UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-Q

☐ **Quarterly Report Pursuant to Section 13 or 15 (d) of the Securities Exchange Act of 1934**

For the quarterly period ended September 30, 2020

or

☐ **Transition Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934**

For the Transition Period From _____ to _____ .

Commission File Number: 001-33093

LIGAND PHARMACEUTICALS INCORPORATED

(Exact name of registrant as specified in its charter)

Delaware	**77-0160744**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification No.)*
3911 Sorrento Valley Boulevard, Suite 110 **San Diego** **CA**	**92121**
(Address of principal executive offices)	*(Zip Code)*

(858) 550-7500

(Registrant's Telephone Number, Including Area Code)

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

Title of each class:	Trading symbol:	Name of each exchange on which registered:
Common Stock , par value $0.001 per share	**LGND**	**The Nasdaq Global Market**

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

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

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

Large Accelerated Filer	☒	Accelerated Filer	☐
Non-Accelerated Filer	☐	Smaller Reporting Company	☐
Emerging Growth Company	☐		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

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

As of November 3, 2020, the registrant had 16,091,319 shares of common stock outstanding.

LIGAND PHARMACEUTICALS INCORPORATED
QUARTERLY REPORT

FORM 10-Q

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GLOSSARY OF TERMS AND ABBREVIATIONS

Abbreviation	Definition
2019 Annual Report	Annual Report on Form 10-K for the year ended December 31, 2019, filed with the SEC on February 27, 2020
2019 Notes	$245.0 million aggregate principal amount of convertible senior unsecured notes due 2019
2023 Notes	$750.0 million aggregate principal amount of convertible senior unsecured notes due 2023
Ab Initio	Ab Initio Biotherapeutics, Inc.
Amgen	Amgen, Inc.
ANDA	Abbreviated New Drug Application
ASC	Accounting Standards Codification
ASU	Accounting Standards Update
Aziyo	Aziyo Med, LLC
CE	Captisol-enabled
Company	Ligand Pharmaceuticals Incorporated, including subsidiaries
CorMatrix	CorMatrix Cardiovascular, Inc.
CVR	Contingent value right
Crystal	Crystal Bioscience, Inc.
CStone Pharmaceuticals	CStone Pharmaceuticals (Suzhou) Co., Ltd.
CyDex	CyDex Pharmaceuticals, Inc.
Dianomi Therapeutics	Dianomi Therapeutics, Inc.
ESPP	Employee Stock Purchase Plan, as amended and restated
FASB	Financial Accounting Standards Board
FDA	Food and Drug Administration
GAAP	Generally accepted accounting principles in the United States
Gilead	Gilead Sciences, Inc.
GRA	Glucagon receptor antagonist
Icagen	Icagen, Inc.
Ligand	Ligand Pharmaceuticals Incorporated, including subsidiaries
Metabasis	Metabasis Therapeutics, Inc.
NDA	New Drug Application
Pfenex	Pfenex Inc.
Pfizer	Pfizer Inc.
Q3 2019	The Company's fiscal quarter ended September 30, 2019
Q3 2020	The Company's fiscal quarter ended September 30, 2020
Roivant	Roivant Sciences GmbH
Roivant License Agreement	License Agreement, dated March 5, 2018, between Ligand and Roivant
Retrophin	Retrophin, Inc.
SBC	Share-based compensation expense
SEC	Securities and Exchange Commission
Selexis	Selexis, SA
sNDA	Supplemental New Drug Application
Taurus	Taurus Biosciences, LLC
Teva	Teva Pharmaceuticals USA, Inc., Teva Pharmaceutical Industries Ltd. and Actavis, LLC, collectively
Vernalis	Vernalis plc
Viking	Viking Therapeutics, Inc.
xCella	xCella Biosciences, Inc.
YTD	Year-to-date

PART I - FINANCIAL INFORMATION

em 1. Condensed Consolidated Financial Statements

LIGAND PHARMACEUTICALS INCORPORATED
CONDENSED CONSOLIDATED BALANCE SHEETS
(Unaudited, in thousands, except par value)

	September 30, 2020	December 31, 2019
ASSETS		
Current assets:		
Cash and cash equivalents	$ 456,916	$ 71,543
Short-term investments	338,154	998,324
Accounts receivable, net	32,907	30,387
Inventory	13,430	7,296
Income taxes receivable	—	11,361
Other current assets	3,191	4,734
Assets held for sale	13,143	—
Total current assets	857,741	1,123,645
Deferred income taxes, net	27,026	25,608
Intangible assets, net	224,582	210,448
Goodwill	102,136	95,229
Commercial license and other economic rights, net	10,834	20,090
Property and equipment, net	7,157	7,185
Operating lease right-of-use assets	4,269	10,353
Other assets	13,704	2,357
Total assets	$ 1,247,449	$ 1,494,915
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 10,169	$ 2,420
Accrued liabilities	14,498	9,836
Income taxes payable	674	—
Current contingent liabilities	1,194	2,607
Deferred revenue	5,404	2,139
Liabilities related to assets held for sale	10,361	—
Total current liabilities	42,300	17,002
2023 convertible senior notes, net	454,973	638,959
Long-term contingent liabilities	9,604	6,335
Deferred income taxes, net	13,508	32,937
Long-term operating lease liabilities	3,920	9,970
Other long-term liabilities	25,320	22,480
Total liabilities	549,625	727,683
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, $0.001 par value; 5,000 shares authorized; zero issued and outstanding at September 30, 2020 and December 31, 2019	—	—
Common stock, $0.001 par value; 60,000 shares authorized; 16,091 and 16,823 shares issued and outstanding at September 30, 2020 and December 31, 2019, respectively	16	17
Additional paid-in capital	313,057	367,326
Accumulated other comprehensive loss	(1,441)	(216)
Retained earnings	386,192	400,105
Total stockholders' equity	697,824	767,232
Total liabilities and stockholders' equity	$ 1,247,449	$ 1,494,915

See accompanying notes to unaudited condensed consolidated financial statements.

LIGAND PHARMACEUTICALS INCORPORATED
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(Unaudited)
(in thousands, except per share amounts)

	Three months ended September 30,		Nine months ended September 30,	
	2020	**2019**	**2020**	**2019**
Revenues:				
Royalties	$ 9,005	$ 9,767	$ 22,751	$ 35,931
Captisol	23,389	6,849	68,966	24,357
Contract revenue	9,454	8,192	24,712	32,991
Total revenues	41,848	24,808	116,429	93,279
Operating costs and expenses:				
Cost of Captisol	6,353	3,147	18,680	9,410
Amortization of intangibles	3,875	3,552	11,285	10,560
Research and development	12,853	13,742	37,476	37,244
General and administrative	15,020	9,525	34,353	31,607
Total operating costs and expenses	38,101	29,966	101,794	88,821
Gain from sale of Promacta license	—	—	—	812,797
Income (loss) from operations	3,747	(5,158)	14,635	817,255
Other income (expense):				
Loss from short-term investments	(9,862)	(13,297)	(17,143)	(8,524)
Interest income	991	7,396	7,690	22,590
Interest expense	(6,269)	(8,993)	(21,030)	(26,911)
Other income (expense), net	(219)	181	1,940	404
Total other income (loss), net	(15,359)	(14,713)	(28,543)	(12,441)
Income (loss) before income taxes	(11,612)	(19,871)	(13,908)	804,814
Income tax benefit (expense)	4,911	4,620	5,162	(168,147)
Net income (loss)	$ (6,701)	$ (15,251)	$ (8,746)	$ 636,667
Basic net income (loss) per share	$ (0.42)	$ (0.81)	$ (0.54)	$ 32.51
Shares used in basic per share calculations	16,082	18,770	16,222	19,586
Diluted net income (loss) per share	$ (0.42)	$ (0.81)	$ (0.54)	$ 31.29
Shares used in diluted per share calculations	16,082	18,770	16,222	20,349

See accompanying notes to unaudited condensed consolidated financial statements.

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

	Three months ended September 30,		Nine months ended September 30,	
	2020	**2019**	**2020**	**2019**
Net income (loss):	$ (6,701)	$ (15,251)	$ (8,746)	$ 636,667
Unrealized net gain (loss) on available-for-sale securities, net of tax	(54)	(187)	(84)	546
Foreign currency translation	923	(764)	(1,141)	(1,015)
Comprehensive income (loss)	$ (5,832)	$ (16,202)	$ (9,971)	$ 636,198

See accompanying notes to unaudited condensed consolidated financial statements.

LIGAND PHARMACEUTICALS INCORPORATED
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(Unaudited)
(in thousands)

	Common Stock		Additional paid in capital	Accumulated other comprehensive income (loss)	Retained earnings	Total stockholders' equity
	Shares	Amount				
Balance at January 1, 2020	16,823	$ 17	$ 367,326	$ (216)	$ 400,105	$ 767,232
Issuance of common stock under employee stock compensation plans, net	105	—	(1,008)	—	—	(1,008)
Share-based compensation	—	—	5,653	—	—	5,653
Repurchase of common stock	(878)	(1)	(73,286)	—	—	(73,287)
Unrealized net loss on available-for-sale securities, net of deferred tax	—	—	—	(2,772)	—	(2,772)
Foreign currency translation adjustment	—	—	—	(1,879)	—	(1,879)
Reacquisition of equity due to 2023 debt extinguishment, net of tax	—	—	(2,745)	—	—	(2,745)
Cumulative-effect adjustment from adoption of ASU 2016-13, net of tax	—	—	—	—	(5,167)	(5,167)
Net loss	—	—	—	—	(24,131)	(24,131)
Balance at March 31, 2020	16,050	$ 16	$ 295,940	$ (4,867)	$ 370,807	$ 661,896
Issuance of common stock under employee stock compensation plans, net	21	—	1,128	—	—	1,128
Share-based compensation	—	—	7,359	—	—	7,359
Unrealized net gain on available-for-sale securities, net of deferred tax	—	—	—	2,742	—	2,742
Foreign currency translation adjustment	—	—	—	(185)	—	(185)
Adjustment on reacquisition of equity due to 2023 debt extinguishment, net of tax	—	—	(23)	—	—	(23)
Net income	—	—	—	—	22,086	22,086
Balance at June 30, 2020	16,071	$ 16	$ 304,404	$ (2,310)	$ 392,893	$ 695,003
Issuance of common stock under employee stock compensation plans, net	20	—	910	—	—	910
Share-based compensation	—	—	7,740	—	—	7,740
Unrealized net loss on available-for-sale securities, net of deferred tax	—	—	—	(54)	—	(54)
Foreign currency translation adjustment	—	—	—	923	—	923
Other	—	—	3	—	—	3
Net loss	—	—	—	—	(6,701)	$ (6,701)
Balance at September 30, 2020	16,091	$ 16	$ 313,057	$ (1,441)	$ 386,192	$ 697,824

	Common Stock		Additional paid in capital	Accumulated other comprehensive income (loss)	Retained earnings (Accumulated deficit)	Total stockholders' equity
	Shares	Amount				
Balance at January 1, 2019	20,765	$ 21	$ 791,114	$ (1,024)	$ (229,197)	$ 560,914
Issuance of common stock under employee stock compensation plans, net	135	—	(991)	—	—	(991)
Share-based compensation	—	—	5,347	—	—	5,347
Repurchase of common stock	(1,236)	(1)	(151,584)	—	—	(151,585)
Unrealized net gain on available-for-sale securities, net of deferred tax	—	—	—	230	—	230
Foreign currency translation adjustment	—	—	—	291	—	291
Other tax adjustments	—	—	(569)	—	—	(569)
Net income	—	—	—	—	666,337	666,337
Balance at March 31, 2019	19,664	$ 20	$ 643,317	$ (503)	$ 437,140	$ 1,079,974
Issuance of common stock under employee stock compensation plans, net	17	—	740	—	—	740
Share-based compensation	—	—	6,571	—	—	6,571
Repurchase of common stock	(291)	(1)	(33,716)	—	—	(33,717)
Unrealized net gain on available-for-sale securities, net of deferred tax	—	—	—	503	—	503
Foreign currency translation adjustment	—	—	—	(542)	—	(542)
Other tax adjustments	—	—	2,343	—	—	2,343
Net loss	—	—	—	—	(14,419)	(14,419)
Balance at June 30, 2019	19,390	$ 19	$ 619,255	$ (542)	$ 422,721	$ 1,041,453
Issuance of common stock under employee stock compensation plans, net	7	—	199	—	—	199
Share-based compensation	—	—	6,297	—	—	6,297
Repurchase of common stock	(1,834)	(2)	(181,186)	—	—	(181,188)
Unrealized net loss on available-for-sale securities, net of deferred tax	—	—	—	(187)	—	(187)
Foreign currency translation adjustment	—	—	—	(764)	—	(764)
Other tax adjustments	—	—	22	—	—	22
Net loss	—	—	—	—	(15,251)	(15,251)
Balance at September 30, 2019	17,563	$ 17	$ 444,587	$ (1,493)	$ 407,470	$ 850,581

See accompanying notes to unaudited condensed consolidated financial statements.

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

	Nine months ended September 30,	
	2020	**2019**
Cash flows from operating activities:		
Net income (loss)	$ (8,746)	$ 636,667
Adjustments to reconcile net income to net cash provided by (used in) operating activities:		
Gain from sale of Promacta license	—	(812,797)
Change in estimated fair value of contingent liabilities	(397)	762
Depreciation and amortization of intangible assets	12,645	11,648
Amortization of premium (discount) on investments, net	1,507	(7,477)
Amortization of debt discount and issuance fees	17,743	22,562
Amortization of commercial license and other economic rights	2,505	10,047
Gain on debt extinguishment	(659)	—
Share-based compensation	20,752	18,215
Deferred income taxes	(19,311)	57,766
Loss from short-term investments	17,143	8,524
Other	(1,525)	(4,253)
Changes in operating assets and liabilities, net of acquisition:		
Accounts receivable, net	(5,080)	33,892
Inventory	(4,914)	(1,500)
Accounts payable and accrued liabilities	9,894	(3,302)
Income tax receivable and payable	12,026	16,571
Other economic rights	—	(12,000)
Other	466	2,678
Net cash provided by (used in) operating activities	54,049	(21,997)
Cash flows from investing activities:		
Proceeds from sale of Promacta license	—	812,797
Purchase of short-term investments	(337,016)	(1,682,586)
Proceeds from sale of short-term investments	389,296	144,182
Proceeds from maturity of short-term investments	589,155	1,274,851
Cash paid for acquisition, net of cash acquired	(26,857)	(11,840)
Cash paid for equity method investment	(500)	(1,000)
Other	(228)	(6,307)
Net cash provided by investing activities	613,850	530,097
Cash flows from financing activities:		
Repurchase of 2023 Notes	(203,210)	—
Repayment of 2019 Notes	—	(27,323)
Proceeds from convertible bond hedge settlement	—	12,401
Payments to convertible bond holders for bond conversion	—	(12,401)
Net proceeds from stock option exercises and ESPP	2,459	2,856
Taxes paid related to net share settlement of equity awards	(1,429)	(2,906)
Share repurchase	(73,287)	(371,106)
Payments to CVR Holders	(2,325)	(3,000)
Other	(5,224)	—
Net cash used in financing activities	(283,016)	(401,479)
Effect of exchange rate changes on cash	(50)	(88)
Net increase in cash, cash equivalents and restricted cash	384,833	106,533
Cash, cash equivalents and restricted cash at beginning of period	72,273	119,780
Cash, cash equivalents and restricted cash at end of period	$ 457,106	$ 226,313

Supplemental disclosure of cash flow information:				
Interest paid	$	2,531	$	3,015
Taxes paid	$	2,130	$	93,817
Restricted cash in other current assets	$	190	$	1,011
Supplemental schedule of non-cash activity:				
Accrued fixed asset purchases	$	381	$	—
Accrued inventory purchases	$	1,390	$	—
Accrued financing lease payment	$	2,500	$	—
Unrealized gain (loss) on AFS investments	$	(109)	$	699

See accompanying notes to unaudited condensed consolidated financial statements.

Unless the context requires otherwise, references in this report to "Ligand," "we," "us," the "Company," and "our" refer to Ligand Pharmaceuticals Incorporated and its consolidated subsidiaries.

1. Basis of Presentation and Summary of Significant Accounting Policies

Basis of Presentation

Our condensed consolidated financial statements include the financial statements of Ligand and its wholly-owned subsidiaries. All significant intercompany accounts and transactions have been eliminated in consolidation. We have included all adjustments, consisting only of normal recurring adjustments, which we considered necessary for a fair presentation of our financial results. These unaudited condensed consolidated financial statements and accompanying notes should be read together with the audited consolidated financial statements included in our 2019 Annual Report. Interim financial results are not necessarily indicative of the results that may be expected for the full year.

Reclassifications

Certain amounts in the prior period condensed consolidated financial statements have been reclassified to conform with the current period presentation. Specifically, effective the second quarter of 2020, we began to include our investment in Viking in "short-term investments" in the condensed consolidated balance sheet, and present "gain (loss) from short-term investments" in the condensed consolidated statements of operations to include both the gain (loss) from investment in Viking and other short-term investments, which was previously included in "other income, net". As a result, the audited consolidated balance sheet as of December 31, 2019 and the condensed consolidated statements of operations for the three and nine months ended September 30, 2019 have been reclassified to conform to the current period presentation.

Significant Accounting Policies

We have described our significant accounting policies in *Note 1, Basis of Presentation and Summary of Significant Accounting Policies*, of Notes to Consolidated Financial Statements in our 2019 Annual Report.

Use of Estimates

The preparation of condensed consolidated financial statements in conformity with 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.

Impact of COVID-19 Pandemic

The current COVID-19 worldwide pandemic has presented substantial public health and economic challenges and is affecting our employees and partners, patients, communities and business operations, as well as the U.S. and global economy and financial markets. International and U.S. governmental authorities in impacted regions have taken actions in an effort to slow the spread of COVID-19, including issuing varying forms of "stay-at-home" orders, and restricting business functions outside of one's home. In response, we have restricted in-person access to our executive offices, our administrative employees are mostly working remotely, and we have limited the number of staff in our research and development laboratories and other facilities. The continued spread of the COVID-19 pandemic and the measures taken by the governments of countries have affected, and could continue to affect, our business and the business of our partners, including future disruptions to our supply chain and the manufacture or shipment of drug substance and finished drug product for Captisol, delays by us or our partners in the initiation or enrollment of patients in clinical trials, discontinuations by patients enrolled in clinical trials, difficulties launching or commercializing products and other related activities, which could delay ongoing clinical trials, increase development costs, reduce royalty revenues and have a material adverse effect on our business, financial condition and results of operations. Several of our partners have reported that their operations have been impacted including delays in research and development programs and deprioritizing clinical trials in favor of treating patients who have contracted the virus or to prevent the spread of the virus. This may lead to clinical trial protocol deviations or to discontinuation of treatment for patients who are currently enrolled in the clinical trials being conducted by us or our partners. In addition, certain of our partners have reported negative impacts on product sales which will impact our royalty revenues.

Some of our partners are working to develop drugs to treat COVID-19. For example, we are supplying Captisol to partners, including Gilead for Veklury® (remdesivir), the first FDA-approved treatment for COVID-19 for the treatment of patients with COVID-19 requiring hospitalization and, as a result, we have extended our Captisol supply agreement with Gilead until September 2030 and worked to increase our manufacturing of Captisol to meet this increased demand. We believe our existing production capacity, together with our planned expansion, will provide adequate supply of Captisol and do not expect any significant risk or disruption to our supply chain for the foreseeable future. In addition, certain of our OmniAb and Vernalis partners have initiated antibody discovery programs for the potential treatment of COVID-19.

The full extent to which the COVID-19 pandemic will directly or indirectly impact our business, the businesses of our partners, our results of operations and our financial condition will depend on future developments that are highly uncertain and cannot be accurately predicted, including new information that may emerge concerning COVID-19, the actions taken to contain it or treat its impact, including the timing and extent of governments reopening or further restricting activities, and the economic impact on local, regional, national and international markets.

Accounting Standards Recently Adopted

Credit Losses - In June 2016, the FASB issued ASU 2016-13,*Financial Instruments - Credit Losses: Measurement of Credit Losses on Financial Instruments (Topic 326)*, which amends the impairment model by requiring entities to use a forward-looking approach based on expected losses to estimate credit losses on certain types of financial instruments, including trade receivables and available for sale debt securities. This standard includes our financial instruments, such as accounts receivable, investments that are generally of high credit quality, and commercial license rights. Previously, when credit losses were measured under GAAP, an entity generally only considered past events and current conditions in measuring the incurred loss. The new guidance requires us to identify, analyze, document and support new methodologies for quantifying expected credit loss estimates for our financial instruments, using information such as historical experience and current economic conditions, plus the use of reasonable supportable forecast information. We adopted ASU 2016-13 on January 1, 2020, using a modified retrospective transition method, which requires a cumulative-effect adjustment, if any, to the opening balance sheet of retained earnings to be recognized on the date of adoption with prior periods not restated. The cumulative-effect adjustment, net of tax, recorded on January 1, 2020, is approximately $5.2 million on our unaudited condensed consolidated balance sheet as of January 1, 2020. Results for periods after January 1, 2020 are presented under ASU 2016-13 while prior period amounts continue to be reported under previously applicable accounting standards. See additional disclosure on credit losses under *"Short-term Investments"*, *"Accounts Receivable and Allowance for Credit Losses"* and *"Commercial License and Other Economic Rights"* discussed below.

Goodwill Impairment Testing - In January 2017, the FASB issued ASU 2017-04,*Simplifying the Test for Goodwill Impairment,* which eliminates the requirement to perform a hypothetical purchase price allocation to measure goodwill impairment. Under the new standard the goodwill impairment test is performed by comparing the fair value of a reporting unit with its carrying amount, and recognizing an impairment charge for the amount by which the carrying amount of the reporting unit exceeds its fair value, although it cannot exceed the total amount of goodwill allocated to that reporting unit. We adopted this standard on January 1, 2020, and the adoption did not have a material impact on our condensed consolidated financial statements.

Fair Value Measurement - In August 2018, the FASB issued ASU 2018-13,*Fair Value Measurement: Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement (Topic 820)*, which modifies the disclosure requirements on fair value measurements. We adopted this standard on January 1, 2020, and the adoption did not have a material impact on our condensed consolidated financial statements.

Collaborative Arrangements - In November 2018, the FASB issued ASU 2018-18,*Collaborative Arrangements: Clarifying the Interaction between Topic 808 and Topic 606 (Topic 808)*. The new standard clarifies that certain transactions between participants in a collaborative arrangement should be accounted for under Topic 606,*Revenue from Contracts with Customers*, when the counterparty is a customer for a good or service that is a distinct unit of account. The amendments also preclude entities from presenting consideration from transactions with a collaborator that is not a customer together with revenue recognized from contracts with customers. We adopted this standard on January 1, 2020, and the adoption did not have a material impact on our condensed consolidated financial statements.

Income Taxes - In December 2019, the FASB issued ASU 2019-12,*Simplifying the Accounting for Income Taxes.* The standard is expected to reduce cost and complexity related to accounting for income taxes. The new guidance eliminates certain exceptions and clarifies and amends existing guidance to promote consistent application among reporting entities. This standard is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2020, with early adoption permitted. Depending on the amendment, adoption may be applied on a retrospective, modified retrospective or prospective basis. We adopted this standard on a prospective basis on January 1, 2020, and the adoption did not have a material impact on our condensed consolidated financial statements.

Accounting Standards Not Yet Adopted

In August 2020, the FASB issued ASU 2020-06,*Debt—Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging—Contracts in Entity's Own Equity (Subtopic 815-40): Accounting for Convertible Instruments and Contracts in an Entity's Own Equity.* The new guidance simplifies accounting for convertible instruments by removing major separation models required under current GAAP. This standard removes certain settlement conditions that are required for equity contracts to qualify for the derivative scope exception and it also simplifies the diluted earnings per share calculation in certain areas. This standard is effective for fiscal years beginning after December 15, 2023, including interim periods within those fiscal years. Early adoption is permitted, but no earlier than fiscal years beginning after December 15, 2020 and adoption must be as of the beginning of the Company's annual fiscal year. We are currently evaluating the impact of this standard on our consolidated financial statements and related disclosures.

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

Revenue

Our revenue is generated primarily from royalties on sales of products commercialized by our partners, Captisol material sales, and contract revenue for services, license fees and development, regulatory and sales based milestone payments.

Royalties

We receive royalty revenue on sales by our partners of products covered by patents that we own. We do not have future performance obligations under these license arrangements. We generally satisfy our obligation to grant intellectual property rights on the effective date of the contract. However, we apply the royalty recognition constraint required under the guidance for sales-based royalties which requires a sales-based royalty to be recorded when the underlying sale occurs. Therefore, royalties on sales of products commercialized by our partners are recognized in the quarter the product is sold. Our partners generally report sales information to us on a one quarter lag. Thus, we estimate the expected royalty proceeds based on an analysis of historical experience and interim data provided by our partners including their publicly announced sales. Differences between actual and estimated royalty revenues are adjusted for in the period in which they become known, typically the following quarter.

Contract Revenue

Our contract revenue includes service revenue, license fees and future contingent milestone based payments. We recognize service revenue for contracted R&D services performed for our customers over time. We measure our progress using an input method based on the effort we expend or costs we incur toward the satisfaction of our performance obligation. We estimate the amount of effort we expend, including the time we estimate it will take us to complete the activities, or costs we incur in a given period, relative to the estimated total effort or costs to satisfy the performance obligation. This results in a percentage that we multiply by the transaction price to determine the amount of revenue we recognize each period. This approach requires us to make estimates and use judgement. If our estimates or judgements change over the course of the collaboration, they may affect the timing and amount of revenue that we recognize in the current and future periods.

We include contingent milestone based payments in the estimated transaction price when there is a basis to reasonably estimate the amount of the payment. These estimates are based on historical experience, anticipated results and our best judgment at the time. If the contingent milestone based payment is sales-based, we apply the royalty recognition constraint and record revenue when the underlying sale has taken place. Significant judgments must be made in determining the transaction price for our sales of intellectual property. Because of the risk that products in development with our partners will not reach development based milestones or receive regulatory approval, we generally recognize any contingent payments that would be due to us upon or after the development milestone or regulatory approval.

Captisol Sales

We recognize revenue when control of Captisol material is transferred to our customers in an amount that reflects the consideration we expect to receive from our customers in exchange for those products. This process involves identifying the contract with a customer, determining the performance obligations in the contract, determining the contract price, allocating the contract price to the distinct performance obligations in the contract, and recognizing revenue when the performance obligations have been satisfied. A performance obligation is considered distinct from other obligations in a contract when it provides a benefit to the customer either on its own or together with other resources that are readily available to the customer and is separately identified in the contract. We consider a performance obligation satisfied once we have transferred control of the product, meaning the customer has the ability to use and obtain the benefit of the Captisol material or intellectual property license right. We recognize revenue for satisfied performance obligations only when we determine there are no uncertainties regarding payment terms or transfer of control. We have elected to recognize the cost for freight and shipping when or after

control over Captisol material has transferred to the customer as an expense in cost of Captisol. Sales tax and other taxes we collect concurrent with revenue-producing activities are excluded from revenue. We expense incremental costs of obtaining a contract when incurred if the expected amortization period of the asset that we would have recognized is one year or less or the amount is immaterial. We did not incur any incremental costs of obtaining a contract during the periods reported.

Deferred Revenue

Depending on the terms of the arrangement, we may also defer a portion of the consideration received because we have to satisfy a future obligation. We use an observable price to determine the stand-alone selling price for separate performance obligations or a cost plus margin approach when one is not available.

The timing of revenue recognition, billings and cash collections results in billed accounts receivable, unbilled receivables (contract assets), and customer advances and deposits (contract liabilities) on the consolidated balance sheet. Except for royalty revenue and certain service revenue, we generally receive payment at the point we satisfy our obligation or soon after. Therefore, we do not generally carry a contract asset balance. Any fees billed in advance of being earned are recorded as deferred revenue. During the three and nine months ended September 30, 2020, the amount recognized as revenue that was previously deferred was $5.8 million and $8.3 million, respectively. During the three and nine months ended September 30, 2019, the amount recognized as revenue that was previously deferred was $1.0 million and $5.0 million, respectively. We expect to satisfy the performance obligations related to long-term deferred revenue within the next 3 years.

Disaggregation of Revenue

The following table represents disaggregation of royalties, Captisol and contract revenue (in thousands):

		Three months ended September 30,		Nine months ended September 30,	
		2020	**2019**	**2020**	**2019**
Royalties					
	Kyprolis	$ 6,923	$ 7,602	$ 16,809	$ 16,317
	Evomela	1,802	1,515	4,577	3,570
	Other	280	650	1,365	1,851
	Promacta	—	—	—	14,193
		$ 9,005	$ 9,767	$ 22,751	$ 35,931
Captisol		$ 23,389	$ 6,849	$ 68,966	$ 24,357
Contract					
	Service Revenue	$ 7,341	$ 4,548	$ 15,280	$ 12,990
	License Fees	158	243	1,793	3,083
	Milestone	960	2,674	4,766	15,425
	Other	995	727	2,873	1,493
		$ 9,454	$ 8,192	$ 24,712	$ 32,991
Total		$ 41,848	$ 24,808	$ 116,429	$ 93,279

Short-term Investments

Our investments, excluding investment in Viking, consist of the following at September 30, 2020 and December 31, 2019 (in thousands):

	September 30, 2020				December 31, 2019			
	Amortized cost	Gross unrealized gains	Gross unrealized losses	Estimated fair value	Amortized cost	Gross unrealized gains	Gross unrealized losses	Estimated fair value
Short-term investments								
Bank deposits	$ 68,226	$ 101	$ —	$ 68,327	$ 411,690	$ 188	$ (3)	$ 411,875
Corporate bonds	27,125	102	—	27,227	63,818	161	—	63,979
Commercial paper	47,943	60	—	48,003	210,525	43	(16)	210,552
Corporate equity securities	4,484	415	(2,624)	2,275	4,506	416	(1,850)	3,072
Mutual fund	151,513	204	—	151,717	250,635	—	(249)	250,386
Warrants	—	155	—	155	—	125	—	125
	$ 299,291	$ 1,037	$ (2,624)	$ 297,704	$ 941,174	$ 933	$ (2,118)	$ 939,989

In addition, as of September 30, 2020 and December 31, 2019, we recorded shares of Viking common stock we own at fair value of $3.9 million and $48.4 million, respectively, in “Short-term investments” in our consolidated balance sheets. We also own warrants to purchase up to 1.5 million shares of Viking's common stock at an exercise price of $1.50 per share. We recorded the warrants in “Short-term investments” in our consolidated balance sheet at fair value of $6.6 million and $9.9 million at September 30, 2020 and December 31, 2019, respectively.

Gain (loss) from short-term investments on our condensed consolidated statements of operations includes both realized and unrealized gain (loss) from our short-term investments in public equity and warrant securities.

For available-for-sale debt securities with unrealized losses, the new credit losses standard (Topic 326) now requires allowances to be recorded instead of reducing the amortized cost of the investment. This standard limits the amount of credit losses to be recognized for available-for-sale debt securities to be the amount by which carrying value exceeds fair value and requires the reversal of previously recognized credit losses if fair value increases. The provisions of the new credit losses standard did not have a material impact on our available-for-sale debt securities during the three and nine months ended September 30, 2020.

The following table summarizes our available-for-sale debt securities by contractual maturity (in thousands):

	September 30, 2020	
	Amortized Cost	Fair Value
Within one year	$ 121,452	$ 121,610
After one year through five years	21,842	21,947
After five years	—	—
Total	$ 143,294	$ 143,557

The following table summarizes our available-for-sale debt securities in an unrealized loss position (in thousands):

	Less than 12 months		12 months or greater		Total	
	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value
September 30, 2020						
Bank deposits	$ —	$ 5,011	$ —	$ —	$ —	$ 5,011
Corporate bonds	(0.4)	3,007	—	—	(0.4)	3,007
Total	$ (0.4)	$ 8,018	$ —	$ —	$ (0.4)	$ 8,018
December 31, 2019						
Bank deposits	$ (3)	$ 58,584	$ —	$ —	$ (3)	$ 58,584
Commercial paper	(16)	79,363	—	—	(16)	79,363
Total	$ (19)	$ 137,947	$ —	$ —	$ (19)	$ 137,947

Our investment policy is capital preservation and we only invested in U.S.-dollar denominated investments. We held a total of 2 positions which were in an unrealized loss position as of September 30, 2020. We believe that we will collect the principal and interest due on our debt securities that have an amortized cost in excess of fair value. The unrealized losses are largely due to changes in interest rates and not to unfavorable changes in the credit quality associated with these securities that impacted our assessment on collectability of principal and interest. We do not intend to sell these securities nor do we believe that we will be required to sell these securities before the recovery of the amortized cost basis. Accordingly, no credit losses were recognized for the three and nine months ended September 30, 2020.

Accounts Receivable and Allowance for Credit Losses

Our accounts receivable arise primarily from sales on credit to customers. We establish an allowance for credit losses to present the net amount of accounts receivable expected to be collected. The allowance is determined by using the loss-rate method, which requires an estimation of loss rates based upon historical loss experience adjusted for factors that are relevant to determining the expected collectability of accounts receivable. Some of these factors include macroeconomic conditions that correlate with historical loss experience, delinquency trends, aging behavior of receivables and credit and liquidity quality indicators for industry groups, customer classes or individual customers. During the three and nine months ended September 30, 2020, we considered the current and expected future economic and market conditions including, but not limited to, the anticipated unfavorable impacts of the surrounding novel coronavirus (COVID-19) pandemic on our business and recorded an adjustment of $(0.1) million and $0.2 million, of allowance for credit losses, respectively, as of September 30, 2020.

Inventory

Inventory, which consists of finished goods, is stated at the lower of cost or net realizable value. We determine cost using the first-in, first-out method or the specific identification method.

Goodwill and Other Identifiable Intangible Assets

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

	September 30, 2020	December 31, 2019
Goodwill	$ 102,136	$ 95,229
Definite lived intangible assets		
Complete technology	257,317	242,813
Less: accumulated amortization [1]	(59,869)	(50,203)
Trade name	2,642	2,642
Less: accumulated amortization	(1,279)	(1,180)
Customer relationships	40,700	29,600
Less: accumulated amortization	(14,929)	(13,224)
Total goodwill and other identifiable intangible assets, net	$ 326,718	$ 305,677

(1) Accumulated amortization for complete technology includes immaterial amount of foreign currency translation adjustments for the complete technology acquired from the Vernalis acquisition.

Commercial License and Other Economic Rights

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

	September 30, 2020			December 31, 2019		
	Gross	Adjustments[1]	Net	Gross	Adjustments[2]	Net
Aziyo and CorMatrix	$ 17,696	$ (9,644)	**$ 8,052**	$ 17,696	$ (5,500)	**$ 12,196**
Palvella	10,000	(10,000)	—	10,000	(7,492)	**2,508**
Selexis and Dianomi	10,602	(7,820)	**2,782**	10,602	(5,216)	**5,386**
Total	$ 38,298	$ (27,464)	**$ 10,834**	$ 38,298	$ (18,208)	**$ 20,090**

(1) Amounts represent accumulated amortization to principal or research and development expenses of $ 21.5 million and credit loss adjustments of $ 6.0 million as of September 30, 2020.
(2) Amounts represent accumulated amortization to principal or research and development expenses as of December 31, 2019.

Commercial license and other economics rights represent a portfolio of future milestone and royalty payment rights acquired from Selexis in April 2013 and April 2015, CorMatrix in May 2016, Palvella in December 2018, and Dianomi in January 2019. Commercial license rights acquired are accounted for as financial assets and other economic rights are accounted for as funded research and developments as further discussed below.

In May 2017, we entered into a Royalty Agreement with Aziyo pursuant to which we will receive royalties from certain marketed products that Aziyo acquired from CorMatrix. We account for the Aziyo commercial license right as a financial asset, and in accordance with ASC 310, *Receivables*, we amortize the commercial license right using the effective interest method whereby we forecast expected cash flows over the term of the arrangement to arrive at an annualized effective interest. The annual effective interest associated with the forecasted cash flows from the Royalty Agreement with Aziyo as of September 30, 2020 is 23%. Revenue is calculated by multiplying the carrying value of the commercial license right by the effective interest.

In December 2018, we entered into a development funding and royalties agreement with Palvella. Pursuant to the agreement, we may receive up to $8.0 million of milestone payments upon the achievement by Palvella of certain corporate, financing and regulatory milestones for PTX-022, a product candidate being developed to treat pachyonychia congentia. In addition to the milestone payments, Palvella will pay us tiered royalties from 5.0% to 9.8% based on any aggregate annual worldwide net sales of any PTX-022 products, subject to Palvella's right to reduce the royalty rates by making payments in certain circumstances. We paid Palvella an upfront payment of $10.0 million, which Palvella is required to use to fund the development of PTX-022. We are not obligated to provide additional funding to Palvella for the development or commercialization of PTX-022. We determined the economic rights related to Palvella should be characterized as a funded research and development arrangement, thus we account for it in accordance with ASC 730-20, *Research and Development Arrangements*, and reduce our asset as the funds are expended by Palvella. As of September 30, 2020, the fund has been fully expended by Palvella and our cost basis for the asset has been reduced to zero, we will recognize milestones and royalties as revenue when earned. During the second quarter of 2020, we recorded a $3.0 million milestone from Palvella under contract revenue, which has been included in our condensed consolidated statement of operations for the nine months ended September 30, 2020.

We recorded a $5.5 million pre-tax reserve for credit losses upon adoption of the new credit losses on January 1, 2020. We estimated the credit losses at the individual asset level by considering the performance against the programs, the company operating performance and the macroeconomic forecast. In addition, we have judgmentally applied credit loss risk factors to the future expected payments with consideration given to the timing of the payment. Given the higher inherent credit risk associated with longer term receivables, we applied a lower risk factor to the earlier years and progressively higher risk factors to the later years. During the nine months ended September 30, 2020, we further considered the current and expected future economic and market conditions surrounding novel coronavirus (COVID-19) pandemic and recorded an additional $0.5 million reserve for credit losses in other expense, net, in our condensed consolidated statement of operations.

See further detail described in *Note 1, Basis of Presentation and Summary of Significant Accounting Policies*, of Notes to Consolidated Financial Statements in our 2019 Annual Report.

Other Assets

Other assets consist of the following (in thousands):

	September 30, 2020	December 31, 2019
Captisol manufacturing ramp up fee	$ 9,215	$ —
Long-term investment receivable	2,000	—
Equity investment	813	750
Deposits	138	219
Other	1,538	1,388
Total other assets	$ 13,704	$ 2,357

Accrued Liabilities

Accrued liabilities consist of the following (in thousands):

	September 30, 2020	December 31, 2019
Compensation	$ 4,840	$ 1,986
Professional fees	1,226	1,135
Amounts owed to former licensees	407	381
Royalties owed to third parties	805	—
Return reserve	2,835	3,027
Current operating lease liabilities	1,029	1,242
Accrued interest	1,437	690
Other	1,919	1,375
Total accrued liabilities	$ 14,498	$ 9,836

Share-Based Compensation

Share-based compensation expense for awards to employees and non-employee directors is a non-cash expense and is recognized on a straight-line basis over the vesting period until the last tranche vests. The following table summarizes share-based compensation expense recorded as components of research and development expenses and general and administrative expenses for the periods indicated (in thousands):

	Three months ended September 30,		Nine months ended September 30,	
	2020	2019	2020	2019
SBC - Research and development expenses	$ 3,094	$ 2,481	$ 8,510	$ 7,136
SBC - General and administrative expenses	4,646	3,816	12,242	11,079
	$ 7,740	$ 6,297	$ 20,752	$ 18,215

The fair-value for options that were awarded to employees and directors was estimated at the date of grant using the Black-Scholes option valuation model with the following weighted-average assumptions:

	Three months ended September 30,		Nine months ended September 30,	
	2020	2019	2020	2019
Risk-free interest rate	0.3%	1.6%	1.0%	2.4%
Dividend yield	—	—	—	—
Expected volatility	59%	41%	55%	43%
Expected term	4.9	5.3	4.8	5.2

Net Income (loss) Per Share

Basic net income (loss) per share is calculated by dividing net income (loss) by the weighted-average number of common shares outstanding during the period. Diluted net income 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.

For the three and nine months ended September 30, 2020, all of the0.70 million and 0.65 million, respectively, weighted average shares of outstanding equity awards as of September 30, 2020 were anti-dilutive due to the net loss for the period.

For the three months ended September 30, 2019, all of the0.70 million weighted average shares of outstanding equity awards as of September 30, 2019 were anti-dilutive due to the net loss for the period

Potentially dilutive common shares consist of shares issuable under the 2023 Notes, stock options and restricted stock. The 2023 Notes have a dilutive impact when the average market price of our common stock exceeds the applicable conversion price of the respective notes. It is our intent and policy to settle conversions through combination settlement, which involves payment in cash equal to the principal portion and delivery of shares of common stock for the excess of the conversion value over the principal portion. 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 and the average amount of unrecognized compensation expense for the awards. See *Note 4 - Convertible Senior Notes* and *Note 6 - Stockholders' Equity.*

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

	Three months ended September 30,		Nine months ended September 30,	
	2020	**2019**	**2020**	**2019**
Weighted average shares outstanding:	16,082	18,770	16,222	19,586
Dilutive potential common shares:				
Restricted stock	—	—	—	35
Stock options	—	—	—	728
Shares used to compute diluted income per share	16,082	18,770	16,222	20,349
Potentially dilutive shares excluded from calculation due to anti-dilutive effect	7,028	11,549	8,330	8,694

2. Fair Value Measurements

Assets and Liabilities Measured on a Recurring Basis

The following table presents the hierarchy for our assets and liabilities measured at fair value (in thousands):

	September 30, 2020				December 31, 2019			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Assets:								
Short-term investments, excluding Viking[1]	$ 2,274	$ 295,275	$ 155	$ 297,704	$ 3,073	$ 936,791	$ 125	$ 939,989
Investment in Viking common stock	33,869	—	—	33,869	48,425	—	—	48,425
Investment in Viking warrants [2]	6,581	—	—	6,581	9,910	—	—	9,910
Total assets	$ 42,724	$ 295,275	$ 155	$ 338,154	$ 61,408	$ 936,791	$ 125	$ 998,324
Liabilities:								
Crystal contingent liabilities[3]	$ —	$ —	$ 800	$ 800	$ —	$ —	$ 2,659	$ 2,659
CyDex contingent liabilities	—	—	509	509	—	—	348	348
Metabasis contingent liabilities[4]	—	4,985	—	4,985	—	5,935	—	5,935
Icagen contingent liabilities[5]	—	—	4,504	4,504	—	—	—	—
Amounts owed to former licensor	71	—	—	71	75	—	—	75
Total liabilities	$ 71	$ 4,985	$ 5,813	$ 10,869	$ 75	$ 5,935	$ 3,007	$ 9,017

1. Excluding our investment in Viking, our short-term investments in marketable debt and equity securities are classified as available-for-sale securities based on management's intentions and are at 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. Short-term investments in mutual funds are valued at their net asset value (NAV) on the last day of the period. We have classified marketable securities with original maturities of greater than one year as short-term investments based upon our ability and intent to use any and all of those marketable securities to satisfy the liquidity needs of our current operations. In addition, we have investment in warrants resulting from Seelos Therapeutics Inc. milestone payments that were settled in shares during the first quarter of 2019 and are at level 3 of the fair value hierarchy, based on Black Scholes value estimated by management on the last day of the period.
2. Investment in warrants, which we received as a result of Viking's partial repayment of the Viking note receivable and our 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. The change of the fair value is recorded in "Gain (loss) from short-term investments" in our condensed consolidated statement of operations.
3. The fair value of Crystal contingent liabilities was determined using a probability weighted income approach. Most of the contingent payments are based on development or regulatory milestones as defined in the merger agreement with Crystal. The fair value is subjective and is affected by changes in inputs to the valuation model including management's estimates regarding the timing and probability of achievement of certain developmental and regulatory milestones. Changes in these estimates may materially affect the fair value. During the first quarter of 2020, we paid a $1.8 million contingent liability on development milestones to former Crystal shareholders.
4. 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 frequently as every six months as cash is received by us from proceeds from the sale or partnering of any of the Metabasis drug development programs, among other triggering events. The liability for the CVRs is determined using quoted prices in a market that is not active for the underlying CVR. 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. Several of the Metabasis drug development programs have been outlicensed to Viking, including VK2809. VK2809 is a novel selective TR-β agonist with potential in multiple indications, including hypercholesterolemia, dyslipidemia, NASH, and X-ALD. 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 including a $10 million payment upon initiation of a Phase 3 clinical trial.
5. The fair value of Icagen contingent liabilities was determined using a probability weighted income approach. Most of the contingent payments are based on certain revenue milestones as defined in the asset purchase agreement with Icagen. The fair value is subjective and is affected by changes in inputs to the valuation model including management's estimates regarding the timing and probability of achievement of certain developmental and regulatory milestones. Changes in these estimates may materially affect the fair value. During the third quarter of 2020, we paid a $0.5 million contingent liability based on revenue milestones to Icagen.

Assets Measured on a Non-Recurring Basis

We apply fair value techniques on a non-recurring basis associated with valuing potential impairment losses related to our goodwill, indefinite-lived intangible assets and long-lived assets.

We evaluate goodwill and indefinite-lived intangible assets annually for impairment and whenever circumstances occur indicating that goodwill might be impaired. We determine the fair value of our reporting unit based on a combination of inputs, including the market capitalization of Ligand, as well as Level 3 inputs such as discounted cash flows, which are not observable from the market, directly or indirectly. We determine the fair value of our indefinite-lived intangible assets using the income approach based on Level 3 inputs.

There were no triggering events identified and no indication of impairment of our goodwill, indefinite-lived intangible assets, or long-lived assets during the three and nine months ended September 30, 2020.

3. Acquisitions

Taurus Acquisition

On September 9, 2020, we acquired Taurus, which discovers and develops novel antibodies from immunized cows and cow-derived libraries. The purchase price of $5.1 million included $4.6 million in cash, and a $0.5 million holdback to satisfy indemnification obligations which will be settled by September 2021. We also issued nontransferable CVRs for up to $4.5 million tied to partnered and internal research and development and for up to $25.0 million as a 25% share of post-clinical Taurus product revenues (including milestone payments) received by us. We evaluated this acquisition in accordance with ASC 805, *Business Combinations*, to discern whether the assets and operations of Taurus met the definition of a business. We concluded that substantially all of the fair value of the gross assets acquired is concentrated in the acquired core technology. Accordingly, we accounted for this transaction as an asset acquisition. Of the $5.1 million consideration transferred, we recognized (1) $0.05 million of tangible assets acquired, and (2) $5.0 million of core completed technology intangibles acquired. The core technology is being amortized on a straight-line basis over the estimated useful life of 10 years. We account for the CVRs in accordance with ASC 450, *Contingencies*, when the contingency is resolved and the liability becomes payable. None of the CVRs are recognized as of the acquisition date.

xCella Acquisition

On September 8, 2020, we acquired xCella, an antibody discovery company. We paid $7.1 million in cash (including a $0.5 million holdback to satisfy indemnification obligations which will be settled by September 2021), and issued earnout rights for up to $5.0 million tied to our use of the xCella technology for partnered research and development and for up to $25.75 million as a 25% share of any future milestone payments we received under a certain existing xCella partner arrangement. We evaluated this acquisition in accordance with ASC 805, *Business Combinations*, to discern whether the assets and operations of xCella met the definition of a business. We concluded that substantially all of the fair value of the gross assets acquired is concentrated in the acquired core technology. Accordingly, we accounted for this transaction as an asset acquisition. Of the $7.1 million consideration transferred, we recognized (1) $0.2 million of tangible assets acquired, (2) $(0.1) million of liabilities assumed, (3) $7.8 million of core completed technology acquired, and (4) $(0.8) million of deferred tax liability. The core technology is being amortized on a straight-line basis over the estimated useful life of 15 years. We account for the earnout rights in accordance with ASC 450,*Contingencies*, when the contingency is resolved and the liability becomes payable. None of the earnout rights are recognized as of the acquisition date.

Icagen Acquisition

On April 1, 2020, we acquired the core assets, including its partnered programs and ion channel technology from Icagen and certain of its affiliates. The acquisition was accounted for as a business combination and we applied the acquisition method of accounting. Accordingly, we recorded the tangible and intangible assets acquired and liabilities assumed at their estimated fair values as of the applicable date of acquisition. We did not incur any material acquisition related costs.

The purchase price of $19.9 million included $15.1 million cash consideration paid upon acquisition, and a contingent earn-out payment of up to $25.0 million of cash payments based on certain revenue milestones with an estimated fair value of $4.8 million. The fair value of the earn-out liability was determined using a probability weighted income approach incorporating the estimated future cash flows from expected future milestones. These cash flows were then discounted to present value using a discount rate based on the market participants' cost of debt reflective of Icagen. Refer to *Note 2, Fair Value Measurement*, for

further discussion. The liability will be periodically assessed based on events and circumstances related to the underlying milestones, and any change in fair value will be recorded in our consolidated statements of operations. The carrying amount of the liability may fluctuate significantly and actual amount paid may be materially different than the carrying amount of the liability. There was no change in the fair value of the continent liabilities during the second quarter of 2020. As the acquisition is not considered significant, pro forma information has not been provided. The results of Icagen have been included in our results of operations since the date of acquisition.

The preliminary allocation of the purchase price consisted of (1) $1.8 million of fair value of tangible assets acquired, (2) $(0.8) million of liabilities assumed, (3) $12.8 million of acquired intangibles, (4) $(3.7) million of deferred revenue in connection with assumed performance obligations under a collaboration agreement, (5) $0.8 million of deferred tax asset associated with the deferred revenue, and (6) $9.0 million of goodwill, the majority of which is deductible for tax purposes.

Acquired intangibles include $11.1 million of customer relationships and $1.7 million of core technology. The fair values of the customer relationships were based on a discounted cash flow analysis incorporating the estimated future cash flows from these relationships during the contractual term. These cash flows were then discounted to present value using a discount rate of 17%. The fair value of the customer relationships is being amortized on a straight-line basis over the weighted average estimated useful life of 9.6 years The fair value of the core technology was based on the discounted cash flow method that estimated the present value of the potential royalties, milestones, and collaboration revenue streams derived from the licensing of the related technologies. These projected cash flows were discounted to present value using a discount rate of 17%. The fair value of the core technology is being amortized on a straight-line basis over the estimated useful life of 10 years. The total acquired intangibles are being amortized on a straight-line basis over the estimated useful life of 9.7 years.

The estimated fair values of assets acquired and liabilities assumed, including deferred tax assets and liabilities, and purchased intangibles are provisional. The accounting for these amounts falls within the measurement period and therefore we may adjust these provisional amounts to reflect new information obtained about facts and circumstances that existed as of the acquisition date.

Ab Initio Acquisition

On July 23, 2019, we acquired privately-held Ab Initio Biotherapeutics, Inc., an antigen-discovery company located in South San Francisco, California. The acquisition was accounted for as a business combination and we applied the acquisition method of accounting. Accordingly, we recorded the tangible and intangible assets acquired and liabilities assumed at their estimated fair values as of the applicable date of acquisition. We did not incur any material acquisition related costs.

The purchase price of $12.0 million included $11.86 million cash consideration paid upon acquisition, net of cash acquired, and $0.15 million cash holdback for potential indemnification claims, which was paid during the third quarter of 2020. As the acquisition is not considered significant, pro forma information has not been provided. The results of Ab Initio have been included in our results of operations since the date of acquisition.

The allocation of the purchase price consisted of (1) $0.03 million of fair value of tangible assets acquired, (2) $(0.08) million of liabilities assumed, (3) $7.40 million of acquired technologies, (4) $(0.15) million of deferred tax liability in connection with the acquired intangibles, and (5) $4.81 million of goodwill, none of which is deductible for tax purposes. The fair value of the core technology was based on the discounted cash flow method that estimated the present value of the potential royalties, milestones, and collaboration revenue streams derived from the licensing of the related technologies. These projected cash flows were discounted to present value using a discount rate of 12%. The fair value of the core technology is being amortized on a straight-line basis over the weighted average estimated useful life of the approximately 20 years.

4. Convertible Senior Notes

0.75% Convertible Senior Notes due 2023

In May 2018, we issued $750.0 million aggregate principal amount of 0.75% convertible senior notes. The net proceeds from the offering, after deducting the initial purchasers' discount and offering expenses, were approximately $733.1 million. The 2023 Notes will be convertible into cash, shares of common stock, or a combination of cash and shares of common stock, at our election, based on an initial conversion rate, subject to adjustment, of 4.0244 shares per $1,000 principal amount of the 2023 Notes which represents an initial conversion price of approximately $248.48 per share.

Holders of the 2023 Notes may convert the notes at any time prior to the close of business on the business day immediately preceding November 15, 2022, under any of the following circumstances:

(1) during any fiscal quarter (and only during such fiscal quarter) commencing after September 30, 2018, 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 our 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 our 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.

The notes will have a dilutive effect to the extent the average market price per share of common stock for a given reporting period exceeds the conversion price of $248.48. As of September 30, 2020, the "if-converted value" did not exceed the principal amount of the 2023 Notes. In connection with the issuance of the 2023 Notes, we incurred $16.9 million of issuance costs, which primarily consisted of underwriting, legal and other professional fees. The portion of these costs allocated to the liability component totaling $13.7 million is amortized to interest expense using the effective interest method over the five year expected life of the 2023 Notes. It is our intent and policy to settle conversions through combination settlement, which essentially involves payment in cash equal to the principal portion and delivery of shares of common stock for the excess of the conversion value over the principal portion.

In March 2020, we repurchased $234.4 million in principal of the 2023 Notes for $203.8 million in cash, including accrued interest of $0.6 million. We accounted for the repurchase as a debt extinguishment, which resulted (1) a gain of $0.7 million reflected in other income (expense), net, in our condensed consolidated statement of operations for the nine months ended September 30, 2020; (2) a $32.7 million reduction in debt discount, and (3) a $2.7 million reduction to additional paid in capital, net of tax, related to the reacquisition of the equity component in our condensed consolidated balance sheet as of September 30, 2020. After the repurchases, approximately $515.6 million in principal amount of the 2023 Notes remain outstanding.

Convertible Bond Hedge and Warrant Transactions

In conjunction with the 2023 Notes, in May 2018, we entered into convertible bond hedges and sold warrants covering 3,018,327 shares of our common stock to minimize the impact of potential dilution to our common stock and/or offset the cash payments we are required to make in excess of the principal amount upon conversion of the 2023 Notes. The convertible bond hedges have an exercise price of $248.48 per share and are exercisable when and if the 2023 Notes are converted. We paid $140.3 million for these convertible bond hedges. If upon conversion of the 2023 Notes, the price of our 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 us and are not part of the terms of the 2023 Notes. Holders of the 2023 Notes and warrants will not have any rights with respect to the convertible bond hedges.

Concurrently with the convertible bond hedge transactions, we entered into warrant transactions whereby we sold warrants covering approximately 3,018,327 shares of common stock with an exercise price of approximately $315.38 per share, subject to certain adjustments. We received $90.0 million for these warrants. The warrants have various expiration dates ranging from August 15, 2023 to February 6, 2024. 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 common stock issuable upon exercise of the warrants will be in unregistered shares, and we do not have the obligation and do not intend to file any registration statement with the SEC registering the issuance of the shares under the warrants.

In April 2020, in connection with the repurchases of $234.4 million in principal of the 2023 Notes for $203.8 million in cash, including accrued interest of $0.6 million, during the quarter ended March 31, 2020, we entered into amendments with Barclays Bank PLC, Deutsche Bank AG, London Branch, and Goldman Sachs & Co. LLC to the convertible note hedges transactions we initially entered into in connection with the issuance of the 2023 Notes. The amendments provide that the options under the convertible note hedges corresponding to such repurchased 2023 Notes will remain outstanding notwithstanding such repurchase.

The following table summarizes information about the 2023 Notes (in thousands):

	September 30, 2020	December 31, 2019
Principal amount of the 2023 Notes outstanding	$ 515,560	$ 750,000
Unamortized discount (including unamortized debt issuance cost)	(60,587)	(111,041)
Total long-term portion of notes payable	$ 454,973	$ 638,959
Carrying value of equity component of the 2023 Notes	$ 55,339	$ 101,422
Fair value of the 2023 Notes outstanding (Level 2)	$ 464,958	$ 647,280

5. Income Tax

Our effective tax rate may vary from the U.S. federal statutory tax rate due to the change in the mix of earnings in various state jurisdictions with different statutory rates, benefits related to tax credits, and the tax impact of non-deductible expenses, stock award activities and other permanent differences between income before income taxes and taxable income. The effective tax rate for the three and nine months ended September 30, 2020 was 42.3% and 37.1%, respectively. The variances from the U.S. federal statutory tax rate of 21% for the three and nine months ended September 30, 2020 were primarily attributable to the mix of earnings in the jurisdictions with lower statutory rates than the U.S. and tax deductions related to stock award activities offset by tax deductions related to foreign derived intangible income tax credits. The effective tax rate for the three and nine months ended September 30, 2019 was 23.2% and 20.9%, respectively. The variances from the U.S. federal statutory tax rate of 21% for the three months ended September 30, 2019 were primarily attributable to the mix of earnings in the jurisdictions with lower statutory tax rates than the U.S..

6. Stockholders' Equity

We grant options and awards to employees and non-employee directors pursuant to a stockholder approved stock incentive plan, which is described in further detail in*Note 9, Stockholders' Equity*, of Notes to Consolidated Financial Statements in our 2019 Annual Report.

The following is a summary of our stock option and restricted stock activity and related information:

	Stock Options		Restricted Stock Awards	
	Shares	Weighted-Average Exercise Price	Shares	Weighted-Average Grant Date Fair Value
Balance as of December 31, 2019	1,956,379	$ 77.54	147,259	$ 125.11
Granted	480,250	$ 90.08	104,306	$ 89.58
Options exercised/RSUs vested	(113,107)	$ 23.91	(50,053)	$ 122.16
Forfeited	(10,200)	$ 72.01	—	$ —
Balance as of September 30, 2020	2,313,322	$ 82.79	201,512	$ 107.45

As of September 30, 2020, outstanding options to purchase1.6 million shares were exercisable with a weighted average exercise price per share of $72.60.

Employee Stock Purchase Plan

The price at which common stock is purchased under the Amended Employee Stock Purchase Plan, or ESPP, is equal to85% of the fair market value of the common stock on the first or last day of the offering period, whichever is lower. As of September 30, 2020, 56,079 shares were available for future purchases under the ESPP.

Share Repurchases

During the first quarter of 2020, we repurchased $73.3 million of our common stock under our stock repurchase programs as discussed below. We didnot have any share repurchases during the second and third quarter of 2020.

On September 11, 2019, our Board of Directors approved a stock repurchase program authorizing, but not obligating, the repurchase of up to $500.0 million of our common stock from time to time over the next three years. We expect to acquire shares primarily through open-market transactions and may enter into Rule 10b5-1 trading plans, to facilitate open-market

repurchases. The timing and amount of repurchase transactions will be determined by management based on our evaluation of market conditions, share price, legal requirements and other factors. Authorization to repurchase $253.5 million of our common stock remained available as of September 30, 2020.

7. Commitment and Contingencies: Legal Proceedings

We record 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, we record the minimum estimated liability related to the claim in accordance with ASC 450, *Contingencies.* As additional information becomes available, we assess the potential liability related to our pending litigation and revises our estimates. Revisions in our estimates of potential liability could materially impact our results of operations.

On April 9, 2019, CyDex received a Paragraph IV certification Notice Letter from Alembic Global Holdings SA ("Alembic") stating that Alembic had submitted an ANDA to the FDA, seeking approval to manufacture, offer to sell, and sell a generic version of EVOMELA® prior to the expiration of any of the '077 patent; the '088 patent, the '582 patent, or U.S. Patent No. 10,040,872 ("the '872 patent"), and alleging that these patents, each of which relates to Captisol®, are invalid, unenforceable, and/or would not be infringed by Alembic's ANDA product. On May 23, 2019, CyDex filed a complaint against Alembic, Alembic Pharmaceuticals, Ltd., and Alembic Pharmaceuticals, Inc. in the U.S. District Court for the District of Delaware, asserting that the filing of Alembic's ANDA constitutes infringement of each of the '088 patent and the '582 patent. On July 29, 2019, Alembic filed an answer and counterclaims seeking declarations of non-infringement and invalidity as to each of the asserted patents and, on August 19, 2019, CyDex filed an answer to Alembic's counterclaims. On April 7, 2020, the Court ordered that the Scheduling Order be amended such that, *inter alia*, the fact discovery cut off was set for November 2, 2020, the close of expect discovery was set for March 22, 2021, and that May 17, 2021 would remain the first day of a five-to-six-day bench trial.

On September 16, 2019, CyDex received a Paragraph IV certification Notice Letter from Lupin Ltd. ("Lupin") stating that Lupin had submitted an ANDA to the FDA, seeking approval to manufacture, offer to sell, and sell a generic version of EVOMELA® prior to the expiration of any of the '077 patent; the '088 patent, the '582 patent, or the '872 patent, and alleging that these patents, each of which relates to Captisol®, are invalid, unenforceable, and/or would not be infringed by Lupin's ANDA product. CyDex filed a complaint on October 29, 2019, alleging patent infringement against Lupin. Lupin filed an answer on December 11, 2019 and counterclaimed for declaratory judgments of invalidity and non-infringement as to all four patents and CyDex filed its answer to Lupin's counterclaims on January 2, 2020. Fact discovery is ongoing. The Court's scheduling order sets close of discovery on May 7, 2021 and a five day bench trial starting on December 13, 2021.

On October 31, 2019, we received three civil complaints filed in the US District Court for the Northern District of Ohio on behalf of several Indian tribes. The Northern District of Ohio is the Court that the Judicial Panel on Multi-District Litigation ("JPML") has assigned more than one thousand civil cases which have been designated as a Multi-District Litigation ("MDL") and captioned In Re: National Prescription Opiate Litigation. The allegations in these complaints focus on the activities of defendants other than the company and no individualized factual allegations have been advanced against us in any of the three complaints. We reject all claims raised in the complaints and intend to vigorously defend these matters.

8. Leases

We lease certain office facilities and equipment primarily under various operating leases. Our leases have remaining contractual terms up to seven years, some of which include options to extend the leases for up to seven years. Our lease agreements do not contain any material residual value guarantees, material restrictive covenants, or material termination options. Our operating lease costs are primarily related to facility leases for administration offices and research and development facilities, and our finance leases are immaterial.

Lease assets and lease liabilities are recognized at the commencement of an arrangement where it is determined at inception that a lease exists. Lease assets represent the right to use an underlying asset for the lease term, and lease liabilities represent the obligation to make lease payments arising from the lease. These assets and liabilities are initially recognized based on the present value of lease payments over the lease term calculated using our incremental borrowing rate generally applicable to the location of the lease asset, unless the implicit rate is readily determinable. Lease assets also include any upfront lease payments made and lease incentives. Lease terms include options to extend or terminate the lease when it is reasonably certain that those options will be exercised. For leases with a term of 12 months or less, we elected to not recognize lease assets and lease liabilities and expense the leases over a straight-line basis for the term of those leases.

In addition to base rent, certain of our operating leases require variable payments, such as insurance and common area maintenance. These variable lease costs, other than those dependent upon an index or rate, are expensed when the obligation for those payments is incurred. Leases with an initial term of 12 months or less are not recorded on the balance sheet, and the expense for these short-term leases and for operating leases is recognized on a straight-line basis over the lease term.

The depreciable life of lease assets and leasehold improvements is limited by the expected lease term, unless there is a transfer of title or purchase option reasonably certain of exercise.

9. Assets Held for Sale

As discussed in *Note 10 - Subsequent Events*, we entered into an agreement to divest Vernalis (R&D) Limited in October 2020. As a result of meeting the criteria to classify the disposal group as held for sale under generally accepted accounting principles, Vernalis (R&D) Limited was classified as held for sale as of September 30, 2020. Assets classified as held for sale are recorded at the lower of their carrying amount or fair value less costs to sell and are not depreciated or amortized. Classification of our disposal group held for sale occurs when sufficient authority to sell the disposal group has been obtained, the disposal group is available for immediate sale and its sale is probable within one year. If at any time these criteria are no longer met, the disposal group would be reclassified as held and used. We evaluate the held for sale classification during each reporting period. The disposal group did not meet the requirements for presentation as discontinued operations and are included in income from continuing operations for the three and nine months ended September 30, 2020.

We did not have any assets held for sale as of December 31, 2019. The following table presents the carrying amounts of major classes of assets and liabilities related to assets held for sale with respect to the Vernalis (R&D) Limited divestiture as of September 30, 2020.

	September 30, 2020
Assets:	
Accounts receivable, net	$ 2,581
Other current assets	2,871
Property and equipment, net	2,445
Operating lease right-of-use assets	5,246
Total assets held for sale	$ 13,143
Liabilities:	
Accounts payable	$ 463
Accrued liabilities	1,697
Deferred revenue	2,464
Long-term operating lease liability	5,084
Other long-term liabilities	653
Total liabilities related to assets held for sale	$ 10,361

10. Subsequent Events

Pfenex Acquisition

On October 1, 2020, we completed the acquisition of Pfenex for $437.5 million in cash, plus one non-transferable CVR per share representing the right to receive an aggregate contingent payment of $78 million in cash if a certain specified milestone is achieved. The acquisition was funded using cash on hand. We are currently evaluating the accounting impact of this transaction and anticipate using ASC 805, *Business Combinations*, but the initial purchase price allocation is not yet complete.

Divestiture of Vernalis Research Operations

On October 11, 2020, we and our wholly-owned subsidary Vernalis Limited, a company incorporated in England ("Seller"), entered into an Agreement for the Sale and Purchase of the Entire Issued Share Capital of Vernalis (R&D) Limited (the "Purchase and Sale Agreement") with HitGen UK Ltd, a company incorporated in England ("Buyer"), and HitGen Inc., a company incorporated in China ("HitGen"), pursuant to which Ligand and Seller agreed to sell the entire issued share capital of Vernalis (R&D) Limited, a company incorporated in England and a wholly-owned subsidiary of Seller ("Vernalis"), which constitutes the sale of the Vernalis business operations including the Vernalis Design Platform. Under the terms of the Purchase and Sale Agreement, at the closing of the transaction, Buyer will pay $25.0 million in cash, subject to a working capital adjustment. In addition, Buyer will pay to Ligand any net receipts pursuant to completed collaboration licenses and a share of any net receipts pursuant to ongoing research collaboration agreements. The closing is expected to occur in the fourth quarter of 2020.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

Caution: This discussion and analysis may contain predictions, estimates and other forward-looking statements that involve a number of risks and uncertainties, including those discussed in Part II, Item 1A: "Risk Factors." This outlook represents our current judgment on the future direction of our business. These statements include those related to our Captisol-related revenues and manufacturing capacity, our Kyprolis, and other product royalty revenues, the impact of COVID-19, product returns, and product development. Actual events or results may differ materially from our expectations. For example, there can be no assurance that our revenues or expenses will meet any expectations or follow any trend(s), that we will be able to retain our key employees or that we will be able to enter into any strategic partnerships or other transactions. We cannot assure you that we will receive expected Kyprolis, Captisol and other product revenues to support our ongoing business or that our internal or partnered pipeline products will progress in their development, gain marketing approval or achieve success in the market, or that the closing conditions of the transaction to divest the Vernalis business will be satisfied. Ligand may not achieve the growth prospects and synergies expected from its acquisitions of Pfenex, xCella and Taurus, and may experience delays, challenges and expenses associated with integrating the related businesses. In addition, ongoing or future arbitration, or litigation or disputes with third parties may have a material adverse effect on us. Such risks and uncertainties, and others, could cause actual results to differ materially from any future performance suggested. We undertake no obligation to make any revisions to these forward-looking statements to reflect events or circumstances arising after the date of this quarterly report. This caution is made under the safe harbor provisions of Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act.

Our trademarks, trade names and service marks referenced herein include Ligand. Each other trademark, trade name or service mark appearing in this quarterly report belongs to its owner.

References to “Ligand Pharmaceuticals Incorporated,” “Ligand,” the “Company,” “we” or “our” include Ligand Pharmaceuticals Incorporated and our wholly owned subsidiaries.

Overview

We are a revenue generating biopharmaceutical company focused on developing and acquiring technologies that help pharmaceutical companies discover and develop medicines. We employ research technologies such as antibody discovery technologies, structure-based drug design, formulation science and liver targeted pro-drug technologies to assist companies in their work toward securing prescription drug and biologic approvals. We currently have partnerships and license agreements with over 120 pharmaceutical and biotechnology companies. Over 200 different programs are in various stages of commercialization and development and fully funded by our collaboration partners and licensees. We have contributed novel research and technologies for approved medicines that treat cancer, osteoporosis, fungal infections and postpartum depression, among others. Our collaboration partners and licensees have programs currently in clinical development targeting cancer, seizure, diabetes, cardiovascular disease, muscle wasting, liver disease, and kidney disease, among others. We have over 1,400 issued patents worldwide.

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, which we refer to as “shots on goal,” 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 and then seek partners to continue development and potential commercialization.

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 is generated primarily from: royalties on sales of products commercialized by our partners, sale of Captisol material, and contract revenue which consists of service revenue for contracted R&D services performed for our customers over

time, license fees, contingent milestone payments and other payments. 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.

Impact of COVID-19 Pandemic

Please see impact of COVID-19 pandemic described in Item 1. Condensed Consolidated Financial Statements -*Note 1,* "*Basis of Presentation and Summary of Significant Accounting Policies*". For additional information on the various risks posed by COVID-19 pandemic, please read *Item 1A. Risk Factors* included in this report.

Portfolio Program Updates

OmniAb® Platform Updates

OmniAb is our multi-species antibody platform for the discovery of mono- and bi-specific therapeutic human antibodies. As of the third quarter of 2020, more than 8,500 clinical subjects have been or are planned to be treated by partners in clinical trials with OmniAb-derived antibodies. New clinical programs are pending at Johnson & Johnson and Merck, among others. Ligand expects the first regulatory submission for OmniAb-derived antibodies in 2021, with potential for as many as 10 approvals expected by 2025.

As part of the OmniAb platform, we recently announced OmniTaur™, featuring Ultralong CDR-H3 humanized binding domains recently acquired from Taurus Biosciences. The OmniAb platform also includes the ultra-high resolution, high-speed automated antibody selection technology acquired from xCella Biosciences.

Multiple OmniAb partners reported clinical or regulatory progression with OmniAb-derived antibodies during the third quarter of 2020. Additionally, three of our partners (Takeda, Immunoprecise and Genovac) are pursuing development of therapeutic antibodies for the treatment of COVID-19 that were discovered with OmniAb.

CStone Pharmaceuticals announced the formation of a $480 million strategic collaboration that encompasses a $200 million equity investment by Pfizer Hong Kong in CStone, collaboration between CStone and Pfizer Investment for the development and commercialization of CStone's PD-L1 antibody sugemalimab (CS1001) in mainland China and a framework between CStone and Pfizer Investment to bring additional oncology assets to the Greater China market. CStone announced updated results from two clinical studies of sugemalimab at the 2020 Chinese Society of Clinical Oncology Annual Meeting. CStone announced that sugemalimab met the primary endpoint as first-line treatment in stage IV squamous and non-squamous non-small cell lung cancer.

Immunovant announced positive topline results from a multicenter, placebo-controlled Phase 2a trial (ASCEND MG) of IMVT-1401, a novel investigational anti-FcRn antibody delivered by subcutaneous injection, in patients with myasthenia gravis (MG). A registration-enabling Phase 3 MG trial is expected to initiate in the first half of 2021.

Captisol® Business Updates

To date in 2020, we have entered into more than 120 Captisol research use agreements and eight clinical and/or commercial license agreements. This is the highest number of use agreements to be signed in a single year since the invention of Captisol.

Captisol is utilized in the formulation of Gilead Sciences' Veklury® (remdesivir), which on October 22, 2020 received U.S. FDA approval for the treatment of patients with COVID-19 requiring hospitalization. The product has regulatory approvals for the treatment of moderate or severe COVID-19 in over 50 countries and is included in more than 30 ongoing clinical trials. We are supplying Captisol to Gilead under a recently signed 10-year supply agreement. We are also supplying Captisol to Gilead's voluntary licensing generic partners who are manufacturing remdesivir for 127 low- and middle-income countries.

Partner Marinus was recently awarded a BARDA contract by the U.S. government to develop Captisol-enabled IV ganaxolone for the treatment of refractory status epilepticus (RSE) caused by nerve agent exposure. Marinus also announced it had satisfied the FDA protocol-specific questions for the registrational Phase 3 trial (the RAISE trial) in RSE, allowing the company to begin patient enrollment in October. Topline data are anticipated in the first half of 2022.

We plan to initiate a potentially pivotal trial for CE-Iohexol in December 2020. CE-Iohexol is an iodine-based contrast agent for hospital-based imaging procedures.

Protein Expression Technology Platform Updates

On October 1, 2020, we closed the previously announced acquisition of Pfenex, Inc. Pfenex brings to us a proprietary protein expression technology, as well as major collaborations with Jazz Pharmaceuticals, Merck, Serum Institute of India and Alvogen, each of which has potential to contribute meaningfully to our royalty revenue. Our partner Merck announced positive data from two Phase 3 studies with V114, which uses the protein expression technology, evaluating the safety, tolerability and immunogenicity of the investigational 15-valent pneumococcal conjugate vaccine with plans for global regulatory licensure applications in the fourth quarter 2020. Also using the platform, Jazz Pharmaceutical's Erwinaze supply challenges due to issues with their manufacturer were solved, resulting in a robust process showing manufacturing consistency and efficiency. The program was completed from commencement to projected first BLA filing in approximately four years.

We entered into a new 10-year CRM197 supply agreement with a global multi-national pharmaceutical partner focused on vaccine development.

Other Business Updates

We announced the sale of our Vernalis research operations and internal programs to HitGen Inc. for $25 million in cash. Under the terms of the agreement, we will retain economic rights on completed collaboration licenses as well as a share of the economic rights on current research collaboration contracts. The transaction is expected to close in the fourth quarter of 2020, subject to customary closing conditions.

Several partners also had significant regulatory, financing and business updates during the third quarter of 2020: Verona Pharma announced initiation of its ENHANCE Phase 3 trials, Retrophin announced enrollment of the first 280 patients in the pivotal Phase 3 PROTECT study of sparsentan in IgA nephropathy, and Sermonix Pharmaceuticals announced a collaboration with Eli Lilly to study lasofoxifene in combination with Lilly's CDK 4 and 6 inhibitor abemaciclib in metastatic breast cancer.

Results of Operations

Revenue

(Dollars in thousands)	Q3 2020	Q3 2019	Change	% Change	YTD 2020	YTD 2019	Change	% Change
Royalties	**$ 9,005**	$ 9,767	$ (762)	(8) %	**$ 22,751**	$ 35,931	$ (13,180)	(37) %
Captisol	**23,389**	6,849	16,540	241 %	**68,966**	24,357	44,609	183 %
Contract revenue	**9,454**	8,192	1,262	15 %	**24,712**	32,991	(8,279)	(25) %
Total revenue	**$ 41,848**	$ 24,808	$ 17,040	69 %	**$ 116,429**	$ 93,279	$ 23,150	25 %

Royalty revenue is a function of our partners' product sales and the applicable royalty rate. Kyprolis royalty rates are under a tiered royalty rate structure with the highest tier being 3.0%. Evomela has a fixed royalty rate of 20%. On March 6, 2019, we sold all of our rights, title and interest in and to the Promacta license to Royalty Pharma; therefore, the royalty revenue for Promacta only reflected the revenue prior to the sale. Subsequent to March 6, 2019, we no longer recognize revenue related to Promacta. Contract revenue includes service revenue, license fees and development, regulatory and sales based milestone payments.

The following tables represent royalty revenue by program:

(in millions)	Q3 2020 Estimated Partner Product Sales	Effective Royalty Rate	Q3 2020 Royalty Revenue	Q3 2019 Partner Product Sales	Effective Royalty Rate	Q3 2019 Royalty Revenue
Kyprolis	**$ 277.2**	**2.5 %**	**$ 6.9**	$ 279.0	2.7 %	$ 7.6
Evomela	**9.0**	**20.0 %**	**1.8**	7.5	20.0 %	1.5
Other	**45.6**	**0.6 %**	**0.3**	50.7	1.3 %	0.7
Total	**$ 331.8**		**$ 9.0**	$ 337.2		$ 9.8

(in millions)	YTD 2020 Estimated Partner Product Sales	Effective Royalty Rate	YTD 2020 Royalty Revenue	YTD 2019 Partner Product Sales	Effective Royalty Rate	YTD 2019 Royalty Revenue
Kyprolis	**$ 832.3**	**2.0 %**	**$ 16.8**	$ 778.0	2.1 %	$ 16.3
Evomela	**22.9**	**20.0 %**	**4.6**	17.7	20.0 %	3.5
Other	**132.2**	**1.0 %**	**1.4**	142.8	1.3 %	1.9
Promacta	**N/A**	**N/A**	**N/A**	225.1	6.3 %	14.2
Total	**$ 987.4**		**$ 22.8**	$ 1,163.6		$ 35.9

Q3 2020 vs. Q3 2019

Total revenue increased by $17.0 million, or 69%, to $41.8 million in Q3 2020 compared to $24.8 million in Q3 2019 mainly driven by an increase in Captisol material sales during Q3 2020 attributable to an increased demand from Gilead for remdesivir. See additional remdesivir updates in the *Portfolio Program Updates* section above.

YTD 2020 vs. YTD 2019

Total revenue increased by $23.2 million, or 25%, to $116.4 million in the YTD 2020 compared to $93.3 million in the same period last year mainly driven by an increase in Captisol material sales during the YTD 2020 attributable to an increased demand from Gilead for remdesivir as mentioned above. The increases were partially offset by our no longer recognizing royalties related to Promacta since the sale of Promacta in March 2019 and the decreased contract revenue due to the disruption from COVID-19 as some partners delay starting clinical trials or paused patient enrollment in ongoing trials.

Operating Costs and Expenses

(Dollars in thousands)	Q3 2020	% of Revenue	Q3 2019	% of Revenue	YTD 2020	% of Revenue	YTD 2019	% of Revenue
Costs of Captisol	**$ 6,353**		$ 3,147		18,680		9,410	
Amortization of intangibles	**3,875**		3,552		11,285		10,560	
Research and development	**12,853**		13,742		37,476		37,244	
General and administrative	**15,020**		9,525		34,353		31,607	
Total operating costs and expenses	**$ 38,101**	91%	$ 29,966	121%	**$ 101,794**	87%	$ 88,821	95%

Q3 2020 vs. Q3 2019

Total operating costs and expenses increased by $8.1 million or 27%. Cost of Captisol increased primarily due to higher Captisol sales during Q3 2020 as mentioned above. General and administrative expenses increased primarily due to acquisition integration related costs as well as additional expenses from the Icagen acquisition in April 2020.

YTD 2020 vs. YTD 2019

Total operating costs and expenses increased by $13.0 million or 15%. Cost of Captisol increased primarily due to higher Captisol sales during the YTD 2020 as mentioned above. General and administrative expenses increased primarily due to acquisition integration related costs as well as additional expenses from the Icagen acquisition in April 2020.

Other Income (Expense)

(Dollars in thousands)	Q3 2020	Q3 2019	Change	YTD 2020	YTD 2019	Change
Loss from short-term investments	**$ (9,862)**	$ (13,297)	$ 3,435	**$ (17,143)**	$ (8,524)	$ (8,619)
Interest income	**991**	7,396	(6,405)	**7,690**	22,590	(14,900)
Interest expense	**(6,269)**	(8,993)	2,724	**(21,030)**	(26,911)	5,881
Other income (expense), net	**(219)**	181	(400)	**1,940**	404	1,536
Total other income (expense), net	**$ (15,359)**	$ (14,713)	$ (646)	**$ (28,543)**	$ (12,441)	$ (16,102)

The fluctuation in the gain (loss) from short-term investments is primarily driven by the changes in the fair value of our ownership in Viking common stock and warrants.

Interest income consists primarily of interest earned on our short-term investments. The decreases over the prior periods were due to the decrease in our short-term investment balance resulting from the proceeds used in share repurchases, the 2023 Notes repurchase during the second quarter of 2020 and the acquisition of Icagen, xCella and Taurus during the nine months ended September 30, 2020.

Interest expense includes the 0.75% coupon cash interest expense in addition to the non-cash accretion of discount (including the amortization of debt issuance cost) on our 2023 Notes for the three and nine months ended September 30, 2020. The decreases over the prior periods were primarily due to lower average debt outstanding balance during the current periods as compared to the prior periods. The 2019 Notes were paid off upon the maturity date in August 2019. In March 2020, we repurchased $234.4 million in principal of the 2023 Notes for $203.8 million in cash, including accrued interest of $0.6 million. See *Note 4 - Convertible Senior Notes.*

Other income, net, for the nine months ended September 30, 2020 increased as compared to the same period last year. The increases wereprimarily due to a $1.9 million gain on an asset sale during the nine months ended September 30, 2020.

Income Tax Benefit (Expense)

(Dollars in thousands)	Q3 2020	Q3 2019	Change	YTD 2020	YTD 2019	Change
Income (loss) before income taxes	**$ (11,612)**	$ (19,871)	$ 8,259	**$ (13,908)**	$ 804,814	$ (818,722)
Income tax benefit (expense)	**4,911**	4,620	291	**5,162**	(168,147)	173,309
Income (loss) from operations	**$ (6,701)**	$ (15,251)	$ 8,550	**$ (8,746)**	$ 636,667	$ (645,413)
Effective tax rate	42.3 %	23.2 %		37.1 %	20.9 %	

We compute our income tax provision by applying the estimated annual effective tax rate to income from operations and adding the effects of any discrete income tax items specific to the period. The effective tax rate for the three and nine months ended September 30, 2020 was 42.3% and 37.1%, respectively. The variances from the U.S. federal statutory tax rate of 21% for the three and nine months ended September 30, 2020 were primarily attributable to the mix of earnings in the jurisdictions with higher statutory rates than the U.S. and tax deductions related to stock award activities, offset by tax deductions related to foreign derived intangible income tax credits. The effective tax rate for the three and nine months ended September 30, 2019 was 23.2% and 20.9%, respectively. The variances from the U.S. federal statutory tax rate of 21% for the three months ended September 30, 2019 were primarily attributable to the mix of earnings in the jurisdictions with lower statutory tax rates than the U.S.

Liquidity and Capital Resources

As of September 30, 2020, our cash, cash equivalents, and marketable securities totaled $795.1 million, which were decreased by $274.8 million from the end of last year, due to factors described in the "*Cash Flow Summary*" below. This amount excludes our cash payment of $437.5 million million at the closing of our acquisition of Pfenex on October 1, 2020. Our primary source of liquidity, other than our holdings of cash, cash equivalents, and investments, has been cash flows from operations. Our ability to generate cash from operations provides us with the financial flexibility we need to meet operating, investing, and financing needs.

Historically, we have liquidated our short-term investments and/or issued debt and equity securities to finance our business needs as a supplement to cash provided by operating activities. Our short-term investments include U.S. government debt securities, investment-grade corporate debt securities, mutual funds 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 5.8 million shares of common stock in Viking.

In May 2018, we issued an aggregate principal amount of $750.0 million of the 2023 Notes. In conjunction of the 2023 Notes offering, we used a portion of the proceeds from such issuance totaling $49.7 million to repurchase 260,000 shares of our common stock. In March 2020, we repurchased $234.4 million in principal of the 2023 Notes for $203.8 million in cash, including accrued interest of $0.6 million. After the repurchases, $515.6 million in principal amount of the 2023 Notes remain outstanding. We may continue to use cash on hand to repurchase additional 2023 Notes through open-market transactions, including through Rule 10b5-1 trading plan to facilitate open-market repurchases, or otherwise, from time to time. The timing and amount of repurchase transactions will be determined by management based on the evaluation of market conditions, trading

price of the 2023 Notes, legal requirements and other factors. The 2023 Notes were not convertible as of September 30, 2020. It is our intent and policy to settle conversions through combination settlement, which essentially involves payment in cash equal to the principal portion and delivery of shares of common stock for the excess of the conversion value over the principal portion. See *Note 4 - Convertible Senior Notes.*

In September 2019, our Board of Directors approved a stock repurchase program authorizing, but not obligating, the repurchase of up to $500.0 million of our common stock from time to time over the next three years. We expect to acquire shares primarily through open-market transactions and may enter into Rule 10b5-1 trading plans to facilitate open-market repurchases. The timing and amount of repurchase transactions will be determined by management based on our evaluation of market conditions, share price, legal requirements and other factors. During the first quarter of 2020, we repurchased $73.3 million of our common stock under our stock repurchase programs as discussed below. We did not have any share repurchases during the second and third quarter of 2020. Authorization to repurchase $253.5 million of our common stock remained available as of September 30, 2020.

We believe that our existing funds, cash generated from operations and existing sources of and access to financing are adequate to fund our need for working capital, capital expenditures, debt service requirements, continued advancement of research and development efforts, potential stock repurchases and other business initiatives we plan to strategically pursue, including acquisitions and strategic investments.

As of September 30, 2020, we had $10.8 million in fair value of contingent consideration liabilities associated with prior acquisitions to be settled in future periods.

Leases and Off-Balance Sheet Arrangements

We lease our office facilities under operating lease arrangements with varying terms through September 2026. The agreements provide for increases in annual rents based on changes in the Consumer Price Index or fixed percentage increases of 3.0%. See further information in *Note 8, Leases.* We had no off-balance sheet arrangements at September 30, 2020 and December 31, 2019.

Cash Flow Summary

(Dollars in thousands)	YTD 2020	YTD 2019
Net cash provided by (used in):		
Operating activities	$ 54,049	$ (21,997)
Investing activities	$ 613,850	$ 530,097
Financing activities	$ (283,016)	$ (401,479)

During the nine months ended September 30, 2020, we repurchased $234.4 million in principal of the 2023 Notes for $203.8 million in cash, including accrued interest of $0.6 million; paid $15.1 million in cash for the Icagen acquisition, $11.6 million in cash for xCella and Taurus acquisitions, and used $73.3 million to repurchase our common stock. During the nine months ended September 30, 2019, we generated $827 million from the sale of Promacta license (including $14.2 million recorded to revenue related to the Promacta royalty for the period between January 1, 2019 and March 6, 2019), used cash for net purchases of short-term investments, used $371.1 million to repurchase our common stock, used $93.8 million to pay federal and state estimated income taxes, paid off the remaining balance of the 2019 Notes in the amount of $27.3 million, paid $12.0 million for the purchase of Novan economic rights and paid $11.8 million for the Ab Initio acquisition (net of cash acquired).

Contractual Obligations

There have been no material changes outside the ordinary course of business to the “Contractual Obligations” table set forth in our 2019 Annual Report, other than our purchase obligations under our agreements with Hovione for Captisol purchases and equipment investment increased by approximately $69 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 our consolidated financial statements and the disclosures made in the accompanying notes. Those estimates and assumptions are based on historical experience and various other factors deemed 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. There have been no material changes in our critical accounting policies and estimates as compared to the critical accounting policies and estimates described in our 2019 Annual Report, other than the adoption of the Accounting Standards Updates described in Item 1. Condensed Consolidated Financial Statements - *Note 1, "Basis of Presentation and Summary of Significant Accounting Policies,"* related to allowance for credit losses.

Item 3. Quantitative and Qualitative Disclosures about Market Risk

There were no substantial changes to our market risks in the three and nine months ended September 30, 2020, when compared to the disclosures in Item 7A of our 2019 Annual Report.

Item 4. Controls and Procedures

We 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) of the Securities Exchange Act of 1934. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that our disclosure controls and procedures as of September 30, 2020 were effective to ensure that information required to be disclosed by us in reports that we file or submit under the Securities Exchange Act of 1934 is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.

There were no changes in our internal control over financial reporting that occurred during the quarter ended September 30, 2020 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II. OTHER INFORMATION

Item 1. Legal Proceedings

For information that updates the disclosures set forth under Part I, Item 3, "Legal Proceedings" in our 2019 Annual Report, refer to *Note 7, Commitment and Contingencies: Legal Proceedings*, to the Condensed Consolidated Financial Statements contained in Part I, Item 1 of this report.

Item 1A. Risk Factors

There have been no material changes to the risk factors included in "Item 1A. Risk Factors" in our 2019 Annual Report, other than as set forth below:

Our business is subject to risks arising from epidemic diseases, such as the recent COVID-19 pandemic, which has impacted and could continue to impact our business.

The current COVID-19 worldwide pandemic has presented substantial public health and economic challenges and is affecting our employees and partners, patients, communities and business operations, as well as the U.S. and global economy and financial markets. International and U.S. governmental authorities in impacted regions are taking actions in an effort to slow the spread of COVID-19, including issuing varying forms of "stay-at-home" orders, and restricting business functions outside of one's home. In response, we have restricted in-person access to our executive offices, our administrative employees are mostly working remotely, and we have limited the number of staff in our research and development laboratories and other facilities.

Several of our partners have reported that their operations have been impacted including delays in research and development programs and deprioritizing clinical trials in favor of treating patients who have contracted the virus or to prevent the spread of the virus. This may lead to clinical trial protocol deviations or to discontinuation of treatment for patients who are currently enrolled in the clinical trials being conducted by us or our partners. In addition, certain of our partners have reported negative impacts on product sales which will impact our royalty revenues. As the COVID-19 pandemic continues to spread around the globe, we may experience disruptions that could severely impact our business, drug manufacturing and supply chain, nonclinical activities and clinical trials and our partners' business may be impacted in similar ways, including due to:

- delays or difficulties in enrolling patients in clinical trials;
- delays or difficulties in clinical site initiation, including difficulties in recruiting or supporting clinical site investigators and clinical site staff;
- diversion of healthcare resources away from the conduct of clinical trials, including the diversion of hospitals serving as clinical trial sites and hospital staff supporting the conduct of clinical trials;
- interruption of key clinical trial activities, such as clinical trial site monitoring, due to limitations on travel imposed or recommended by federal or state governments, employers and others or interruption of clinical trial subject visits and study procedures, which may impact the integrity of subject data and clinical study endpoints;
- interruption or delays in the operations of the FDA or other regulatory authorities, which may impact review and approval timelines;
- interruption of, or delays in receiving, supplies of Captisol or other product or product candidates from contract manufacturing organizations due to staffing shortages, production slowdowns or stoppages and disruptions in delivery systems, which may result in cancellations of Captisol orders or refunds if we fail to deliver Captisol timely;
- delays in clinical sites receiving the supplies and materials needed to conduct clinical trials and interruption in global shipping that may affect the transport of clinical trial materials;
- interruptions in nonclinical studies due to restricted or limited operations at laboratory facility or those of outsourced service providers;
- limitations on employee resources that would otherwise be focused on the conduct of nonclinical studies or clinical trials, including because of sickness of employees or their families or the desire of employees to avoid contact with large groups of people;
- delays in receiving approval from local regulatory authorities to initiate planned clinical trials;
- changes in local regulations as part of a response to COVID-19 which may require us to change the ways in which clinical trials are conducted, which may result in unexpected costs, or to discontinue the clinical trials altogether;
- delays in necessary interactions with local regulators, ethics committees and other important agencies and contractors due to limitations in employee resources or forced furlough of government employees;
- refusal of the FDA to accept data from clinical trials in affected geographies outside the United States;
- interruption or delays to discovery and development pipelines; and
- difficulties launching or commercializing products, including due to reduced access to doctors as a result of social distancing protocols.

In addition, if COVID-19 infects our genetically modified animals which form the basis of our OmniAb platform, or if there is an outbreak among our employees who maintain and care for these animals, we and our partners may be unable to produce antibodies for development. Further, the spread of COVID-19 has had and may continue to severely impact the trading price of shares of our common stock and could further severely impact our ability to raise additional capital on a timely basis or at all.

The COVID-19 pandemic continues to evolve. The extent to which the COVID-19 may impact our business, including our drug manufacturing and supply chain, nonclinical activities, clinical trials and financial condition, including due to impacts on our partners' businesses, will depend on future developments, which are highly uncertain and cannot be predicted with confidence, the duration of the pandemic, travel restrictions and social distancing in the United States and other countries, business closures or business disruptions and the effectiveness of actions taken in the United States and other countries to contain and treat the disease.

To the extent the COVID-19 pandemic adversely affects our business and financial results, it may also have the effect of heightening many of the other risks described in this section and in the "*Risk Factors*" section of our 2019 Annual Report.

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, including Amgen and Gilead, 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. In addition, revenue from Captisol sales related to remdesivir may not continue or materially increase due to a number of factors, including: if remdesivir is later shown to not be effective or safe for the treatment of COVID-19; the FDA revises or revokes its approval of remdesivir; if alternative therapies or vaccines are approved; or the risk of COVID-19 infection significantly diminishes, in which case the commercial opportunity could be materially and adversely affected.

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 Hovione, our third party manufacturer, primarily at Hovione's facilities in Portugal and Ireland. If Hovione 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. In the event of a Captisol supply interruption, we are permitted to designate and, with Hovione's assistance, qualify one or more alternate suppliers, although there is no assurance that we could do so timely or at an acceptable costs, if at all. In addition to manufacturing at Hovione's facilities in Ireland and Portugal, we have now added final step processing capacity for Captisol in both the United States and England.

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. In addition, we will rely on Hovione to expand manufacturing capacity of Captisol and any failure by Hovione to timely implement such increased capacity could adversely affect our ability to supply Captisol to our partners. While we believe we maintain adequate inventory of Captisol to meet our current partner needs, and our planned expansion of Captisol capacity will be sufficient to meet future partner needs, our estimates and projections for Captisol demand may not be correct and any supply interruptions could materially adversely impact our operating results. In addition, our plan to invest additional capital for the expansion of Captisol manufacturing capacity may not yield a return on investment if future Captisol sales fall below our expectations.

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 competing product, 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.

Our OmniAb antibody platform faces specific risks, including the fact that no product using antibodies from the platform has been approved by the FDA or similar regulatory agency.

None of our collaboration partners using our OmniAb antibody platform have received approval from the FDA or similar regulatory agency to market a product discovered based on our platform. In addition, only a few of our collaboration partners' product candidates based on the platform have been tested in late stage clinical trials. If one of our OmniAb collaboration

partners' product candidates fails during preclinical studies or clinical trials, our other OmniAb collaboration partners may decide to abandon product candidates using antibodies generated from the OmniAb platform, whether or not such failure is 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 six patents within the U.S. and three patents in the European Union and are subject to the same risks as our patent portfolio discussed elsewhere in this report and our 2019 Annual Report, including the risk that our patents may infringe on third party patent rights or that our patents may be invalidated. As of a result of these factors, the future revenue generated from this platform may be materially lower than what we currently anticipate. 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. Our competitors may render our OmniAb antibody platform obsolete, or limit the commercial value of any product candidates developed using our platform, by advances in existing technological approaches or the development of new or different approaches, potentially eliminating the advantages that we believe our platform offers.

Our recent strategic acquisitions and announced dispositions may adversely affect our stock price, operating results and results of operations.

We recently acquired Pfenex, as well as Taurus and xCella. We may not be able to integrate these acquired business successfully, achieve the expected growth prospects and synergies, expected royalties and other economics or operate such businesses profitably. In addition, such acquisitions may disrupt our current plans and operations, we may not be able to retain key personnel or preserve existing business relationships following such acquisitions, and may incur unexpected costs, charges or expenses resulting from completion of the acquisitions. Further, many of the risks we disclose for our programs and our existing partners' programs in "*Item 1A. Risk Factors*" in our 2019 Annual Report would also apply these acquired companies and businesses. For example, the platform we acquired from Pfenex faces many of the same risks that face our OmniAb platform, including that we are entirely dependent on our partners' efforts to develop and commercial products based on the platform.

We also recently announced the disposition of Vernalis (R&D) Limited. We cannot assure you that the closing of this transaction will occur on our expected timeframe or at all, whether as a result of the failure to meet closing conditions or otherwise, including the requirement that required governmental approvals may not obtained or may be delayed. Furthermore, we may not realize expected future benefits from the Vernalis transaction, including from retained licenses and collaboration economics and as a result of indemnification claims under the Vernalis Purchase Agreement and our retention of certain liabilities associated with the Vernalis business.

If we fail to realize the expected benefits from these acquisitions and our proposed Vernalis disposition, our business, results of operations and financial condition could be adversely affected.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

None.

Item 3. Defaults Upon Senior Securities

None.

em 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

None

Item 6. Exhibits

Exhibit Number	Description
2.1	Agreement and Plan of Merger, dated as of August 10, 2020, by and among Pfenex, Inc., Ligand Pharmaceuticals Incorporated and Pelican Acquisition Sub, Inc. (incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on August 11, 2020).
2.2	Agreement and Plan of Merger, dated September 8, 2020, among Ligand Pharmaceuticals Incorporated, xCella Biosciences, Inc. and other persons (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on September 10, 2020).
2.3	Agreement and Plan of Merger, dated September 9, 2020, among Ligand Pharmaceuticals Incorporated, Taurus Biosciences, LLC and other persons (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on September 10, 2020).
2.4	Contingent Value Rights Agreement, dated September 9, 2020, between Ligand Pharmaceuticals Incorporated and Vaughn Smider, as Members' Representative (regarding Taurus Biosciences, LLC acquisition) (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on September 10, 2020).
2.5	Contingent Value Rights Agreement, dated as of September 30, 2020, by and between Ligand Pharmaceuticals Incorporated and American Stock Transfer & Trust Company, LLC.*
2.6	Agreement for the Sale and Purchase of the Entire Issued Share Capital of Vernalis (R&D) Limited, dated as of October 11, 2020, by and among Ligand Pharmaceuticals Incorporated, Vernalis Limited, HitGen UK Ltd and HitGen Inc. (incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on October 13, 2020).
10.1	Commercial License Agreement, dated September 9, 2020, between Taurus Biosciences, LLC and Minotaur Therapeutics, Inc. (incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on September 10, 2020).
10.2	Amendment to Supply Agreement, dated September 21, 2020, by and between Cydex Pharmaceuticals, Inc. and Gilead Sciences, Inc., which amends that certain Supply Agreement, dated December 2, 2015, by and between Cydex Pharmaceuticals, Inc. and Gilead Sciences, Inc.*
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.*
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.*
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.*
101	The following financial information from our Quarterly Report on Form 10-Q for the quarter ended September 30, 2020, formatted in iXBRL (inline eXtensible Business Reporting Language): (i) Consolidated Condensed Balance Sheets, (ii) Consolidated Condensed Statements of Operations, (iii) Consolidated Condensed Statement of Comprehensive Income, (iv) Consolidated Condensed Statements of Stockholders' Equity, (v) Consolidated Condensed Statements of Cash Flows, and (vi) the Notes to Consolidated Condensed Financial Statements.*
104	The cover page from the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2020, formatted in Inline XBRL and contained in Exhibit 101.

* Filed herewith.

SIGNATURES

Pursuant to the requirements 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.

Date: November 6, 2020

By: /s/ Matthew Korenberg

Matthew Korenberg
Executive Vice President, Finance and Chief Financial Officer
Duly Authorized Officer and Principal Financial Officer

Exhibit 2.5

CONTINGENT VALUE RIGHTS AGREEMENT

This CONTINGENT VALUE RIGHTS AGREEMENT (this " **Agreement**"), dated September 30, 2020, is by and between Ligand Pharmaceuticals Incorporated, a Delaware corporation ("**Parent**") and American Stock Transfer & Trust Company, LLC, a New York limited liability trust company, as rights agent (the "**Rights Agent**").

RECITALS

A . Pfenex Inc., a Delaware corporation (the "**Company**"), Parent and Pelican Acquisition Sub, Inc., a Delaware corporation and a wholly-owned subsidiary of Parent ("**Acquisition Sub**") have entered into an Agreement and Plan of Merger, dated as of August 10, 2020 (as it may be amended or supplemented from time to time pursuant to the terms thereof, the "**Merger Agreement**"). Capitalized terms used but not otherwise defined in this Agreement shall have the meanings ascribed to them in the Merger Agreement.

B. Pursuant to the Merger Agreement, Acquisition Sub (a) has agreed to commence a tender offer (the " **Offer**") to acquire all of the outstanding shares of Company Common Stock and (b) will, following consummation of the Offer, merge with and into the Company (the "**Merger**"), with the Company surviving the Merger as a wholly owned subsidiary of Parent.

C. Pursuant to the Merger Agreement, and in accordance with the terms and conditions thereof, Parent has agreed to provide the Holders (as defined below) certain contingent value rights upon the achievement of a certain milestone as hereinafter described in accordance with the terms of this Agreement and of the Merger Agreement.

D. The Rights Agent is willing to act in connection with the issuance, transfer, exchange and payment of such contingent value rights as provided herein.

AGREEMENT

The parties to this Agreement therefore agree as follows:

ARTICLE I
CONTINGENT VALUE RIGHTS

1.1 Holders of CVRs; Appointment of Rights Agent

(a) Pursuant to the terms of the Merger Agreement, as of the Effective Time (i) each holder of any shares of Company Common Stock that is converted into the right to receive the Merger Consideration shall, as part of such Merger Consideration, be entitled to one CVR for each such share of Company Common Stock, and (ii) each holder of any In-the-Money Company Option that is cancelled in exchange for the right to receive the excess of the Merger Consideration over the per share exercise price of each such In-the-Money Company Option shall, as part of such Merger Consideration, be entitled to receive one CVR for each share of Company Common Stock underlying each such In-the-Money Company Option. For the avoidance of doubt, no CVR shall be issued with respect to any Out-of-the-Money Company Options or any portion of In-the-Money Company Options that vest based on performance that do not vest in accordance with Section 2.8(d) of the Merger Agreement. The initial Holders shall be determined pursuant to the terms of the Merger Agreement and this Agreement, and a list of the initial Holders shall be furnished to the Rights Agent by or on behalf of Parent in accordance with Section 3.1 hereof.

(b) Parent hereby appoints the Rights Agent to act as rights agent for Parent in accordance with the express terms and conditions set forth in this Agreement, and the Rights Agent hereby accepts such appointment.

1.2 Nontransferable. CVRs may not be sold, assigned, transferred, pledged, encumbered or disposed of in any other manner, in whole or in part, other than pursuant to a Permitted Transfer, and, in the case of a Permitted Transfer, only in accordance with Section 1.3(c) hereof. Any attempted sale, assignment, transfer, pledge, encumbrance or disposition of CVRs, in whole or in part, in violation of this Section 1.2 shall be void *ab initio* and of no effect.

1.3 No Certificate; Registration; Registration of Transfer; Change of Address .

(a) CVRs shall not be evidenced by a certificate or other instrument.

(b) The Rights Agent shall keep a register (the "CVR Register") for the purposes of (i) identifying the Holders of CVRs and (ii) documenting CVRs and Permitted Transfers thereof, which CVR Register may be amended from time to time by the Rights Agent to reflect any changes to Holders or applicable number of CVRs as permitted hereunder, including to reflect any repurchases by Parent of CVRs. The CVR Register will initially show one position for Cede & Co. representing all of the CVRs that are issued to the former holders of shares of Company Common Stock held by DTC on behalf of the former street holders of the shares of Company Common Stock. With respect to any payments to be made under Section 1.4 below, the Rights Agent will accomplish such payment to any former street name holders of the shares of Common Stock by sending such payments to DTC. The Rights Agent will have no responsibilities whatsoever with regard to the distribution of payments by DTC to such street name holders.

(c) Without limiting the restriction on transferability set forth in Section 1.2, every request made to transfer a CVR must be in writing and accompanied by a written instrument of transfer and other requested documentation in form reasonably satisfactory to the Rights Agent, duly executed by the registered Holder or Holders thereof, or by the duly appointed legal representative, personal representative or survivor of such Holder or Holders, setting forth in reasonable detail the circumstances relating to the transfer demonstrating that such proposed transfer is a Permitted Transfer. Upon receipt of such written notice, the Rights Agent shall promptly notify Parent in writing that it has received such written notice. Upon receipt of such notice from the Rights Agent, Parent shall in good faith reasonably determine whether the transfer is a Permitted Transfer and otherwise complies with the other terms and conditions of this Agreement, and if Parent so reasonably determines that such transfer does so comply, Parent shall instruct the Rights Agent in writing to register the transfer of the applicable CVRs in the CVR Register. All duly transferred CVRs registered in the CVR Register shall be the valid obligations of Parent, evidencing the same right, and entitling the transferee to the same benefits and rights under this Agreement, as those held by the transferor. No transfer of a CVR shall be valid until registered in the CVR Register in accordance with this Agreement. The CVR Register shall be conclusive absent manifest error. Any transfer or assignment of CVRs shall be without charge (other than the cost of any transfer Tax or similar Tax or charge) to the applicable Holder. Parent and the Rights Agent may require payment from the applicable Holder or recipient of the applicable CVR of a sum sufficient to cover any stamp or other Tax or charge that is imposed in connection with any such registration of transfer and/or may require the applicable Holder or recipient of the applicable CVR to establish to the satisfaction of Parent and the Rights Agent that such stamp or other Tax or charge has been paid or is otherwise not payable.

(d) A Holder may make a written request to the Rights Agent to change such Holder's address of record in the CVR Register. Such written request must be duly executed by such Holder. Upon receipt of such written request, the Rights Agent shall promptly record the change of address in the CVR Register.

1.4 Payment Procedures.

(a) If the CVR Payment Milestone has been achieved on or prior to December 31, 2021 (the " **Expiration Date**"), then the Milestone Payments shall become due and payable. In such event, Parent or its designee shall provide prompt (and in no event later than ten Business Days after receipt of the FDA TE Achievement Notice) notice to the Rights Agent of the occurrence of the CVR Payment Milestone (the "**Milestone Occurrence Notice**"), which notice shall (i) indicate that the FDA TE Achievement Notice has been received and (ii) specify a payment date for the Milestone Payment, no later than 60 days after the date of the FDA TE Achievement Notice (the "**Payment Date**"). For the avoidance of doubt, the Milestone Payment shall only be paid, if at all, one time under this Agreement.

(b) On or before the Payment Date, Parent shall deliver to the Rights Agent an amount in cash equal to the aggregate Milestone Payment with respect to the CVRs held by all Holders, other than that portion payable to the Equity Award Holders, which aggregate amount shall be retained by Parent for payment pursuant to Section 1.4(d) below. The Rights Agent shall promptly (and in no event later than five Business Days after receipt thereof by the Rights Agent) send to each Holder at its address set forth in the CVR Register a copy of the Milestone Occurrence Notice and any letter of instruction reasonably required by the Rights Agent, and, other than with respect to Equity Award Holders, an amount in cash equal to the Milestone Payment with respect to each CVR held by such Holder. If the CVR Payment Milestone does not occur by 5:00 p.m. Eastern time on the Expiration Date, then the Holders shall have no right to receive the Milestone Payment with respect to their CVRs

(c) Parent or its designee shall provide prompt (and in no event later than ten Business Days after receipt of the FDA TE Non-Achievement Notice) notice to the Rights Agent a certificate ("**Non-Occurrence Notice**") which notice shall (i) indicate that the FDA TE Non-Achievement Notice has been received and (ii) indicate that the Milestone Payment will not be paid. The Rights Agent shall promptly (and in no event later than five Business Days after receipt thereof by the Rights Agent) send to each Holder at its address set forth in the CVR Register a copy of the Non-Occurrence Notice.

(d) With respect to the Milestone Payment that is payable pursuant to this Agreement to Holders other than Equity Award Holders, the Rights Agent shall pay the applicable amount to each of the Holders (the amount to which each Holder is entitled to receive will be based on the number of CVRs held by such Holder as reflected on the CVR Register) by check mailed to the address of each Holder as reflected on the CVR Register as of the close of business on the last Business Day prior to such payment date. With respect to any Milestone Payment that is payable to Equity Award Holders, Parent shall, within 10 days following the Payment Date, pay, or cause the Company to pay, each such Holder the applicable amount (the amount to which each Equity Award Holder is entitled to receive will be based on the number of CVRs held by such Holder as reflected on the CVR Register) through the Company's payroll system (subject to any applicable Tax withholding).

(e) Each of the Rights Agent, Parent, Acquisition Sub, any Affiliate of Parent and the Surviving Corporation shall be entitled to deduct and withhold from any amounts payable pursuant to this Agreement and pay to the applicable Taxing Authority, such amounts that each of the Rights Agent, Parent, Acquisition Sub, any Affiliate of Parent and the Surviving Corporation is required to deduct or withhold with respect to the making of such payment under the Code or any other provision of applicable Tax Laws. To the extent that such amounts are so deducted and withheld, such amounts shall be treated for all purposes of this Agreement as having been paid to the Person in respect of in respect of whom such deduction and withholding was made.

(f) The Rights Agent shall hold, as agent for Parent, any cash held by it for payment to the Holders in a non-interest bearing account at such commercial bank as Parent instructs the Rights Agent.

Notwithstanding anything to the contrary herein, Parent shall be responsible for providing the Rights Agent with sufficient funds to satisfy its payment obligations to Holders.

(g) Any cash that remains undistributed to the Holders of CVRs 12 months after such payment is due (including by means of uncashed checks or invalid addresses on the CVR Register) in accordance with the terms of this Agreement, shall be delivered to Parent or its designee, within five Business Days following the expiration of such 12 month period and shall be held in trust by Parent for the benefit of the Holders. Any Holders of CVRs who have not theretofore received cash with respect to such CVRs shall thereafter look only to Parent for payment of their claim therefor (subject to abandoned property, escheat or similar Laws). Notwithstanding any other provisions of this Agreement, any portion of the cash provided by Parent to the Rights Agent that remains unclaimed after termination of this Agreement in accordance with Section 5.13 (or such earlier date immediately prior to such time as such amounts would otherwise escheat to, or become property of, any Governmental Authority) shall, to the extent permitted by Law, become the property of Parent free and clear of any claims or interest of any Person previously entitled thereto. Neither Parent, the Rights Agent nor any of their Affiliates shall be liable to any Holder for any payments delivered to a public official pursuant to any abandoned property, escheat or other similar Law.

(h) The Rights Agent shall keep copies of this Agreement available for inspection by the Holders during normal business hours at its office.

1.5 No Voting, Dividends or Interest; No Equity or Ownership Interest .

(a) CVRs shall not have any voting or dividend or consent rights, and, shall not entitle the Holders to receive notice as stockholders in respect of the meetings of stockholders or the election of directors of Parent or any or any other matter, or any other rights of any kind or nature whatsoever as a stockholder of Parent, either at Law or in equity. Except as set forth in this Agreement, interest shall not accrue on any amounts payable in respect of CVRs.(b) CVRs shall not represent any equity or ownership interest in Parent, any constituent company to the Merger or any of their respective Affiliates. The rights of a Holder in respect of the CVRs are limited to those expressed in this Agreement and the Merger Agreement.

1.6 Ability to Abandon CVRs . A Holder may at any time, at such Holder's option, abandon all of such Holder's remaining rights in a CVR by transferring such CVR to Parent or its Affiliates without consideration therefor. Nothing in this Agreement shall prohibit Parent or any of its Affiliates from offering to acquire or acquiring any CVRs for consideration from the Holders, in private transactions or otherwise, in its sole discretion. Any CVRs acquired by Parent or any of its Affiliates shall be automatically deemed extinguished and no longer outstanding for purposes of the definition of Acting Holders.

ARTICLE II
THE RIGHTS AGENT

2.1 Certain Duties and Responsibilities of the Rights Agent .

(a) The Rights Agent shall not have any liability for any actions taken or not taken in connection with this Agreement, except to the extent such liability arises as a result of the willful misconduct, bad faith, gross negligence or fraud of the Rights Agent.

(b) The Acting Holders may direct the Rights Agent to act on behalf of the Holders in enforcing any of their rights hereunder. All rights of action of any or all Holders under this Agreement may be enforced by the Rights Agent, and any action, suit or proceeding instituted by the Rights Agent shall be brought in its name as the Rights Agent and any recovery in connection therewith shall be for the proportionate benefit of all the Holders, as their respective rights or interests may appear.

2.2 Certain Rights of the Rights Agent .

(a) The Rights Agent undertakes to perform such duties and only such duties as are specifically set forth in this Agreement, and no implied covenants or obligations shall be read into this Agreement against the Rights Agent.

(b) The Rights Agent may rely and shall be protected in acting or refraining from acting upon any resolution, certificate, statement, instrument, opinion, report, notice, request, direction, consent, order or other paper or document believed by it in good faith to be genuine and to have been signed or presented by the proper party or parties.

(c) The Rights Agent may engage and consult with counsel of its reasonable selection and the written advice or opinion of such outside counsel shall be full and complete authorization and protection in respect of any action taken, suffered or omitted by it hereunder in good faith and in reliance thereon.

(d) Any permissive rights of the Rights Agent hereunder shall not be construed as a duty.

(e) The Rights Agent shall not be required to give any note or surety in respect of the execution of such powers or otherwise in respect of such powers.

(f) Parent agrees to indemnify the Rights Agent for, and to hold the Rights Agent harmless from and against, any loss, liability, damage or expense ("**Loss**") suffered or incurred by the Rights Agent arising out of or in connection with the Rights Agent's performance of its obligations under this Agreement, including the reasonable costs and expenses of defending the Rights Agent against any claims, charges, demands, actions or suits arising out of or in connection with such performance, except to the extent such Loss shall have been determined by a court of competent jurisdiction to have resulted from the Rights Agent's gross negligence, bad faith, willful misconduct or fraud. Parent's obligations under this Section 2.2(f) to indemnify the Rights Agent shall survive the resignation or removal of any Rights Agent and the termination of this Agreement.

(g) In addition to the indemnification provided under Section 2.2(f), but without duplication, Parent agrees (i) to pay the fees of the Rights Agent in connection with the Rights Agent's performance of its obligations hereunder, as agreed upon in writing by the Rights Agent and Parent on or prior to the date of this Agreement, and (ii) to reimburse the Rights Agent for all reasonable and documented out-of-pocket expenses, including all Taxes (other than income, receipt, franchise or similar Taxes) and governmental charges, incurred by the Rights Agent in the performance of its obligations under this Agreement.

2.3 Resignation and Removal; Appointment of Successor .

(a) The Rights Agent may resign at any time by giving written notice thereof to Parent and the Holders specifying a date when such resignation shall take effect, which notice shall be sent at least 60 days prior to the date so specified but in no event shall such resignation become effective until a successor Rights Agent has been appointed and accepted such appointment.

(b) Parent shall have the right to remove the Rights Agent at any time by specifying a date when such removal shall take effect. Notice of such removal shall be given by Parent to the Rights Agent, which notice shall be sent at least 60 days prior to the date so specified.

(c) If the Rights Agent shall resign, be removed or become incapable of acting, Parent shall promptly appoint a qualified successor Rights Agent. The successor Rights Agent so appointed shall, forthwith upon its acceptance of such appointment in accordance with this Section 2.3(c) and Section 2.4, become the Rights Agent for all purposes hereunder.

(d) Parent shall give notice of each resignation or removal of the Rights Agent and each appointment of a successor Rights Agent through the facilities of DTC in accordance with DTC's procedures and/or by mailing written notice of such event by first-class mail, postage prepaid, to the Holders as their names and addresses appear in the CVR Register. Each notice shall include the name and address of the successor Rights Agent. If Parent fails to send such notice within 10 Business Days after acceptance of appointment by a successor Rights Agent, the successor Rights Agent shall cause the notice to be mailed at the expense of Parent. Failure to give any notice provided for in this Section 2.3, however, shall not affect the legality or validity of the resignation or removal of the Rights Agent or the appointment of the successor Rights Agent, as the case may be.

2 . 4 Acceptance of Appointment by Successor . Every successor Rights Agent appointed hereunder shall, at or prior to such appointment, execute, acknowledge and deliver to Parent and to the retiring Rights Agent an instrument accepting such appointment and a counterpart of this Agreement, and thereupon such successor Rights Agent, without any further act, deed or conveyance, shall become vested with all the rights, powers, trusts and duties of the Rights Agent; provided that upon the request of Parent or the successor Rights Agent, such resigning or removed Rights Agent shall execute and deliver an instrument transferring to such successor Rights Agent all the rights, powers and trusts of such resigning or removed Rights Agent.

ARTICLE III
COVENANTS

3 . 1 List of Holders . Parent shall furnish or cause to be furnished to the Rights Agent the names and addresses of the Holders within 30 Business Days following the Effective Time. The CVRs shall, in the case of the holders of Company Common Stock, be registered in the names and addresses of the holder as set forth in the applicable letter of transmittal accompanying the Company Common Stock surrendered by the holder thereof in connection with the Offer pursuant to the Merger Agreement and in a denomination equal to the number of Company Common Stock so surrendered, and in the case of In-the-Money Company Options, be registered in the name and address of the holder set forth in the books and records of the Company at the Effective Time and in a denomination computed in accordance with the terms of the Merger Agreement.

3 . 2 Efforts. Parent shall, during the period from and after the Closing Date through the later of the delivery of the Non-Occurrence Notice or Milestone Occurrence Notice to the Rights Agent, exercise commercially reasonable efforts to cause the occurrence of the CVR Payment Milestone. For purposes of this Section 3.2(a), "commercially reasonable efforts" means, with respect to the CVR Payment Milestone event, the efforts and resources customarily applied by similarly situated pharmaceutical companies of comparable size and resources to secure the occurrence of such event for a product of similar potential (including commercial potential) and in similar stages of development, taking into account all relevant technical, commercial, legal, scientific and/or medical factors, including its proprietary position and profitability (including pricing and reimbursement status), issues of safety and efficacy, anticipated or actual product profile, difficulty in product development or manufacturing, anticipated or actual cost and time to develop, anticipated or actual market conditions and economic return potential, anticipated or actual competitiveness of alternative products in the marketplace, the nature and extent of anticipated or actual market exclusivity (including patent coverage and regulatory exclusivity), the regulatory environment, including regulatory requirements involved and the reasonably expected likelihood of regulatory approval, anticipated or actual amounts of marketing and promotional expenditures required, other relevant technical, commercial, legal, scientific and/or medical factors.

ARTICLE IV
AMENDMENTS

4.1 Amendments Without Consent of Holders or Rights Agent .

(a) Parent, at any time or from time to time, may unilaterally enter into one or more amendments hereto for any of the following purposes, without the consent of any of the Holders or the Rights Agent, so long as, in the cases of clauses (ii) through (iv), such amendments do not, individually or in the aggregate, adversely affect the interests of the Holders:

(i) to evidence the appointment of another Person as a successor Rights Agent and the assumption by any successor Rights Agent of the covenants and obligations of the Rights Agent hereof in accordance with the provisions of this Agreement;

(ii) to add to the covenants of Parent such further covenants, restrictions, conditions or provisions as Parent shall determine to be for the protection of the Holders;

(iii) to cure any ambiguity, to correct or supplement any provision herein that may be defective or inconsistent with any other provision herein, or to make any other provisions with respect to matters or questions arising under this Agreement;

(iv) as may be necessary or appropriate to ensure that CVRs are not subject to registration under the Securities Act or the Exchange Act;

(v) to evidence the assignment of this Agreement by Parent as provided in Section 5.4; or

(vi) any other amendment hereto which would provide any additional rights or benefits to the Holders or that does not adversely affect the legal rights under this Agreement of any such Holder.

(b) Promptly after the execution by Parent of any amendment pursuant to the provisions of this Section 4.1, Parent shall mail (or cause the Rights Agent to mail) a notice thereof through the facilities of DTC in accordance with DTC's procedures and/or by first class mail to the Holders at their addresses as set forth on the CVR Register, setting forth in general terms the substance of such amendment.

4.2 Amendments with Consent of Holders .

(a) In addition to any amendments to this Agreement that may be made by Parent without the consent of any Holder or the Rights Agent pursuant to Section 4.1 , with the consent of the Holders of not less than a majority of the outstanding CVRs, whether evidenced in writing or taken at a meeting of the Holders, Parent and the Rights Agent may enter into one or more amendments hereto for the purpose of adding, eliminating or changing any provisions of this Agreement, even if such addition, elimination or change is adverse to the interests of the Holders.

(b) Promptly after the execution by Parent and the Rights Agent of any amendment pursuant to the provisions of this Section 4.2 (but prior to the effectiveness of such amendment), Parent shall mail (or cause the Rights Agent to mail) a notice thereof through the facilities of DTC in accordance with DTC's procedures and/or by first class mail to the Holders at their addresses as set forth on the CVR Register, setting forth in general terms the substance of such amendment. Any amendment to this Agreement made pursuant to this Section 4.2 shall become effective 15 Business Days following the mailing of such notice.

4.3 Amendments Affecting Rights Agent . The Rights Agent may, but is not obligated to, enter into any such amendment that affects the Rights Agent's own rights, powers, trusts, privileges, covenants or duties under this Agreement or otherwise.

4.4 Effect of Amendments. Upon the execution of any amendment under this ARTICLE IV, this Agreement shall be modified in accordance therewith, such amendment shall form a part of this Agreement for all purposes and every Holder shall be bound thereby.

ARTICLE V
MISCELLANEOUS

5.1 Notices to Rights Agent and Parent . All notices and other communications under this Agreement shall be in writing and shall be deemed to have been duly delivered and received (i) four Business Days after being sent by registered or certified mail, return receipt requested, postage prepaid, (ii) one Business Day after being sent for next Business Day delivery, fees prepaid, via a reputable nationwide overnight courier service, (iii) immediately upon delivery by hand or (iv) on the date sent by email (except that notice given by email will not be effective unless either (A) a duplicate copy of such email notice is promptly given by one of the other methods described in this Section 5.1 or (B) the receiving party delivers a written confirmation of receipt of such notice either by email or any other method described in this Section 5.1 (excluding "out of office" or other automated replies)), in each case to the intended recipient as set forth below:

(i) if to Parent, to:
Ligand Pharmaceuticals Incorporated
3911 Sorrento Valley Boulevard, Suite 110
San Diego, CA 92121
Attention: Charles S. Berkman
E-mail: cberkman@ligand.com

with a copy (which shall not constitute notice) to:

Latham & Watkins LLP
12670 High Bluff Drive
San Diego, CA 92130
Attention: Matt Bush; R. Scott Shean
E-mail: matt.bush@lw.com; scott.shean@lw.com

(ii) if to the Rights Agent, to:
American Stock Transfer & Trust Company, LLC
6201 15th Avenue
Brooklyn, New York 11219
Attn: Corporate Actions
Tel: (718) 921-8200

with a copy (which shall not constitute notice) to:

Wilson Sonsini Goodrich & Rosati
Professional Corporation
12235 El Camino Real
San Diego, California 92130
Attention: Dan Koeppen, Zachary Myers and Ethan Lutske
E-mail: dkoeppen@wsgr.com, zmyers@wsgr.com and elutske@wsgr.com

5.2 Notice to Holders. All notices, requests and communications required to be given to the Holders shall be sufficiently given (unless otherwise herein expressly provided) if in writing and transmitted through

the facilities of DTC in accordance with DTC's procedures and/or mailed, first-class postage prepaid, to each Holder affected by such event, at his, her or its address set forth in the CVR Register, not later than the latest date, and not earlier than the earliest date, prescribed for the giving of such notice. In any case where notice to the Holders is given by mail, neither the failure to mail such notice, nor any defect in any notice so mailed, to any particular Holder shall affect the sufficiency of such notice with respect to other Holders.

5.3 Entire Agreement. This Agreement, the Confidentiality Agreement and the Merger Agreement represent the entire understanding of Parent and the Company with reference to the CVRs, and this Agreement supersedes any and all other oral or written agreements hereto made with respect to the CVRs, except for the Merger Agreement and the Confidentiality Agreement. This Agreement represents the entire understanding of the Rights Agent with reference to the CVRs, and this Agreement supersedes any and all other oral or written agreements hereto made with respect to the CVRs, except for the Merger Agreement and the Confidentiality Agreement.

5.4 Successors and Assigns. Parent may assign, in its sole discretion and without the consent of any other party, any or all of its rights, interests and obligations hereunder to one or more its Affiliates (that are wholly owned direct or indirect Subsidiaries of Parent) (each, an "**Assignee**") and any such Assignee may thereafter assign, in its sole discretion and without the consent of any other party, any or all of its rights, interests and obligations set forth hereunder to one or more additional Assignees; provided, however, that in connection with any assignment to an Assignee, Parent shall agree to remain liable for the performance by Parent of its obligations hereunder. This Agreement shall be binding upon, and shall be enforceable by and inure solely to the benefit of, the parties to this Agreement and their respective successors and assigns. The Rights Agent may not assign this Agreement without Parent's consent. This Agreement shall not restrict Parent's or any successor's ability to merge or consolidate or enter into or consummate any Change of Control; *provided*, that in the event of a Change of Control, Parent shall cause the acquirer to assume Parent's obligations, duties and covenants under this Agreement. Any attempted assignment of this Agreement or any of such rights in violation of this Section 5.4 shall be void *ab initio* and of no effect.

5.5 Benefits of Agreement. Nothing in this Agreement, express or implied, shall give to any Person (other than the parties to this Agreement, the Holders and their permitted successors and assigns hereunder) any benefit or any legal or equitable right, remedy or claim under this Agreement or under any covenant or provision herein contained, all such covenants and provisions being for the sole benefit of the parties to this Agreement, the Holders and their permitted successors and assigns. The Holders shall have no rights hereunder except as are expressly set forth herein.

5.6 Governing Law. This Agreement shall be governed by and construed in accordance with the Laws of the State of Delaware, regardless of the Laws that might otherwise govern under applicable principles of conflicts of law thereof.

5.7 Consent to Jurisdiction; Service of Process; Venue. Each of the parties to this Agreement (a) irrevocably consents to the service of the summons and complaint and any other process (whether inside or outside the territorial jurisdiction of the Chosen Courts) in any Legal Proceeding relating to the transactions contemplated by this Agreement, for and on behalf of itself or any of its properties or assets, in accordance with Section 5.1 or in such other manner as may be permitted by applicable Law, but nothing in this Section 5.7 shall affect the right of any parties to this Agreement to serve legal process in any other manner permitted by applicable Law; (b) irrevocably and unconditionally consents and submits itself and its properties and assets in any Legal Proceeding to the exclusive jurisdiction of the Chosen Courts in the event any dispute or controversy arises out of this Agreement or the transactions contemplated in this Agreement, or for recognition and enforcement of any judgment in respect thereof; (c) agrees that it will not attempt to deny or defeat such personal jurisdiction by motion or other request for leave from any Chosen Court; (d) agrees that any Legal Proceedings arising in connection with this Agreement or the transactions contemplated in this Agreement

shall be brought, tried and determined only in the Chosen Courts; (e) waives any objection that it may now or hereafter have to the venue of any such Legal Proceeding in the Chosen Courts or that such Legal Proceeding was brought in an inconvenient court and agrees not to plead or claim the same; and (f) agrees that it will not bring any Legal Proceeding relating to this Agreement or the transactions contemplated hereby or thereby in any court other than the Chosen Courts. Each of parties to this Agreement agrees that a final judgment in any Legal Proceeding in the Chosen Courts shall be conclusive and may be enforced in other jurisdictions by suit on the judgment or in any other manner provided by applicable Law.

5.8 WAIVER OF JURY TRIAL . EACH PARTY TO THIS AGREEMENT ACKNOWLEDGES AND AGREES THAT ANY CONTROVERSY THAT MAY ARISE PURSUANT TO THIS AGREEMENT IS LIKELY TO INVOLVE COMPLICATED AND DIFFICULT ISSUES, AND THEREFORE EACH PARTY TO THIS AGREEMENT IRREVOCABLY AND UNCONDITIONALLY WAIVES ANY RIGHT THAT SUCH PARTY MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY LEGAL PROCEEDING (WHETHER FOR BREACH OF CONTRACT, TORTIOUS CONDUCT OR OTHERWISE) DIRECTLY OR INDIRECTLY ARISING OUT OF OR RELATING TO THIS AGREEMENT. EACH PARTY TO THIS AGREEMENT ACKNOWLEDGES AND AGREES THAT (A) NO REPRESENTATIVE, AGENT OR ATTORNEY OF ANY OTHER PARTY TO THIS AGREEMENT HAS REPRESENTED, EXPRESSLY OR OTHERWISE, THAT SUCH OTHER PARTY WOULD NOT, IN THE EVENT OF LITIGATION, SEEK TO ENFORCE THE FOREGOING WAIVER; (B) IT UNDERSTANDS AND HAS CONSIDERED THE IMPLICATIONS OF THIS WAIVER; (C) IT MAKES THIS WAIVER VOLUNTARILY; AND (D) IT HAS BEEN INDUCED TO ENTER INTO THIS AGREEMENT BY, AMONG OTHER THINGS, THE MUTUAL WAIVERS AND CERTIFICATIONS IN THIS SECTION 5.8.

5.9 Further Assurances. Subject to the provisions of this Agreement, the parties to this Agreement will, from time to time, do all acts and things and execute and deliver all such further documents and instruments, as the other parties to this Agreement may reasonably require to effectively carry out or better evidence or perfect the full intent and meaning of this Agreement.

5.10 Severability. In the event that any provision of this Agreement, or the application thereof, becomes or is declared by a court of competent jurisdiction to be illegal, void or unenforceable, the remainder of this Agreement will continue in full force and effect and the application of such provision to other persons or circumstances will be interpreted so as reasonably to effect the intent of the parties to this Agreement. The parties to this Agreement further agree to replace such void or unenforceable provision of this Agreement with a valid and enforceable provision that will achieve, to the extent possible, the economic, business and other purposes of such void or unenforceable provision.

5.11 Headings. The headings and table of contents contained in this Agreement are for reference purposes only and shall not affect in any way the meaning or interpretation of this Agreement.

5.12 Counterparts. This Agreement and any amendments to this Agreement may be executed in one or more textually identical counterparts, all of which will be considered one and the same agreement and will become effective when one or more counterparts have been signed by each of the parties to this Agreement and delivered to the other parties to this Agreement, it being understood that all parties to this Agreement need not sign the same counterpart. Any such counterpart, to the extent delivered by fax or .pdf, .tif, .gif, .jpg or similar attachment to electronic mail (any such delivery, an "**Electronic Delivery**"), will be treated in all manner and respects as an original executed counterpart and will be considered to have the same binding legal effect as if it were the original signed version thereof delivered in person. No party to this Agreement may raise the use of an Electronic Delivery to deliver a signature, or the fact that any signature or agreement or instrument was transmitted or communicated through the use of an Electronic Delivery, as a defense to the formation of a contract, and each party to this Agreement forever waives any such defense, except to the extent such defense relates to lack of authenticity.

5.13 Termination. This Agreement shall be terminated and of no force or effect, and the parties to this Agreement shall have no liability hereunder (other than to the extent of any obligations which expressly survive or provide for performance following termination), upon the earliest to occur of (a) the full payment of the Milestone Payment and (b) Parent's delivery of the Non-Occurrence Notice.

5.14 Legal Holidays. In the event that the day on which any Milestone Payment is due shall not be a Business Day, then, notwithstanding any provision of this Agreement to the contrary, any payment required to be made in respect of the CVRs shall be made on the next succeeding Business Day with the same force and effect as if made on the last day on which such Milestone Payment is due.

5.15 Interpretation. When a reference is made in this Agreement to an Article, Annex or Section, such reference shall be to an Article, Annex or Section of this Agreement unless otherwise indicated. Whenever the words "include," "includes" or "including" are used in this Agreement, they shall be deemed to be followed by the words "without limitation." The words "hereof," "herein" and "hereunder" and words of similar import when used in this Agreement shall refer to this Agreement as a whole and not to any particular provision of this Agreement. All terms defined in this Agreement shall have the defined meanings when used in any certificate or other document made or delivered pursuant of this Agreement unless otherwise defined therein. The definitions contained in this Agreement are applicable to the singular as well as the plural forms of such terms and to the masculine as well as to the feminine and neuter genders of such term. Any agreement, instrument or statute defined or referred to herein or in any agreement or instrument that is referred to herein means such agreement, instrument or statute as from time to time amended, modified or supplemented, including (in the case of agreements or instruments) by waiver or consent and (in the case of statutes) by succession of comparable successor statutes and references to all attachments thereto and instruments incorporated therein. References to a Person are also to its permitted successors and assigns. References to clauses without a cross-reference to a Section or subsection are references to clauses within the same Section or, if more specific, subsection. References from or through any date means, unless otherwise specified, from and including or through and including, respectively. The symbol "$" refers to United States Dollars.

5.16 No Fiduciary Obligations. Each of Parent and the Rights Agent acknowledges and agrees that the other party, its Affiliates and their respective officers, directors and controlling Persons do not owe any fiduciary duties to the first party or any of its respective Affiliates, officers, directors or controlling Persons. The only obligations of Parent and the Rights Agent to each other and their Affiliates and their respective officers, directors and controlling Persons arising out of this Agreement are the contractual obligations expressly set forth in this Agreement.

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IN WITNESS WHEREOF, the undersigned have caused this Agreement to be executed by their respective duly authorized officers to be effective as of the date first above written.

LIGAND PHARMACEUTICALS INCORPORATED

By: /s/ Charles S. Berkman

Name: Charles S. Berkman

Title: Senior Vice President, General Counsel and Secretary

AMERICAN STOCK TRANSFER & TRUST COMPANY, LLC

By: /s/ Michael Legregin

Name: Michael Legregin

Title: Senior Vice President

[Signature Page to Contingent Value Rights Agreement]

Annex A

CERTAIN DEFINED TERMS

"**Acting Holder(s)**" means any Holder or Holders of at least thirty-five percent (35%) of the outstanding CVRs as set forth on the CVR Register.

"**Business Day**" means any day, other than a Saturday, Sunday and any day which is a legal holiday under the Laws of the State of California or is a day on which banking institutions located in the State of California are authorized or required by Law or other governmental action to close.

"**Change of Control**" means (i) a sale or other disposition of all or substantially all of the assets of Parent on a consolidated basis (other than to any direct or indirect wholly owned subsidiary of Parent), (ii) a merger or consolidation involving Parent in which it is not the surviving entity, and (iii) any other transaction involving Parent in which it is the surviving entity but in which the stockholders of Parent immediately prior to such transaction own less than fifty percent (50%) of the surviving entity's voting power immediately after the transaction, other than any bona fide equity financing transaction solely related to the continued financing of the operations of Parent and its subsidiaries.

"**Chosen Courts**" means the Court of Chancery of the State of Delaware and any state appellate court therefrom within the State of Delaware (or, if the Court of Chancery of the State of Delaware does not have subject matter jurisdiction (but only in such event), the United States District Court for the District of Delaware or, if jurisdiction is not then available in the United States District Court for the District of Delaware (but only in such event), then any Delaware state court).

"**CVR(s)**" means the rights of Holders to receive contingent cash payments pursuant to the Merger Agreement and this Agreement.

"**CVR Payment Milestone**" means, with respect to Company's teriparatide injection product (also referred to as PF708 or Bonsity™) (the "**CVR Product**"), the receipt of written notice from the U.S. Food and Drug Administration (the " **FDA**") indicating that the FDA has determined the CVR Product to be therapeutically equivalent to the listed product, FORTEO® (teriparatide injection) ("**FORTEO**"), and that the FDA has assigned the CVR Product a therapeutic equivalence code that begins with an "A" in the FDA publication, *Approved Drug Products with Therapeutic Equivalence Evaluations* (the "**Orange Book**") with respect to FORTEO (the "**FDA TE Achievement Notice**").

"**DTC**" means The Depository Trust Company or any successor entity thereto.

"**Equity Award Holder**" means Holders of CVRs granted with respect to In-the-Money Options.

"**FDA TE Non-Achievement Notice**" means with respect to the CVR Product, the receipt of written notice from the FDA indicating that the FDA has determined that the CVR Product is not therapeutically equivalent to FORTEO, such that the CVR Product will not be assigned a therapeutic equivalence code that begins with an "A" in the Orange Book with respect to FORTEO.

"**Governmental Authority**" means any government, any governmental or regulatory entity or body, department, commission, board, agency, instrumentality, legislature, Taxing Authority, political subdivision, bureau, official and any self-regulatory organization (including NYSE American) and any

court, tribunal, judicial body, arbitrator or arbitration panel, in each case whether federal, state, county, provincial, and whether local, foreign or multinational.

"**Holder**" means, at the relevant time, a Person in whose name a CVR is registered in the CVR Register.

"**Law**" means any and all applicable federal, state, local, municipal, foreign, multinational or other law, statute, constitution, principle of common law, ordinance, code, rule, regulation, ruling, order or other legal requirement issued, enacted, adopted, promulgated, implemented or otherwise put into effect by law under the authority of any Governmental Authority.

"**Legal Proceeding**" means any civil, criminal or administrative actions, demands, countersuits, proceedings suits, claims, charges, arbitrations, oppositions, investigations, reexaminations, lawsuits, litigations or other proceedings brought by or pending before any Governmental Authority.

"**Milestone Payment**" means an amount equal to $2.00 per CVR, payable in cash, without interest thereon and subject to reduction for any applicable withholding Taxes in respect thereof.

"**Permitted Transfer**" means a transfer of one or more CVRs (a) upon death by will or intestacy; (b) by instrument to an inter vivos or testamentary trust in which the CVRs are to be passed to beneficiaries upon the death of the trustee; (c) made pursuant to a court order; (d) made by operation of Law (including a consolidation or merger) or without consideration in connection with the dissolution, liquidation or termination of any corporation, limited liability company, partnership or other entity; (e) in the case of CVRs payable to a nominee, from a nominee to a beneficial owner (and, if applicable, through an intermediary) or from such nominee to another nominee for the same beneficial owner, in each case as allowable by DTC; or (f) as provided in Section 1.6.

AMENDMENT TO SUPPLY AGREEMENT

This Amendment to Supply Agreement (this "**Amendment**") is made as of September 21, 2020 ("**Amendment Effective Date**") between CyDex Pharmaceuticals, Inc. ("**CyDex**") and Gilead Sciences, Inc. ("**Gilead**"). It amends the Supply Agreement dated December 22, 2015 between CyDex and Gilead (as previously amended to date, the "**Original Agreement**"). The Original Agreement, as amended hereby, is referred to as the "**Agreement**." Defined terms used in this Amendment but not defined herein shall have the meanings set forth in the Original Agreement.

In consideration of the following mutual promises and other good and valuable consideration, the receipt and sufficiency of which are acknowledged, the parties, intending to be legally bound, agree as follows:

1. **Exhibit A-1** of the Original Agreement is hereby amended prospectively to read in full as set forth in Exhibit A-1 to this Amendment.

2. **Exhibit A-2** of the Original Agreement is hereby amended prospectively to read in full as set forth in Exhibit A-2 to this Amendment.

3. Section 2(b) of the Original Agreement is hereby amended prospectively to read in full as follows:

> **i. Forecasts**. Before the first day of each calendar quarter starting on Oct 1, 2020, Gilead (on behalf of itself and its Affiliates) shall provide to CyDex a rolling forecast detailing the quantities for the delivery of Product for the next twelve (12) calendar months of the Term (each, a "**Forecast**"). Each Forecast beginning with the Forecast covering the four (4) calendar quarters beginning October 1st, 2020 shall be [***].
>
> **ii. Binding Purchase Orders**. CyDex agrees to supply ordered Product in a quantity up to a maximum of 150% (per calendar quarter) of the quantity specified in the Forecast and shall also utilize commercially reasonable efforts to supply any requested additional Product in excess of those (150%) quantities in the timeline requested by Gilead. Gilead shall from time to time provide CyDex purchase orders for the Product quantity required to meet Gilead's production schedule, and each such purchase order shall constitute a firm and binding commitment by Gilead to purchase from CyDex such ordered quantities. For each such purchase order, CyDex shall be required to deliver at least the minimum monthly delivery quantities set forth under "Product Delivery" of **Exhibit A-2** during the corresponding delivery window. If Gilead requests more than the quantities set forth for each delivery window in **Exhibit A-2**, CyDex shall have fourteen (14) days from the receipt of a purchase order from Gilead to provide Gilead written confirmation of its receipt and acceptance or rejection (to the extent provided herein) of such purchase order.
>
> **iii. Take or Pay**. If Gilead fails to order for [***] of any Forecast a quantity of Product to be delivered during such [***] that is equal to or greater than 100% of the quantity of Product Gilead is obligated to purchase in [***] pursuant to the applicable Forecast (the difference between the quantity of Product Gilead is obligated to purchase

*** Certain Confidential Information Omitted.

in [***] pursuant to the applicable Forecast and the amount of Product that Gilead actually orders for delivery in [***], the " **Shortfall**"), then within 30 days after the end of [***] Gilead shall pay CyDex [***] of the purchase price hereunder for the Shortfall amount and in such case shall not be entitled to receive delivery of such Shortfall amount. If the delivery of any quantity of Product is delayed 30 days beyond the delivery date set forth in the Purchase Order and in consideration of Section 2(d) of the Agreement Gilead accepts and does not cancel such delayed Product, CyDex shall discount the price of the Product by [***] as to such applicable delivery.

4. Section 6 of the Original Agreement is hereby amended prospectively to read in full as follows:

(a) Unless otherwise agreed to by the Parties in writing, CYDEX shall deliver all shipments of Product ordered through December 31, 2020 to Gilead DDP (Incoterms 2010) to the facility designated in the accepted Purchase Order. Title and risk of loss, damage or destruction to the Product shall remain with CYDEX until final delivery of the Product to Gilead at the named place of destination on the accepted Purchase Order.

(b) Unless otherwise agreed to by the Parties in writing, CYDEX shall deliver all shipments of Product ordered after December 31, 2020 to Gilead FCA (Incoterms 2020) CyDex's location of manufacture; provided, that the Parties agree to cooperate with one another and use reasonable efforts to legitimately mitigate or reduce any value added taxes, or other duties, as permitted by applicable law. Title and risk of loss, damage or destruction to the Product shall remain with CYDEX until final delivery of the Product to Gilead at CyDex's location of manufacture.

(c) CYDEX shall package and label the Product for delivery in accordance with Gilead's packaging and labeling requirements.

5. Section 15 of the Original Agreement is hereby amended to provide that the Agreement shall have a term lasting until the 10 th anniversary of the Amendment Effective Date (the "**Term**").

6. Section 20 of the Original Agreement is amended prospectively to change the address for notice to CyDex to: CyDex Pharmaceuticals, Inc., c/o Ligand Pharmaceuticals Incorporated, 3911 Sorrento Valley Boulevard, Suite 110, San Diego, California 92121, USA, Attention: Senior Vice President and Secretary; with a copy to Ligand Pharmaceuticals Incorporated, 3911 Sorrento Valley Boulevard, Suite 110, San Diego, California 92121, USA, Attention: General Counsel.

7. Except as expressly set forth in this Amendment, the Original Agreement remains unchanged and in full force and effect.

*** Certain Confidential Information Omitted.

IN WITNESS WHEREOF, the parties have executed this Amendment to Supply Agreement.

CYDEX PHARMACEUTICALS, INC.

By:	/s/ Charles S. Berkman
Name:	Charles S. Berkman
Title:	SVP, General Counsel and Secretary

GILEAD SCIENCES, INC.

By:	/s/ Reza Oliyai
Name:	Reza Oliyai
Title:	SVP, PBO

Exhibit A-1
Product

Product: **Captisol® Betadex Sulfobutyl Ether Sodium, Sulfobutylether ß (beta) cyclodextrin, sodium salt (Clinical Grade or Commercial Grade, as specified for Gilead's proposed use and supplied by/for CYDEX).** Captisol which (a) has been manufactured in accordance with the Specifications under cGMP conditions, (b) is intended for use in humans, and (c) is intended for use in the manufacture of quantities of Licensed Products that are to be offered for clinical use or commercial sale or otherwise introduced into commerce (e.g., humanitarian or charitable use).

Specifications:

[***]

*** Certain Confidential Information Omitted.

Exhibit A-2
Commercial Provisions

[***]

*** Certain Confidential Information Omitted.

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 Quarterly Report on Form 10-Q 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

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.

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

Date: November 6, 2020

/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 Quarterly Report on Form 10-Q 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

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.

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

Date: November 6, 2020

/s/ Matthew Korenberg

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

Exhibit 32.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER

In connection with the Quarterly Report of Ligand Pharmaceuticals Incorporated (the "Company") on Form 10-Q for the quarter ended September 30, 2020, 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: November 6, 2020

/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 Quarterly Report of Ligand Pharmaceuticals Incorporated (the "Company") on Form 10-Q for the quarter ended September 30, 2020, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Matthew Korenberg, Executive 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: November 6, 2020

/s/ Matthew Korenberg

Matthew Korenberg
Executive 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.