 (VentiRx Pharmaceuticals/Celgene)

Our partner, VentiRx is currently conducting Phase 2 trials for the development of motolimod for the treatment of ovarian cancer and head and neck cancer. Motolimod is a Captisol-enabled Toll-like Receptor 8 agonist. Motolimod was granted Fast Track and Orphan Designations by the FDA for the treatment of recurrent or persistent ovarian cancer. VentiRx has an exclusive worldwide collaboration with Celgene to develop motolimod. Under the terms of the clinical-stage agreement, we have earned development milestones from VentiRx and revenue from Captisol material sales.

Seribantumab-MM-121 (Merrimack Pharmaceuticals)

Merrimack Pharmaceuticals is currently conducting a Phase 2 trial of seribantumab (MM-121) in patients with heregulin-positive, locally advanced or metastatic non-small cell lung cancer whose disease has progressed following immunotherapy. The FDA has granted fast track designation to facilitate and expedite the development. Seribantumab is

an antibody-drug that targets ErbB3 that was developed using the Selexis SUREtechnology Platform. Under the terms of the agreement, we may be entitled to development and commercial milestones, royalties on potential future sales.

CHS-0214 (Coherus Biosciences)

Coherus Biosciences has conducted Phase 3 / MAA-enabling clinical trials for CHS-0214 (etanercept biosimilar) for rheumatoid arthritis and psoriasis. Coherus uses the Selexis' technology platform for CHS-0214. We are entitled to earn regulatory and sales milestones, and royalties on potential future sales through at least 2026.

AM0010+PD-1 (ARMO Biosciences)

Our partner, ARMO Biosciences, is developing an anti-PD-1 antibody discovered with the OmniAb platform technology. AM0010+PD-1 is a therapeutic target for cancer therapy. We are entitled to earn regulatory milestones and royalties on future sales.

ADX-102 (Aldeyra)

Our partner, Aldeyra, is conducting a phase II study for ADX-102 for the treatment of ocular inflammation. ADX-102 is a Captisol-enabled ophthalmic solution for the treatment of allergic conjunctivitis that could be active in a broad array of inflammatory ocular diseases. Under the terms of our agreement with Aldeyra, we are entitled to receive regulatory milestones and royalties on future sales.

Esaxerenone (Exelixis)

Our partner, Exelixis, entered into a collaboration agreement with Daiichi Sankyo and is conducting a phase 3 pivotal trial (ESAX-HTN) to evaluate esaxerenone (CS-3150) versus eplerenone for essential hypertension in Japanese patients. Under the terms of the agreement with Exelixis, we are entitled to receive a royalty on future sales.

TAK-020 (Takeda)

Our partner, Takeda, is conducting a phase I study for TAK-020 for the treatment of rheumatoid arthritis. TAK-020 is a Captisol-enabled formulation. We have received an up front fee and revenue from Captisol material sales.

The following table represents our various royalty arrangements:

Royalty Table

Ligand Licenses With Tiered Royalties, Tiers Disclosed*

Promacta (Novartis)		Kyprolis (Amgen)		Duavee (Pfizer)		Viviant/Conbriza (Pfizer)	
< $100 million	4.7%	< $250 million	1.5%	<$400 million	0.5%	<$400 million	0.5%
$100 to $200 million	6.6%	$250 to $500 million	2.0%	$400 million to $1.0 billion	1.5%	$400 million to $1.0 billion	1.5%
$200 to $400 million	7.5%	$500 to $750 million	2.5%	>$1.0 billion	2.5%	>$1.0 billion	2.5%
$400 million to $1.5 billion	9.4%	>$750 million	3.0%				
>$1.5 billion	9.3%						

CE-Topiramate (CURx)		CE-Budesonide (Sedor)		CE-Meloxicam (Sedor)	
< $50 million	6.0%	< $25 million	8.0%	< $25 million	8.0%
$50 to $100 million	6.8%	> $25 million	10.0%	> $25 million	10.0%
>$100 million	7.5%				

Ligand Licenses With Tiered Royalties, Tiers Undisclosed*

Program	Licensee	Royalty Rate
IRAK4	TG Therapeutics	6.0% - 9.5%
CE-Lamotrigine	CURx	4.0% - 7.0%
Lasofoxifene	Sermonix	6.0% - 10.0%
FBPase Inhibitor	Viking	7.5% - 9.5%
SARM	Viking	7.25% - 9.25%
TR Beta	Viking	3.5% - 7.5%
Oral EPO	Viking	4.5% - 8.5%
DGAT-1	Viking	3.0% - 7.0%
LTP-O3FA	Omthera/AstraZeneca	Tiered mid-to-high single digit royalties
Various	Nucorion	4.0%-9.0%
Various	Seelos	4.0%-10.0%

Ligand Licenses With Fixed Royalties*

Program	Licensee	Royalty Rate
Evomela	Spectrum Pharma	20%
Baxdela	Melinta	2.5%
SAGE-547	SAGE	3%
Sparsentan	Retrophin	9%
CE-Fosphenytoin	Sedor	11%
Pradefovir	Chiva Pharma	9%
MB07133	Chiva Pharma	6%
KLM465	Novartis	14.5% (6.5% in year one)
Topical lasofoxifene	Azure Biotech	5%
MM-121	Merrimack Pharma	<1.0%
MM-151	Merrimack Pharma	<1.0%
MM-141	Merrimack Pharma	<1.0%
ME-143	MEI Pharma	Low single digit royalty
ME-344	MEI Pharma	Low single digit royalty
ADX-102	Aldeyra Therapeutics	Low single digit royalty

**Royalty rates are shown net of sublicense payments. Royalty tier references for specific rates notated in the table are for up to and including the dollar amount referenced. Higher tiers are only applicable for the dollar ranges specified in the table.*

Primary Internal Development Program - *Glucagon Receptor Antagonist Program*

We are currently developing a small molecule glucagon receptor antagonist for the treatment of Type 2 diabetes mellitus. Compounds that block the action of glucagon may reduce the hyperglycemia that is characteristic of the disease. Glucagon stimulates the production of glucose by the liver and its release into the blood stream. In diabetic patients, glucagon secretion is abnormally elevated and contributes to hyperglycemia in these patients. We announced results in 2016 from two Phase I clinical trials which demonstrated favorable safety, tolerability and pharmacokinetics in normal healthy volunteers and in subjects with type 2 diabetes mellitus. The trial results also demonstrate a robust, dose-dependent reduction of fasting plasma glucose. We also initiated a Phase 2 clinical trial in September 2016 for the treatment of type 2 diabetes mellitus (T2DM). The randomized, double-blind, placebo-controlled study will evaluate the safety and efficacy of LGD-6972, as an adjunct to diet and exercise, in subjects with T2DM whose blood glucose levels are inadequately controlled with metformin.

The following table represents other internal programs eligible for further development funding, either through Ligand or a partner:

Program	Development Stage	Indication
CCR1 Antagonist	Preclinical	Oncology
CE-Busulfan	Preclinical	Oncology
CE-Cetirizine Injection	Preclinical	Allergy
CE-Clopidogrel	Phase 3	Anti-coagulant
CE-Sertraline, Oral Concentrate	Phase 1	Depression
CE-Silymarin for Topical Formulation	Preclinical	Sun damage
FLT3 Kinase Inhibitors	Preclinical	Oncology
GCSF Receptor Agonist	Preclinical	Blood disorders
Liver Specific Glucokinase Activator	Preclinical	Diabetes

Manufacturing

We currently have no manufacturing facilities and rely on a third party, Hovione, for Captisol production. Hovione is a global supplier with over 50 years of experience in the development and manufacture of APIs and Drug Product Intermediates. Hovione operates FDA-inspected sites in the United States, Macau, Ireland and Portugal. Manufacturing operations for Captisol are currently performed in both of Hovione's Portugal and Ireland sites with distribution operations also performed from Hovione's Portugal and Ireland sites.

We have ongoing minimum purchase commitments under the agreement and are required to pay Hovione an aggregate minimum amount during the agreement term.

In the event of a Captisol supply interruption, we are permitted to designate and, with Hovione’s assistance, qualify one or more alternate suppliers. If the supply interruption continues beyond a designated period, we may terminate the agreement. In addition, if Hovione cannot supply our requirements of Captisol due to an uncured force majeure event or if the unit price of Captisol exceeds a set figure, we may obtain Captisol from a third party.

The current term of the agreement with Hovione is through December 2019. The agreement will automatically renew for successive two year renewal terms unless either party gives written notice of its intention to terminate the agreement no less than two years prior to the expiration of the initial term or renewal term. In addition, either party may terminate the agreement for the uncured material breach or bankruptcy of the other party or an extended force majeure event. We may terminate the agreement for extended supply interruption, regulatory action related to Captisol or other specified events. For further discussion of these items, see below under “*Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations.”*

Competition

Some of the drugs we and our licensees are developing may compete with existing therapies or other drugs in development by other companies. Furthermore, academic institutions, government agencies and other public and private organizations conducting research may seek patent protection with respect to potentially competing products or technologies and may establish collaborative arrangements with our competitors.

Existing or potential competitors to our licensee’s products, particularly large pharmaceutical companies, may have greater financial, technical and human resources than our licensees. Accordingly, these competitors may be better equipped to develop, manufacture and market products. Many of these companies also have extensive experience in preclinical testing and human clinical trials, obtaining FDA and other regulatory approvals and manufacturing and marketing pharmaceutical products.

Our Captisol business may face competition from other suppliers of similar cyclodextrin excipients or other technologies that are aimed to increase solubility or stability of APIs. Our OmniAb antibody technology faces competition from suppliers of other transgenic animal systems that are also available for antibody drug discovery.

Our competitive position also depends upon our ability to obtain patent protection or otherwise develop proprietary products or processes. For a discussion of the risks associated with competition, see below under "Item 1A. Risk Factors."

Government Regulation

The research and development, manufacturing and marketing of pharmaceutical products are subject to regulation by numerous governmental authorities in the United States and other countries. We and our partners, depending on specific activities performed, are subject to these regulations. In the United States, pharmaceuticals are subject to regulation by both federal and various state authorities, including the FDA. The Federal Food, Drug and Cosmetic Act and the Public Health Service Act govern the testing, manufacture, safety, efficacy, labeling, storage, record keeping, approval, advertising and promotion of pharmaceutical products and there are often comparable regulations that apply at the state level. There are similar regulations in other countries as well. For both currently marketed and products in development, failure to comply with applicable regulatory requirements can, among other things, result in delays, the suspension of regulatory approvals, as well as possible civil and criminal sanctions. In addition, changes in existing regulations could have a material adverse effect on us or our partners. For a discussion of the risks associated with government regulations, see below under "Item 1A. Risk Factors."

Patents and Proprietary Rights

We believe that patents and other proprietary rights are important to our business. Our policy is to file patent applications to protect technology, inventions and improvements to our inventions that are considered important to the development of our business. We also rely upon trade secrets, know-how, continuing technological innovations and licensing opportunities to develop and maintain our competitive position.

Patents are issued or pending for the following key products or product families. The scope and type of patent protection provided by each patent family is defined by the claims in the various patents. The nominal patent expiration dates have been provided. The actual patent term may vary by jurisdiction and depend on a number of factors including potential patent term adjustments, patent term extensions, and terminal disclaimers. For each product or product family, the patents and/or applications referred to are in force in at least the United States, and for most products and product families, the patents and/or applications are also in force in European jurisdictions, Japan and other jurisdictions.

Promacta

Patents covering Promacta are owned by Novartis. The United States patent listed in the FDA's Orange Book relating to Promacta with the latest expiration date is not expected to expire until 2027. Six months of additional exclusivity has been granted due to pediatric studies conducted by GSK. The type of patent protection (*e.g.*, composition of matter or use) for each patent listed in the Orange Book and the expiration date for each patent listed in the Orange Book are provided in the following table. In addition, certain related patents in the commercially important jurisdictions of Europe and Japan are identified in the following table.

Promacta					
United States			Corresponding Foreign		
Type of Protection	U.S. Patent No.	U.S. Expiration Date	Jurisdiction	Patent Number	Expiration Date‡
CoM / Use	6,280,959	10/30/2018	N/A		
			EU	1,864,981	5/24/2021
			EU	1,294,378	5/24/2021
CoM / Use	7,160,870	11/20/2022	Japan	3,813,875	5/24/2021
			EU	1,889,838	5/24/2021
Use	7,332,481	5/24/2021	Japan	4,546,919	5/24/2021
			EU	1,889,838	5/24/2021
CoM / Use	7,452,874	5/24/2021	Japan	4,546,919	5/24/2021
			EU	1,864,981	5/24/2021
			EU	1,294,378	5/24/2021
CoM / Use	7,473,686	5/24/2021	Japan	3,813,875	5/24/2021
			EU	1,534,390	5/21/2023
CoM / Use	7,547,719	7/13/2025	Japan	4,612,414	5/21/2023
Use	7,790,704	5/24/2021	N/A		
Use	7,795,293	5/21/2023	N/A		
			EU	2,152,237	8/1/2027
			Japan	5,419,866	8/1/2027
CoM / Use	8,052,993	8/1/2027	Japan	5,735,078	8/1/2027
			EU	2,152,237	8/1/2027
			Japan	5,419,866	8/1/2027
CoM / Use	8,052,994	8/1/2027	Japan	5,735,078	8/1/2027
			EU	2,152,237	8/1/2027
			Japan	5,419,866	8/1/2027
CoM / Use	8,052,995	8/1/2027	Japan	5,735,078	8/1/2027
			EU	2,152,237	8/1/2027
			Japan	5,419,866	8/1/2027
CoM / Use	8,062,665	8/1/2027	Japan	5,735,078	8/1/2027
			EU	2,152,237	8/1/2027
			Japan	5,419,866	8/1/2027
CoM / Use	8,071,129	8/1/2027	Japan	5,735,078	8/1/2027
			EU	2,152,237	8/1/2027
			Japan	5,419,866	8/1/2027
CoM / Use	8,828,430	8/1/2027	Japan	5,735,078	8/1/2027

‡Expiration dates of European and Japanese patents are calculated as 20 years from the earliest nonprovisional filing date to which priority is claimed, and do not take into account extensions that are or may be available in these jurisdictions.

Kyprolis

Patents protecting Kyprolis include those owned by Amgen and those owned by us. The United States patent listed in the Orange Book relating to Kyprolis with the latest expiration date is not expected to expire until 2029. Patents and applications owned by Ligand relating to the Captisol component of Kyprolis are not expected to expire until 2033. The type of patent protection (*e.g.*, composition of matter or use) for each patent listed in the Orange Book and the expiration dates for each patent listed in the Orange Book are provided in the following table. In addition, certain related patents in the commercially important jurisdictions of Europe and Japan are identified in the following table.

Kyprolis					
United States			Corresponding Foreign		
Type of Protection	U.S. Patent No.	U.S. Expiration Date	Jurisdiction	Patent Number	Expiration Date‡
			EU	1,745,064	4/14/2025
CoM	7,232,818	4/14/2025	Japan	5,394,423	4/14/2025
			EU	1,781,688	8/8/2025
CoM	7,417,042	7/20/2026	Japan	4,743,720	8/8/2025
			EU	1,745,064	4/14/2025
Use	7,491,704	4/14/2025	Japan	5,394,423	4/14/2025
			EU	1,819,353	12/7/2025
			EU	2,260,835	12/7/2025
			EU	2,261,236	12/7/2025
			Japan	4,990,155	12/7/2025
CoM	7,737,112	12/7/2027	Japan	5,108,509	5/9/2025
			EU	1,745,064	4/14/2025
Use	8,129,346	4/14/2025	Japan	5,394,423	4/14/2025
			EU	1,781,688	8/8/2025
CoM	8,207,125	4/14/2025	Japan	4,743,720	8/8/2025
CoM / Use	8,207,126	4/14/2025	N/A		
Use	8,207,127	4/14/2025	N/A		
CoM / Use	8,207,297	4/14/2025	N/A		
Use	9,511,109	10/21/2029	Japan	5,675,629	10/21/2029

‡Expiration dates of European and Japanese patents are calculated as 20 years from the earliest nonprovisional filing date to which priority is claimed, and do not take into account extensions that are or may be available in these jurisdictions.

Captisol

Patents and pending patent applications covering Captisol are owned by us. Other patents and pending patent applications covering methods of making Captisol are owned by Ligand or by Pfizer. The patents covering the Captisol product, if issued, with the latest expiration date would not be set to expire until 2033 (*see, e.g.,* U.S. Patent No. 9,493,582 (expires Feb. 27, 2033)). We also own several patents and pending patent applications covering drug products containing Captisol as a component. The type of patent protection (*e.g.*, composition of matter or use) and the expiration dates for several issued patents covering Captisol are provided in the following table. In addition, certain related patents and applications in the commercially important jurisdictions of Europe and Japan are listed in the following table.

Captisol					
United States			Corresponding Foreign		
Type of Protection	U.S. Patent No.	U.S. Expiration Date	Jurisdiction	Patent Number	Expiration Date‡
			EU	2,708,225	pending
CoM	8,114,438	3/19/2028	Japan	2015-163634	pending
			EU	1,945,228	10/26/2025
			EU	2,335,707	10/26/2025
CoM	7,629,331	10/26/2025	EU	2,581,078	10/26/2025
Use	8,049,003	12/19/2026	EU	2,583,668	10/26/2025
			EU	1,945,228	10/26/2025
			EU	2,335,707	10/26/2025
CoM	8,846,901	10/26/2025	EU	2,581,078	10/26/2025
			EU	1,945,228	10/26/2025
			EU	2,335,707	10/26/2025
CoM	8,829,182	10/26/2025	EU	2,581,078	10/26/2025
			EU	2,268,269	pending
			Japan	4,923,144	4/28/2029
CoM / Use	7,635,773	3/13/2029	Japan	6,039,721	4/28/2029
			Japan	2016-216021	pending
			EU	2,268,269	pending
			Japan	4,923,144	4/28/2029
CoM	8,410,077	3/13/2029	Japan	6,039,721	4/28/2029
			Japan	2016-216021	pending
			EU	2,268,269	pending
			Japan	4,923,144	4/28/2029
CoM	9,200,088	3/13/2029	Japan	6,039,721	4/28/2029
			Japan	2016-216021	pending
CoM	9,493,582	2/27/2033	EU	2,748,205	pending
			Japan	2016-166368	pending

‡ Expiration date of European and Japanese patents are calculated as 20 years from the earliest nonprovisional filing date to which priority is claimed, and do not take into account extensions that are or may be available in these jurisdictions.

Subject to compliance with the terms of the respective agreements, our rights to receive royalty payments under our licenses with our exclusive licensors typically extend for the life of the patents covering such developments. For a discussion of the risks associated with patent and proprietary rights, see below under “Item 1A. Risk Factors.”

OmniAb

Ligand has received patent protection in 27 countries, including the United States, multiple countries throughout Europe, Japan and China (see selected cases listed in the table below) and has 19 patent applications pending worldwide. The patents and applications owned by Ligand are expected to expire between 2028 and 2033 and partners are able to use the OMT patented technology to generate novel antibodies, which may be entitled to additional patent protection.

OmniAb					
United States			Corresponding Foreign		
Type of Protection	U.S. Patent No.	U.S. Expiration Date	Jurisdiction	Patent Number	Expiration Date‡
			EU	2,152,880	5/30/2028
			EU	2,336,329	5/30/2028
CoM	8,703,485	10/10/2031	Japan	5,823,690	5/30/2028
	9,388,233	5/30/2028	N/A		
Use	8,907,157	5/30/2028	N/A		
CoM / Use	9,475,859	4/15/2034	N/A		

‡ Expiration date of European and Japanese patents are calculated as 20 years from the earliest nonprovisional filing date to which priority is claimed, and do not take into account extensions that are or may be available in these jurisdictions.

LTP Technology

Patent applications related to our LTP Technology include two families owned by Ligand and one owned by Omthera. Each of these patent families include claims directed to composition of matter and use. Patents resulting from these applications, if granted, would have a latest expiration date in 2036.

LGD-6972 (Glucagon Receptor Antagonist)

Patents and pending patent applications covering LGD-6972 are owned by Ligand. Patents covering LGD-6972, if issued, with the latest expiration date would not be set to expire until 2035 (*see, e.g.,* WO 2015/191900 (contains composition of matter and use claims; filed June 11, 2015)). The type of patent protection (*e.g.*, composition of matter or use) and the expiration dates for several issued patents covering LGD-6972 are provided in the following table. In addition, certain related patents and applications in the commercially important jurisdictions of Europe and Japan are listed in the following table.

LGD-6972					
United States			Corresponding Foreign		
Type of Protection	U.S. Patent No.	U.S. Expiration Date	Jurisdiction	Patent Number	Expiration Date‡
			EU	2,129,654	2/11/2028
			EU	2,786,985	pending
			Japan	5,322,951	2/11/2028
CoM	8,710,236	2/11/2028	Japan	2015-196171	pending
			EU	2,129,654	2/11/2028
			EU	2,786,985	pending
			Japan	5,322,951	2/11/2028
CoM	9,169,201	2/11/2028	Japan	2015-196171	pending
			EU	2,326,618	8/13/2029
			EU	2,799,428	8/13/2029
			EU	n/a	pending
			Japan	5,684,126	8/13/2029
CoM / Use	8,907,103	1/2/2031	Japan	2016-251460	pending

‡ Expiration date of European and Japanese patents are calculated as 20 years from the earliest nonprovisional filing date to which priority is claimed, and do not take into account extensions that are or may be available in these jurisdictions.

Human Resources

As of February 6, 2016, we had 22 full-time employees, of whom eight are involved directly in scientific research and development activities.

Investor Information

Financial and other information about us is available on our website at www.ligand.com. We make available on our website copies of our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, 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 as soon as reasonably practicable after we electronically file such material with, or furnish it to, the U.S. Securities and Exchange Commission (SEC). In addition, we have previously filed registration statements and other documents with the SEC. Any document we file may be inspected, at the SEC's public reference room at 100 F Street NE, Washington, DC 20549, or at the SEC's internet address at www.sec.gov. These website addresses are not intended to function as hyperlinks, and the information contained in our website and in the SEC's website is not intended to be a part of this filing. Information related to the operation of the SEC's public reference room may be obtained by calling the SEC at 800-SEC-0330.

ITEM 1A. RISK FACTORS

The following is a summary description of some of the many risks we face in our business. You should carefully review these risks in evaluating our business, including the businesses of our subsidiaries. You should also consider the other information described in this report.

Future revenue based on Promacta, Kyprolis and Evomela, as well as sales of our other products, may be lower than expected.

Novartis is obligated to pay us royalties on its sales of Promacta, and we receive revenue from Amgen based on both sales of Kyprolis and purchases of Captisol material for clinical and commercial uses. These payments are expected to be a substantial portion of our ongoing revenues for some time. In addition, we receive revenues based on sales of Evomela and other products. Any setback that may occur with respect to any of our partners' products, and in particular Promacta or Kyprolis, could significantly impair our operating results and/or reduce our revenue and the market price of our stock. Setbacks for the products could include problems with shipping, distribution, manufacturing, product safety, marketing, government regulation or reimbursement, licenses and approvals, intellectual property rights, competition with existing or new products and physician or patient acceptance of the products, as well as higher than expected total rebates, returns, discounts, or unfavorable exchange rates. These products also are or may become subject to generic competition.

Future revenue from sales of Captisol material to our license partners may be lower than expected.

Revenues from sales of Captisol material to our collaborative partners represent a significant portion of our current revenues. Any setback that may occur with respect to Captisol could significantly impair our operating results and/or reduce the market price of our stock. Setbacks for Captisol could include problems with shipping, distribution, manufacturing, product safety, marketing, government regulation or reimbursement, licenses and approvals, intellectual property rights, competition with existing or new products and physician or patient acceptance of the products using Captisol.

If products or product candidates incorporating Captisol material were to cause any unexpected adverse events, the perception of Captisol safety could be seriously harmed. If this were to occur, we may not be able to sell Captisol unless and until we are able to demonstrate that the adverse event was unrelated to Captisol, which we may not be able to do. Further, the FDA could require us to submit additional information for regulatory review or approval, including data from extensive safety testing or clinical testing of products using Captisol. This would be expensive and it may delay the marketing of Captisol-enabled products and receipt of revenue related to those products, which could significantly impair our operating results and/or reduce the market price of our stock.

We obtain Captisol from a sole source supplier, and if this supplier were to cease to be able, for any reason, to supply Captisol to us in the amounts we require, or decline to supply Captisol to us, we would be required to seek an alternative source, which could potentially take a considerable length of time and impact our revenue and customer relationships. We maintain inventory of Captisol, which has a five year shelf life, at three geographically dispersed storage locations in the United States and Europe. If we were to encounter problems maintaining our inventory, such as natural disasters, at one or more of these locations, it could lead to supply interruptions.

We currently depend on our arrangements with our partners and licensees to sell products using our Captisol technology. These agreements generally provide that our partners may terminate the agreements at will. If our partners discontinue sales of

products using Captisol, fail to obtain regulatory approval for products using Captisol, fail to satisfy their obligations under their agreements with us, or choose to utilize a generic form of Captisol should it become available, or if we are unable to establish new licensing and marketing relationships, our financial results and growth prospects would be materially affected. Furthermore, we maintain significant accounts receivable balances with certain customers purchasing Captisol materials, which may result in the concentration of credit risk. We generally do not require any collateral from our customers to secure payment of these accounts receivable. If any of our major customers were to default in the payment of their obligations to us, our business, operating results and cash flows could be adversely affected.

Further, under most of our Captisol outlicenses, the amount of royalties we receive will be reduced or will cease when the relevant patent expires. Our low-chloride patents and foreign equivalents are not expected to expire until 2033, our high purity patents and foreign equivalents, are not expected to expire until 2029 and our morphology patents and foreign equivalents, are not expected to expire until 2025, but the initially filed patents relating to Captisol expired starting in 2010 in the United States and in 2016 in most countries outside the United States. If our other intellectual property rights are not sufficient to prevent a generic form of Captisol from coming to market and if in such case our partners choose to terminate their agreements with us, our Captisol revenue may decrease significantly.

Third party intellectual property may prevent us or our partners from developing our potential products; our and our partners' intellectual property may not prevent competition; and any intellectual property issues may be expensive and time consuming to resolve.

The manufacture, use or sale of our potential products or our licensees' products or potential products may infringe the patent rights of others. If others obtain patents with conflicting claims, we may be required to obtain licenses to those patents or to develop or obtain alternative technology. We may not be able to obtain any such licenses on acceptable terms, or at all. Any failure to obtain such licenses could delay or prevent us from pursuing the development or commercialization of our potential products.

Generally, our success will depend on our ability and the ability of our partners to obtain and maintain patents and other intellectual property rights for our and their potential products. Our patent position is uncertain and involves complex legal and technical questions for which legal principles are unresolved. Even if we or our partners do obtain patents, such patents may not adequately protect the technology we own or have licensed. For example, in January 2016, we received a paragraph IV certification from a subsidiary of Par advising us that it had filed an ANDA with the FDA seeking approval to market a generic version of Merck's NOXAFIL-IV product. The paragraph IV certification alleges that Merck's U.S. Patent No. 9,023,790 related to NOXAFIL-IV and our U.S. Patent No. 8,410,077 related to Captisol, which we refer to as the '077 Patent, are invalid and/or will not be infringed by Par's manufacture, use or sale of the product for which the ANDA was submitted. Although Merck and Par settled this dispute, we could face similar disputes in the future which, if successful, could result in lost revenues or limit our ability to enter into new licenses using the challenged patent.

Any conflicts with the patent rights of others could significantly reduce the coverage of our patents or limit our ability to obtain meaningful patent protection. For example, our European patent related to Agglomerated forms of Captisol was limited during an opposition proceeding, and the rejection of our European patent application related to High Purity Captisol is currently being appealed. In addition, any determination that our patent rights are invalid may result in early termination of our agreements with our license partners and could adversely affect our ability to enter into new license agreements. We also rely on unpatented trade secrets and know-how to protect and maintain our competitive position. We require our employees, consultants, licensees and others to sign confidentiality agreements when they begin their relationship with us. These agreements may be breached, and we may not have adequate remedies for any breach. In addition, our competitors may independently discover our trade secrets.

We may also need to initiate litigation, which could be time-consuming and expensive, to enforce our proprietary rights or to determine the scope and validity of others' rights. If this occurs, a court may find our patents or those of our licensors invalid or may find that we have infringed on a competitor's rights. In addition, if any of our competitors have filed patent applications in the United States which claim technology we also have invented, the United States Patent and Trademark Office may require us to participate in expensive interference proceedings to determine who has the right to a patent for the technology.

The occurrence of any of the foregoing problems could be time-consuming and expensive and could adversely affect our financial position, liquidity and results of operations.

We rely heavily on licensee relationships, and any disputes or litigation with our partners or termination or breach of any of the related agreements could reduce the financial resources available to us, including milestone payments and future royalty revenues.

Our existing collaborations may not continue or be successful, and we may be unable to enter into future collaborative arrangements to develop and commercialize our unpartnered assets. Generally, our current collaborative partners also have the right to terminate their collaborations at will or under specified circumstances. If any of our collaborative partners breach or terminate their agreements with us or otherwise fail to conduct their collaborative activities successfully (for example, by not making required payments when due, or at all), our product development under these agreements will be delayed or terminated. Disputes or litigation may also arise with our collaborators (with us and/or with one or more third parties), including those over ownership rights to intellectual property, know-how or technologies developed with our collaborators. For example, we are asserting our rights to receive payment against one of our collaborative partners which could harm our relationship with sch partner. Such disputes or litigation could adversely affect our rights to one or more of our product candidates and could delay, interrupt or terminate the collaborative research, development and commercialization of certain potential products, create uncertainty as to ownership rights of intellectual property, or could result in litigation or arbitration. In addition, a significant downturn or deterioration in the business or financial condition of our collaborators or partners could result in a loss of expected revenue and our expected returns on investment. The occurrence of any of these problems could be time-consuming and expensive and could adversely affect our business.

Our product candidates, and the product candidates of our partners, face significant development and regulatory hurdles prior to partnering and/or marketing which could delay or prevent licensing, sales-based royalties and/or milestone revenue.

Before we or our partners obtain the approvals necessary to sell any of our unpartnered assets or partnered programs, we must show through preclinical studies and human testing that each potential product is safe and effective. We and/or our partners have a number of partnered programs and unpartnered assets moving toward or currently awaiting regulatory action. Failure to show any product's safety and effectiveness could delay or prevent regulatory approval of a product and could adversely affect our business. The drug development and clinical trials process is complex and uncertain. For example, the results of preclinical studies and initial clinical trials may not necessarily predict the results from later large-scale clinical trials. In addition, clinical trials may not demonstrate a product's safety and effectiveness to the satisfaction of the regulatory authorities. A number of companies have suffered significant setbacks in advanced clinical trials or in seeking regulatory approvals, despite promising results in earlier trials. The FDA may also require additional clinical trials after regulatory approvals are received. Such additional trials may be expensive and time-consuming, and failure to successfully conduct those trials could jeopardize continued commercialization of a product.

The speed at which we and our partners complete our scientific studies and clinical trials depends on many factors, including, but not limited to, our ability to obtain adequate supplies of the products to be tested and patient enrollment. Patient enrollment is a function of many factors, including the size of the patient population, the proximity of patients to clinical sites, the eligibility criteria for the trial and other potential drug candidates being studied. Delays in patient enrollment for our or our partners' trials may result in increased costs and longer development times. In addition, our partners have rights to control product development and clinical programs for products developed under our collaborations. As a result, these partners may conduct these programs more slowly or in a different manner than expected. Moreover, even if clinical trials are completed, we or our partners still may not apply for FDA approval in a timely manner or the FDA still may not grant approval.

Our drug development programs may require substantial additional capital to complete successfully, arising from costs to: conduct research, preclinical testing and human studies; establish pilot scale and commercial scale manufacturing processes and facilities; and establish and develop quality control, regulatory, marketing, sales and administrative capabilities to support these programs. While we expect to fund our research and development activities from cash generated from operations to the extent possible, if we are unable to do so, we may need to complete additional equity or debt financings or seek other external means of financing. These financings could depress our stock price. If additional funds are required to support our operations and we are unable to obtain them on terms favorable to us, we may be required to cease or reduce further development or commercialization of our products, to sell some or all of our technology or assets or to merge with another entity.

Our OmniAb antibody platform faces specific risks, including the fact that no drug using antibodies from the platform has yet advanced to late stage clinical trials.

None of our collaboration partners using our OmniAb antibody platform have tested drugs based on the platform in clinical trials and, therefore, none of our OmniAb collaboration partners' drugs have received FDA approval. If one of our OmniAb collaboration partners' drug candidates fails during preclinical studies or clinical trials, our other OmniAb collaboration partners may decide to abandon drugs using antibodies generated from the OmniAb platform, whether or not

attributable to the platform. All of our OmniAb collaboration partners may terminate their programs at any time without penalty. In addition, our OmniRat and OmniFlic platforms, which we consider the most promising, are covered by two patents within the U.S. and two patents in the European Union and are subject to the same risks as our patent portfolio discussed above, including the risk that our patents may infringe on third party patent rights or that our patents may be invalidated. Further, we face significant competition from other companies selling human antibody-generating rodents, especially mice which compete with our OmniMouse platform, including the VelocImmune mouse, the AlivaMab mouse, the Trianni mouse and the Kymouse. Many of our competitors have greater financial, technical and human resources than we do and may be better equipped to develop, manufacture and market competing antibody platforms.

If plaintiffs bring product liability lawsuits against us or our partners, we or our partners may incur substantial liabilities and may be required to limit commercialization of our approved products and product candidates.

As is common in our industry, our partners and we face an inherent risk of product liability as a result of the clinical testing of our product candidates in clinical trials and face an even greater risk for commercialized products. Although we are not currently a party to product liability litigation, if we are sued, we may be held liable if any product or product candidate we develop causes injury or is found otherwise unsuitable during product testing, manufacturing, marketing or sale. Regardless of merit or eventual outcome, liability claims may result in decreased demand for any product candidates or products that we may develop, injury to our reputation, discontinuation of clinical trials, costs to defend litigation, substantial monetary awards to clinical trial participants or patients, loss of revenue and the inability to commercialize any products that we develop. We have product liability insurance that covers our clinical trials up to a $10.0 million annual limit. If we are sued for any injury caused by our product candidates or any future products, our liability could exceed our total assets.

Any difficulties from strategic acquisitions could adversely affect our stock price, operating results and results of operations.

We may acquire companies, businesses and products that complement or augment our existing business. We may not be able to integrate any acquired business successfully or operate any acquired business profitably. Integrating any newly acquired business could be expensive and time-consuming. Integration efforts often take a significant amount of time, place a significant strain on managerial, operational and financial resources and could prove to be more difficult or expensive than we predict. The diversion of our management's attention and any delay or difficulties encountered in connection with any future acquisitions we may consummate could result in the disruption of our on-going business or inconsistencies in standards and controls that could negatively affect our ability to maintain third-party relationships. Moreover, we may need to raise additional funds through public or private debt or equity financing, or issue additional shares, to acquire any businesses or products, which may result in dilution for stockholders or the incurrence of indebtedness.

As part of our efforts to acquire companies, business or product candidates or to enter into other significant transactions, we conduct business, legal and financial due diligence with the goal of identifying and evaluating material risks involved in the transaction. Despite our efforts, we ultimately may be unsuccessful in ascertaining or evaluating all such risks and, as a result, might not realize the intended advantages of the transaction. If we fail to realize the expected benefits from acquisitions we may consummate in the future or have consummated in the past, whether as a result of unidentified risks, integration difficulties, regulatory setbacks, litigation with current or former employees and other events, our business, results of operations and financial condition could be adversely affected. If we acquire product candidates, we will also need to make certain assumptions about, among other things, development costs, the likelihood of receiving regulatory approval and the market for such product candidates. Our assumptions may prove to be incorrect, which could cause us to fail to realize the anticipated benefits of these transactions.

In addition, we will likely experience significant charges to earnings in connection with our efforts, if any, to consummate acquisitions. For transactions that are ultimately not consummated, these charges may include fees and expenses for investment bankers, attorneys, accountants and other advisors in connection with our efforts. Even if our efforts are successful, we may incur, as part of a transaction, substantial charges for closure costs associated with elimination of duplicate operations and facilities and acquired IPR&D charges. In either case, the incurrence of these charges could adversely affect our results of operations for particular quarterly or annual periods.

We have restated prior consolidated financial statements, which may lead to possible additional risks and uncertainties, including possible loss of investor confidence.

We have restated our consolidated financial statements as of and for the year ended December 31, 2015 (including the third quarter within that year) and for the first and second quarters of fiscal year 2016 in order to correct certain accounting errors. For a description of the material weaknesses in our internal control over financial reporting identified by management in

connection with the Restatement and management's plan to remediate those material weaknesses, see "Part II, Item 9A - Controls and Procedures."

As a result of the Restatement, we have become subject to possible additional costs and risks, including (a) accounting and legal fees incurred in connection with the Restatement and (b) a possible loss of investor confidence. Further, we are subject to a shareholder lawsuit related to the Restatement which may be costly to defend and divert our management's attention from other operating matters. See "Item 3. Legal Proceedings."

We have identified material weaknesses in our internal control over financial reporting that, if not remediated, could result in additional material misstatements in our financial statements.

As described in "Part II, Item 9A - Controls and Procedures," management identified control deficiencies that represent material weaknesses. A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim financial statements will not be prevented or detected on a timely basis. As a result of the identified material weaknesses, management has concluded that we did not maintain effective internal control over financial reporting as of December 31, 2016. See "Part II, Item 9A - Controls and Procedures."

We are developing and implementing a remediation plan to address the material weaknesses. If our remediation efforts are insufficient or if additional material weaknesses in our internal control over financial reporting are discovered or occur in the future, our consolidated financial statements may contain material misstatements and we could be required to restate our financial results, which could materially and adversely affect our business, results of operations and financial condition, restrict our ability to access the capital markets, require us to expend significant resources to correct the material weakness, subject us to fines, penalties or judgments, harm our reputation or otherwise cause a decline in investor confidence.

Changes or modifications in financial accounting standards, including those related to revenue recognition, may harm our results of operations.

From time to time, the Financial Accounting Standards Board, or FASB, either alone or jointly with other organizations, promulgates new accounting principles that could have an adverse impact on our results of operations. For example, in May 2014, FASB issued a new accounting standard for revenue recognition-Accounting Standards Codification Topic 606, Revenue from Contracts with Customers, or ASC 606-that supersedes most current revenue recognition guidance. The new guidance requires a company to recognize revenue upon transfer of goods or services to a customer at an amount that reflects the expected consideration to be received in exchange for those goods or services. The new guidance becomes effective in fiscal 2018 and early adoption in fiscal 2017 is permitted.

We anticipate this standard will have a material impact on our consolidated financial statements by accelerating the timing of revenue recognition for revenues related to royalties, and potentially certain contingent milestone based payments. Our practice has been to book royalties one quarter after our partners report sales of the underlying product. Now, under ASC 606, Ligand will estimate and book royalties in the same quarter that our partners report the sale of the underlying product. As a result, we will book royalties one quarter earlier compared to our past practice. We will rely on our partners' earning releases and other information from our partners to determine the sales of our partners' products and to estimate the related royalty revenues. If our partners report incorrect sales, or if our partners delay reporting of their earnings release, our royalty estimates may need to be revised and/or our financial reporting may be delayed.

Any difficulties in implementing this guidance could cause us to fail to meet our financial reporting obligations, which could result in regulatory discipline and harm investors' confidence in us. Finally, if we were to change our critical accounting estimates, including those related to the recognition of license revenue and other revenue sources, our operating results could be significantly affected.

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

As of December 31, 2016 we had U.S. federal and state net operating loss carryforwards (NOLs) of approximately $446.3 million and $140.5 million, respectively, which expire through 2036, if not utilized. As of December 31, 2016, we had federal and California research and development tax credit carryforwards of approximately $21.9 million and $19.4 million, respectively. The federal research and development tax credit carryforwards expire in various years through 2036, if not utilized. The California research and development credit will carry forward indefinitely. Under Sections 382 and 383 of Internal Revenue Code of 1986, as amended (Code) if a corporation undergoes an "ownership change," the corporation's ability to use

its pre-change NOLs and other pre-change tax attributes, such as research tax credits, to offset its future post-change income and taxes may be limited. In general, an "ownership change" occurs if there is a cumulative change in our ownership by "5% shareholders" that exceeds 50 percentage points over a rolling three-year period. Similar rules may apply under state tax laws. We believe we have experienced certain ownership changes in the past and have reduced our deferred tax assets related to NOLs and research and development tax credit carryforwards accordingly. In the event that it is determined that we have in the past experienced additional ownership changes, or if we experience one or more ownership changes as a result future transactions in our stock, then we may be further limited in our ability to use our NOLs and other tax assets to reduce taxes owed on the net taxable income that we earn in the event that we attain profitability. Any such limitations on the ability to use our NOLs and other tax assets could adversely impact our business, financial condition and operating results.

We rely on information technology and any failure, inadequacy, interruption or security lapse of that technology, including any cyber security incidents, could harm our ability to operate our business effectively.

Our business is increasingly dependent on critical, complex and interdependent information technology systems, including internet-based systems, to support business processes as well as internal and external communications. Despite the implementation of security measures, our internal computer systems and those of our partners are vulnerable to damage from cyber-attacks, computer viruses, security breaches, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures. System failures, accidents or security breaches could cause interruptions in our operations, could lead to the loss of trade secrets or other intellectual property, could lead to the public exposure of personal information of our employees and others, and could result in a material disruption of our clinical and commercialization activities and business operations, in addition to possibly requiring substantial expenditures to remedy. To the extent that any disruption or security breach were to result in a loss of, or damage to, our data or applications, or inappropriate disclosure of confidential or proprietary information, we could incur liability and our business and financial condition could be harmed.

The occurrence of a catastrophic disaster could damage our facilities beyond insurance limits or we could lose key data which could cause us to curtail or cease operations.

We are vulnerable to damage and/or loss of vital data from natural disasters, such as earthquakes, tornadoes, power loss, fire, floods and similar events, as well as from accidental loss or destruction. If any disaster were to occur, our ability to operate our business could be seriously impaired. We have property, liability, and business interruption insurance which may not be adequate to cover our losses resulting from disasters or other similar significant business interruptions, and we do not plan to purchase additional insurance to cover such losses due to the cost of obtaining such coverage. Any significant losses that are not recoverable under our insurance policies could seriously impair our business, financial condition and prospects.

We sold the 2019 Convertible Senior Notes, which may impact our financial results, result in the dilution of existing stockholders, and restrict our ability to take advantage of future opportunities.

In August of 2014, we sold $245.0 million aggregate principal amount of 0.75% Convertible Senior Notes due 2019, or the 2019 Convertible Senior Notes. We will be required to pay interest on the 2019 Convertible Senior Notes until they come due or are converted, and the payment of that interest will reduce our net income. The sale of the 2019 Convertible Senior Notes may also affect our earnings per share figures, as accounting procedures require that we include in our calculation of earnings per share the number of shares of our common stock into which the 2019 Convertible Senior Notes are convertible. The 2019 Convertible Senior Notes may be converted, under the conditions and at the premium specified in the 2019 Convertible Senior Notes, into cash and shares of our common stock, if any (subject to our right to pay cash in lieu of all or a portion of such shares). If shares of our common stock are issued to the holders of the 2019 Convertible Senior Notes upon conversion, there will be dilution to our shareholders equity. Upon the occurrence of certain circumstances, holders of the 2019 Convertible Senior Notes may require us to purchase all or a portion of their notes for cash, which may require the use of a substantial amount of cash. If such cash is not available, we may be required to sell other assets or enter into alternate financing arrangements at terms that may or may not be desirable. The existence of the 2019 Convertible Senior Notes and the obligations that we incurred by issuing them may restrict our ability to take advantage of certain future opportunities, such as engaging in future debt or equity financing activities.

Impairment charges pertaining to goodwill, identifiable intangible assets or other long-lived assets from our mergers and acquisitions could have an adverse impact on our results of operations and the market value of our common stock.

The total purchase price pertaining to our acquisitions in recent years of CyDex, Metabasis, Pharmacopeia, Neurogen and OMT have been allocated to net tangible assets, identifiable intangible assets, in-process research and development and goodwill. To the extent the value of goodwill or identifiable intangible assets or other long-lived assets become impaired, we

will be required to incur material charges relating to the impairment. Any impairment charges could have a material adverse impact on our results of operations and the market value of our common stock.

Our charter documents and concentration of ownership may hinder or prevent change of control transactions.

Provisions contained in our certificate of incorporation and bylaws may discourage transactions involving an actual or potential change in our ownership. In addition, our Board of Directors may issue shares of common or preferred stock without any further action by the stockholders. Our directors and certain of our institutional investors collectively beneficially own a significant portion of our outstanding common stock. Such provisions and issuances may have the effect of delaying or preventing a change in our ownership. If changes in our ownership are discouraged, delayed or prevented, it would be more difficult for our current Board of Directors to be removed and replaced, even if you or our other stockholders believe that such actions are in the best interests of us and our stockholders.

We may be subject to prosecution for violation of federal law due to our agreement with Vireo Health, which is developing drugs using cannabis.

In November 2015, we entered into a license agreement and supply agreement with Vireo Health granting Vireo Health an exclusive right in certain states within the United States and certain global territories to use Captisol in Vireo's development and commercialization of pharmaceutical-grade cannabinoid-based products. However, state laws legalizing medical cannabis use are in conflict with the Federal Controlled Substances Act, which classifies cannabis as a schedule-I controlled substance and makes cannabis use and possession illegal on a national level. The United States Supreme Court has ruled that it is the Federal government that has the right to regulate and criminalize cannabis, even for medical purposes, and thus Federal law criminalizing the use of cannabis preempts state laws that legalize its use. While the Obama administration effectively stated that it is not an efficient use of resources to direct Federal law enforcement agencies to prosecute those lawfully abiding by state-designated laws allowing the use and distribution of medical and recreational cannabis, the Trump administration has indicated that it will reconsider such policy and practice, especially with respect to recreational cannabis. Further, even if the Trump administration affirms the same approach with respect to medical or recreational cannabis initially, there is no guarantee that such policy and practice will not change regarding the low-priority enforcement of Federal laws in states where cannabis has been legalized. Any such change in the Federal government's enforcement of Federal laws could result in Ligand, as the supplier of Captisol, to be charged with violations of Federal laws which may result in significant legal expenses and substantial penalties and fines.

Our stock price has been volatile and could experience a sudden decline in value.

The market prices for securities of biotechnology and pharmaceutical companies have historically been highly volatile, and the market has recently experienced significant price and volume fluctuations that are unrelated to the operating performance of particular companies. Continued volatility in the overall capital markets could reduce the market price of our common stock in spite of our operating performance. Further, high stock price volatility could result in higher stock-based compensation expense.

Our common stock has experienced significant price and volume fluctuations and may continue to experience volatility in the future. Many factors may have a significant impact on the market price of our common stock, including, but not limited to, the following factors: results of or delays in our preclinical studies and clinical trials; the success of our collaboration agreements; publicity regarding actual or potential medical results relating to products under development by us or others; announcements of technological innovations or new commercial products by us or others; developments in patent or other proprietary rights by us or others; comments or opinions by securities analysts or major stockholders; future sales of our common stock by existing stockholders; regulatory developments or changes in regulatory guidance; litigation or threats of litigation; economic and other external factors or other disaster or crises; the departure of any of our officers, directors or key employees; period-to-period fluctuations in financial results; and price and volume fluctuations in the overall stock market.

Our results of operations and liquidity needs could be materially negatively affected by market fluctuations and economic downturn.

Our results of operations could be materially negatively affected by economic conditions generally, both in the United States and elsewhere around the world. Continuing concerns over inflation, energy costs, geopolitical issues, the availability and cost of credit, and the U.S. financial markets have contributed to increased volatility and diminished expectations for the economy and the markets going forward. Domestic and international equity markets periodically experience heightened volatility and turmoil. These events may have an adverse effect on us. In the event of a market downturn, our results of operations could be adversely affected by those factors in many ways, including making it more difficult for us to raise funds if

necessary, and our stock price may further decline. We cannot provide assurance that our investments are not subject to adverse changes in market value. If our investments experience adverse changes in market value, we may have less capital to fund our operations.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

We currently lease premises consisting of approximately 5,000 square feet of office space in San Diego which serves as our corporate headquarters. The lease expires in May 2023.

We lease approximately 1,500 square feet of laboratory space located at the Bioscience and Technology Business Center in Lawrence, Kansas, leased through December 2017.

Item 3. Legal Proceedings

From time to time we are subject to various lawsuits and claims with respect to matters arising out of the normal course of our business. Due to the uncertainty of the ultimate outcome of these matters, the impact on future financial results is not subject to reasonable estimates.

Paragraph IV Certification by Par Pharmaceuticals

On January 7, 2016, the Company received a paragraph IV certification from Par Sterile Products, LLC, a subsidiary of Par Pharmaceuticals, Inc., or Par, advising us that it had filed an ANDA with the FDA seeking approval to market a generic version of Merck's NOXAFIL-IV product. On February 19, 2016, Merck filed an action against Par in the United States District Court for the District of New Jersey, asserting that Par's manufacture, use or sale of the product for which the ANDA was submitted would infringe Merck's U.S. Patent No. 9,023,790. On October 31, 2016, the parties to the lawsuit entered into a consent judgment dismissing all claims, counterclaims, affirmative defenses and demands. The parties have reported to the court that they entered into a confidential settlement agreement, and that they submitted the agreement to the Federal Trade Commission and the United States Department of Justice pursuant to Section 112(a) of the Medicare Prescription Drug, Improvement and Modernization Act of 2003.

Class Action Lawsuit

In November 2016, a putative shareholder class action lawsuit was filed in the United States District Court for the Southern District of California against the Company, its chief executive officer and chief financial officer. The complaint alleges violations of Sections 10(b) and 20(a) of the Securities Exchange Act of 1934, and Rule 10b-5 promulgated thereunder, and seeks unspecified compensatory damages and other relief on behalf of a purported class of purchasers of the Company's securities between November 9, 2015 and November 14, 2016, inclusive. The complaint's allegations relate generally to the Company's November 2016 restatement of certain prior period financial statements. In January 2017, a purported Company shareholder filed a motion for appointment of lead counsel and lead plaintiff. The motion is scheduled to be heard by the court in March 2017. No trial date has been set. The Company believes that the lawsuit is without merit and intends to vigorously defend against the lawsuit.

Securities Litigation

In 2012, a federal securities class action and shareholder derivative lawsuit was filed in Pennsylvania alleging that the Company and its chief executive officer assisted various breaches of fiduciary duties based on our purchase of a licensing interest in a development-stage pharmaceutical program from the Genaera Liquidating Trust in 2010 and our subsequent sale of half of our interest in the transaction to Biotechnology Value Fund, Inc. The district court granted our motion to dismiss an amended complaint on November 11, 2015 and the plaintiff has appealed that ruling to the U.S. Third Circuit Court of Appeals. The Company intends to continue to vigorously defend against the claims against the Company and its chief executive officer. The outcome of the matter is not presently determinable.

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 traded on the NASDAQ Global Market under the symbol "LGND."

The following table sets forth the high and low intraday sales prices for our common stock on the NASDAQ Global Market for the periods indicated:

	Price Range	
	Low	High
Year Ended December 31, 2016:		
1st Quarter	$ 82.06	$ 108.79
2nd Quarter	95.05	131.84
3rd Quarter	97.22	139.79
4th Quarter	87.50	110.83
Year Ended December 31, 2015:		
1st Quarter	$ 51.54	$ 77.11
2nd Quarter	75.67	100.90
3rd Quarter	82.10	111.25
4th Quarter	84.46	111.85

As of February 15, 2017, the closing price of our common stock on the NASDAQ Global Market was $104.28

Holders

As of February 15, 2017, there were approximately 576 holders of record of the common stock.

Purchases of Equity Securities By the Issuer and Affiliated Purchasers

The following table presents information regarding repurchases by us of our common stock during the three months ended December 31, 2016 under the stock repurchase program approved by our board of directors in September 2015, under which we may acquire up to $200 million of our common stock in open market and negotiated purchases for a period of up to three years.

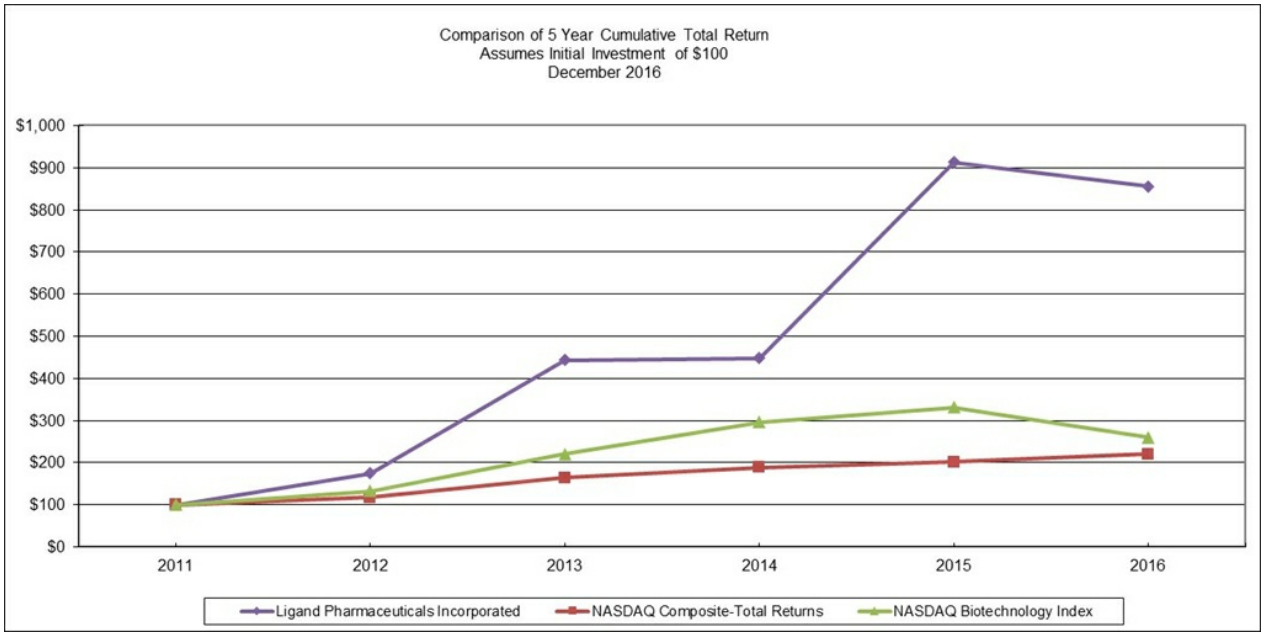
ISSUER PURCHASES OF EQUITY SECURITIES

	Total Number of Shares Purchased	Average Price Paid Per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Maximum Dollar Value of Shares that May Yet Be Purchased Under the Program (in thousands)
October 1 - October 31, 2016	15,000	$ 93.91	15,000	$ 196,548
November 1 - November 30, 2016	10,000	$ 93.83	10,000	$ 195,610
December 1 - December 31, 2016	—	$ —	—	$ 195,610
Total	25,000	$ 93.88	25,000	$ 195,610

Performance Graph

The graph below shows the five-year cumulative total stockholder return assuming the investment of $100 and is based on the returns of the component companies weighted monthly according to their market capitalizations. The graph compares total stockholder returns of our common stock, of all companies traded on the NASDAQ Stock market, as represented by the NASDAQ Composite® Index, and of the NASDAQ Biotechnology Stock Index, as prepared by The NASDAQ Stock Market Inc. The NASDAQ Biotechnology Stock Index tracks approximately 181 domestic biotechnology stocks.

The stockholder return shown on the graph below is not necessarily indicative of future performance and we will not make or endorse any predictions as to future stockholder returns.



	12/31/2012	12/31/2013	12/31/2014	12/31/2015	12/31/2016
Ligand	75%	154%	1%	104%	(6)%
NASDAQ Market (U.S. Companies) Index	17%	40%	15%	7%	9 %
NASDAQ Biotechnology Stocks	33%	66%	34%	12%	(21)%

Item 6. Selected Consolidated Financial Data

The following selected historical consolidated financial and other data are qualified by reference to, and should be read in conjunction with, our consolidated financial statements and the related notes thereto appearing elsewhere herein and "Management's Discussion and Analysis of Financial Condition and Results of Operations." Our selected statement of operations data set forth below for each of the years ended December 31, 2016, 2015, 2014, 2013, and 2012 and the balance sheet data as of December 31, 2016, 2015, 2014, 2013 and 2012 are derived from our consolidated financial statements.

	Year Ended December 31,				
	2016	2015	2014	2013	2012
Consolidated Statements of Operations Data:	(in thousands)				
Royalties	$ 59,423	$ 38,194	$ 29,994	$ 23,584	$ 14,073
Material sales	22,502	27,662	28,488	19,072	9,432
License fees, milestones, and other revenues	27,048	6,058	6,056	6,317	7,883
Total revenues	108,973	71,914	64,538	48,973	31,388
Cost of sales	5,571	5,807	9,136	3,357	1,226
Intangible Amortization	10,643	2,375	2,375	2,375	2,375
Research and development expenses	21,221	11,005	9,747	9,274	10,790
General and administrative expenses	26,621	24,378	22,570	17,984	15,782
Lease exit and termination costs	1,032	1,020	1,084	560	1,022
Write-off of acquired IPR&D	—	—	—	480	—
Total operating costs and expenses	65,088	44,585	44,912	34,030	31,195
Income (loss) from operations	43,885	27,329	19,626	14,943	193
Income (loss) from continuing operations including noncontrolling interests	(2,367)	227,444	10,892	8,832	(2,674)
Loss attributable to noncontrolling interests	—	(2,380)	(1,132)	—	—
Income (loss) from continuing operations	(2,367)	229,824	12,024	8,832	(2,674)
Discontinued operations (1)	731	—	—	2,588	2,147
Net income (loss)	(1,636)	229,824	12,024	11,420	(527)
Basic per share amounts:					
Income (loss) from continuing operations	$ (0.11)	$ 11.61	$ 0.59	$ 0.43	$ (0.14)
Discontinued operations (1)	0.04	—	—	0.13	0.11
Net income (loss)	$ (0.08)	$ 11.61	$ 0.59	$ 0.56	$ (0.03)
Weighted average number of common shares-basic	20,831	19,790	20,419	20,312	19,853
Diluted per share amounts:					
Income (loss) from continuing operations	$ (0.11)	$ 10.83	$ 0.56	$ 0.43	$ (0.14)
Discontinued operations (1)	0.04	—	—	0.12	0.11
Net income (loss)	$ (0.08)	$ 10.83	$ 0.56	$ 0.55	$ (0.03)
Weighted average number of common shares-diluted	20,831	21,228	21,433	20,745	19,853

(1) We sold our Oncology product line ("Oncology") on October 25, 2006.

	December 31,				
	2016	2015	2014	2013	2012
	(in thousands)				
Consolidated Balance Sheet Data:					
Cash, cash equivalents, short-term investments, restricted cash and investments	$ 149,393	$ 229,947	$ 168,597	$ 17,320	$ 15,148
Working capital (deficit)	(64,076)	(8,109)	162,379	(4,058)	(11,616)
Total assets	601,585	503,061	258,029	104,713	104,260
Long-term obligations (excludes long-term portions of deferred revenue, net and deferred gain)	3,603	3,330	208,757	24,076	39,967
Accumulated deficit	(431,127)	(429,491)	(659,315)	(671,339)	(682,759)
Total stockholders' equity	341,290	237,282	26,318	49,613	26,485

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

Results of Operations

Revenue

(Dollars in thousands)	2016	2015	Change	% Change	2014	Change	% Change
Royalty Revenue	$ 59,423	$ 38,194	$ 21,229	56 %	$ 29,994	$ 8,200	27 %
Material Sales	22,502	27,662	(5,160)	(19)%	28,488	(826)	(3)%
License fees, milestones and other revenue	27,048	6,058	20,990	346 %	6,056	2	— %
Total revenue	$ 108,973	$ 71,914	$ 37,059	52 %	$ 64,538	$ 7,376	11 %

Total revenue for 2016 increased $37.1 million or 52% compared with 2015 and for 2015 it increased $7.4 million or 11% compared with 2014. Royalty revenue increased year over year in 2016 and 2015 primarily due to an increase in Promacta and Kyprolis royalties. Material sales decreased year over year in 2016 and 2015 due to timing of customer purchases of Captisol for use in clinical trials and in commercialized products. The increase in license fee, milestones and other revenues in 2016 compared to 2015 is primarily due to OMT license fees and a milestone payment received from Spectrum as a result of the FDA approval of Evomela.

The following table represents royalty revenue by program (in thousands):

	Year ended December 31,		
	2016	2015	2014
Promacta / Revolade	$ 43,043	$ 29,295	$ 23,300
Kyprolis	12,145	7,317	4,558
Third Largest Royalty	1,357	390	1,244
Other Royalties	2,878	1,192	892
Total	$ 59,423	$ 38,194	$ 29,994

The following table represents material sales by clinical and commercial use (in thousands):

	Year ended December 31,		
	2016	2015	2014
Clinical material sales	$ 9,325	$ 10,049	$ 13,798
Commercial material sales	13,177	17,613	14,690
Total	$ 22,502	$ 27,662	$ 28,488

Operating Costs and Expenses

(Dollars in thousands)	2016	2015	Change	% Change	2014	Change	% Change
Cost of sales	$ 5,571	$ 5,807	$ (236)	(4)%	$ 9,136	$ (3,329)	(36)%
Amortization of intangibles	10,643	2,375	8,268	348 %	2,375	—	— %
Research and development	21,221	11,005	10,216	93 %	9,747	1,258	13 %
General and administrative	26,621	24,378	2,243	9 %	22,570	1,808	8 %
Lease exit and termination costs	1,032	1,020	12	1 %	1,084	(64)	(6)%
Total operating costs and expenses	$ 65,088	$ 44,585	$ 20,503	46 %	$ 44,912	$ (327)	(1)%

Total operating costs and expenses for 2016 increased $20.5 million or 46% compared with 2015. Cost of sales decreased year over year in 2016 and 2015 primarily due to lower material sales as a result of timing of customer purchases. Amortization of intangibles increased in 2016 compared with 2015 due to the acquisition of OMT and the corresponding amortization of intangible assets. Research and development expenses and general and administrative expenses increased year over year in 2016 and 2015 due primarily to expenses associated with OMT which we acquired in January 2016 and increases in stock-based compensation expense, business development activities, headcount related expenses and timing of internal development costs.

We are developing several proprietary products. Our programs represent a range of future licensing opportunities to expand our partnered asset portfolio. Our development focus for the year ended December 31, 2016, 2015, and 2014 has been LGD-6972, our novel glucagon receptor antagonist program. We completed a Phase 1b trial in 2015 and initiated a Phase 2 trial in 2016.

We do not provide forward-looking estimates of costs and time to complete our ongoing research and development projects as such estimates would involve a high degree of uncertainty. Uncertainties include our inability to predict the outcome of research and clinical studies, regulatory requirements placed upon us by regulatory authorities such as the FDA and EMA, our inability to predict the decisions of our partners, our ability to fund research and development programs, competition from other entities of which we may become aware in future periods, predictions of market potential for products that may be derived from our work, and our ability to recruit and retain personnel or third-party contractors with the necessary knowledge and skills to perform certain research. Refer to “Item 1A. Risk Factors” for additional discussion of the uncertainties surrounding our research and development initiatives.

Other (expense) income

(Dollars in thousands)	2016	2015	Change	% Change	2014	Change	% Change
Interest expense, net	$ (12,178)	$ (11,802)	$ (376)	3 %	$ (4,860)	$ (6,942)	143 %
Increase in contingent liabilities	(3,334)	(5,013)	1,679	(33)%	(5,135)	122	(2)%
Gain on deconsolidation of Viking	—	28,190	(28,190)	(100)%	—	28,190	— %
Loss from Viking	(23,132)	(5,143)	(17,989)	350 %	—	(5,143)	— %
Other income, net	2,719	1,768	951	54 %	1,671	97	6 %
Total other (expense) income	$ (35,925)	$ 8,000	$ (43,925)	(549)%	$ (8,324)	$ 16,324	(196)%

The year over year increase in interest expense in 2016 and 2015 is due to interest expense related to the 2019 Convertible Senior Notes partially offset by interest income. The year over year increase in contingent liabilities in 2016 and 2015 is due to an increase in the fair value of CyDex and Metabasis related contingent liabilities. We recorded a gain on deconsolidation of Viking in 2015, primarily related to the equity milestone received from Viking upon the close of the Viking

IPO. We recorded a loss from Viking in 2016 for our proportionate share of Viking's losses based on our ownership of Viking common stock and $10.7 million for loss on dilution resulting from Viking's financing. The 2016 year over year increase in loss from Viking is primarily due to an impairment charge of $7.4 million recorded in the fourth quarter of 2016, an increase in Viking's research and development activities as well as a full year of absorbed losses in 2016 versus 2015 which was a partial year as the Company began accounting for Viking under the equity method in May of 2015. The increase in other income in 2016 compared to 2015 is primarily due to the gain on the sale of short-term investments.

Income tax benefit (expense)

(Dollars in thousands)	2016	2015	Change	% Change	2014	Change	% Change
Income before income tax (benefit) expense	$ 7,960	$ 35,329	$ (27,369)	(77)%	$ 11,302	$ 24,027	213 %
Income tax benefit (expense)	(10,327)	192,115	(202,442)	(105)%	(410)	192,525	(46,957)%
Income from operations	$ (2,367)	$ 227,444	$ (229,811)	(101)%	$ 10,892	$ 216,552	1,988 %
Effective Tax Rate	130%	(544)%			4%		

Our effective tax rate for 2016, 2015 and 2014 was 129.7% , (543.8)% , and 3.6% , respectively. Our tax rate is affected by recurring items, such as the U.S. federal and state statutory tax rates and the relative amounts of income we earn in those jurisdictions, which we expect to be fairly consistent in the near term. It is also affected by discrete items that may occur in any given year, but are not consistent from year to year. In addition to state income taxes, the following had the most significant impact on the difference between our statutory U.S. income tax rate (35% in 2016 and 2015 and 34% in 2014) and our effective tax rate:

2016

- $6.3 million (79%) increase in valuation allowance primarily relating to Viking deferred tax asset
- $1.4 million (18%) increase in uncertain tax positions
- $1.2 million (15%) increase from non cash contingent liability charges that are nondeductible for tax purposes
- $1.5 million (19%) reduction from R&D credits

2015

- $231.4 million (655%) reduction from the valuation allowance release against a significant portion of our deferred tax assets. The tax benefit is primarily comprised of U.S. federal and state net operating loss carryforwards, R&D tax credits, and other temporary differences
- $5.8 million (16%) reduction from rate changes due to changes in state law
- $2.1 million (6%) reduction from adjustments relating to the discontinuation of the Avinza product line
- $27.2 million (77%) increase in uncertain tax positions
- $3.3 million (9%) increase in deferred tax assets from completion of 382 analysis
- $1.7 million (5%) increase from non cash CVR and contingent liability charges that are nondeductible for tax purposes

2014

- $7.2 million (64%) reduction due to release of valuation allowance against a portion of our deferred tax assets.
- $1.7 million (15%) increase from non cash contingent liability charges that are nondeductible for tax purposes
- $0.7 million (6%) increase from state taxes net of federal benefit
- $0.6 million (4%) increase from nondeductible stock based and executive compensation

Discontinued operations, net

In 2006, we entered into a purchase agreement with Eisai pursuant to which Eisai agreed to acquire our Oncology product line which included four marketed oncology drugs: ONTAK, Targretin capsules, Targretin gel and Panretin gel. Certain liabilities were recorded associated with the disposal of the product line. During the year ended December 31, 2016 we recognized a $1.1 million gain due to subsequent changes in certain estimates and liabilities previously recorded. We recorded a provision for income taxes related to the gain of $0.4 million.

Net loss attributable to noncontrolling interests

We recorded $2.4 million as a net loss attributable to noncontrolling interests for the year ended December 31, 2015 compared with $1.1 million for the year ended December 31, 2014. The net loss attributable to noncontrolling interests was recorded as a result of our determination that prior to Viking's IPO we held a variable interest in Viking. We recorded 100% of the losses incurred from May 21, 2014 through deconsolidation of Viking, as net loss attributable to noncontrolling interest due to the fact that we were considered the primary beneficiary with no equity interest in the variable interest entity.

Liquidity and Capital Resources

We have financed our operations through offerings of our equity securities, borrowings from long-term debt, issuance of convertible notes, product sales and the subsequent sales of our commercial assets, royalties, license fees, milestones and other revenues, capital and operating lease transactions.

We had net loss of $1.6 million for the year ended December 31, 2016. At December 31, 2016, our accumulated deficit was $431.1 million and we had a working capital deficit of $64.1 million. We believe that our currently available funds, cash generated from operations as well as existing sources of and access to financing will be sufficient to fund our anticipated operating, capital requirements and debt service requirement. We expect to build cash in the future as we continue to generate significant cash flow from royalty, license and milestone revenue and Captisol material sales primarily driven by continued increases in Promacta and Kyprolis sales, recent product approvals and regulatory developments, as well as revenue from anticipated new licenses and milestones. In addition, we anticipate that our liquidity needs can be met through other sources, including sales of marketable securities, borrowings through commercial paper and/or syndicated credit facilities and access to other domestic and foreign debt markets and equity markets.

Investments

We invest our excess cash principally in U.S. government debt securities, investment-grade corporate debt securities and certificates of deposit. We have established guidelines relative to diversification and maturities of our investments in order to provide both safety and liquidity. These guidelines are periodically reviewed and modified to take advantage of trends in yields and interest rates. Additionally, we own certain securities which are classified as short-term investments that we received as a result of a milestone and an upfront license payment as well as 6.3 million shares in Viking.

Borrowings and Other Liabilities

2019 Convertible Senior Notes

We have convertible debt outstanding as of December 31, 2016 related to our 2019 Convertible Senior Notes. In August 2014, we issued $245.0 million aggregate principal amount of convertible senior unsecured notes. The Notes are convertible into common stock upon satisfaction of certain conditions. Interest of 0.75% per year is payable semi-annually on August 15th and February 15th through the maturity of the notes in August 2019.

Upon the occurrence of certain circumstances, holders of the 2019 Convertible Senior Notes may redeem all or a portion of their notes, which may require the use of a substantial amount of cash. At December 31, 2016, we had a working capital deficit of $64.1 million, which includes the 2019 Convertible Senior notes that are currently redeemable as of December 31, 2016 but excludes another $30.0 million that is classified as mezzanine equity. As noted in Note 6, the debt may change from current to non-current period over period, primarily as a result of changes in the Company’s stock price. Management believes that it is remote that holders of the notes would choose to convert their notes early because the fair value of the security that a noteholder can currently realize in an active market is greater than the conversion value the noteholder would realize upon early conversion. In the unlikely event that all the debt was converted, we have 3 business days following a

50 trading day observation period from the convert date to pay the principal in cash. We have positive operating income and positive cash flow from operations for the three years ended December 31, 2016 and, accordingly, while there can be no assurance, we believe we have the ability to raise additional capital through our active S-3, by liquidating assets, or via alternative financing arrangements such as convertible or high yield debt.

Repurchases of Common Stock

During the year ended December 31, 2016, we repurchased 40,500 common shares at a weighted average price of $96.90 per share, pursuant to the repurchase plan, or approximately $3.9 million of common shares.

During the year ended December 31, 2015, we repurchased 6,120 common shares at a weighted average price of $79.92 per share, pursuant to the repurchase plan, or approximately 0.5 million of common shares.

Contingent Liabilities

CyDex

In connection with the acquisition of CyDex in January 2011, we issued a series of CVRs and also assumed certain contingent liabilities. We may be required to make additional payments upon achievement of certain clinical and regulatory milestones to the CyDex shareholders and former license holders. We pay CyDex shareholders, through 2016, 20% of all CyDex-related revenue, but only to the extent that, and beginning only when, CyDex-related revenue for the year exceeds $15.0 million; plus an additional 10% of all CyDex-related revenue recognized during such year, but only to the extent, and beginning only when aggregate CyDex-related revenue for such year exceeds $35.0 million. *See footnote* 7, Balance Sheet Account Details.

Metabasis

In connection with the acquisition of Metabasis in January 2010, we entered into four CVR agreements with Metabasis shareholders. The CVRs entitle the holders to cash payments as frequently as every six months as proceeds are received by us upon the sale or licensing of any of the Metabasis drug development programs and upon the achievement of specified milestones. *See footnote* 7, Balance Sheet Account Details.

Leases and Off-Balance Sheet Arrangements

We lease our office facilities under operating lease arrangements with varying terms through April 2023. The agreements provide for increases in annual rents based on changes in the Consumer Price Index or fixed percentage increases of 3.0%. We had no off-balance sheet arrangements at December 31, 2016, 2015 and 2014.

Contractual Obligations

As of December 31, 2016, future minimum payments due under our contractual obligations are as follows (in thousands):

	Payments Due by Period				
	Total	Less than 1 year	1-2 years	3-4 years	Thereafter
Purchase obligations [1]	$ 61	$ 36	$ 25	$ —	$ —
Contingent liabilities [2]	$ 4,977	$ 4,977	$ —	$ —	$ —
Note and interest payment obligations	$ 249,747	$ 1,838	$ 247,909	$ —	$ —
Operating lease obligations [3]	$ 2,758	$ 900	$ 1,378	$ 283	$ 197

(1) Purchase obligations represent our commitments under our supply agreement with Hovione for Captisol purchases.

(2) Contingent liabilities to former shareholders and licenseholders are subjective and affected by changes in inputs to the valuation model including management's assumptions regarding revenue volatility, probability of commercialization of products, estimates of timing and probability of achievement of certain revenue thresholds and developmental and regulatory milestones and affect amounts owed to former license holders and CVR holders. As of December 31, 2016, only those liabilities for revenue sharing payments and milestones achieved as a result of 2016 activities are included in the table above.

(3) We lease an office and research facility, which we have fully vacated under operating lease arrangements expiring on June 2019. We sublet these facilities through the end of our lease. As of December 31, 2016, we expect to receive aggregate future minimum lease payments totaling $1.7 million (non-discounted) over the duration of the sublease agreement as follows and not included in the table above: less than a year $0.7 million and two to three years $1.0 million.

Cash Flow Summary

(in thousands)	2016	2015	2014
Net cash provided by operating activities	$ 63,001	$ 41,727	$ 20,566
Net cash used in investing activities	(143,192)	(112,862)	(2,027)
Net cash provided by financing activities	1,515	8,360	130,025
Net increase (decrease) in cash and cash equivalents	$ (78,676)	$ (62,775)	$ 148,564

Operating Activities

Net cash provided by operating activities in 2016 consisted of net loss of $1.6 million plus net adjustments of $76.0 million partially offset by net changes in net operating assets and liabilities of $10.6 million. The primary non-cash expenses added back to net income included share-based compensation of $18.9 million, loss on equity investment in Viking of $23.1 million, depreciation and amortization of $11.3 million and amortization of debt discount and issuance fees of $10.9 million. Cash flow impact from changes in net operating assets included increases in accounts receivable and inventory, partially offset by increases in accounts payable and accrued liabilities.

Net cash provided by operating activities in 2015 consisted of net income of $227.4 million minus net adjustments of$186.5 million. The primary non-cash items subtracted from net income included $192.1 million income tax benefit from the release of our valuation allowance, a $28.2 million gain on deconsolidation of Viking, and a $2.6 million gain on the sale of investments. The primary non-cash expenses added back to net income included share-based compensation of $12.5 million, amortization of debt discount and issuance fees of $10.3 million, change in estimated value of contingent liabilities of $5.0 million and $5.1 million loss on equity investment of Viking.

Net cash provided by operating activities in 2014 consisted of net income of $10.9 million plus net adjustments of $20.6 million partially offset by net changes in net operating assets and liabilities of $10.9 million. The primary non-cash expenses added back to net income included stock-based compensation of $11.3 million, change in estimated value of contingent liabilities of $5.1 million, amortization of debt discount and issuance fees of $3.7 million, depreciation and amortization of $2.7 million. Cash flow impact from changes in net operating assets included increases in accounts receivable, an increase in other assets and a decrease in accounts payable and accrued liabilities, partially offset by decrease in inventory.

Investing Activities

In 2016 we purchased $164.4 million of short term investments and $143.5 million of our short term investments matured or were sold during the period. We also paid net cash of $92.5 million for acquisitions, $17.7 million for commercial license rights, $8.8 million to CyDex CVR holders and other contingency payments, $1.9 million for capital expenditures, and $0.7 million for Viking common stock.

In 2015 we purchased $166.0 million of short term investments and $73.2 million of our short terms investments matured or were sold during the period. We also paid cash of $9.0 million to purchase Viking common stock, $6.7 million to CyDex CVR holders and other contingency payments and $4.0 million for purchase of commercial license rights.

In 2014 we received $2.3 million in proceeds from the sale of short term investments and we paid cash of $3.5 million to CyDex CVR holders and other contingency payments and $1.0 million for commercial license rights.

Financing Activities

Cash provided by financing activities in 2016 primarily reflects the $6.4 million of proceeds received from stock option exercises and our employee stock purchase plan, partially offset by payment for share repurchases of $3.9 million.

Cash provided by financing activities in 2015 primarily reflects the $8.8 million of proceeds received from stock option exercises and our employee stock purchase plan, partially offset by payment for share repurchases of $0.5 million.

Cash provided by financing activities in 2014 primarily reflects the gross proceeds received from the issuance of an aggregate $245.0 million of the 2019 Convertible Senior Notes, proceeds from issuance of warrants of $11.6 million, and $4.6 million of proceeds received from stock option exercises and our employee stock purchase plan, partially offset by repayment of debt of $9.4 million, purchase of convertible bond hedge of $48.1 million, payment for share repurchases of $68.0 million and payment of debt issuance costs of $5.7 million.

Critical Accounting Policies

Certain of our policies require the application of management judgment in making estimates and assumptions that affect the amounts reported in the consolidated financial statements and disclosures made in the accompanying notes. Those estimates and assumptions are based on historical experience and various other factors deemed to be applicable and reasonable under the circumstances. The use of judgment in determining such estimates and assumptions is by nature, subject to a degree of uncertainty. Accordingly, actual results could differ materially from the estimates made. Our critical accounting policies are as follows:

Revenue Recognition

We recognize revenue when persuasive evidence of an arrangement exists, delivery has occurred or service has been provided, title has transferred or access has been given, the price is fixed or determinable, there are no remaining customer acceptance requirements, and collectability of the resulting receivable is reasonably assured.

Royalties on sales of products commercialized by our partners are recognized in the quarter reported by the respective partner. Generally, we receive royalty reports from our licensees approximately one quarter in arrears due to the fact that our agreements require partners to report product sales between 30-60 days after the end of the quarter. The Company recognizes royalty revenues when it can reliably estimate such amounts and collectability is reasonably assured. Under this accounting policy, the royalty revenues reported are not based upon estimates and such royalty revenues are typically reported to the Company by its partners in the same period in which payment is received.

Revenue from material sales of Captisol is recognized upon transfer of title, which normally passes upon shipment to the customer, provided all other revenue recognition criteria have been met. All product returns are subject to the Company's credit and exchange policy, approval by the Company and a 20% restocking fee. To date, product returns by customers have not been material to net material sales in any related period. The Company records revenue net of product returns, if any, and sales tax collected and remitted to government authorities during the period.

Many of the Company's revenue arrangements for Captisol involve a license agreement with the supply of manufactured Captisol product. Licenses may be granted to pharmaceutical companies for the use of Captisol product in the development of pharmaceutical compounds. The supply of the Captisol product may be for all phases of clinical trials and through commercial availability of the host drug or may be limited to certain phases of the clinical trial process. The Company evaluates the deliverables in these agreements to determine whether they have stand-alone value to our customers and therefore meet the criteria to be accounted for as separate units of accounting or they should be combined with other deliverables and accounted for as a single unit of accounting. Management believes that the Company's licenses have stand-alone value at the outset of an arrangement because the customer obtains the right to use Captisol in its formulations without any additional input by the Company.

Other nonrefundable, upfront license fees are recognized as revenue upon delivery of the license, if the license is determined to have standalone value that is not dependent on any future performance by the Company under the applicable collaboration agreement. Nonrefundable contingent event-based payments are recognized as revenue when the contingent event is met, which is usually the earlier of when payments are received or collections are assured, provided that it does not require future performance by the Company. Sales-based contingent payments from partners are accounted for similarly to royalties, with revenue recognized upon achievement of the sales targets assuming all other revenue recognition criteria are met. The Company occasionally has sub-license obligations related to arrangements for which it receives license fees, milestones and royalties. The Company evaluates the determination of gross versus net reporting based on each individual agreement.

Revenue from development and regulatory milestones is recognized when earned, as evidenced by written acknowledgement from the collaborator, provided that (1) the milestone event is substantive, its achievability was not reasonably assured at the inception of the agreement, and the Company has no further performance obligations relating to that

event, and (2) collectability is reasonably assured. If these criteria are not met, the milestone payment is recognized over the remaining period of the Company's performance obligations under the arrangement.

Revenue from research funding under our collaboration agreements is earned and recognized on a percentage-of completion basis as research hours are incurred in accordance with the provisions of each agreement.

Intangible Assets and Other Long-Lived Assets — Impairment Assessments

We regularly perform reviews to determine if the carrying values of our long-lived assets are impaired. A review of identifiable intangible assets and other long-lived assets is performed when an event occurs indicating the potential for impairment. If indicators of impairment exist, we assess the recoverability of the affected long-lived assets and compare their fair values to the respective carrying amounts.

In order to estimate the fair value of identifiable intangible assets and other long-lived assets, we estimate the present value of future cash flows from those assets. The key assumptions that we use in our discounted cash flow model are the amount and timing of estimated future cash flows to be generated by the asset over an extended period of time and a rate of return that considers the relative risk of achieving the cash flows, the time value of money, and other factors that a willing market participant would consider. Significant judgment is required to estimate the amount and timing of future cash flows and the relative risk of achieving those cash flows.

Assumptions and estimates about future values and remaining useful lives are complex and often subjective. They can be affected by a variety of factors, including external factors such as industry and economic trends, and internal factors such as changes in our business strategy and our internal forecasts. For example, if our future operating results do not meet current forecasts or if we experience a sustained decline in our market capitalization that is determined to be indicative of a reduction in fair value of our reporting unit, we may be required to record future impairment charges for purchased intangible assets. Impairment charges could materially decrease our future net income and result in lower asset values on our balance sheet.

Contingent Liabilities

In connection with our acquisition of CyDex in January 2011, we recorded contingent liabilities for amounts potentially due to holders of the CyDex CVR's and certain other contingency payments. The fair value of the liability is assessed at each reporting date using the income approach incorporating the estimated future cash flows from potential milestones and revenue sharing. The change in fair value is recorded in our consolidated statements of operations. The carrying amount of the liability may fluctuate significantly and actual amounts paid may be materially different than the carrying amount of the liability.

In connection with our acquisition of Metabasis in January 2010, we issued Metabasis stockholders four tradable CVRs, one CVR from each of four respective series of CVR, for each Metabasis share. The CVRs entitle Metabasis stockholders to cash payments as proceeds are received by us from the sale or partnering of any of the Metabasis drug development programs. The fair values of the CVRs are remeasured at each reporting date through the term of the related agreement. Changes in the fair values are reported in the statement of operations as income (decreases) or expense (increases). The carrying amount of the liability may fluctuate significantly based upon quoted market prices and actual amounts paid under the agreements may be materially different than the carrying amount of the liability.

Income Taxes

Our provision for income taxes, deferred tax assets and liabilities, and reserves for unrecognized tax benefits reflect our best assessment of estimated future taxes to be paid. Significant judgments and estimates based on interpretations of existing tax laws or regulations in the United States are required in determining our provision for income taxes. Changes in tax laws, statutory tax rates, and estimates of our future taxable income could impact the deferred tax assets and liabilities provided for in the consolidated financial statements and would require an adjustment to the provision for income taxes.

Deferred tax assets are regularly assessed to determine the likelihood they will be recovered from future taxable income. A valuation allowance is established when we believe it is more likely than not the future realization of all or some of a deferred tax asset will not be achieved. In evaluating our ability to recover deferred tax assets within the jurisdiction which they arise, we consider all available positive and negative evidence. Factors reviewed include the cumulative pre-tax book income for the past three years, scheduled reversals of deferred tax liabilities, our history of earnings and reliability of our forecasts, projections of pre-tax book income over the foreseeable future, and the impact of any feasible and prudent tax planning strategies.

We recognize the impact of a tax position in our financial statements only if that position is more likely than not of being sustained upon examination by taxing authorities, based on the technical merits of the position. Tax authorities regularly examine our returns in the jurisdictions in which we do business and we regularly assess the tax risk of our return filing positions. Due to the complexity of some of the uncertainties, the ultimate resolution may result in payments that are materially different from our current estimate of the tax liability. These differences, as well as any interest and penalties, will be reflected in the provision for income taxes in the period in which they are determined.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to market risk from interest rates and equity prices which could affect our results of operations, financial condition and cash flows. We manage our exposure to these market risks through our regular operating and financing activities.

Investment Portfolio Risk

At December 31, 2016, our investment portfolio included investments in available-for-sale equity securities of $122.3 million. These securities are subject to market risk and may decline in value based on market conditions.

Equity Price Risk

Our 2019 Convertible Senior Notes include conversion and settlement provisions that are based on the price of our common stock at conversion or maturity of the notes, as applicable. The minimum amount of cash we may be required to pay is $245.0 million, but will ultimately be determined by the price of our common stock. The fair values of our 2019 Convertible Senior Notes are dependent on the price and volatility of our common stock and will generally increase or decrease as the market price of our common stock changes. In order to minimize the impact of potential dilution to our common stock upon the conversion of the 2019 Convertible Senior Notes, we entered into convertible bond hedges covering 3,264,643 shares of our common stock. Concurrently with entering into the convertible bond hedge transactions, we entered into warrant transactions whereby we sold warrants with an exercise price of approximately $125.08 per share, subject to adjustment. Throughout the term of the 2019 Convertible Senior Notes, the notes may have a dilutive effect on our earnings per share to the extent the stock price exceeds the conversion price of the notes. Additionally, the warrants may have a dilutive effect on our earnings per share to the extent the stock price exceeds the strike price of the warrants.

Foreign Currency Risk

Through our licensing and business operations, we are exposed to foreign currency risk. Foreign currency exposures arise from transactions denominated in a currency other than the functional currency and from foreign denominated revenues and profit translated into U.S. dollars. Our license partners sell our products worldwide in currencies other than the U.S. dollar. Because of this, our revenues from royalty payments are subject to risk from changes in exchange rates.

We purchase Captisol from Hovione, located in Lisbon, Portugal. Payments to Hovione are denominated and paid in U.S. dollars; however the unit price of Captisol contains an adjustment factor which is based on the sharing of foreign currency risk between the two parties. The effect of an immediate 10% change in foreign exchange rates would not have a material impact on our financial condition, results of operations or cash flows. We do not currently hedge our exposures to foreign currency fluctuations.

Interest Rate Risk

We are exposed to market risk involving rising interest rates. To the extent interest rates rise, our interest costs could increase. An increase in interest costs of 10% would not have a material impact on our financial condition, results of operations or cash flows.

Item 8. Consolidated Financial Statements and Supplementary Data

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

Report of Ernst & Young LLP, Independent Registered Public Accounting Firm

The Board of Directors and Stockholders of
Ligand Pharmaceuticals Incorporated

We have audited the accompanying consolidated balance sheet of Ligand Pharmaceuticals Incorporated as of December 31, 2016, and the related consolidated statements of operations, comprehensive loss, stockholders' equity, and cash flows for the year then ended. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of Ligand Pharmaceuticals Incorporated at December 31, 2016, and the consolidated results of its operations and its cash flows for the year then ended, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), Ligand Pharmaceuticals Incorporated's internal control over financial reporting as of December 31, 2016, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated February 28, 2017 expressed an adverse opinion thereon.

/s/ ERNST & YOUNG LLP

San Diego, California
February 28, 2017

Report of Independent Registered Public Accounting Firm

Board of Directors and Shareholders of Ligand Pharmaceuticals Incorporated

We have audited the accompanying consolidated balance sheet of Ligand Pharmaceuticals Incorporated (the "Company") as of December 31, 2015, and the related consolidated statements of operations, comprehensive income (loss), changes in shareholders' equity (deficit), and cash flows for each of the years ended December 31, 2015 and 2014. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Ligand Pharmaceuticals Incorporated as of December 31, 2015, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2015 in conformity with accounting principles generally accepted in the United States of America.

/s/ GRANT THORNTON LLP

San Diego, California

February 26, 2016 (except for 2015 Restatement described in Note 1 in the previously filed 2015 financial statements, which is not presented herein and is as of November 14, 2016)

LIGAND PHARMACEUTICALS INCORPORATED

CONSOLIDATED BALANCE SHEETS
(in thousands, except share data)

	December 31,	
	2016	2015
ASSETS		
Current assets:		
Cash and cash equivalents	$ 18,752	$ 97,428
Short-term investments	122,296	102,791
Accounts receivable, net	14,700	6,170
Note receivable from Viking	3,207	4,782
Inventory	1,923	1,633
Other current assets	2,175	1,908
Total current assets	163,053	214,712
Deferred income taxes	123,891	189,083
Investment in Viking	8,345	29,728
Intangible assets, net	204,705	48,347
Goodwill	72,207	12,238
Commercial license rights	25,821	8,554
Property and equipment, net	1,819	372
Other assets	1,744	27
Total assets	$ 601,585	$ 503,061
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 2,734	$ 4,083
Accrued liabilities	6,397	5,405
Current contingent liabilities	5,088	10,414
Current lease exit obligations	—	934
2019 convertible senior notes, net	212,910	201,985
Total current liabilities	227,129	222,821
Long-term contingent liabilities	2,916	3,033
Other long-term liabilities	687	297
Total liabilities	230,732	226,151
Commitments and contingencies		
Equity component of currently redeemable convertible notes (Note 6)	29,563	39,628
Stockholders' equity:		
Common stock, $0.001 par value; 33,333,333 shares authorized; 20,909,301 and 19,949,012 shares issued and outstanding at December 31, 2016 and 2015, respectively	21	20
Additional paid-in capital	769,653	661,850
Accumulated other comprehensive income	2,743	4,903
Accumulated deficit	(431,127)	(429,491)
Total stockholders' equity	341,290	237,282
Total liabilities and stockholders' equity	$ 601,585	$ 503,061

See accompanying notes to these consolidated financial statements.

LIGAND PHARMACEUTICALS INCORPORATED

CONSOLIDATED STATEMENTS OF OPERATIONS

(in thousands, except per share amounts)

	Year Ended December 31,		
	2016	**2015**	**2014**
Revenues:			
Royalties	$ 59,423	$ 38,194	$ 29,994
Material sales	22,502	27,662	28,488
License fees, milestones and other revenues	27,048	6,058	6,056
Total revenues	108,973	71,914	64,538
Operating costs and expenses:			
Cost of sales[2]	5,571	5,807	9,136
Amortization of intangibles	10,643	2,375	2,375
Research and development	21,221	11,005	9,747
General and administrative	26,621	24,378	22,570
Lease exit and termination costs	1,032	1,020	1,084
Total operating costs and expenses	65,088	44,585	44,912
Income from operations	43,885	27,329	19,626
Other (expense) income:			
Interest expense, net	(12,178)	(11,802)	(4,860)
Increase in contingent liabilities	(3,334)	(5,013)	(5,135)
Gain on deconsolidation of Viking	—	28,190	—
Loss from Viking	(23,132)	(5,143)	—
Other income, net	2,719	1,768	1,671
Total other income (expense), net	(35,925)	8,000	(8,324)
Income before income tax benefit (expense)	7,960	35,329	11,302
Income tax benefit (expense)	(10,327)	192,115	(410)
Income (loss) from operations	(2,367)	227,444	10,892
Discontinued operations:			
Gain on sale of Oncology Product Line before income taxes	1,139	—	—
Income tax expense on discontinued operations	(408)	—	—
Income from discontinued operations	731	—	—
Net (loss) income including noncontrolling interests:	(1,636)	227,444	10,892
Less: Net loss attributable to noncontrolling interests	—	(2,380)	(1,132)
Net (loss) income	$ (1,636)	$ 229,824	$ 12,024
Basic per share amounts [1]:			
Income (loss) from continuing operations	$ (0.11)	$ 11.61	$ 0.59
Income from discontinued operations	0.04	—	—
Net (loss) income	$ (0.08)	$ 11.61	$ 0.59
Diluted per share amounts [1]:			
Income (loss) from continuing operations	$ (0.11)	$ 10.83	$ 0.56
Income from discontinued operations	0.04	—	—
Net (loss) income	$ (0.08)	$ 10.83	$ 0.56
Shares used for computation (in thousands)			
Basic	20,831	19,790	20,419
Diluted	20,831	21,228	21,433

(1) The sum of net income per share amounts may not equal the total due to rounding

(2) Excludes amortization of intangibles

See accompanying notes to these consolidated financial statements.

LIGAND PHARMACEUTICALS INCORPORATED
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
(in thousands)

	Year Ended December 31,		
	2016	2015	2014
Net (loss) income	$ (1,636)	$ 229,824	$ 12,024
Unrealized net gain on available-for-sale securities, net of tax	93	1,933	3,872
Less:Reclassification of net realized gains included in net income, net of tax	$ (2,253)	$ (1,965)	$ (1,833)
Comprehensive (loss) income	$ (3,796)	$ 229,792	$ 14,063

See accompanying notes to these consolidated financial statements.

LIGAND PHARMACEUTICALS INCORPORATED

CONSOLIDATED STATEMENT OF STOCKHOLDERS' EQUITY

(in thousands, except share data)

	Common Stock		Additional paid-in capital	Accumulated other comprehensive income (loss)	Accumulated deficit	Noncontrolling interest	Total stockholders' equity
	Shares	Amount					
Balance at December 31, 2013	20,468,521	$ 21	$ 718,017	$ 2,914	$ (671,339)	$ —	$ 49,613
Consolidation of Viking	—	—	—	—	—	(778)	(778)
Issuance of common stock under employee stock compensation plans, net	360,054	—	4,561	—	—	—	4,561
Stock-based compensation	—	—	11,270	—	—	—	11,270
Repurchase of common stock	(1,253,425)	(1)	(67,954)	—	—	—	(67,955)
Sale of warrants	—	—	11,638	—	—	—	11,638
Purchase of convertible bond hedge	—	—	(48,143)	—	—	—	(48,143)
Equity component of convertible debt issuance, net of issuance costs	—	—	51,271	—	—	—	51,271
Other comprehensive income	—	—	—	2,039	—	—	2,039
Net income	—	—	—	—	12,024	—	12,024
Net loss in noncontrolling interests	—	—	—	—	—	(1,132)	(1,132)
Balance at December 31, 2014	19,575,150	$ 20	$ 680,660	$ 4,953	$ (659,315)	$ (1,910)	$ 24,408
Issuance of common stock under employee stock compensation plans, net	379,982	—	8,849	—	—	—	8,849
Reclassification of equity component of currently redeemable convertible notes	—	—	(39,628)	—	—	—	(39,628)
Stock-based compensation	—	—	12,458	—	—	—	12,458
Repurchase of common stock	(6,120)	—	(489)	—	—	—	(489)
Other comprehensive income	—	—	—	(50)	—	—	(50)
Net income	—	—	—	—	229,824	—	229,824
Net loss in noncontrolling interests	—	—	—	—	—	(2,380)	(2,380)
Deconsolidation of Viking	—	—	—	—	—	4,290	4,290
Balance at December 31, 2015	19,949,012	$ 20	$ 661,850	$ 4,903	$ (429,491)	$ —	$ 237,282
Issuance of common stock under employee stock compensation plans, net	210,626	—	5,416	—	—	—	5,416
Shares issued in OMT acquisition	790,163	1	77,330	—	—	—	77,331
Reclassification of equity component of currently redeemable convertible notes	—	—	10,065	—	—	—	10,065
Stock-based compensation	—	—	18,893	—	—	—	18,893
Repurchase of common stock	(40,500)	—	(3,901)	—	—	—	(3,901)
Other comprehensive income	—	—	—	(2,160)	—	—	(2,160)
Net income	—	—	—	—	(1,636)	—	(1,636)
Balance at December 31, 2016	20,909,301	$ 21	$ 769,653	$ 2,743	$ (431,127)	$ —	$ 341,290

See accompanying notes to these consolidated financial statements.

LIGAND PHARMACEUTICALS INCORPORATED
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

	Year Ended December 31,		
	2016	**2015**	**2014**
Operating activities			
Net (loss) income	$ (1,636)	$ 227,444	$ 10,892
Less: gain from discontinued operations	731	—	—
Income (loss) from continuing operations	(2,367)	227,444	10,892
Adjustments to reconcile net income to net cash used in operating activities:			
Change in estimated fair value of contingent liabilities	3,334	5,013	5,135
Realized gain on sale of short-term investment	(2,352)	(2,603)	(1,538)
Gain on disposal of assets	183	—	—
Depreciation and amortization	11,290	2,627	2,657
Gain on deconsolidation of Viking	—	(28,190)	—
Loss on equity investment in Viking	23,132	5,143	—
Change in fair value of the convertible debt receivable from Viking and warrants	(462)	765	—
Amortization of Premium (discount) on investments, net	348	—	—
Amortization of debt discount and issuance fees	10,925	10,274	3,694
Non-cash milestone revenue	—	—	(1,211)
Stock-based compensation	18,893	12,458	11,270
Deferred income taxes	10,697	(192,132)	410
Other	—	107	206
Changes in operating assets and liabilities, net of acquisition:			
Accounts receivable, net	(8,525)	6,489	(10,412)
Inventory	(244)	(401)	4,369
Restricted cash	—	1,261	—
Other current assets	558	51	(426)
Other long term assets	(32)	(325)	(1,439)
Accounts payable and accrued liabilities	(2,369)	(4,027)	(3,121)
Deferred revenue	(8)	(2,227)	80
Net cash provided by operating activities of continuing operations	63,001	41,727	20,566
Net cash used in operating activities of discontinued operations	—	—	—
Net cash provided by operating activities	63,001	41,727	20,566
Investing activities			
Purchase of commercial license rights	(17,695)	(4,030)	(1,000)
Purchase of Viking common stock and warrant	(700)	(9,000)	—
Reduction of cash due to deconsolidation of Viking	—	(247)	—
Purchase of common stock in equity method investment	(1,000)	—	—
Cash paid for acquisition, net of cash acquired	(92,502)	—	—
Payments to CVR holders and other contingency payments	(8,777)	(6,740)	(3,493)
Purchases of property and equipment	(1,850)	(93)	(6)
Purchases of short-term investments	(164,438)	(166,025)	—
Proceeds from sale of short-term investments	24,596	16,039	2,342
Proceeds from maturity of short-term investments	118,874	57,234	—
Proceeds received from repayment of Viking note receivable	300	—	—
Other, net	—	—	130
Net cash used in investing activities	(143,192)	(112,862)	(2,027)
Financing activities			
Repayment of debt	—	—	(9,366)
Gross proceeds from issuance of 2019 Convertible Senior Notes	—	—	245,000
Payment of debt issuance costs	—	—	(5,711)

Proceeds from issuance of warrants	—	—	11,638
Purchase of convertible bond hedge	—	—	(48,143)
Net proceeds from stock option exercises and ESPP	6,415	8,849	4,561
Taxes paid related to net share settlement of equity awards	(999)	—	—
Share repurchases	(3,901)	(489)	(67,954)
Net cash provided by financing activities	1,515	8,360	130,025
Net (decrease) increase in cash and cash equivalents	(78,676)	(62,775)	148,564
Cash and cash equivalents at beginning of year	97,428	160,203	11,639
Cash and cash equivalents at end of year	$ 18,752	$ 97,428	$ 160,203
Supplemental disclosure of cash flow information			
Cash paid during the year:			
Interest paid	$ 1,838	$ 1,822	$ 494
Taxes paid	$ 38	$ 28	$ 18
Supplemental schedule of non-cash investing and financing activities			
Stock issued for acquisition, net of issuance cost	$ (77,331)	$ —	$ —
Stock and warrant received for repayment of Viking notes receivable	$ 1,200	$ —	$ —
Accrued inventory purchases	$ 646	$ 1,333	$ 3,246
Unrealized gain on AFS investments	$ (1,109)	$ 3,005	$ 3,872

See accompanying notes to these consolidated financial statements.

LIGAND PHARMACEUTICALS INCORPORATED AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Basis of Presentation and Summary of Significant Accounting Policies

Business

Ligand is a biopharmaceutical company with a business model based on developing or acquiring assets which generate royalty, milestone or other passive revenue for the Company and using a lean corporate cost structure. We operate in one business segment: development and licensing of biopharmaceutical assets.

Principles of Consolidation

The accompanying consolidated financial statements include Ligand and its wholly owned subsidiaries. All significant intercompany accounts and transactions have been eliminated in consolidation.

Basis of Presentation

The Company's accompanying consolidated financial statements have been prepared in accordance with U.S. GAAP and include the accounts of the Company and its wholly-owned subsidiaires. All intercompany transactions and balances have been eliminated in consolidation.

Upon the occurrence of certain circumstances, holders of the 2019 Convertible Senior Notes may redeem all or a portion of their notes, which may require the use of a substantial amount of cash. At December 31, 2016, we had a working capital deficit of $64.1 million, which includes the 2019 Convertible Senior notes that are currently redeemable as of December 31, 2016 but excludes another $29.6 million that is classified as mezzanine equity. As noted in Note 6, the debt may change from current to non-current period over period, primarily as a result of changes in the Company's stock price. Management believes that it is remote that holders of the notes would choose to convert their notes early because the fair value of the security that a noteholder can currently realize in an active market is greater than the conversion value the noteholder would realize upon early conversion. In the unlikely event that all the debt was converted, we have 3 business days following a 50 trading day observation period from the convert date to pay the principal in cash. We have positive operating income and positive cash flow from operations for the three years ended December 31, 2016 and, accordingly, while there can be no assurance, we believe we have the ability to raise additional capital through our active S-3, by liquidating assets, or via alternative financing arrangements such as convertible or high yield debt.

Reclassifications

Certain reclassifications have been made to the previously issued statement of operations for comparability purposes. These reclassifications had no effect on the reported net income, stockholders' equity and operating cash flows as previously reported.

Use of Estimates

The preparation of consolidated financial statements in conformity with U.S. GAAP requires the use of estimates and assumptions that affect the amounts reported in the condensed consolidated financial statements and the accompanying notes. Actual results may differ from those estimates

Recent Accounting Pronouncements

In May 2014, the FASB issued new guidance related to revenue recognition, Accounting Standards Update 2014-09, Revenue from Contracts with Customers ("ASC 606"), which outlines a comprehensive revenue recognition model and supersedes most current revenue recognition guidance. The new guidance requires a company to recognize revenue upon transfer of goods or services to a customer at an amount that reflects the expected consideration to be received in exchange for those goods or services. ASC 606 defines a five-step approach for recognizing revenue, which may require a company to use more judgment and make more estimates than under the current guidance. The new guidance becomes effective in calendar year 2018 and early adoption in calendar year 2017 is permitted. Two methods of adoption are permitted: (a) full retrospective adoption, meaning the standard is applied to all periods presented; or (b) modified retrospective adoption, meaning the

cumulative effect of applying the new guidance is recognized at the date of initial application as an adjustment to the opening retained earnings balance.

We are undertaking a substantial effort to be ready for adoption of ASC 606. Some of our contracts have distinct terms which will need to be evaluated separately. We have started our preliminary assessment of these contracts and although we have not completed our assessment and are in the process of reviewing our contracts, we anticipate this standard will have a material impact on our consolidated financial statements by accelerating the timing of revenue recognition for revenues related to royalties, and potentially certain contingent milestone based payments. We intend to adopt ASC 606 starting as of January 1, 2018 using the modified retrospective method.

In August 2014, the FASB issued Accounting Standards Update No. 2014-15, Presentation of Financial Statements -Going Concern (Subtopic 205-40). This accounting standard requires management to perform interim and annual assessments of the entity's ability to continue its business operations within one year of the date of issuance of its financial statements. The Company must then provide certain disclosure if there is substantial doubt about its ability to continue as a going concern. As of December 31, 2016, the Company has adopted this standard with no impact to the financial statements.

In March 2016, the FASB issued ASU 2016-09 amending several aspects of share-based payment accounting. This guidance requires all excess tax benefits and tax deficiencies to be recorded in the income statement when the awards vest or are settled, with prospective application required. The guidance also changes the classification of such tax benefits or tax deficiencies on the statement of cash flows from a financing activity to an operating activity, with retrospective or prospective application allowed. The guidance requires the classification of employee taxes paid when an employer withholds shares for tax-withholding purposes as a financing activity on the statement of cash flows, with retrospective application required. In addition, the guidance provides for an option to recognize gross stock compensation expense with actual forfeitures recognized as they occur. The updated guidance is effective in fiscal year 2018 and early adoption in fiscal year 2017 is permitted. We are currently evaluating the adoption timing as well as the impact of the new guidance on our consolidated financial statements and related disclosures.

In June 2016, the FASB issued ASU No. 2016-13, *Financial Instruments - Credit Losses: Measurement of Credit Losses on Financial Instruments* which requires that expected credit losses relating to financial assets measured on an amortized cost basis and available-for-sale debt securities be recorded through an allowance for credit losses. ASU 2016-13 limits the amount of credit losses to be recognized for available-for-sale debt securities to the amount by which carrying value exceeds fair value and also requires the reversal of previously recognized credit losses if fair value increases. The new standard will be effective for us in fiscal year 2020 and early adoption in fiscal 2019 is permitted. We are currently evaluating the effect that the updated standard will have on our consolidated financial statements.

In August 2016 the FASB issued ASU No. 2016-15 *Statement of Cash Flows (Topic 230)*, Classification of Certain Cash Receipts and Cash Payments. The guidance addresses the classification of cash flows related to (1) debt prepayment or extinguishment costs, (2) settlement of zero-coupon debt instruments or other debt instruments with coupon rates that are insignificant in relation to the effective interest rate of the borrowing, (3) contingent consideration payments made after a business combination, (4) proceeds from the settlement of insurance claims, (5) proceeds from the settlement of corporate-owned life insurance, including bank-owned life insurance, (6) distributions received from equity method investees and (7) beneficial interests in securitization transactions. The guidance also clarifies how the predominance principle should be applied when cash receipts and cash payments have aspects of more than one class of cash flows. The new guidance will be effective for fiscal year 2018 and early adoption is permitted. We are currently evaluating the effect that the updated standard will have on our consolidated financial statements. We expect contingent consideration payment presentation will change to conform to the standard.

We do not believe that any other recently issued, but not yet effective accounting pronouncements, if adopted, would have a material impact on our consolidated financial statements or disclosures.

Concentrations of Business Risk

Financial instruments that potentially subject the Company to significant concentrations of credit risk consist primarily of cash equivalents and investments. The Company invests its excess cash principally in United States government debt securities, investment grade corporate debt securities and certificates of deposit. The Company has established guidelines relative to diversification and maturities that maintain safety and liquidity. These guidelines are periodically reviewed and modified to take advantage of trends in yields and interest rates.

A relatively small number of partners accounts for a significant percentage of our revenue. Revenue from significant partners, which is defined as 10% or more of our total revenue, was as follows:

	December 31,		
	2016	2015	2014
Partner A	41%	27%	37%
Partner B	14%	23%	31%
Partner C	—	18%	10%

The Company obtains Captisol from a single supplier, Hovione. If this supplier were not able to supply the requested amounts of Captisol, the Company would be unable to continue to derive revenues from the sale of Captisol until it obtained an alternative source, which could take a considerable length of time.

Cash Equivalents & Short Term Investments

Cash equivalents consist of all investments with maturities of three months or less from the date of acquisition. Short-term investments primarily consist of investments in debt securities that have effective maturities greater than three months and less than twelve months from the date of acquisition. The Company classifies its short-term investments as "available-for-sale". Such investments are carried at fair value, with unrealized gains and losses included in the statement of comprehensive income (loss). The Company determines the cost of investments based on the specific identification method.

Accounts Receivable

Trade accounts receivable are recorded at the net invoice value and are not interest bearing. The Company considers receivables past due based on the contractual payment terms which range from 30 to 90 days. The Company reserves specific receivables if collectibility is no longer reasonably assured. The Company re-evaluates such reserves on a regular basis and adjusts its reserves as needed. Once a receivable is deemed to be uncollectible, such balance is charged against the reserve.

Inventory

Inventory, which consists of finished goods, is stated at the lower of cost or market value. The Company determines cost using the first-in, first-out method. The Company analyzes its inventory levels periodically and writes down inventory to its net realizable value if it has become obsolete, has a cost basis in excess of its expected net realizable value or is in excess of expected requirements. There were no write downs related to obsolete inventory recorded for the years ended December 31, 2016 and 2015.

Property and Equipment

Property and equipment are stated at cost, subject to review for impairment, and depreciated over the estimated useful lives of the assets, which generally range from three to ten years, using the straight-line method. Amortization of leasehold improvements is recorded over the shorter of the lease term or estimated useful life of the related asset. Maintenance and repairs are charged to operations as incurred. When assets are sold, or otherwise disposed of, the cost and related accumulated depreciation are removed from the accounts and any gain or loss is included in operating expense.

Goodwill and Intangible Assets

Goodwill, which has an indefinite useful life, represents the excess of cost over fair value of net assets acquired. The change in the carrying value of goodwill during the year ended December 31, 2016, was due to the acquisition of OMT. Goodwill is reviewed for impairment at least annually during the fourth quarter, or more frequently if an event occurs indicating the potential for impairment. During its goodwill impairment review, the Company may assess qualitative factors to determine whether it is more likely than not that the fair value of its reporting unit is less than its carrying amount, including goodwill. The qualitative factors include, but are not limited to, macroeconomic conditions, industry and market considerations, and the overall financial performance of the Company. If, after assessing the totality of these qualitative factors, the Company determines that it is not more likely than not that the fair value of its reporting unit is less than its carrying amount, then no additional assessment is deemed necessary. Otherwise, the Company proceeds to perform the two-step test for goodwill impairment. The first step involves comparing the estimated fair value of the reporting unit with its carrying value, including goodwill. If the carrying amount of the reporting unit exceeds its fair value, the Company performs the second step of the

goodwill impairment test to determine the amount of loss, which involves comparing the implied fair value of the goodwill to the carrying value of the goodwill. The Company may also elect to bypass the qualitative assessment in a period and elect to proceed to perform the first step of the goodwill impairment test. The Company performed its annual assessment for goodwill impairment in the fourth quarter of 2016 by assessing qualitative factors, noting no impairment.

Intangible assets related to acquired IPR&D are considered to be indefinite-lived until the completion or abandonment of the associated research and development efforts. During the period the assets are considered to be indefinite-lived, they are not amortized but are tested for impairment on an annual basis and between annual tests if the Company becomes aware of any events occurring or changes in circumstances that would indicate a reduction in the fair value of the IPR&D projects below their respective carrying amounts. If and when development is complete, which generally occurs if and when regulatory approval to market a product is obtained, the associated assets would be deemed finite-lived and would then be amortized based on their respective estimated useful lives at that point in time. The Company performed its annual assessment for IPR&D impairment in 2016, noting no impairment.

Commercial license rights

Commercial license rights represent a portfolio of future milestone and royalty payment rights acquired from Selexis in April 2013 and April 2015 and Cormatrix in May 2016. Individual commercial license rights acquired are carried at allocated cost and approximate fair value. The carrying value of the license rights will be reduced on a pro-rata basis as revenue is realized over the term of the agreement. Declines in the fair value of license rights below their carrying value that are deemed to be other than temporary are reflected in earnings in the period such determination is made. As of December 31, 2016, management does not believe there have been any events or circumstances indicating that the carrying amount of its commercial license rights may not be recoverable.

Royalty income earned from Cormatrix were $1.5 million for the year ended December 31, 2016. Accounts receivable due from Cormatrix were $0.2 million at December 31, 2016.

Relationships between the CorMatrix Parties

As previously disclosed in Ligand's filings, Jason Aryeh is a director of both Ligand and CorMatrix. Mr. Aryeh beneficially owns equity of CorMatrix representing less than 1% of CorMatrix's outstanding equity. Mr. Aryeh recused himself from all of the board's consideration of the purchase agreement between the Company and CorMatrix, including any financial analysis, the terms of the purchase agreement and the vote to approve the Purchase Agreement and the related transactions.

Contingent Liabilities

In connection with the Company's acquisition of CyDex in January 2011, the Company recorded a contingent liability for amounts potentially due to holders of the CyDex CVRs and former license holders. *See footnote 7,* Other Balance Sheet Details. The liability is periodically assessed based on events and circumstances related to the underlying milestones, royalties and material sales. In connection with the Company's acquisition of Metabasis in January 2010, the Company issued Metabasis stockholders four tradable CVRs for each Metabasis share. The fair values of the CVRs are remeasured at each reporting date through the term of the related agreement.

Any change in fair value is recorded in the Company's consolidated statement of operations.

Revenue Recognition

We recognize revenue when persuasive evidence of an arrangement exists, delivery has occurred or service has been provided, title has transferred or access has been given, the price is fixed or determinable, there are no remaining customer acceptance requirements, and collectability of the resulting receivable is reasonably assured.

Royalties on sales of products commercialized by the Company's partners are recognized in the quarter reported by the respective partner. Generally, the Company receives royalty reports from its licensees approximately one quarter in arrears due to the fact that its agreements require partners to report product sales between 30 and 60 days after the end of the quarter. The Company recognizes royalty revenues when it can reliably estimate such amounts and collectability is reasonably assured. Under this accounting policy, the royalty revenues reported are not based upon estimates and such royalty revenues are typically reported to the Company by its partners in the same period in which payment is received.

Revenue from material sales of Captisol is recognized upon transfer of title, which normally passes upon shipment to the customer, provided all other revenue recognition criteria have been met. All product returns are subject to the Company's credit and exchange policy, approval by the Company and a 20% restocking fee. To date, product returns have not been material to net material sales in any related period. The Company records revenue net of product returns, if any, and sales tax collected and remitted to government authorities during the period.

The Company analyzes its revenue arrangements and other agreements to determine whether there are multiple elements that should be separated and accounted for individually or as a single unit of accounting. For multiple element contracts, arrangement consideration is allocated at the inception of the arrangement to all deliverables on the basis of relative selling price, using a hierarchy to determine selling price. Management first considers VSOE, then TPE and if neither VSOE nor TPE exist, the Company uses its best estimate of selling price.

Many of the Company's revenue arrangements for Captisol involve a license agreement and the supply of manufactured Captisol product. Licenses may be granted to pharmaceutical companies for the use of Captisol product in the development of pharmaceutical compounds. The supply of the Captisol product may be for all phases of clinical trials and through commercial availability of the host drug or may be limited to certain phases of the clinical trial process. Management believes that the Company's licenses have stand-alone value at the outset of an arrangement because the customer obtains the right to use Captisol in its formulations without any additional input by the Company, and in a hypothetical stand-alone transaction, the customer would be able to procure inventory from another manufacturer in the absence of contractual provisions for exclusive supply by the Company.

Other nonrefundable, up-front license fees are recognized as revenue upon delivery of the license, if the license is determined to have standalone value that is not dependent on any future performance by the Company under the applicable collaboration agreement. Nonrefundable contingent event-based payments are recognized as revenue when the contingent event is met, which is usually the earlier of when payments are received or collections are assured, provided that it does not require future performance by the Company. The Company occasionally has sub-license obligations related to arrangements for which it receives license fees, milestones and royalties. Management evaluates the determination of gross versus net reporting based on each individual agreement.

Sales-based contingent payments from partners are accounted for similarly to royalties, with revenue recognized upon achievement of the sales targets assuming all other revenue recognition criteria for milestones are met. Revenue from development and regulatory milestones is recognized when earned, as evidenced by written acknowledgement from the collaborator, provided that (1) the milestone event is substantive, its achievability was not reasonably assured at the inception of the agreement, and the Company has no further performance obligations relating to that event, and (2) collectability is reasonably assured. If these criteria are not met, the milestone payment is recognized over the remaining period of the Company’s performance obligations under the arrangement.

Preclinical Study and Clinical Trial Accruals

Substantial portions of the Company’s preclinical studies and all of the Company’s clinical trials have been performed by third-party laboratories, CROs. The Company accounts for a significant portion of its clinical study costs according to the terms of its contracts with CROs. The terms of its CRO contracts may result in payment flows that do not match the periods over which services are provided to us under such contracts. The Company's objective is to reflect the appropriate preclinical and clinical trial expenses in its financial statements in the same period as the services occur. As part of the process of preparing its financial statements, the Company relies on cost information provided by its CROs. The Company is also required to estimate certain of its expenses resulting from its obligations under its CRO contracts. Accordingly, the Company's preclinical study and clinical trial accrual is dependent upon the timely and accurate reporting of CROs and other third-party vendors. The Company periodically evaluates its estimates to determine if adjustments are necessary or appropriate as more information becomes available concerning changing circumstances, and conditions or events that may affect such estimates. No material adjustments to preclinical study and clinical trial accrued expenses have been recognized to date.

Research and Development Expenses

Research and development expense consists of labor, material, equipment, and allocated facilities costs of the Company's scientific staff who are working pursuant to the Company's collaborative agreements and other research and development projects. Also included in research and development expenses are third-party costs incurred for the Company's research programs including in-licensing costs, CRO costs and costs incurred by other research and development service vendors. We expense these costs as they are incurred. When we make payments for research and development services prior to the services being rendered, we record those amounts as prepaid assets on our consolidated balance sheet and we expense them as the services are provided

Stock-Based Compensation

The Company incurs share-based compensation expense related to restricted stock, its ESPP, and stock options

Restricted stock units (RSU) and performance stock units (PSU) are all considered restricted stock. The fair value of restricted stock is determined by the closing market price of the Company's common stock on the date of grant. The Company recognizes share-based compensation expense based on the fair value on a straight-line basis over the requisite service periods of the awards, taking into consideration estimated forfeitures. PSU represents a right to receive a certain number of shares of common stock based on the achievement of corporate performance goals and continued employment during the vesting period. At each reporting period, the Company reassesses the probability of the achievement of such corporate performance goals and any expense change resulting from an adjustment in the estimated shares to be released are treated as a cumulative catch-up in the period of adjustment.

The Company uses the Black-Scholes-Merton option-pricing model to estimate the fair value of stock purchases under ESPP and stock options granted. The model assumptions include expected volatility, term, dividends, and the risk-free interest rate. The Company looks to historical volatility of the Company's stock to determine the expected volatility. The expected term of an award is based on historical forfeiture experience, exercise activity, and on the terms and conditions of the stock awards. The expected dividend yield is determined to be 0% given that the Company has never declared or paid regular cash dividends on its common stock and does not anticipate paying such cash dividends. The risk-free interest rate is based upon U.S. Treasury securities with remaining terms similar to the expected term of the share-based awards

The Company grants options and restricted stock awards to employees and non-employee directors. Non-employee directors are accounted for as employees. Options and restricted stock awards granted to certain non-employee directors vest in equal monthly installments over one year from the date of grant. Options granted to employees vest 1/8 on the six month anniversary of the date of grant, and 1/48 each month thereafter for forty-two months. Restricted stock awards granted to employees vest over three years. All option awards generally expire ten years from the date of grant.

Stock-based compensation expense for awards to employees and non-employee directors is recognized on a straight-line basis over the vesting period until the last tranche vests.

Income Taxes

The provision for income taxes is computed using the asset and liability method, under which deferred tax assets and liabilities are recognized for the expected future tax consequences of temporary differences between the financial reporting and tax bases of assets and liabilities, and for the expected future tax benefit to be derived from tax loss and credit carryforwards. Deferred tax assets and liabilities are determined using the enacted tax rates in effect for the years in which those tax assets are expected to be realized. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in the provision for income taxes in the period that includes the enactment date.

Deferred tax assets are regularly assessed to determine the likelihood they will be recovered from future taxable income. A valuation allowance is established when the Company believes it is more likely than not the future realization of all or some of a deferred tax asset will not be achieved. In evaluating the ability to recover deferred tax assets within the jurisdiction which they arise the Company considers all available positive and negative evidence. Factors reviewed include the cumulative pre-tax book income for the past three years, scheduled reversals of deferred tax liabilities, history of earnings and reliable forecasting, projections of pre-tax book income over the foreseeable future, and the impact of any feasible and prudent tax planning strategies.

The Company recognizes the impact of a tax position in the financial statements only if that position is more likely than not of being sustained upon examination by taxing authorities, based on the technical merits of the position. Any interest and penalties related to uncertain tax positions will be reflected in income tax expense.

Discontinued Operations

In 2006, we entered into a purchase agreement with Eisai pursuant to which Eisai agreed to acquire our Oncology product line which included four marketed oncology drugs: ONTAK, Targretin capsules, Targretin gel and Panretin gel. Certain liabilities were recorded associated with the disposal of the product line. During the year ended December 31, 2016 we recognized a $1.1 million gain due to subsequent changes in certain estimates and liabilities previously recorded. We recorded a provision for income taxes related to the gain of $0.4 million.

Income Per Share

Basic income (loss) per share is calculated by dividing net income by the weighted-average number of common shares outstanding during the period. Diluted income (loss) per share is computed based on the sum of the weighted average number of common shares and potentially dilutive common shares outstanding during the period

Potentially dilutive common shares consist of shares issuable under 2019 convertible senior notes, stock options and restricted stock. 2019 convertible senior notes have a dilutive impact when the average market price of the Company's common stock exceeds the applicable conversion price of the respective notes. Potentially dilutive common shares from stock options and restricted stock are determined using the average share price for each period under the treasury stock method. In addition, the following amounts are assumed to be used to repurchase shares: proceeds from exercise of stock options; the average amount of unrecognized compensation expense for restricted stock; and estimated tax benefits that will be recorded in additional paid-in capital when expenses related to equity awards become deductible. In loss periods, basic net loss per share and diluted net loss per share are identical since the effect of otherwise dilutive potential common shares is anti-dilutive and therefore excluded

The following table presents the calculation of weighted average shares used to calculate basic and diluted earnings per share (in thousands):

	Year Ended December 31,		
	2016	2015	2014
Weighted average shares outstanding:	20,831	19,790	20,419
Dilutive potential common shares:			
Restricted stock	—	56	36
Stock options	—	882	978
2019 Convertible Senior Notes	—	499	—
Shares used to compute diluted income per share	20,831	21,228	21,433
Potentially dilutive shares excluded from calculation due to anti-dilutive effect	3,544	3,333	5,104

Comprehensive Income (Loss)

Comprehensive income (loss) represents net income (loss) adjusted for the change during the periods presented in unrealized gains and losses on available-for-sale securities less reclassification adjustments for realized gains or losses included in net income (loss). The unrealized gains or losses are reported on the Consolidated Statements of Comprehensive Income (Loss).

2. Investment in Viking

In 2014, the Company entered into a MLA with Viking to license the rights to five of the Company's programs to Viking. Under the terms of the MLA, no consideration was exchanged upon execution, but rather Viking agreed to issue shares of Viking common stock with an aggregate value of approximately $29.2 million upon consummation of Viking's IPO. As part

of this transaction, the Company also extended a $2.5 million convertible loan to Viking under a LSA. As a result of these transactions, the Company determined it held a variable interest in Viking. The Company considered certain criteria in the accounting guidance for VIEs, and determined that Viking was a VIE and Ligand was the primary beneficiary of Viking. As a result, the Company consolidated Viking on its financial statements from May 2014 through May 2015, the effective date of Viking's IPO. The Company recorded 100% of the losses incurred as net loss attributable to noncontrolling interest because it was the primary beneficiary with no equity interest in the VIE.

In May 2015, Viking completed the Viking IPO and issued the Company approximately 3.7 million shares of Viking common stock with an aggregate value of $29.2 million based on the IPO price of $8.00 per share. In connection with the Viking IPO, the Company purchased 1.1 million shares of Viking common stock for an aggregate price of $9.0 million at the initial public offering price. Upon completion of Viking’s IPO, the Company determined that Viking was no longer a VIE and the Company did not have any other element of control that would require consolidation of Viking. In May 2015, the Company deconsolidated Viking and began to account for its equity investment in Viking under the equity method and records its proportional share of Viking gains and losses in Loss from Viking Therapeutics in the Company's consolidated statement of operations. Viking is considered a related party as the Company maintains a seat on Viking's board of directors.

In January 2016, the Company entered into an amendment to the LSA with Viking to extend the maturity of the convertible loan to May 2017, reduce the interest rate from 5.0% to 2.5%, and extend the lock up period by one year such that the Company may not sell, transfer, or dispose of any Viking securities prior to January 23, 2017. Additionally, upon the consummation of a subsequent capital financing transaction, Viking will be required to repay $1.5 million of the Viking Note obligation to the Company, with at least $0.3 million to be paid in cash and the remaining amount to be paid in the form and at the price of the Viking equity securities sold in the financing transaction. Upon maturity or further payments, the Company may elect to receive equity of Viking common stock or cash equal to 200% of the principal amount plus accrued and unpaid interest. The Company has opted to account for the Viking convertible note receivable at fair value.

In April 2016, Viking closed its underwritten public offering of 7.5 million shares of common stock and warrants to purchase up to 7.5 million shares of its common stock at a price of $1.25 per share of its common stock and related warrants. The warrant has an exercise price of $1.50 per share, immediately exercisable and will expire on April 13, 2021. As part of this public offering, the Company purchased 560,000 shares of common stock and warrants to purchase 560,000 shares of Viking's common stock for a total purchase price of $0.7 million. The purchased shares of common stock and warrants are subject to the same terms as the shares issued in this offering. In addition, on April 13, 2016, pursuant to the terms of the amendment to the LSA that was entered in January 2016 between Ligand and Viking, Viking repaid $0.3 million of the convertible notes in cash, and issued the Company 960,000 shares of its common stock and warrants to purchase 960,000 shares of its common stock as repayment of $1.2 million of the convertible notes. The shares received as part of the repayment, like all Viking securities held by the Company, are subject to a lock-up period that ends on January 23, 2017 in accordance with the amended LSA. A gain of $0.3 million representing the fair market value of the warrants is included within other income for the year ended December 31, 2016. As of December 31, 2016, the aggregate fair value of the note receivable was 3.2 million .

The Company's ownership in Viking decreased to 32.7% after the public offering and the repayment of the convertible notes and further decreased to 30.3% as of December 31, 2016. Accordingly, the book value of the Company's equity method investment in Viking decreased by $10.7 million. The resulting net loss was recognized in Loss from Viking in the Company's consolidated statement of operations for the year ended December 31, 2016.

The Company reviews its investment in Viking on a regular basis and assesses whether events, changes in circumstances or the passage of time, in management's judgment, indicate that a loss in the market value of the investment may be other than temporary. This might include, but would not necessarily be limited to, the period of time during which the carrying value of our investment is significantly above the observed market value, a deterioration in Viking's financial condition, or an adverse event relating to its lead clinical programs.

Based on the sustained low Viking common stock unit price during the year ended December 31, 2016, the Company determined that an other than temporary decrease in the value of its investment in Viking had occurred. The Company wrote down the value of its investment in Viking to its estimated fair value which resulted in impairment charges of $7.4 million for the year ended December 31, 2016.

3. Business Combinations

On January 8, 2016, the Company acquired substantially all of the assets and liabilities of OMT. OMT is a biotechnology company engaged in the genetic engineering of animals for the generation of human therapeutic antibodies through its OmniAb® technology, which currently offers three transgenic animal platforms for license, including OmniRat®,

OmniMouse® and OmniFlic®. The transaction, which was accounted for as a business combination, initially added 16 partnerships to the Company's portfolio and provides the Company with opportunities for further licensing and collaborations in the area. The aggregate acquisition consideration was $173.4 million, consisting of (in thousands, except per share amounts):

Cash consideration	$	96,006
Total share consideration:		
Actual number of shares issued		790
Multiplied by: Ligand closing share price on January 8, 2016		98
Total share consideration	$	77,373
Total consideration	$	173,379

The acquisition consideration was allocated to the acquisition date fair values of acquired assets and assumed liabilities as follows (in thousands):

Cash and cash equivalents	$	3,504
Accounts receivable		5
Income tax receivable		136
Prepaid expenses and other current assets		1
Deferred tax liabilities, net		(55,708)
Intangible asset with finite life - core technology		167,000
Liabilities assumed		(1,528)
Goodwill		59,969
Total consideration	$	173,379

The fair value of the core technology, or OMT's OmniAb technology, was based on the discounted cash flow method that estimated the present value of a hypothetical royalty stream derived from the licensing of the OmniAb technology. These projected cash flows were discounted to present value using a discount rate of 15.5%. The fair value of the core technology is being amortized on a straight-line basis over the estimated useful life of 20 years.

The excess of the acquisition date consideration over the fair values assigned to the assets acquired and the liabilities assumed was $60.0 million and was recorded as goodwill, which is not deductible for tax purposes and is primarily attributable to OMT’s potential revenue growth from combining the OMT and Ligand businesses and workforce, as well as the benefits of access to different markets and customers.

The following table presents supplemental pro forma information for the three and twelve months ended December 31, 2016 and December 31, 2015, as if the acquisition of OMT had occurred on January 1, 2015 (in thousands except for income per share):

	Three months ended December 31,		Twelve months ended December 31,	
	2016	2015	2016	2015
Revenue	$ 38,185	$ 24,571	$ 111,449	$ 80,365
Net (loss) income	$ (3,126)	5,888	$ 632	$ 222,788
Basic (loss) income per share:	$ (0.15)	$ 0.30	$ 0.03	$ 11.26
Diluted (loss) income per share:	$ (0.15)	$ 0.27	$ 0.03	$ 10.50

The unaudited pro forma consolidated results include pro forma adjustments that assume the acquisition occurred on January 1, 2015. The primary adjustments include: (i) the $0.3 million and $0.9 million for the three and twelve months ended December 31, 2015, respectively, for share based compensation expenses related to the stock awards issued to the retained OMT employees after the acquisition, (ii) additional intangible amortization expense of $2.1 million and $6.3 million was

included in the three and twelve months ended December 31, 2015, respectively and (iii) a platform license fee of $3.0 million paid by OMT during the twelve months ended December 31, 2015. The license agreement was terminated upon acquisition by Ligand. The adjustments also include $2.5 million license revenue recognized by OMT from January 1, 2016 to the acquisition date. The unaudited pro forma consolidated results are not necessarily indicative of what our consolidated results of operations actually would have been had we completed the acquisition on January 1, 2015. In addition, the unaudited pro forma consolidated results do not purport to project the future results of operations of the combined company nor do they reflect the expected realization of any cost savings associated with the acquisition.

4. Fair Value Measurement

The Company measures certain financial assets and liabilities at fair value on a recurring basis. Fair value is a market-based measurement that should be determined using assumptions that market participants would use in pricing an asset or liability. The Company establishes a three-level hierarchy to prioritize the inputs used in measuring fair value. The levels are described in the below with level 1 having the highest priority and level 3 having the lowest:

Level 1 - Observable inputs such as quoted prices in active markets

Level 2 - Inputs other than the quoted prices in active markets that are observable either directly or indirectly

Level 3 - Unobservable inputs in which there is little or no market data, which require the Company to develop its own assumptions

The following table provide a summary of the assets and liabilities that are measured at fair value on a recurring basis as of December 31, 2016 and 2015 (in thousands):

	Fair Value Measurements at Reporting Date Using			
December 31, 2016	**Total**	**Quoted Prices in Active Markets for Identical Assets (Level 1)**	**Significant Other Observable Inputs (Level 2)**	**Significant Unobservable Inputs (Level 3)**
Assets:				
Short-term investments [1]	$ 122,296	$ 3,054	$ 119,242	$ —
Note receivable Viking [2]	3,207	—	—	3,207
Investment in warrants [3]	684	684	—	—
Total assets	$ 126,187	$ 3,054	$ 119,242	$ 3,207
Liabilities:				
Current contingent liabilities - CyDex [4a]	$ 101	$ —	$ —	$ 101
Long-term contingent liabilities - Metabasis [5]	1,413	—	1,413	—
Long-term contingent liabilities - CyDex [4]	1,503	—	—	1,503
Liability for amounts owed to former licensees [6]	371	371	—	—
Total liabilities	$ 3,388	$ 371	$ 1,413	$ 1,604

December 31, 2015	Total	Fair Value Measurements at Reporting Date Using: Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Cash equivalents [7]	$ 3,015	$ —	$ 3,015	$ —
Short-term investments [1]	92,775	6,786	85,989	—
Note receivable Viking [2]	4,782	—	—	4,782
Total assets	$ 100,572	$ 6,786	$ 89,004	$ 4,782
Liabilities:				
Current contingent liabilities - CyDex [4]	$ 7,812	$ —	$ —	$ 7,812
Current contingent liabilities-Metabasis [5]	2,602	—	2,602	—
Long-term contingent liabilities - Metabasis [5]	1,355	—	1,355	—
Long-term contingent liabilities - CyDex [4]	1,678	—	—	1,678
Liability for amounts owed to former licensees [6]	794	794	—	—
Total liabilities	$ 14,241	$ 794	$ 3,957	$ 9,490

(1) Investments in equity securities, are classified as level 1 as the fair value is determined using quoted market prices in active markets for the same securities. Short-term investments in marketable securities with maturities greater than 90 days are classified as level 2 of the fair value hierarchy, as these investment securities are valued based upon quoted prices for identical or similar instruments in markets that are not active, and model-based valuation techniques for which all significant assumptions are observable in the market.

(2) The fair value of the convertible note receivable from Viking at December 31, 2015 was determined using a probability weighted option pricing model. The fair value is subjective and is affected by certain significant input to the valuation model such as the estimated volatility of the common stock, which was estimated to be 75% at December 31, 2016 and 65% at December 31, 2015. Changes in these assumptions may materially affect the fair value estimate. For the year ended December 31, 2016 and December 31, 2015, the Company reported a decrease in the fair value of the Viking convertible notes of $0.2 million and$0.8 million respectively in "Other, net" of the consolidated statement of operations.

(3) Investment in warrants, which the Company received as a result of Viking's partial repayment of the Viking note receivable and the Company's purchase of Viking common stock and warrants in April 2016, are classified as level 1 as the fair value is determined using quoted market prices in active markets for the same securities.

(4) The fair value of the liabilities for CyDex contingent liabilities were determined based on the income approach using a Monte Carlo analysis. The fair value is subjective and is affected by changes in inputs to the valuation model including management's assumptions regarding revenue volatility, probability of commercialization of products, estimates of timing and probability of achievement of certain revenue thresholds and developmental and regulatory milestones which may be achieved and affect amounts owed to former license holders and CVR holders. Changes in these assumptions can materially affect the fair value estimate.

(4a) The fair value of the liabilities for short-term CyDex contingent liabilities at December 31, 2016 disclosed herein represents the fair value of the estimated contingent considerations owed to former license holder only, which is determined based on the methodology described in (4) above. The contingent considerations owed to the Cydex CVR holders at December 31, 2016 is determined based on actual amount owed at December 31, 2016 as the Cydex CVR agreement ended at December 31, 2016.

(5) The liability for CVRs for Metabasis are determined using quoted market prices in a market that is not active for the underlying CVR.

(6) The liability for amounts owed to former licensees are determined using quoted market prices in active markets for the underlying investment received from a partner, a portion of which is owed to former licensees.

(7) Highly liquid investments with maturities less than 90 days from the purchase date are recorded as cash equivalents that are classified as Level 2 of the fair value hierarchy, as these investment securities are valued based upon quoted prices for identical or similar instruments in markets that are not active, and model-based valuation techniques for which all significant assumptions are observable in the market.

The following table represents significant unobservable inputs used in determining the fair value of contingent liabilities assumed in the acquisition of CyDex:

	December 31,	
	2016	2015
Range of annual revenue subject to revenue sharing [1]	N/A	$22.5 million
Revenue volatility	25%	25%
Average of probability of commercialization	12.5%	73%
Sales beta	N/A	0.40
Credit rating	BB	BB
Equity risk premium	6%	6%
Market price of risk	3.2%	N/A

(1) For the December 31, 2015 valuation date, revenue subject to revenue sharing represent management's estimate of the range of total annual revenue subject to revenue sharing (i.e. annual revenues in excess of $15 million) through December 31, 2016, which is the term of the CVR agreement. For the December 31, 2016 valuation date, the Cydex CVR was determined based on the actual $5.0 million amount owed to Cydex CVR holders as the Cydex CVR agreement ended at December 31, 2016. This amount was subsequently paid in February 2017.

A reconciliation of the level 3 financial instruments as of December 31, 2016 is as follows (in thousands):

Assets:		
Fair value of level 3 financial instruments as of December 31, 2015	$	4,782
Viking note receivable fair market value adjustment		(215)
Cash payment received as partial repayment of note receivable		(300)
Fair market value of stock received as partial repayment of note receivable		(1,060)
Fair value of level 3 financial instrument assets as of December 31, 2016	$	3,207
Liabilities		
Fair value of level 3 financial instruments as of December 31, 2015	$	9,490
Payments to CVR holders and other contingency payments		(6,158)
Fair value adjustments to contingent liabilities		3,259
Other [1]		(4,987)
Fair value of level 3 financial instruments as of December 31, 2016	$	1,604

(1) Balance represents Cydex CVR obligation, which was determined based on actual amount owed to Cydex CVR holders as the Cydex CVR agreement ended at December 31, 2016.

Other Fair Value Measurements-2019 Convertible Senior Notes

In August 2014, the Company issued the 2019 Convertible Senior Notes. The Company uses a quoted market rate in an inactive market, which is classified as a Level 2 input, to estimate the current fair value of its 2019 Convertible Senior Notes. The estimated fair value of the 2019 Senior Convertible Notes was $331.7 million as of December 31, 2016. The carrying value of the notes does not reflect the market rate. See Note 7 *Financing Arrangements* for additional information.

Viking

The Company records its investment in Viking under the equity method of accounting. The investment is subsequently adjusted for the Company's share of Viking's operating results, and if applicable, cash contributions and distributions. See *Note*

2 Investment in Viking for additional information. The market value of the Company's investment in Viking was $7.5 million as of December 31, 2016.

5. Lease Obligations

The Company leases office facilities in California and Kansas. These leases expire between 2017 and 2023. Total rent expense, net under all office leases for 2016, 2015 and 2014 was $0.3 million, $0.4 million and $0.7 million, respectively. The following table provides a summary of operating lease obligations and payments expected to be received from sublease agreements as of December 31, 2016 (in thousands):

Operating lease obligations:	Lease Termination Date	Less than 1 year	1-2 years	3-4 years	Thereafter	Total
Corporate headquarters-San Diego, CA	April 2023	$ 128	$ 267	$ 283	$ 197	$ 875
Office and research facility-La Jolla, CA	June 2019	718	1,111	—	—	1,829
Bioscience and Technology Business Center-Lawrence, KS	December 2017	54	—	—	—	54
Total operating lease obligations		$ 900	$ 1,378	$ 283	$ 197	$ 2,758
Sublease payments expected to be received:						
Office and research facility-La Jolla, CA	June 2019	656	1,002	—	—	1,658
Net operating lease obligations		$ 244	$ 376	$ 283	$ 197	$ 1,100

Lease termination

In November 2015, the Company entered into a lease termination agreement with its current lessor for the corporate headquarters facility located in La Jolla, California. The termination agreement accelerated the expiration date of the lease to April 2016, through which date, the Company is obligated to pay all base rent, operating expenses and other obligations due under the current lease.

In conjunction with the execution of the termination agreement, the Company entered into a new lease agreement with a different lessor for its corporate headquarters located in San Diego, California. The new lease has an initial term of approximately 7 years and commenced in May 2016. The base rent under the new facility lease agreement is approximately $0.1 million per year for the first year, escalating 3.0% annually thereafter over the initial term. The Company has an option to extend the term of the lease for an additional five years. The lease is subject to additional charges for property management, common area maintenance and other costs.

Lease exit obligations

As of December 31, 2016 and 2015, the Company had lease exit obligations of $0 million and $0.9 million, respectively. The Company no longer records a lease obligation with respect to its vacated space expiring in June 2019 as the sublease proceeds offset the estimated lease exit obligations. For the years ended December 31, 2016 and 2015, the Company made cash payments, net of sublease payments received of $1.7 million and $3.3 million, respectively. The Company recognized adjustments for accretion and changes in leasing assumptions of $0.7 million, $0.9 million and $1.1 million for the years ended December 31, 2016, 2015 and 2014, respectively.

6. Financing Arrangements

2019 Convertible Senior Notes

In August 2014, the Company issued $245.0 million aggregate principal amount of its 2019 Convertible Senior Notes, resulting in net proceeds of $239.3 million. The 2019 Convertible Senior Notes are convertible into common stock at an initial conversion rate of 13.3251 shares per $1,000 principal amount of convertible notes, subject to adjustment upon certain events, which is equivalent to an initial conversion price of approximately $75.05 per share of common stock. The notes bear cash interest at a rate of 0.75% per year, payable semi-annually.

Holders of the 2019 Convertible Senior Notes may convert the notes at any time prior to the close of business on the business day immediately preceding May 15, 2019, under any of the following circumstances:

(1) during any fiscal quarter (and only during such fiscal quarter) commencing after December 31, 2014, if, for at least 20 trading days (whether or not consecutive) during the 30 consecutive trading day period ending on the last trading day of the immediately preceding fiscal quarter, the last reported sale price of the Company's common stock on such trading day is greater than 130% of the conversion price on such trading day;

(2) during the five business day period immediately following any 10 consecutive trading day period, in which the trading price per $1,000 principal amount of notes was less than 98% of the product of the last reported sale price of the Company's common stock on such trading day and the conversion rate on each such trading day; or

(3) upon the occurrence of certain specified corporate events as specified in the indenture governing the notes.

As of December 31 2016, the Company's last reported sale price exceeded the 130% threshold described above and accordingly the Convertible Notes have been classified as a current liability as of December 31, 2016. As a result, the related unamortized discount of $29.6 million was classified as temporary equity component of currently redeemable convertible notes on our consolidated balance sheet. The determination of whether or not the Convertible Notes are convertible as described above is made each quarter until maturity, conversion or repurchase. It is possible that the Convertible Notes may not be convertible in future periods, in which case the Convertible Notes would be classified as long-term debt, and the unamortized discount would be classified as permanent equity unless one of the other conversion events described above were to occur.

On or after May 15, 2019 until the close of business on the second scheduled trading day immediately preceding August 15, 2019, holders of the notes may convert all or a portion of their notes at any time. Upon conversion, Ligand must deliver cash to settle the principal and may deliver cash or shares of common stock, at the option of the Company, to settle any premium due upon conversion.

The Company accounted for the debt and equity components of the 2019 Convertible Senior Notes by allocating the $245.0 million total proceeds between the debt component and the embedded conversion option, or equity component, due to Ligand's ability to settle the 2019 Convertible Senior Notes in cash for the principal portion and to settle any premium in cash or common stock, at the Company's election. The debt allocation was performed in a manner that reflected the Company's non-convertible borrowing rate for similar debt of 5.83% derived from independent valuation analysis. The initial debt value of $192.5 million accretes at 5.83% to reach $245.0 million at the maturity date. The equity component of the 2019 Convertible Senior Notes was recognized as a debt discount and represents the difference between the $245.0 million proceeds at issuance of the 2019 Convertible Senior Notes and the fair value of the debt allocation on their respective issuance dates. The debt discount is amortized to interest expense using the effective interest method over the expected life of a similar liability without an equity component. As of December 31, 2016, the “if-converted value” exceeded the principal amount of the 2019 Convertible Senior Notes by $86.7 million.

In connection with the issuance of the 2019 Convertible Senior Notes, the Company incurred $5.7 million of issuance costs, which primarily consisted of underwriting, legal and other professional fees. The portions of these costs allocated to the equity components totaling $1.2 million were recorded as a reduction to additional paid-in capital. The portions of these costs allocated to the liability components totaling $4.5 million were recorded as assets on the balance sheet at the time the debt was issued. Beginning in 2016, the unamortized issuance costs allocated to the liability components are recorded as part of debt discount on the consolidated balance sheet upon the Company's respective adoption of *ASU 2015-03, Interest-Imputation of Interest: Simplifying the Presentation of Debt Issuance Costs*. Issuance cost included in the unamortized debt discount was $2.5 million and $3.4 million as of December 31, 2016 and 2015, respectively.

The Company determined the expected life of the debt discount for the 2019 Convertible Senior Notes to be equal to the original five-year term of the notes. The carrying value of the equity component related to the 2019 Convertible Senior Notes as of December 31, 2016, net of issuance costs, was $51.3 million.

Convertible Bond Hedge and Warrant Transactions

In August 2014, to minimize the impact of potential dilution to the Company's common stock upon conversion of the 2019 Convertible Senior Notes, in August 2014, the Company entered into convertible bond hedges and sold warrants covering 3,264,643 shares of its common stock. The convertible bond hedges have an exercise price of $75.05 per share and are exercisable when and if the 2019 Convertible Senior Notes are converted. If upon conversion of the 2019 Convertible Senior Notes, the price of the Company's common stock is above the exercise price of the convertible bond hedges, the counterparties will deliver shares of common stock and/or cash with an aggregate value approximately equal to the difference between the price of common stock at the conversion date and the exercise price, multiplied by the number of shares of common stock related to the convertible bond hedge transaction being exercised. The convertible bond hedges and warrants described below are separate transactions entered into by the Company and are not part of the terms of the 2019 Convertible Senior Notes. Holders of the 2019 Convertible Senior Notes and warrants will not have any rights with respect to the convertible bond hedges. The Company paid $48.1 million for these convertible bond hedges and recorded the amount as a reduction to additional paid-in capital.

Concurrently with the convertible bond hedge transactions, the Company entered into warrant transactions whereby it sold warrants to acquire approximately 3,264,643 shares of common stock with an exercise price of approximately $125.08 per share, subject to certain adjustments. None of the warrants have been exercised as of December 31, 2016. The warrants have various expiration dates ranging from November 13, 2019 to April 22, 2020. The warrants will have a dilutive effect to the extent the market price per share of common stock exceeds the applicable exercise price of the warrants, as measured under the terms of the warrant transactions. The Company received $11.6 million for these warrants and recorded this amount to additional paid-in capital. The common stock issuable upon exercise of the warrants will be in unregistered shares, and the Company does not have the obligation and does not intend to file any registration statement with the Securities and Exchange Commission registering the issuance of the shares under the warrants.

The following table summarizes information about the liability components the Company's financing arrangement (dollars in thousands):

	December 31, 2016	December 31, 2015
2019 Convertible Senior Notes		
Principal amount outstanding	$ 245,000	$ 245,000
Unamortized discount	(32,090)	(43,015)
Total current portion of notes payable	$ 212,910	$ 201,985

As of December 31, 2016, there were no events of default or violation of any covenants under the Company's financing obligations.

7. Balance Sheet Account Details

Short-term Investments

The following table summarizes the various investment categories at December 31, 2016 and 2015 (in thousands):

	Cost	Gross unrealized gains	Gross unrealized losses	Estimated fair value
December 31, 2016				
Short-term investments				
Bank deposits	$ 40,715	$ 19	$ —	$ 40,734
Corporate bonds	11,031	—	(5)	11,026
Corporate equity securities	1,512	1,542	—	3,054
Commercial paper	33,074	2	(9)	33,067
Agency bonds	7,294	1	—	7,295
U.S. Government bonds	7,508	—	(1)	7,507
Municipal bonds	19,624	—	(11)	19,613
	$ 120,758	$ 1,564	$ (26)	$ 122,296
December 31, 2015				
Short-term investments				
Bank deposits	$ 43,043	$ —	$ (4)	$ 43,039
Corporate bonds	41,238	—	(35)	41,203
Commercial paper	1,747	—	—	1,747
Asset backed securities	10,020	—	(5)	10,015
Corporate equity securities	1,843	4,944	—	6,787
	$ 97,891	$ 4,944	$ (44)	$ 102,791

Other current assets consist of the following (in thousands):

	December 31,	
	2016	2015
Prepaid expenses	$ 1,864	$ 1,177
Other receivables	311	731
	$ 2,175	$ 1,908

Property and equipment is stated at cost and consists of the following (in thousands):

	December 31,	
	2016	2015
Lab and office equipment	$ 1,067	$ 2,248
Leasehold improvements	1,754	273
Computer equipment and software	569	632
	3,390	3,153
Less accumulated depreciation and amortization	(1,571)	(2,781)
	$ 1,819	$ 372

Depreciation of equipment is computed using the straight-line method over the estimated useful lives of the assets which range from three to ten years. Leasehold improvements are amortized using the straight-line method over their estimated useful lives or their related lease term, whichever is shorter. Depreciation expense of $0.2 million, $0.2 million, and $0.3 million was recognized for the years ended December 31, 2016, 2015, and 2014, respectively and is included in operating expenses.

Goodwill and identifiable intangible assets consist of the following (in thousands):

	December 31,	
	2016	2015
Indefinite lived intangible assets		
IPR&D	$ 12,246	$ 12,556
Goodwill	72,207	12,238
Definite lived intangible assets		
Complete technology	182,577	15,267
Less: Accumulated amortization	(12,792)	(3,762)
Trade name	2,642	2,642
Less: Accumulated amortization	(784)	(652)
Customer relationships	29,600	29,600
Less: Accumulated amortization	(8,784)	(7,304)
Total goodwill and other identifiable intangible assets, net	$ 276,912	$ 60,585

Amortization of finite lived intangible assets is computed using the straight-line method over the estimated useful life of the asset of 20 years. Amortization expense of $10.6 million, $2.4 million, and $2.4 million was recognized for the years ended December 31, 2016 and 2015, and 2014. Estimated amortization expense for the years ending December 31, 2017 through 2021 is $10.6 million per year. For each of the years ended December 31, 2016, 2015, and 2014, there was no impairment of intangible assets with finite lives.

Commercial license rights consist of the following (in thousands):

	December 31, 2016	December 31, 2015
CorMatrix	$ 17,696	$ —
Selexis	8,602	8,602
	26,298	8,602
Less: accumulated amortization	(477)	(48)
Total commercial rights, net	$ 25,821	$ 8,554

Accrued liabilities consist of the following (in thousands):

	December 31,	
	2016	2015
Compensation	$ 2,603	$ 1,711
Legal	829	726
Amounts owed to former licensees	899	915
Royalties owed to third parties	942	823
Other	1,124	1,230
	$ 6,397	$ 5,405

In connection with the acquisition of CyDex in January 2011, we issued a series of CVRs and also assumed certain contingent liabilities. We may be required to make additional payments upon achievement of certain clinical and regulatory milestones to the CyDex shareholders and former license holders. We pay CyDex shareholders, through 2016, 20% of all CyDex-related revenue, but only to the extent that, and beginning only when, CyDex-related revenue for the year exceeds $15.0 million; plus an additional 10% of all CyDex-related revenue recognized during such year, but only to the extent, and beginning only when aggregate CyDex-related revenue for such year exceeds $35.0 million.

In connection with the acquisition of Metabasis in January 2010, we entered into four CVR agreements with Metabasis shareholders. The CVRs entitle the holders to cash payments as frequently as every six months as proceeds are

received by us upon the sale or licensing of any of the Metabasis drug development programs and upon the achievement of specified milestones.

Contingent liabilities consist of the following (in millions):

	December 31, 2014	Payments	Fair Value Adjustment	December 31, 2015	Payments	Fair Value Adjustment	December 31, 2016
Cydex	$ 11.5	$ (5.8)	$ 3.8	$ 9.5	(6.2)	$ 3.3	$ 6.6
Metabasis	3.7	(0.9)	1.2	4.0	(2.6)	0.1	1.5
Total	15.2	(6.7)	5.0	13.5	(8.8)	3.4	8.1

Other long-term liabilities consist of the following (in thousands):

	December 31,	
	2016	2015
Deferred rent	$ 357	$ —
Deposits	43	268
Other	287	29
	$ 687	$ 297

8. Stockholders' Equity

Share-based Compensation Expense

The following table summarizes stock-based compensation expense (in thousands):

	December 31,		
	2016	2015	2014
Stock-based compensation expense as a component of:			
Research and development expenses	$ 8,836	$ 4,080	$ 3,595
General and administrative expenses	10,057	8,378	7,675
	$ 18,893	$ 12,458	$ 11,270

Stock Plans

In May 2009, the Company's stockholders approved the amendment and restatement of the Company's 2002 Stock Incentive Plan (the "Amended 2002 Plan"). The Company's 2002 Stock Incentive Plan was amended to (i) increase the number of shares available for issuance under the Amended 2002 Plan by 1.3 million shares, (ii) revise the list of performance criteria that may be used by the compensation committee for purposes of granting awards under the Amended 2002 Plan that are intended to qualify as performance-based compensation under Section 162(m) of the Internal Revenue Code, as amended, and (iii) eliminate the automatic option grant program for non-employee directors, the director fee stock issuance program and the director fee option grant program, which programs have been superseded by the Company's amended and restated Director Compensation Policy. Additionally, in May 2012 and May 2016, the Company's stockholders approved an amendment and restatement of the Company's 2002 Stock Incentive Plan to increase the number of shares available for issuance by 1.8 million and 0.9 million shares, respectively. As of December 31, 2016, there were 1.0 million shares available for future option grants or direct issuance under the Amended 2002 Plan.

Following is a summary of the Company's stock option plan activity and related information:

	Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term in Years	Aggregate Intrinsic Value (In thousands)
Balance at December 31, 2015	1,683,341	$ 34.19	6.48	$ 124,800
Granted	263,489	92.09		
Exercised	(164,440)	38.08		
Forfeited	(28,115)	60.17		
Balance at December 31, 2016	1,754,275	42.12	6.19	104,247
Exercisable at December 31, 2016	1,298,561	30.21	5.44	92,723
Options vested and expected to vest as of December 31, 2016	1,752,275	$ 42.12	6.19	$ 104,247

The weighted-average grant-date fair value of all stock options granted during 2016, 2015 and 2014 was $46.53, $35.39 and $46.20 per share, respectively. The total intrinsic value of all options exercised during 2016, 2015 and 2014 was approximately $12.0 million, $20.7 million and $15.3 million, respectively.

Cash received from options exercised, net of fees paid, in 2016, 2015 and 2014 was $6.2 million, $8.7 million and $4.4 million, respectively.

Following is a further breakdown of the options outstanding as of December 31, 2016:

Range of exercise prices	Options outstanding	Weighted average remaining life in years	Weighted average exercise price	Options exercisable	Weighted average exercise price
$8.58 - $12.53	247,574	3.94	$ 9.98	247,574	$ 9.98
$10.12 - $12.81	76,100	4.92	11.38	76,100	11.38
$14.47 - $14.47	288,887	5.11	14.47	274,887	14.47
$16.14 - $21.00	106,242	1.85	17.76	106,242	17.76
$21.92 - $21.92	225,105	6.13	21.92	213,199	21.92
$32.00 - $53.34	72,330	6.02	36.18	62,747	34.73
$56.26 - $59.26	183,595	8.11	56.26	70,877	56.26
$63.58 - $68.62	26,382	7.50	67.20	21,976	67.50
$74.42 - $74.42	227,856	7.12	74.42	162,233	74.42
$85.79 - $138.53	298,204	9.03	93.19	62,726	89.71
$8.58 – $138.53	1,752,275	6.19	$ 42.12	1,298,561	$ 30.21

The assumptions used for the specified reporting periods and the resulting estimates of weighted-average grant date fair value per share of options granted:

	Year Ended December 31,		
	2016	2015	2014
Risk-free interest rate	1.3%-1.9%	1.7%-2.0%	1.9%
Expected volatility	48%-50%	50%-58%	62%-69%
Expected term	6.6 to 6.7 years	6.5 years	6.0 years
Forfeiture rate	5.00%	8.52%	8.6%-9.7%

As of December 31, 2016, there was $17.5 million of total unrecognized compensation cost related to non-vested stock options. That cost is expected to be recognized over a weighted average period of 2.22 years.

Restricted Stock Activity

The following is a summary of the Company's restricted stock activity and related information:

	Shares	Weighted-Average Grant Date Fair Value
Outstanding at December 31, 2015	130,749	$ 60.36
Granted	234,855	95.31
Vested	(54,421)	66.79
Forfeited	(2,483)	67.95
Outstanding at December 31, 2016	308,700	$ 86.61

As of December 31, 2016, unrecognized compensation cost related to non-vested stock awards amounted to $13.8 million. That cost is expected to be recognized over a weighted average period of 1.14 years.

Employee Stock Purchase Plan

As of December 31, 2016, 70,406 shares of the Company's common stock are available for future issuance under it's Amended Employee Stock Purchase Plan, or ESPP. The ESPP permits eligible employees to purchase up to 1,250 shares of Ligand common stock per calendar year at a discount through payroll deductions. The price at which stock is purchased under the ESPP is equal to 85% of the fair market value of the common stock on the first of a six month offering period or purchase date, whichever is lower. There were 1,961, 3,374 and 3,774 shares issued under the ESPP in 2016, 2015 and 2014, respectively.

Share Repurchases

During the years ended December 31, 2016, 2015 and 2014 the Company repurchased 40,500 shares for $3.9 million, 6,120 shares for $0.5 million, and 1,253,425 shares for $68.0 million, respectively.

In September 2015, the Company's Board of Directors authorized the Company to repurchase up to $200.0 million of its own stock in privately negotiated and open market transactions for a period of up to three years, subject to the Company's evaluation of market conditions. Authorization to repurchase up to an additional $195.6 million of its common stock remained as of December 31, 2016.

9. Litigation

The Company records an estimate of a loss when the loss is considered probable and estimable. Where a liability is probable and there is a range of estimated loss and no amount in the range is more likely than any other number in the range, The Company records the minimum estimated liability related to the claim in accordance with *FASB ASC Topic 450 Contingencies.* As additional information becomes available, the Company assesses the potential liability related to its pending litigation and revises its estimates. Revisions in the Company's estimates of potential liability could materially impact its results of operations.

Securities Litigation

In 2012, a federal securities class action and shareholder derivative lawsuit was filed in Pennsylvania alleging that the Company and its chief executive officer assisted various breaches of fiduciary duties based on the Company's purchase of a licensing interest in a development-stage pharmaceutical program from the Genaera Liquidating Trust in 2010 and the Company's subsequent sale of half of its interest in the transaction to Biotechnology Value Fund, Inc. Plaintiff filed a second

amended complaint in February 2015, which the Company moved to dismiss in March 2015. The district court granted the motion to dismiss on November 11, 2015. The plaintiff has appealed that ruling to the U.S. Third Circuit Court of Appeals. The Company intends to continue to vigorously defend against the claims against the Company and its chief executive officer. The outcome of the matter is not presently determinable.

Paragraph IV Certification by Par Pharmaceuticals

On January 7, 2016, the Company received a paragraph IV certification from Par Sterile Products, LLC, a subsidiary of Par Pharmaceuticals, Inc., or Par, advising us that it had filed an ANDA with the FDA seeking approval to market a generic version of Merck's NOXAFIL-IV product. On February 19, 2016, Merck filed an action against Par in the United States District Court for the District of New Jersey, asserting that Par's manufacture, use or sale of the product for which the ANDA was submitted would infringe Merck's U.S. Patent No. 9,023,790. On October 31, 2016, the parties entered into a consent judgment dismissing all claims, counterclaims, affirmative defenses and demands. The parties have reported to the court that they entered into a confidential settlement agreement, and that they submitted the agreement to the Federal Trade Commission and the United States Department of Justice pursuant to Section 112(a) of the Medicare Prescription Drug, Improvement and Modernization Act of 2003.

Class Action Lawsuit

In November 2016, a putative shareholder class action lawsuit was filed in the United States District Court for the Southern District of California against the Company, its chief executive officer and chief financial officer. The complaint alleges violations of Sections 10(b) and 20(a) of the Securities Exchange Act of 1934, and Rule 10b-5 promulgated thereunder, and seeks unspecified compensatory damages and other relief on behalf of a purported class of purchasers of the Company's securities between November 9, 2015 and November 14, 2016, inclusive. The complaint's allegations relate generally to the Company's November 2016 restatement of certain prior period financial statements. In January 2017, a purported Company shareholder filed a motion for appointment of lead counsel and lead plaintiff. The motion is scheduled to be heard by the Court in March 2017. No trial date has been set. The Company believes that the lawsuit is without merit and intends to vigorously defend against the lawsuit.

10. Income Taxes

The components of the income tax expense (benefit) for continuing operations are as follows (in thousands):

	Year Ended December 31,		
	2016	2015	2014
Current expense (benefit):			
Federal	$ 21	$ 11	$ 15
State	12	7	19
	33	18	34
Deferred expense (benefit):			
Federal	10,534	(167,413)	406
State	(240)	(24,720)	(30)
	$ 10,327	$ (192,115)	$ 410

A reconciliation of income tax expense (benefit) from continuing operations to the amount computed by applying the statutory federal income tax rate to the net income (loss) from continuing operations is summarized as follows:

	Year Ended December 31,		
	2016	2015	2014
Amounts computed at statutory federal rate	$ 2,786	$ 13,198	$ 3,843
State taxes net of federal benefit	175	386	697
Meals & entertainment	16	16	9
Imputed interest	(1)	(161)	53
Section 162(m) limitation	94	197	490
Contingent liabilities	1,225	1,684	1,748
Stock-based compensation	263	140	89
Expired NOLs	—	232	88
Research and development credits	(1,525)	304	(113)
Change in uncertain tax positions	1,423	27,188	7
Rate change for changes in state law	25	(5,756)	119
APIC Excess Tax Benefit True Up	(622)	—	—
Increase in deferred tax assets from completion of 382 analysis	(120)	3,329	43
Avinza true up	—	(2,107)	—
Change in valuation allowance	6,283	(231,370)	(7,243)
Other	305	605	580
	$ 10,327	$ (192,115)	$ 410

Significant components of the Company’s deferred tax assets and liabilities as of December 31, 2016 and 2015 are shown below. The Company assesses the positive and negative evidence to determine if sufficient future taxable income will be generated to use the existing deferred tax assets. The Company's evaluation of evidence resulted in management concluding that the majority of the Company's deferred tax assets will be realized. However, the Company maintains a valuation allowance to offset certain net deferred tax assets as management believes realization of such assets are uncertain as of December 31, 2016, 2015 and 2014. The valuation allowance increased $6.3 million in 2016, decreased $231.7 million in 2015

and decreased $7.2 million in 2014.

	December 31,	
	2016	2015
	(in thousands)	
Deferred assets:		
Net operating loss carryforwards	$ 150,226	$ 160,595
Research credit carryforwards	26,878	25,613
Fixed assets and intangibles	4,385	8,839
Accrued expenses	943	1,523
Contingent liabilities	578	707
Deferred revenue	—	3
Present value of royalties	591	3,007
Deferred rent	45	68
Capital Loss Carryforward	4,432	—
Viking Equity Method Investment	5,692	1,840
Other	19,312	15,441
	213,082	217,636
Valuation allowance for deferred tax assets	(15,349)	(9,066)
Net deferred tax assets	$ 197,733	$ 208,570
Deferred tax liabilities:		
Retrophin fair value adjustment	$ (52)	$ (1,256)
Convertible debt	(1,196)	(1,844)
Identified intangibles	(68,631)	(12,770)
Identified indefinite lived intangibles	(3,963)	(3,617)
Total	$ 123,891	$ 189,083

Sections 382 and 383 of the U.S. tax code impose limitations (“382 and 383 limitations”) on the annual utilization of operating loss and credit carryforwards whenever a greater than fifty percent change in the ownership of a company occurs within a three year period. In addition to the annual limitations on operating loss and credit carryforwards, Section 382 can also restrict the utilization of certain post change losses if the tax basis in assets exceeds the fair value of assets (“net unrealized built in loss”) at the date of an ownership change. Companies with operating loss and credit carryforwards are required to test the cumulative three year change whenever there is an equity transaction that impacts the ownership of holders of more than five percent of the Company’s stock. During 2016, the Company completed a rollforward analysis through December 31, 2016. As a result of the rollforward analysis, it was determined that no additional ownership changes occurred at the Company within the meaning of section 382 since June 20, 2007. Future changes in the ownership of the Company could place additional restrictions on the Company’s ability to utilize operating loss and credit carryforwards arising through December 31, 2016.

As of December 31, 2016, the Company had federal and state net operating loss carryforwards set to expire through 2036 of $446.3 million and $140.5 million of state net operating loss carryforwards. The Company also has $21.9 million of federal research and development credit carryforwards, which expire through 2036. The Company has $19.4 million of California research and development credit carryforwards that have no expiration date.

The Company accounts for income taxes by evaluating a probability threshold that a tax position must meet before a financial statement benefit is recognized. The minimum threshold is a tax position that is more likely than not to be sustained upon examination by the applicable taxing authority, including resolution of any related appeals or litigation processes, based on the technical merits of the position. The Company’s remaining liabilities for uncertain tax positions are presented net of the deferred tax asset balances on the accompanying consolidated balance sheet.

A reconciliation of the amount of unrecognized tax benefits at December 31, 2016, 2015 and 2014 is as follows (in thousands):

	December 31,		
	2016	2015	2014
Balance at beginning of year	$ 36,452	$ 8,524	$ 8,504
Additions based on tax positions related to the current year	70	154	40
Additions for tax positions of prior years	2,408	28,224	—
Reductions for tax positions of prior years	(160)	(450)	(20)
Balance at end of year	$ 38,770	$ 36,452	$ 8,524

Included in the balance of unrecognized tax benefits at December 31, 2016 is $35.5 million of tax benefits that, if recognized would impact the effective rate. There are no positions for which it is reasonably possible that the uncertain tax benefit will significantly increase or decrease within twelve months.

The Company recognizes interest and penalties related to uncertain tax positions in income tax expense. As of December 31, 2016 and December 31, 2015, the Company recognized an immaterial amount of interest and penalties. The Company files income tax returns in the United States and in various state jurisdictions with varying statutes of limitations. The federal statute of limitation remains open for the 2013 tax year to present. The state income tax returns generally remain open for the 2012 tax years through present. Net operating loss and research credit carryforwards arising prior to these years are also open to examination if and when utilized.

In March 2016, the Financial Accounting Standards Board (the “FASB”) issued Accounting Standards Update No. 2016-09, Compensation - Stock Compensation (Topic 718): Improvements to Employee Shared-Based Payment Accounting ("ASU 2016-09"). ASU 2016-09 simplifies how several aspects of share-based payments are accounted for and presented in the financial statements. ASU 2016-09 is effective for public companies for annual reporting periods beginning after December 15, 2016. The Company will adopt this ASU in the first quarter of 2017. The Company has excess tax federal and state benefits for which a benefit could not be previously recognized of approximately $13.7 million and $11.5 million, respectively. Upon adoption the balance of the unrecognized excess tax benefits will be reversed with the impact recorded to retained earnings including any change to the valuation allowance as a result of the adoption.

11. Summary of Unaudited Quarterly Financial Information

The following financial information reflects all normal recurring adjustments, which are, in the opinion of management, necessary for a fair statement of the results and cash flows of interim periods. Summarized quarterly data for fiscal years 2016 and 2015 are as follows (in thousands, except per share amounts):

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
2016				
Total revenues	$ 29,648	$ 19,521	$ 21,619	$ 38,185
Total operating costs and expenses	14,552	15,552	16,153	18,831
Income tax (expense) benefit	(3,694)	3,881	(160)	(10,354)
Income (loss) from continuing operations	5,877	(6,170)	1,051	(3,125)
Income from discontinued operations	731	—	—	—
Net income (loss)	6,608	(6,170)	1,051	(3,125)
Basic per share amounts:				
Net income (loss)	$ 0.32	$ (0.30)	$ 0.05	$ 0.15
Diluted per share amounts:				
Net income (loss)	0.30	(0.30)	0.05	0.15
Weighted average shares—basic	20,708	20,832	20,887	20,898
Weighted average shares—diluted	22,284	20,832	22,997	20,898
2015				
Total revenues	$ 14,602	$ 18,418	$ 17,701	$ 21,193
Total operating costs and expenses	11,253	14,053	9,104	10,175
Income tax (expense) benefit	(15)	(265)	191,881	514
(Loss) income from continuing operations	(89)	22,027	199,165	6,341
Net loss attributable to noncontrolling interests	(843)	(1,537)	—	—
Net income	754	23,564	199,165	6,341
Basic per share amounts:				
Net income	$ 0.04	$ 1.19	$ 10.01	$ 0.32
Diluted per share amounts:				
Net income	$ 0.04	$ 1.11	$ 9.28	$ 0.29
Weighted average shares—basic	19,612	19,725	19,887	19,933
Weighted average shares—diluted	20,631	21,276	21,460	21,542

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

None.

Item 9A. Controls and Procedures

(a) Evaluation of Disclosure Controls and Procedures

We are responsible for maintaining disclosure controls and procedures designed to provide reasonable assurance that information required to be disclosed in reports we file under the Exchange Act is recorded, processed, summarized and reported within the specified time periods and accumulated and communicated to management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure. The design of any system of controls is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions; over time, controls may become inadequate because of changes in conditions, or the degree of compliance with policies or procedures may deteriorate. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected. As of the end of the period covered by this Annual Report on Form 10-K, we have carried out an evaluation, under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer,

of the effectiveness of our disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, and have concluded our disclosure controls and procedures were not effective at a reasonable assurance level as of December 31, 2016. This conclusion was based on the material weakness identified in our internal control over financial reporting, as described in (b) below.

A material weakness is defined as "a deficiency, or a combination of deficiencies in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the Company's annual or interim financial statements will not be prevented or detected on a timely basis."

In light of the material weakness described below, we performed additional analysis and other procedures to ensure that our consolidated financial statements included in this Annual Report on Form 10-K were prepared in accordance with generally accepted accounting principles in the United States ("GAAP"). Notwithstanding the existence of the material weakness in internal control over financial reporting, we believe that our consolidated balance sheets as of December 31, 2016 and 2015 and the related consolidated statements of operations, comprehensive loss, stockholders' equity, and cash flows for the years ended December 31, 2016, 2015 and 2014 included in this Annual Report on Form 10-K fairly present, in all material respects, the Company's financial condition, results of operations and cash flows for the periods presented therein in conformity with GAAP.

Changes in Internal Control over Financial Reporting

As disclosed in Form 10-K/A for the year ended December 31, 2015, we have identified material weaknesses in internal control over financial reporting:

(1) A material weakness in the design of our internal control over the tax accounting for complex transactions that have a significant tax impact, specifically, management did not have adequate supervision and review of certain technical tax accounting performed by third party tax specialists.

(2) A material weakness in the design of our internal control over the presentation and disclosure of our 2019 convertible senior notes, specifically, management review control is not precise and adequate to capture the appropriate presentation and disclosure of our 2019 convertible senior notes that is triggered by certain specific contractual conditions.

To remediate the material weakness described in (1) above and to prevent similar deficiencies in the future, we are implementing additional controls and procedures, which includes but are not limited to:

- engagement of additional independent third party tax experts to assist or review in the tax accounting for non-routine, complex transactions or give a "second opinion" on the same transaction; and
- additional training for staff involved in the tax accounting for non-routine, complex transactions

While we continue to strive to improve the respective process and controls over management supervision and review of certain technical tax accounting prepared by third parties, we do not believe the new controls have been functioning for sufficient time for management to conclude the material weakness has been remediated at December 31, 2016

With regards to the material weakness described in (2) above, subsequent to the third and fourth quarter of 2016, we undertook the following steps to remediate the identified material weakness:

- Developed and refined certain spreadsheet tools to enhance the precision of the review for various inputs including our stock price, which would trigger the early conversion conditions under the debt indenture agreement;
- Implemented additional management reviews of the presentation including the classification and presentation of our convertible debt; and
- Hired additional accounting personnel to assist with the review of the presentation and classification of our convertible debt as well as overall external financial reporting

Except for the changes mentioned above, there have been no changes in our internal control over financial reporting that occurred in our fourth fiscal quarter that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

(b) Management's Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting for the Company. Internal control over financial reporting is a process to provide reasonable assurance regarding the reliability of our financial reporting for external purposes in accordance with accounting principles generally accepted in the United States of America. Internal control over financial reporting includes maintaining records that in reasonable detail accurately and fairly reflect our transactions; providing reasonable assurance that transactions are recorded as necessary for preparation of our financial statements in accordance with generally accepted accounting principles; providing reasonable assurance that receipts and expenditures are made in accordance with our management and directors; and providing reasonable assurance that
unauthorized acquisition, use or disposition of company assets that could have a material effect on our financial statements would be prevented or detected on a timely basis. Because of its inherent limitations, internal control over financial reporting is not intended to provide absolute assurance that a misstatement of our financial statements would be prevented or detected.

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 based on the framework established by the COSO as set forth in the 2013 Internal Control-Integrated Framework. Based on our evaluation under the 2013 framework in Internal Control - Integrated Framework, management concluded that our internal controls over financial reporting were not effective as of December 31, 2016 because the following material weakness identified in the year ended December 31, 2015 has not been remediated:

A material weakness in the design of our internal control over the tax accounting for complex transactions that have a significant tax impact, specifically, management did not have adequate supervision and review of certain technical tax accounting performed by third party tax specialists.

Ernst & Young LLP, an independent registered public accounting firm, has audited the Company's consolidated financial statements included in this Annual Report on Form 10-K and has issued an attestation report, included herein, on the effectiveness of our internal control over financial reporting as of December 31, 2016.

Report of Ernst & Young LLP, Independent Registered Public Accounting Firm

The Board of Directors and Stockholders of
Ligand Pharmaceuticals Incorporated

We have audited Ligand Pharmaceuticals Incorporated's internal control over financial reporting as of December 31, 2016, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). Ligand Pharmaceutical Incorporated'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 conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). 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, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

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.

A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the company's annual or interim financial statements will not be prevented or detected on a timely basis. The following material weakness has been identified and included in management's assessment. Management has identified a material weakness in controls related to the Company's design of internal control over the tax accounting for complex transactions that have a significant tax impact, specifically, management did not have adequate supervision and review of certain technical tax accounting performed by third party tax specialists. We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated balance sheet of Ligand Pharmaceuticals Incorporated as of December 31, 2016 and the related consolidated statements of operations, comprehensive loss, stockholders' equity and cash flows for the year then ended. This material weakness was considered in determining the nature, timing and extent of audit tests applied in our audit of the 2016 financial statements, and this report does not affect our report dated February 28, 2017, which expressed an unqualified opinion on those financial statements.

In our opinion, because of the effect of the material weakness described above on the achievement of the objectives of the control criteria, Ligand Pharmaceuticals Incorporated has not maintained effective internal control over financial reporting as of December 31, 2016, based on the COSO criteria.

/s/ Ernst & Young LLP

San Diego, California
February 28, 2017

Part III

Item 10. Directors, Executive Officers and Corporate Governance

Code of Conduct

The Board of Directors has adopted a Code of Conduct and Ethics Policy ("Code of Conduct") that applies to all officers, directors and employees. The Company will promptly disclose any material amendment or waiver to the Code of Conduct which affects any corporate officer. The Code of Conduct can be accessed via our website (http://www.ligand.com), Corporate Overview page. You may also request a free copy by writing to: Investor Relations, Ligand Pharmaceuticals Incorporated, 3911 Sorrento Valley Blvd, Suite 110, San Diego, CA 92121.

The other information under Item 10 is hereby incorporated by reference to Ligand's Definitive Proxy Statement to be filed with the SEC on or prior to April 29, 2017.

Item 11. Executive Compensation

Item 11 is hereby incorporated by reference to Ligand's Definitive Proxy Statement to be filed with the SEC on or prior to April 29, 2017.

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

Item 12 is hereby incorporated by reference to Ligand's Definitive Proxy Statement to be filed with the SEC on or prior to April 29, 2017.

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

Item 13 is hereby incorporated by reference to Ligand's Definitive Proxy Statement to be filed with the SEC on or prior to April 29, 2017.

Item 14. Principal Accountant Fees and Services

Item 14 is hereby incorporated by reference to Ligand's Definitive Proxy Statement to be filed with the SEC on or prior to April 29, 2017.

PART IV

Item 15. Exhibits and Financial Statement Schedule

(a) The following documents are included as part of this Annual Report on Form 10-K.

(1) Financial statements

(2) Schedules not included herein have been omitted because they are not applicable or the required information is in the consolidated financial statements or notes thereto.

(3) The following exhibits are filed as part of this Form 10-K and this list includes the Exhibit Index.

		Incorporated by Reference				
Exhibit Number	**Description of Exhibit**	**Form**	**File Number**	**Date of Filing**	**Exhibit Number**	**Filed Herewith**
2.1	Agreement and Plan of Merger, dated January 14, 2011 by and among the Company, CyDex Pharmaceuticals, Inc., and Caymus Acquisition, Inc.,	8-K	001-33093	January 26, 2011	10.1	
2.2	Agreement and Plan of Merger, dated as of December 17, 2015, by and among Ligand Pharmaceuticals Incorporated, Open Monoclonal Technology, Inc., OMT, LLC, Schrader 1 Acquisition, Inc., Schrader 2 Acquisition, Inc. and Fortis Advisors LLC	8-K	001-33093	December 18, 2015	2.1	
3.1	Amended and Restated Certificate of Incorporation of the Company.	S-4	333-58823	July 9, 1998	3.1	
3.2	Certificate of Amendment of the Amended and Restated Certificate of Incorporation of the Company, dated June 14, 2000	10-K	0-20720	March 29, 2001	3.5	
3.3	Certificate of Amendment of the Amended and Restated Certificate of Incorporation of the Company, dated June 30, 2004	10-Q	0-20720	August 5, 2004	3.6	
3.4	Certificate of Amendment of the Amended and Restated Certificate of Incorporation of the Company, dated November 17, 2010	8-K	001-33093	November 19, 2010	3.1	
3.5	Amended Certificate of Designation of Rights, Preferences and Privileges of Series A Participating Preferred Stock of the Company	10-Q	0-20720	May 14, 1999	3.3	
3.6	Third Amended and Restated Bylaws of the Company	8-K	001-33093	September 10, 2015	3.1	
4.1	Specimen stock certificate for shares of the common stock of the Company	S-1	33-47257	April 16, 1992		
4.2	2006 Preferred Shares Rights Agreement, by and between the Company and Mellon Investor Services LLC, dated October 13, 2006	8-K	000-20720	October 17, 2006	4.1	
4.3	First Amendment to 2006 Preferred Shares Rights Agreement, by and between the Company and Computershare Shareowner Services LLC (f/k/a Mellon Investor Services LLC), dated June 19, 2013	8-K	001-33093	June 20, 2013	4.1	

4.4	Indenture dated August 18, 2014 between the Company and Wilmington Trust, National Association	8-K	001-33093	August 18, 2014	4.1
10.1#	Form of Indemnification Agreement between the Company and each of its directors	S-1	33-47257	April 16, 1992	
10.2#	Form of Indemnification Agreement between the Company and each of its officers	S-1	33-47257	April 16, 1992	
10.3#	2002 Stock Incentive Plan (as amended and restated through May 23, 2016)	S-8	333-212775	July 29, 2016	10.1
10.4#	2002 Employee Stock Purchase Plan (as amended effective July 1, 2009)	S-8	333-160132	June 22, 2009	10.2
10.5#	Form of Stock Option Grant Notice and Stock Option Agreement under the Company's 2002 Stock Incentive Plan	10-K	001-33093	February 24, 2014	10.5
10.6#	Form of Restricted Stock Unit Grant Notice and Restricted Stock Unit Agreement under the Company's 2002 Stock Incentive Plan	10-K	001-33093	March 12, 2004	
10.7#	Form of Stock Issuance Agreement for non-employee directors under the Company's 2002 Stock Incentive Plan	S-1	333-131029	January 13, 2006	10.289
10.8#	Form of Letter Agreement regarding Change of Control Severance Benefits between the Company and its officers	10-K	001-33093	March 16, 2007	10.309
10.9#	Form of Executive Officer Change in Control Severance Agreement	8-K	001-33093	August 22, 2007	10.1
10.10#	Amended and Restated Severance Plan, dated December 20, 2008	8-K	001-33093	December 24, 20008	10.2
10.11#	Amended and Restated Director Compensation and Stock Ownership Policy, effective as of June 1, 2011	10-Q	001-33093	August 8, 2011	10.24
10.12#	Letter Agreement by and between the Company and John L. Higgins, dated January 10, 2007	8-K	001-33093	January 16, 2007	10.1
10.13†	Research, Development and License Agreement, dated December 29, 1994, between SmithKline Beecham Corporation and the Company .	S-1 S-3	33-87598 33-87600	December 20, 1994	
10.14†	Amended and Restated Research, Development and License Agreement, dated December 1, 2005, between the Company and Wyeth (formerly American Home Products Corporation)	S-1	333-131029	January 13, 2006	10.287
10.15	Purchase Agreement, by and between the Company, King Pharmaceuticals, Inc. and King Pharmaceuticals Research and Development, Inc., dated September 6, 2006	8-K	000-20720	September 11, 2006	2.1
10.16	Loan Agreement by and between the Company and King Pharmaceuticals, 303 Inc., dated October 12, 2006	10-K	001-33093	March 16, 2006	10.303
10.17	Letter Agreement by and between the Company and King Pharmaceuticals, Inc. effective as of December 29, 2006	8-K	001-33093	January 5, 2007	10.1
10.18	Amendment Number 2 to Purchase Agreement, by and between the Company and King Pharmaceuticals, Inc., effective February 26, 2007.	8-K	001-33093	February 28, 2007	2.1
10.19	Amendment to Lease, dated September 10, 2007, between Pharmacopeia, Inc. and Eastpark at 8A (Building 1000)	10-Q	000-50523	November 5, 2007	10.1
10.42	Lease, dated August 20, 2003, between Pharmacopeia, Inc. and Eastpark at 8A (Building 3000)	10-K	001-33093	March 16, 2009	10.327
10.21	Amendment to Lease, dated April 18, 2007, between Pharmacopeia, Inc. and Eastpark at 8A (Building 3000)	10-Q	000-50523	November 5, 2007	10.2
10.22†	Collaboration and License Agreement, dated July 9, 2003 and effective August 8, 2003, between Pharmacopeia, Inc. and Schering-Plough Ltd	10-K	001-33093	March 16, 2009	10.324
10.23†	Collaboration and License Agreement, dated July 9, 2003 and effective August 8, 2003, between Pharmacopeia, Inc. and Schering Corporation	10-K	001-33093	March 16, 2009	10.325

10.24	Amendment No. 1, dated July 27, 2006, to the Collaboration and License Agreements, effective as of July 9, 2003, between (i) Pharmacopeia, Inc. and Schering Corporation and (ii) Pharmacopeia, Inc. and Schering-Plough Ltd.	8-K	000-50523	August 2, 2006	10.1
10.25	Settlement Agreement and Mutual Release, by and between the Company and The Rockefeller University, dated February 11, 2009	10-Q	001-33093	May 11, 2009	10.318
10.26	TR Beta Contingent Value Rights Agreement, dated January 27, 2010, among the Company, Metabasis Therapeutics, Inc., David F. Hale and Mellon Investor Services LLC	8-K	001-33093	January 28, 2010	10.2
10.27	Glucagon Contingent Value Rights Agreement, dated January 27, 2010, among the Company, Metabasis Therapeutics, Inc., David F. Hale and Mellon Investor Services LLC	8-K	001-33093	January 28, 2010	10.3
10.28	General Contingent Value Rights Agreement, dated January 27, 2010, among the Company, Metabasis Therapeutics, Inc., David F. Hale and Mellon Investor Services LLC	8-K	001-33093	January 28, 2010	10.4
10.29	Amendment of General Contingent Value Rights Agreement, dated January 26, 2011, among the Company, Metabasis Therapeutics, Inc., David F. Hale and Mellon Investor Services LLC	8-K	001-33093	January 31, 2011	10.1
10.30	Purchase and Sale Agreement, dated May 18, 2010, between the Company and The Genaera Liquidating Trust	8-K	001-33093	May 24, 2010	10.1
10.31	Purchase Agreement, dated May 20, 2010, between the Company and Biotechnology Value Fund, L.P., on its own behalf and on behalf of Biotechnology Value Fund II, L.P. and Investment 10, L.L.C.	10-Q	001-33093	August 5, 2010	10.1
10.32	Contingent Value Rights Agreement, by and among the Company, CyDex Pharmaceuticals, Inc., and Allen K. Roberson and David Poltack, acting jointly as Shareholders' Representative, dated January 14, 2011	8-K	001-33093	January 26, 2011	10.2
10.33†	Captisol® Supply Agreement, dated December 20, 2002, among CyDex, Inc., Hovione LLC, Hovione FarmaCiencia S.A., Hovione Pharmascience Limited and Hovione International Limited	10-K	001-33093	March 3, 2011	10.100
10.34†	1st Amendment to Captisol® Supply Agreement, dated July 29, 2005, among CyDex, Inc., Hovione LLC, Hovione FarmaCiencia S.A., Hovione Pharmascience Limited and Hovione International Limited	10-K	001-33093	March 3, 2011	10.101
10.35	2nd Amendment to Captisol® Supply Agreement, dated March 1, 2007, among CyDex, Inc., Hovione LLC, Hovione FarmaCiencia S.A., Hovione Pharmascience Limited, and Hovione International Limited	10-K	001-33093	March 3, 2011	10.102
10.36†	3rd Amendment to Captisol® Supply Agreement, dated January 25, 2008, among CyDex, Inc., Hovione LLC, Hovione FarmaCiencia S.A., Hovione Pharmascience Limited, and Hovione International Limited	10-K	001-33093	March 3, 2011	10.103
10.37†	4th Amendment to Captisol® Supply Agreement, dated September 28, 2009, among CyDex Pharmaceuticals, Inc., Hovione LLC, Hovione FarmaCiencia S.A., Hovione Pharmascience Limited and Hovione International Limited	10-K	001-33093	March 3, 2011	10.104
10.38†	License Agreement, dated September 3, 1993, between CyDex L.C. and The University of Kansas	10-K	001-33093	March 3, 2011	10.105
10.39†	Second Amendment to License Agreement, dated August 4, 2004, between CyDex, Inc. and The University of Kansas	10-K	001-33093	March 3, 2011	10.107
10.40†	Acknowledgement Agreement, dated February 22, 2008, between CyDex, Inc. and The University of Kansas	10-K	001-33093	March 3, 2011	10.111
10.41†	Exclusive License Agreement, dated June 4, 1996, between Pfizer, Inc. and The University of Kansas	10-K	001-33093	March 3, 2011	10.108

10.42†	Nonexclusive License Agreement, dated June 4, 1996, between Pfizer, Inc. and The University of Kansas	10-K	001-33093	March 3, 2011	10.109
10.43†	Addendum to Nonexclusive License Agreement, dated December 11, 2001, between CyDex, Inc. and Pfizer, Inc.	10-K	001-33093	March 3, 2011	10.110
10.44†	License Agreement, dated January 4, 2006, between CyDex, Inc. and Prism Pharmaceuticals, Inc.	10-K	001-33093	March 3, 2011	10.112
10.45†	Amendment to License Agreement, dated May 12, 2006, between CyDex, Inc. and Prism Pharmaceuticals, Inc.	10-K	001-33093	March 3, 2011	10.113
10.46†	Supply Agreement, dated March 5, 2007, between CyDex, Inc. and Prism Pharmaceuticals, Inc.	10-K	001-33093	March 3, 2011	10.114
10.47†	License and Supply Agreement, dated October 12, 2005, between CyDex Pharmaceuticals, Inc. and Proteolix, Inc.	10-K	000-28298	February 23, 2010	10.22
10.48†	Supply Agreement, dated June 13, 2011 by and between CyDex Pharmaceuticals, Inc. and Merck Sharp & Dohme Corporation	10-Q	001-33093	June 30, 2011	10.27
10.49†	License Agreement, by and between CyDex Pharmaceuticals, Inc. and Spectrum Pharmaceuticals, Inc., dated as of March 8, 2013	10-Q	001-33093	May 8, 2013	10.2
10.50†	Supply Agreement, by and between CyDex Pharmaceuticals, Inc. and Spectrum Pharmaceuticals, Inc., dated as of March 8, 2013	10-Q	001-33093	May 8, 2013	10.3
10.51†	Royalty Stream and Milestone Payments Purchase Agreement, dated April 29, 2013, between the Company and Selexis S.A.	10-Q	001-33093	August 1, 2013	10.2
10.52	Amendment of “General” Contingent Value Rights Agreement dated May 20, 2014 among the Company, Metabasis Therapeutics, Inc., David F. Hale and Computershare Inc.	8-K	001-33093	May 22, 2014	10.1
10.53	Amendment of “TR Beta” Contingent Value Rights Agreement dated May 20, 2014 among the Company, Metabasis Therapeutics, Inc., David F. Hale and Computershare, Inc.	8-K	001-33093	May 22, 2014	10.2
10.54†	Loan and Security Agreement dated May 21, 2014 between the Company and Viking Therapeutics, Inc.	10-Q	001-33093	August 5, 2014	10.1
10.55†	Master License Agreement dated May 21, 2014 among the Company, Metabasis Therapeutics, Inc. and Viking Therapeutics, Inc.	10-Q	001-33093	August 5, 2014	10.2
10.56	Letter Agreement, dated as of August 12, 2014, between Bank of America, N.A. and the Company regarding the Base Convertible Note Hedge Transaction	8-K	001-33093	August 18, 2014	10.1
10.57	Letter Agreement, dated as of August 12, 2014, between Bank of America, N.A. and the Company regarding the Base Issuer Warrant Transaction	8-K	001-33093	August 18, 2014	10.2
10.58	Letter Agreement, dated as of August 12, 2014, between Deutsche Bank AG, London Branch and the Company regarding the Base Convertible Bond Hedge Transaction	8-K	001-33093	August 18, 2014	10.3
10.59	Letter Agreement, dated as of August 12, 2014, between Deutsche Bank AG, London Branch and the Company regarding the Base Issuer Warrant Transaction	8-K	001-33093	August 18, 2014	10.4
10.60	Letter Agreement, dated as of August 14, 2014, between Bank of America, N.A. and the Company regarding the Additional Convertible Bond Hedge Transaction	8-K	001-33093	August 18, 2014	10.5
10.61	Letter Agreement, dated as of August 14, 2014, between Bank of America, N.A. and the Company regarding the Additional Issuer Warrant Transaction	8-K	001-33093	August 18, 2014	10.6
10.62	Letter Agreement, dated as of August 14, 2014, between Deutsche Bank AG, London Branch and the Company regarding the Additional Convertible Bond Hedge Transaction	8-K	001-33093	August 18, 2014	10.7

10.63	Letter Agreement, dated as of August 14, 2014, between Deutsche Bank AG, London Branch and the Company regarding the Additional Issuer Warrant Transaction	8-K	001-33093	August 18, 2014	10.8	
10.64†	First Amendment to Master License Agreement dated September 6, 2014 among the Company, Metabasis Therapeutics, Inc. and Viking Therapeutics, Inc.	10-Q	001-33093	October 31, 2014	10.9	
10.65†	Second Amendment to Master License Agreement, dated April 8, 2015, among the Company, Metabasis Therapeutics, Inc. and Viking Therapeutics, Inc.	10-Q	001-33093	August 5, 2015	10.1	
10.66†	First Amendment to Loan and Security Agreement, dated April 8, 2015, among the Company, Metabasis Therapeutics, Inc. and Viking Therapeutics, Inc.	10-Q	001-33093	August 5, 2015	10.2	
10.67†	Amendment No. 4 to Sublicense Agreement, dated September 17, 2015, among the Company, Pharmacopeia, LLC and Retrophin, Inc.	10-Q/A	001-33093	December 23, 2015	10.1	
10.68†	Lease, dated November 3, 2015, between the Company and 3911/3931 SVB, LLC	8-K	001-33093	November 10, 2015	10.1	
10.69#	Amended and Restated Director Compensation and Stock Ownership Policy, effective as of March 2014	10-Q	001-33093	November 14, 2016	10.1	
10.70†	Interest Purchase Agreement, dated May 3, 2016, between the Company and CorMatrix Cardiovascular, Inc.	8-K/A	001-33093	May 9, 2016	10.1	
10.71	Second Amendment to Loan and Security Agreement, dated January 22, 2016, between the Company and Viking Therapeutics, Inc.	10-Q/A	001-33093	November 14, 2016	10.1	
21.1	Subsidiaries of the Company	10-K	001-33093	February 23, 2012	21.1	
23.1	Consent of independent registered public accounting firm-Ernst & Young LLP					X
23.2	Consent of independent registered public accounting firm-Grant Thornton LLP					X
31.1	Certification by Principal Executive Officer, Pursuant to Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.					X
31.2	Certification by Principal Financial Officer, Pursuant to Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.					X
32.1	Certifications by Principal Executive Officer and Principal Financial Officer, Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.					X
101.INS	XBRL Instance Document.					
101.SCH	XBRL Taxonomy Extension Schema Document.					
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document.					
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document.					
101.LAB	XBRL Taxonomy Extension Label Linkbase Document					
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document.					

† Confidential treatment has been requested for portions of this exhibit. These portions have been omitted and submitted separately to the Securities and Exchange Commission.

# Indicates management contract or compensatory plan.

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.

LIGAND PHARMACEUTICALS INCORPORATED

By: /S/ JOHN L. HIGGINS

John L. Higgins,

Chief Executive Officer

Date: February 28, 2017

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 L. HIGGINS **John L. Higgins**	Chief Executive Officer and Director (Principal Executive Officer)	February 28, 2017
/s/ MATTHEW KORENBERG **Matthew Korenberg**	Vice President, Finance and Chief Financial Officer (Principal Financial and Accounting Officer)	February 28, 2017
/s/ TODD C. DAVIS **Todd C. Davis**	Director	February 28, 2017
/s/ SUNIL PATEL **Sunil Patel**	Director	February 28, 2017
/s/ STEPHEN L. SABBA **Stephen L. Sabba**	Director	February 28, 2017
/s/ John W. Kozarich **John W. Kozarich**	Director	February 28, 2017
/s/ John L. Lamattina **John L. Lamattina**	Director	February 28, 2017
/s/ Jason M. Aryeh **Jason M. Aryeh**	Director	February 28, 2017

Exhibit 23.1

Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

(1) Registration Statement (Form S-3 No. 333-208919) of Ligand Pharmaceuticals Incorporated,

(2) Registration Statement (Form S-8 No. 333-212775) pertaining to the 2002 Stock Incentive Plan, as amended and restated of Ligand Pharmaceuticals Incorporated,

(3) Registration Statement (Form S-8 No. 333-182547) pertaining to the 2002 Stock Incentive Plan, as amended and restated of Ligand Pharmaceuticals Incorporated,

(4) Registration Statement (Form S-8 No. 333-160132) pertaining to the 2002 Stock Incentive Plan, as amended and restated, and Employee Stock Purchase Plan, as amended and restated of Ligand Pharmaceuticals Incorporated, and

(5) Registration Statement (Form S-8 No. 333-131029) pertaining to the 2002 Stock Incentive Plan and 2002 Employee Stock Purchase Plan of Ligand Pharmaceuticals Incorporated;

of our reports dated February 28, 2017, with respect to the consolidated financial statements of Ligand Pharmaceuticals Incorporated and the effectiveness of internal control over financial reporting of Ligand Pharmaceuticals Incorporated included in this Annual Report (Form 10-K) of Ligand Pharmaceuticals Incorporated for the year ended December 31, 2016.

/s/ Ernst & Young LLP

San Diego, California
February 28, 2017

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We have issued our report dated February 26, 2016 (except for 2015 Restatement described in Note 1 in the previously filed 2015 financial statements, which is not presented herein and is as of November 14, 2016) with respect to the consolidated financial statements included in the Annual Report of Ligand Pharmaceuticals Incorporated on Form 10-K for the year ended December 31, 2015. We consent to the incorporation by reference of said report in the Registration Statements of Ligand Pharmaceuticals Incorporated on Forms S-3 (File No. 333-208919 and 333-191523) and on Forms S-8 (File No. 333-182547, File No. 333-160132 and File No. 333-131029).

/s/ GRANT THORNTON LLP

San Diego, California
February 28, 2017

Exhibit 31.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO EXCHANGE ACT RULE 13a-14(a)/15d-14(a)
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, John L. Higgins, certify that:

1. I have reviewed this Annual Report on Form 10K of Ligand Pharmaceuticals Incorporated;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO EXCHANGE ACT RULE 13a-14(a)/15d-14(a)
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

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: February 28, 2017

/s/ John L. Higgins

John L. Higgins
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
PURSUANT TO EXCHANGE ACT RULE 13a-14(a)/15d-14(a)
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Matthew Korenberg, certify that:

1. I have reviewed this Annual Report on Form 10-K of Ligand Pharmaceuticals Incorporated;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER

PURSUANT TO EXCHANGE ACT RULE 13a-14(a)/15d-14(a)

AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

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: February 28, 2017

/s/ Matthew Korenberg

Matthew Korenberg
Vice President, Finance and Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER

In connection with the Annual Report of Ligand Pharmaceuticals Incorporated (the "Company") on Form 10-K for the year ended December 31, 2016, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, John L. Higgins, Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or Section 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 28, 2017

/s/ John L. Higgins

John L. Higgins
Chief Executive Officer
(Principal Executive Officer)

The foregoing certification is being furnished solely to accompany the Report pursuant to 18 U.S.C. Section 1350, and is not being filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, and is not to be incorporated by reference into any filing of the Company, whether made before or after the date hereof, regardless of any general incorporation language in such filing. A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER

In connection with the Annual Report of Ligand Pharmaceuticals Incorporated (the "Company") on Form 10-K for the year ended December 31, 2016, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Matthew Korenberg, Vice President, Finance and Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or Section 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 28, 2017

/s/ Matthew Korenberg

Matthew Korenberg
Vice President, Finance and Chief Financial Officer
(Principal Financial Officer)

The foregoing certification is being furnished solely to accompany the Report pursuant to 18 U.S.C. Section 1350, and is not being filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, and is not to be incorporated by reference into any filing of the Company, whether made before or after the date hereof, regardless of any general incorporation language in such filing. A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.