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Ligand Announces Investment in Dianomi Therapeutics

SAN DIEGO--(BUSINESS WIRE)-- **Ligand Pharmaceuticals Incorporated (NASDAQ: LGND)** announces closing an investment in Dianomi Therapeutics, Inc., a biopharmaceutical company focused on improving the delivery and efficacy of large and small molecules in the treatment of a variety of diseases and on therapies for inflammatory diseases, such as osteoarthritis and pain. Ligand paid a total of $3 million to Dianomi in exchange for 1) a tiered royalty of two or three percent based on level of net sales for the first five products to be approved using Dianomi's patented Mineral Coated Microparticle (MCM) technology and 2) a loan convertible into $1 million of equity at the next qualified financing. Ligand will provide technical and scientific advisory assistance to Dianomi for one year. Ligand will not incur any expenses to develop or commercialize any MCM programs.

"We are pleased to invest in Dianomi as the company works to develop therapeutics using its microparticle technology. MCM has a broad range of applicability as well as the potential to improve and extend many of the therapeutic benefits of both novel and existing drugs, similar to Ligand's Captisol technology. This investment helps fund a promising company and will provide potential royalties to Ligand on products that could complete development in the next several years and generate revenue into the late 2030s," said John Higgins, Chief Executive Officer of Ligand. "Our Shots-on-Goal business model is focused on assembling a large and diversified portfolio of royalty contracts, and this transaction is an example of the multiple investment approaches we are pursuing to add programs to our portfolio."

The MCM technology is a patented formulation technology designed to improve dosing and patient compliance, safety and efficacy and/or extended product life of biologics and small molecules. Traditional drug delivery systems can often deliver biologics but struggle with maintaining protein activity during treatment. The MCM technology mimics the ability of human bones and teeth to store and protect biologics, and provides greatly improved, sustained release delivery of active biologics. MCM was developed in the laboratory of William Murphy, PhD, Professor of Biomedical Engineering at the University of Wisconsin, and was patented under the Wisconsin Alumni Research Foundation (WARF) with issued patent coverage through 2037. Dianomi's initial focus will be on creating novel formulations of existing drugs in the osteoarthritis and pain space.

About Mineral Coated Microparticle Technology

Mineral Coated Microparticle (MCM) technology is a platform designed to mimic the natural properties of mineralized tissues (e.g. bones, teeth) for preservation and controlled release of drug molecules without loss of function. Artificial polymers have traditionally been used to encapsulate drugs for local sustained administration; however this approach disrupts both the structure and function of the drug. MCM technology overcomes this limitation by providing a matrix that naturally stabilizes the drug, which then elutes in a controlled manner

as the coating dissolves. The MCM particle and coating are manufactured from generally recognized as safe (GRAS) materials in a scalable process, with properties that can be tailored to the drug and its intended application.

About Dianomi Therapeutics

Dianomi Therapeutics is a biopharmaceutical company focused on optimizing the therapeutic profile of proven biologics to improve patient dosing, safety, and efficacy. The company is advancing a pipeline of next-generation treatments for inflammatory diseases, targeting osteoarthritis and pain. The company's proprietary Mineral Coated Microparticle (MCM) technology mimics the ability of human bones and teeth to store and protect biologics, and provides greatly improved, sustained release delivery of active biologics. Barry Kurokawa, Dianomi's Chief Executive Officer and Co-Founder, has been a biotech fund manager, including serving as a senior portfolio manager at Invesco, for over 25 years. He has served on the boards of directors of several private and public healthcare companies and currently is a board member of Eirion Therapeutics, Inc. William Murphy, Ph.D., is Dianomi's Chief Scientific Officer and Co-Founder, and is a Professor of Biomedical Engineering at the University of Wisconsin-Madison. He has published more than 170 scientific manuscripts, filed over 50 patents and co-founded several start-up companies. For more information, please visit www.dianomitx.com.

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

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 report. These forward-looking statements include comments regarding the capabilities of MCM technology and any drug candidates that would be based on the use of MCM technology. Actual events or results may differ from Ligand's expectations. For example, the development of MCM and

MCM-based products is entirely dependent on Dianomi's success and Ligand will have no ability to direct the development program; Dianomi is subject to a wide variety of risks which are applicable to all emerging growth companies, particularly those in the biopharmaceutical industry; Dianomi requires substantial amounts of additional financing, which it may be unable to obtain; patents covering MCM technology could be challenged or may not provide the expected scope of coverage; Dianomi needs to recruit and retain management, scientific and other key personnel; there can be no assurance that Dianomi will be able to successfully develop MCM and MCM-based products, including initiation of any clinical trials, or that any clinical trials will be successful or result in approval of any MCM-based products by the FDA or any foreign regulatory authority; even if any MCM-based products are approved, Dianomi may not successfully launch or commercialize them; and other products that Ligand expects will be launched by partners may fail their respective clinical development programs or may fail to launch successfully or to be commercially successfully. Many of these risks also apply to the other programs which comprise Ligand's shots-on-goal portfolio. The failure to meet expectations with respect to any of the foregoing matters may reduce Ligand's stock price. Additional information concerning these and other important risk factors affecting Ligand (including Ligand's current reliance on revenues based on sales of Promacta® and Kyprolis®, and various risks to which Ligand's Captisol® cyclodextrin operations are subject) can be found in Ligand's prior periodic filings with the Securities and Exchange Commission (including its Form 10-K filed on March 1, 2018), available at www.sec.gov, as updated by future periodic and current reports filed with the Securities and Exchange Commission. Ligand disclaims any intent or obligation to update these forward-looking statements beyond the date of this press release. This caution is made under the safe harbor provisions of the Private Securities Litigation Reform Act of 1995.

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