October 1, 2020

Ligand Completes Acquisition of Pfenex Inc.

Adds proprietary technology for manufacturing antibodies, enzymes and other protein-based treatments

Acquired company expected to increase Ligand's royalties by 50% annually and to contribute $60 million of total revenue in 2023

SAN DIEGO--(BUSINESS WIRE)-- **Ligand Pharmaceuticals Incorporated (NASDAQ: LGND)** today announced it has completed its tender offer for all outstanding shares of Pfenex Inc. for $437.5 million in cash, plus one non-transferable contingent value right (CVR) per share representing the right to receive a contingent payment of $78 million in cash if a certain specified milestone is achieved. The acquired company will cease trading on the NYSE American under the symbol PFNX effective as of October 1, 2020.

"This is a transformative acquisition that provides a highly valuable technology platform and a portfolio of royalty-bearing collaborations with leading pharmaceutical companies for treatments and vaccines. The business is well established with an attractive growth outlook that is expected to add significantly to Ligand's financial growth and performance," said John Higgins, Chief Executive Officer of Ligand. "The expertise we acquired in the expression of complex proteins is highly complementary to Ligand's industry-leading antibody and drug enabling technologies, which together comprise a comprehensive discovery and early stage platform. We welcome our new colleagues to Ligand and look forward to growing the integrated business with our expanded platform supporting the pharmaceutical industry."

The acquired protein expression technology platform is utilized to develop next-generation and novel protein therapeutics to improve existing therapies and create new therapies for biological targets linked to critical, unmet diseases. The proprietary platform uses *P. fluorescens* bacterium, which are especially well-suited for complex, large-scale protein production that cannot be made by more traditional host systems. The technology can contribute significant value to biopharmaceutical development programs by reducing development timelines and costs for manufacturing human therapeutics and vaccines.

Financial and Business Highlights

- The acquired business is forecasted to generate $30 million of total revenue in 2021 and double that amount, or $60 million, in 2023. Royalties are expected to be the major component of total revenue and are forecasted to increase Ligand's royalty revenue by approximately 50% starting by the end of 2021 assuming approval of the programs partnered with Jazz and Merck. The newly acquired business is expected to be accretive to Ligand in 2021 and contribute $1.50 in adjusted earnings per share in 2023.
- Regulatory submission is expected to be filed in the fourth quarter 2020 for Merck's

V114, with potential approval and launch in 2021. Jazz Pharmaceuticals anticipates submitting the JZP-458 biologics license application (BLA) as early as year-end 2020 and is targeting mid-2021 for U.S. launch following BLA submission and approval.
- Serum Institute of India (SII) recently launched its PNEUMOSIL vaccine to low- and middle-income countries where price previously was a barrier to providing sufficient vaccination. SII is targeting an initial delivery of 150 million doses of the vaccine annually.
- Ligand gains eight existing partner contracts and over $600 million of remaining milestone payments to potentially be paid to Ligand.
- Ligand believes it can secure at least three new partnerships over the next 12 months whereby large pharma or leading biotech companies license Ligand's newly acquired protein expression technology.

Partnership Highlights

The acquisition brings to Ligand major collaborations with Jazz Pharmaceuticals, Merck, Serum Institute of India and Alvogen. Each has the potential to contribute meaningfully to Ligand's royalty revenue, as follows:

- **Jazz Pharmaceuticals**: Under this collaboration Ligand will receive tiered royalties on net sales of JZP-458. JZP-458 is a recombinant *Erwinia* asparaginase product candidate that is being developed for the treatment of pediatric and adult patients with acute lymphoblastic leukemia (ALL) or lymphoblastic lymphoma (LBL) who are hypersensitive to *E. coli*-derived asparaginase products. The Phase 2/3 study of JZP-458 continues to enroll and Jazz Pharmaceuticals anticipates submitting the JZP-458 BLA as early as year-end 2020 and is targeting mid-2021 for U.S. launch following BLA submission and approval. JZP-458 was granted Fast Track designation by FDA in October 2019 for the treatment of this patient population. The Pfenex Expression Technology platform is used to develop complex therapeutic proteins such as JZP-458.
- **Merck**: Under this collaboration, Ligand will receive a low-single-digit royalty on net sales of Merck's 15-valeant pneumococcal vaccine V114. V114 is expected to compete with Pfizer's $6 billion Prevnar franchise. Merck plans to file a BLA by the end of 2020, with a standard 10-month FDA review. The CRM197 carrier protein protected via the Pfenex platform is utilized in the Merck V114 vaccine program.
- **Serum Institute of India**: Under this collaboration Ligand will receive a low-to-mid-single-digit royalty on net sales of SII's recently approved PNEUMOSIL vaccine and Phase 3 meningococcal vaccine. SII is initially targeting 150 million doses of the vaccines annually for low-and middle-income countries in the developing world. SII intends to sell the vaccine at $2 to $4 per dose. PNEUMOSIL utilizes the CRM197 platform.
- **Teriparatide**: Teriparatide Injection is exclusively licensed to Alvogen for sale in the U.S. Under this collaboration, Ligand may be eligible to receive 50% gross profit share on sales of Teriparatide Injection (previously referred to as PF708 and Bonsity™, filed with FDA as a 505(b)(2) application referencing Eli Lilly's Forteo®) if the product is rated by FDA as Therapeutic Equivalent to Forteo, and up to 40% if rated differently. Alvogen is currently marketing Teriparatide Injection in the U.S., and continues to seek a Therapeutic Equivalence rating from FDA. Eli Lilly's Forteo had U.S. sales of $645 million in 2019.[1] Alvogen recently received EU Marketing Authorization for Teriparatide Injection from the European Commission, to be marketed under the name Livogiva™

by Theramex. Important safety information about Teriparatide can be found here.

Expression Technology Platform

The Pfenex Expression Technology® is a robust, validated, cost-effective and scalable platform for recombinant protein production, and is especially well-suited for complex, large-scale protein production where traditional systems are not suitable. Multiple global manufacturers have demonstrated consistent success with the platform and the technology is currently out-licensed for numerous commercial and development-stage programs. The versatility of the platform has been demonstrated in the production of enzymes, peptides, antibody derivatives and engineered non-natural proteins. Partners seek the platform as it can contribute significant value to biopharmaceutical development programs by reducing development timelines and costs for manufacturing therapeutics and vaccines. Given pharmaceutical industry trends toward large molecules with increasing structural complexities, the Pfenex Expression Technology is well positioned to meet these growing needs as the most comprehensive broadly available protein production platform in the industry.

CRM197

CRM197 is a non-toxic mutant of diphtheria toxin having a single amino acid substitution of glutamic acid to glycine at position 52. CRM197 is a well-defined protein and functions as a carrier for polysaccharides and haptens, making them immunogenic. It is utilized as a carrier protein in several approved conjugate vaccines for diseases such as Streptococcus pneumoniae, Haemophilus influenzae B and Neisseria meningitidis. CRM197 is produced by the Pfenex Expression Technology platform and is currently being used in vaccine development by multiple partners, including Merck and the Serum Institute of India Private Ltd.

Integration Plan

Ligand plans to operate the newly acquired protein expression technology platform business with approximately 50 specialized employees based in San Diego, CA. By mid-2021, Ligand expects to consolidate its multiple San Diego locations into one facility at the current Pfenex company location.

Transaction Details

On October 1, 2020, Ligand completed the acquisition through a tender offer and subsequent merger of Pfenex with Pelican Acquisition Sub Inc., a wholly owned subsidiary of Ligand (Buyer). Pfenex is now a wholly owned subsidiary of Ligand. The tender offer for all of the outstanding shares of common stock of Pfenex at a price of $12.00 per share, in cash, plus a CVR, which represents the right to receive a contingent payment of $2.00 in cash, without interest and less any applicable withholding taxes, if a specified milestone is achieved, expired as scheduled, at midnight (New York City Time), at the end of the day on Tuesday, September 29, 2020. American Stock Transfer & Trust Company, LLC, the depositary and paying agent for the tender offer, has advised Ligand that 24,744,327 shares of Pfenex common stock (excluding shares with respect to which Notices of Guaranteed Delivery were delivered) were validly tendered and not properly withdrawn in the tender offer, representing approximately 72.0% of the shares outstanding as of the expiration of the

tender offer. In addition, Notices of Guaranteed Delivery had been delivered with respect to approximately 2,847,227 shares that had not yet been tendered, representing approximately 8.3% of the outstanding shares. All of the conditions to the tender offer having been satisfied, on September 30, 2020, Buyer accepted for payment and will promptly pay for all shares tendered. The transaction will be funded with cash on hand.

Ligand completed its acquisition of Pfenex through the merger of Buyer with and into Pfenex without a vote of Pfenex's shareholders pursuant to Section 251(h) of the Delaware General Corporation Law. In connection with the merger, all shares of Pfenex common stock outstanding immediately prior to the effective time (other than shares owned by Ligand, Buyer, Pfenex, any other subsidiary of Ligand's or any subsidiary of Pfenex, or shares that are held in Pfenex's treasury, or shares held by any Pfenex stockholder who has properly demanded and perfected appraisal rights under Delaware law) have been converted into the right to receive $12.00 per share, in cash, plus the CVR, without interest (less any required withholding taxes), the same amount paid for all shares validly tendered and not validly withdrawn in the tender offer. As a result of the merger, as of October 1, 2020, Pfenex common stock will cease to be traded on the NYSE American market.

Adjusted Financial Measures

Ligand reports adjusted earnings per diluted share in addition to, and not as a substitute for, or superior to, financial measures calculated in accordance with GAAP. Ligand's financial measures under GAAP include share-based compensation expense, amortization of debt-related costs, amortization related to acquisitions and intangible assets, changes in contingent liabilities, mark-to-market adjustments for amounts relating to its equity investments in public companies, excess tax benefit from share-based compensation, gain on the sale of Promacta and others that are listed in the itemized reconciliations between GAAP and adjusted financial measures included at the end of Ligand's press release reporting its results of operations for the period ended June 30, 2020. However, other than with respect to total revenues, Ligand only provides financial guidance on an adjusted basis and does not provide reconciliations of such forward-looking adjusted measures to GAAP due to the inherent difficulty in forecasting and quantifying certain amounts that are necessary for such reconciliation, including adjustments that could be made for changes in contingent liabilities, changes in the market value of its investments in public companies, stock-based compensation expense and effects of any discrete income tax items. Management has excluded the effects of these items in its adjusted measures to assist investors in analyzing and assessing Ligand's past and future core operating performance. Additionally, adjusted earnings per diluted share is a key component of the financial metrics utilized by Ligand's board of directors to measure, in part, management's performance and determine significant elements of management's compensation.

About Ligand

Ligand is a revenue-generating biopharmaceutical company focused on developing or acquiring technologies that help pharmaceutical companies discover and develop medicines. Ligand's 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. Ligand's 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. Ligand's business model is based on doing what Ligand does

best: drug discovery, early-stage drug development, product reformulation and partnering. Ligand partners with other pharmaceutical companies to leverage what they do best (late-stage development, regulatory management and commercialization) to ultimately generate our revenue. Ligand's OmniAb® technology platform is a patent-protected transgenic animal platform used in the discovery of fully human mono- and bispecific therapeutic antibodies. The Captisol platform technology is a patent-protected, chemically modified cyclodextrin with a structure designed to optimize the solubility and stability of drugs. The Pfenex Expression Technology® is a robust, validated, cost-effective and scalable approach to recombinant protein production, and is especially well-suited for complex, large-scale protein production that cannot be made by more traditional systems. The Vernalis Design Platform (VDP) integrates protein structure determination and engineering, fragment screening and molecular modeling, with medicinal chemistry, to help enable success in novel drug discovery programs against highly challenging targets. Ab Initio™ technology and services for the design and preparation of customized antigens enable the successful discovery of therapeutic antibodies against difficult-to-access cellular targets. Ligand has established multiple alliances, licenses and other business relationships with the world's leading pharmaceutical companies including Amgen, Merck, Pfizer, Sanofi, Janssen, Takeda, Gilead Sciences and Baxter International. For more information, please visit www.ligand.com.

Follow Ligand on Twitter @Ligand_LGND.

Forward-Looking Statements

This press release contains forward-looking statements by Ligand that involve risks and uncertainties and reflect Ligand's judgment as of the date of this release. These forward-looking statements include, without limitation, statements regarding: the potential contributions the acquisition is expected to bring to Ligand, including expected royalties and other revenues, technologies and collaborations; and projected future adjusted earnings the potential for approval of product candidates by Jazz Pharmaceuticals and Merck and other partners; the timing of any commercial launch by Ligand's partners following approval, if any, of product candidates; the potential that Alvogen will successfully achieve Therapeutics Equivalence for Bonsity, including Ligand's belief that successful completion of the comparative use human factors study will meet the requirements of Therapeutic Equivalence; FDA may not grant a Therapeutic Equivalence rating of Teriparatide Injection to Forteo; projections of PNEUMOSIL vaccine sales by SII; the potential to secure additional licenses, and development operations; and the expected impact on Ligand's future financial and operating results. Actual events or results may differ from Ligand's expectations due to risks and uncertainties inherent in Ligand's business, including, without limitation: Alvogen, Jazz Pharmaceuticals, Merck and SII or other Ligand partners, may not execute on their development or sales and marketing plans for marketed products for which Ligand has an economic interest; the comparative use human factors study may not be successful and even if successful, the FDA may disagree with Ligand's or Alvogen's interpretations of the results of the trial and not grant Therapeutics Equivalence for Bonsity; risks that the merger will disrupt the current plans and operations of Ligand; the ability of Ligand to retain key personnel following the merger; competitive responses to the proposed transaction; unexpected costs, charges or expenses resulting from completion of the transaction; potential adverse reactions or changes to business relationships resulting from the completion of the transaction; Ligand's ability to achieve the growth prospects and synergies expected from the transaction, as well as delays, challenges and expenses associated with

integrating Pfenex with its existing businesses; the impact of COVID-19 on Ligand's and Pfenex's businesses; Ligand may not achieve the royalties or other revenues expected from the transaction; legislative, regulatory and economic developments; and other risks described in Ligand's prior press releases and filings with the SEC. The failure to meet expectations with respect to any of the foregoing matters may reduce Ligand's stock price. Ligand disclaims any intent or obligation to update these forward-looking statements after the date hereof. This caution is made under the safe harbor provisions of the Private Securities Litigation Reform Act of 1995.

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[1] Forteo is a trademark of Eli Lilly which has no affiliation with Ligand, Pfenex or Alvogen. Teriparatide Injection is not an authorized generic of Forteo.

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