November 14, 2017

Ligand Provides Highlights from Today's Analyst Day Event

Webcast available at www.ligand.com

SAN DIEGO--(BUSINESS WIRE)-- At an Analyst Day event held today in New York City, **Ligand Pharmaceuticals Incorporated (NASDAQ: LGND)** reviewed the recent progress of its business, including its revenue growth opportunities, its portfolio of partnered assets and its OmniAb® and Captisol® technology platforms. Management also discussed its Glucagon Receptor Antagonist internal development program, provided 2017 financial guidance details, and reviewed a preliminary framework for 2018 financials.

Highlights of presentations include the following:

Business model and growth drivers:

- Management highlighted Ligand's business model, which focuses on diversification of its portfolio across a range of partners, technologies and indications. Ligand leverages its diversification with strong intellectual property (IP) protection and Shots-on-Goal fully-funded by partners that provide economics to Ligand on program success without the associated spend.
- The Company has successfully grown its portfolio to more than 165 programs today, with 17 drugs currently approved that have the potential to generate commercial revenue for Ligand.
- Ligand management outlined the "RPT" (Royalties, Pipeline, Technology) framework to assess the Company's core components of valuation.
- Revenue – Ligand has high-growth, high-margin revenue with strong patent protection:
    - The Company's largest revenue component, royalties, is driven by underlying partner product sales and features tiered royalties of the most advanced programs.
    - In 2018, underlying partnered product sales are expected to surpass $2 billion for the first time and the average royalty rate is expected to increase for the third consecutive year to just over 5%.
    - Ligand operates with low cash expenses which, when coupled with high revenue growth, leads to significant and increasing cash generation.
    - Ligand has a strong IP position with over 800 issued patents.
- Pipeline – Ligand's product pipeline supports growth due to its large number of high-quality programs that have near-term, value-creating catalysts:

- Ligand's pipeline is large, growing and highly diversified with many top-tier partners; many of the programs with the largest potential are still in the development stage.
- The current product pipeline consists of over 165 programs partnered with 95 different companies. Nearly 55% of programs are in clinical development or later, with 11% in the NDA-filing or marketed stage.
- Ligand's pipeline programs have potential milestone payments under existing contracts that exceed $2 billion, and the Company estimates that in 2018 its partners will conduct over 200 studies and spend more than $2 billion on R&D related to Ligand-partnered programs.
- Ligand has organized key programs into the Portfolio Pyramid consisting of The Top 3, The Big 6 and The Next 12 and these programs are being advanced by 18 different companies who conducted over 100 clinical trials on these programs in 2017 alone; Ligand estimates these partners spent more than $500 million on R&D in 2017.
- Using the latest industry success rates based on stage of development as published by *BIO*, Ligand estimates that the current portfolio will yield 24 approved products by 2020, a significant three-year increase over the 17 programs currently approved.

- Technology – Ligand's pipeline is driven by best-in-class, leverageable technology with strong IP protection:
  - Ligand's leading technologies include Captisol, a highly-pure, pharmaceutical-grade cyclodextrin with reliable supply, broad IP protection and a large Drug Master File.
  - Ligand's other leading technology is OmniAb, the only transgenic animal antibody discovery platform that has three species; OmniAb also has more partners than any other transgenic animal platform, strong IP protection and a fast-growing number of drugs moving into the clinic.
  - Worldwide sales of antibody therapeutics are projected to grow to more than $150 billion by 2020, and Ligand's entry into the market with the OmniAb acquisition and the recent acquisition of OmniChicken show that the Company is poised to participate in this growth.

Asset portfolio review:

- Promacta® sales have continued to accelerate under Novartis, trending to a record $850 million in 2017. Consensus sell-side estimates project $1.3 billion in 2021 sales. There are currently 36 ongoing clinical trials for Promacta, and Novartis is working to potentially expand Promacta's label beyond its current indications.
- Kyprolis®, developed and marketed by Amgen (worldwide, ex-Japan) and Ono Pharmaceuticals (Japan), for the treatment of multiple myeloma, which uses Captisol in its formulation, has also shown significant growth. As cited in recent public presentation materials, Amgen is active with Kyprolis clinical and regulatory activity, including:

    - Submission of an sNDA to include Overall Survival data from the ENDEAVOR study, with a target FDA action date of April 30, 2018.
    - Regulatory submissions in preparation for ASPIRE Overall Survival data.
    - Phase 3 ARROW trial interim analysis showed superior efficacy and comparable safety with once-weekly dosing.
    - Phase 3 trial in combination with Darzalex® began in the second quarter of 2017.
- EVOMELA® was approved and launched in the US by Spectrum Pharmaceuticals in 2016 and is being developed for China by CASI Pharmaceuticals. Initial adoption in the US has been strong and we estimate the product is on track to have sales of $33 to $38 million in 2017. Third-party analyst outlook indicates revenue potential of $50 to $60 million in 2020.
- Management provided an update on the Big 6 and the Next 12 portfolio programs. The Big 6 includes the following programs:
    - Melinta Therapeutics' approved drug Baxdela for the treatment of infection.
    - Sage Therapeutics' pre-NDA brexanolone for the treatment of post-partum depression.
    - Retrophin's Phase 2/3 Sparsentan for the treatment of focal segmental glomerulosclerosis.
    - Sermonix Pharmaceuticals' Phase 2/3 lasofoxifene for oncology and women's health.
    - Bristol-Myers Squibb's Phase 2/3 BMS986231 for the treatment of cardiovascular disease.
    - Eli Lilly's Phase 2 prexasertib for various oncology indications.

OmniAb and Captisol:

- Management highlighted the strong demand for antibody therapeutics, noting that currently 557 antibodies are in clinical development, a number that has more than tripled since 2008.
- Of the 28 FDA-approved fully human antibodies, 21 are transgenic-animal derived, 6 are phage-derived and 1 is human derived. Ligand also highlighted the speed advantage of creating immune-system derived antibodies (7-14 days) over bioengineering (6-12 months or longer).
- The OmniAb platform is the only transgenic-animal platform that contains three separate species; rat, mouse and now chicken with the recent acquisition of Crystal Bioscience. Varied species offer the benefit of access to a broad antibody repertoire, and OmniChicken offers partners unparalleled epitope coverage due to the evolutionary distance between birds and mammals. With OmniChicken, partners now have a greater ability to pursue more complex targets such as Ion Channels and G Protein Coupled Receptors.

- Current partners have indicated they use the OmniAb platform due to 1) time savings, 2) productivity/efficiency of animal-based system, 3) freedom to operate and 4) superior performance over competing technologies.
- There are 4 OmniAb-discovered antibodies in the clinic today, and Ligand estimates a total of 25 will be in the clinic by 2020 with more than 40 by 2025. Further, by 2020 Ligand expects to have 45 OmniAb partners and a total of 60 by 2025. By 2025, Ligand expects one to three approved OmniAb antibodies.
- Management also highlighted Captisol and discussed five ongoing internal initiatives designed to build and support the franchise for the future.
- Demand for Captisol remains robust. The number of new research agreements has increased from 60 in 2013 to over 100 in 2017. Captisol-derived royalties have increased from just under $4 million in 2013 to almost $25 million in 2017, a more than six-fold increase.

Partner presentations:

- David Portman, M.D., CEO of Sermonix Pharmaceuticals, gave an overview of the lasofoxifene program noting lasofoxifene could potentially be the backbone endocrine therapy treatment of choice for estrogen receptor positive metastatic breast cancer, and that, if approved, the program could reach over $1 billion in peak sales. The Phase 2 trial is expected to start in Q4 2018, with topline data in 2020.
- Lyn Baranowski, SVP of Corporate Development and Strategy of Melinta Therapeutics, gave an overview of recently-approved Baxdela, noting Melinta's plans to take a multi-channel approach to marketing Baxdela including Hospital Inpatient Admission (2.9 million annual patients), Emergency Department Treat and Release (1.6 million annual patients) and Community Initiation (11.6 million annual patients). Melinta projects peak sales of Baxdela at greater than $400 million in the acute bacterial skin and skin structure infections indication alone.
- Brian Lian, Ph.D., CEO of Viking Therapeutics, gave an overview of VK5211 and VK2809, noting that the target indication of VK5211, rehabilitation post-hip fracture has an incidence of greater than 300,000 patients annually, suggesting a market opportunity exceeding $1 billion annually. Data from the ongoing Phase 2 trial is expected in the fourth quarter of 2017. Dr. Lian also noted the ongoing Phase 2 trial of VK2809 in non-alcoholic fatty liver disease and hypercholesterolemia is expected to be completed in the first half of 2018.

Glucagon Receptor Antagonist (GRA):

- GRA is Ligand's proprietary glucagon receptor antagonist in development as an oral treatment for type 2 diabetes mellitus, which recently completed a Phase 2 trial.
- The Company also discussed the promising nature of glucagon receptor antagonism and reviewed the topline results of the recently-completed trial, which showed robust efficacy in combination with a strong safety profile. Management also highlighted the potential for use of GRA in type 1 diabetes.

Financial outlook and capital deployment strategy:

- Management highlighted Ligand's history of strong revenue growth, which has increased at a 34% compound annual growth rate over the past five years. Revenue trends over this period have been bolstered by royalty growth and supported by consistent contribution from milestones and material sales.
- Ligand reaffirmed full-year 2017 revenue guidance of between $134 and $136 million and adjusted EPS guidance of between $2.95 to $3.00.
- The Company noted that formal 2018 revenue guidance will be given after fourth quarter 2017 results are known. To assist analysts and investors understand how the Company is analyzing the range of potential 2018 revenue guidance, management made the following commentary:
    - Royalties follow sales trends of underlying products and fourth quarter 2017 sales trends will guide management in firming expectations for 2018. Currently Ligand believes potential royalty revenue growth for full year 2018 could be in the range of 15% to 25% over that of full year 2017.
    - Material sales are driven by partner orders of Captisol for use in commercial activities and clinical trials. Timing of orders has a significant impact on annual revenue. Once fourth quarter orders are known, the Company will be able to estimate full year 2018 material sales. Currently the Company views it likely that 2018 material sales will be in line with those of 2017.
    - Milestone and license revenues are driven by partner annual fees, clinical trial progress, NDA filings, collaboration revenue and other partner events, and those that occur near year end can potentially shift from 2017 to 2018 due to factors outside of Ligand's control. Once fourth quarter 2017 results are known, the Company will be able to more accurately estimate 2018 milestones. Currently, the company views it likely that 2018 milestone and license revenues will be in line with those of 2017, with the potential for up to an additional $15 to $20 million of less-certain milestones.
- Management also noted that full-year 2018 corporate gross margin is expected to be in the range of 94% to 96% and that the Company's cash operating expense structure is expected to be $30 to $32 million
- Management also gave an overview of the expected impact from recent accounting guidance ASC 606, which requires the company to record royalty revenue in the quarter that the underlying revenue is reported by the partner and no longer on a one-quarter lag, which is the company's current and historic practice.
- Management also discussed merger and acquisition preferred qualification criteria, including that acquired companies or assets have minimal operational requirement, out-licensable technology and long underlying patent life with the goal to contribute to long-term revenue.

A webcast of the Analyst Day presentations can be accessed at www.ligand.com for the next 90 days. A copy of the Company's presentation will be filed with the Securities and Exchange Commission on November 14, 2017.

Adjusted Financial Measures

The Company reports adjusted net income and adjusted net income per diluted share, in addition to, and not as a substitute for, or superior to, financial measures calculated in accordance with GAAP. The Company's financial measures under GAAP include stock-based compensation expense, amortization of debt-related costs, amortization related to acquisitions, changes in contingent liabilities, net losses of Viking Therapeutics, mark-to-market adjustment for amounts owed to licensors, fair value adjustments to Viking Therapeutics convertible note receivable and warrants, unissued shares relating to the Senior Convertible Note and others that are listed in the itemized reconciliations between GAAP and adjusted financial measures included in the Company's presentation filed with the Securities and Exchange Commission on November 14, 2017. However, other than with respect to total revenue, the Company only provides 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, net losses of Viking Therapeutics, stock based compensation expenses, mark-to-market adjustments for amounts owed to licensors, effects of any discrete income tax items and fair value adjustments to Viking Therapeutics convertible note receivable. Management has excluded the effects of these items in its adjusted measures to assist investors in analyzing and assessing the Company's past and future core operating performance. Additionally, adjusted earnings per diluted share is a key component of the financial metrics utilized by the Company's board of directors to measure, in part, management's performance and determine significant elements of management's compensation.

About Ligand Pharmaceuticals

Ligand is a biopharmaceutical company focused on developing or acquiring technologies that help pharmaceutical companies discover and develop medicines. 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. Ligand's Captisol® platform technology is a patent-protected, chemically modified cyclodextrin with a structure designed to optimize the solubility and stability of drugs. OmniAb® is a patent-protected transgenic animal platform used in the discovery of fully human mono-and bispecific therapeutic antibodies. Ligand has established multiple alliances, licenses and other business relationships with the world's leading pharmaceutical companies including Novartis, Amgen, Merck, Pfizer, Celgene, Gilead, Janssen, Baxter International and Eli Lilly.

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Forward-Looking Statements and Disclaimer

This news release contains forward-looking statements by Ligand that involve risks and uncertainties and reflect Ligand's judgment as of the date of this press release. Forward-

looking statements include financial projections, expectations regarding research and development programs, and other statements including words such as “will,“ “should,” “could,” “plan,” etc. Actual events or results may differ from Ligand’s expectations. For example, drug development program benefits may not be realized and there can be no assurance that Ligand will achieve its guidance in 2017 or thereafter or that third party research summarized herein is correct or complete. The forward-looking statements made in the presentation are subject to several risk factors, including, statements regarding intent, belief, or current expectations of the Ligand, its internal and partnered programs, including Promacta™, Kyprolis® and EVOMELA®, Ligand’s reliance on collaborative partners for milestone and royalty payments, royalty and other revenue projections based on third party research, regulatory hurdles facing Ligand's and partners’ product candidates, uncertainty regarding Ligand's and partners’ product development costs, the possibility that Ligand's and partners’ drug candidates might not be proved to be safe and efficacious and commercial performance of Ligand's and/or its partners’ products, risks related to Ligand’s internal controls, its compliance with regulations, accounting principles and public disclosure, and other risks and uncertainties described in its public filings with the Securities and Exchange Commission, available at www.sec.gov. Additional risks may apply to forward-looking statements made in this press release. . Ligand disclaims any intent or obligation to update these forward-looking statements beyond the date of this press release, except as required by law. This caution is made under the safe harbor provisions of the Private Securities Litigation Reform Act of 1995.

Information regarding partnered products and programs comes from information publicly released by our partners. Information presented by Sermonix Pharmaceuticals, Melinta Therapeutics and Viking Therapeutics are the responsibility of each company, respectively. Ligand may be deemed an affiliate of Viking Therapeutics because Ligand holds a substantial amount of Viking securities and one of Ligand's officers serves as a director of Viking.

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Ligand Pharmaceuticals Incorporated
Todd Pettingill
investors@ligand.com
(858) 550-7500
@Ligand_LGND
or
LHA
Bruce Voss
bvoss@lhai.com
(310) 691-7100

Source: Ligand Pharmaceuticals Incorporated