June 17, 2009

Ligand Initiates Clinical Trial with the Selective Androgen Receptor Modulator LGD-4033, a Potential Treatment of Muscle and Bone Disorders

SAN DIEGO-- Ligand Pharmaceuticals Incorporated (NASDAQ:LGND) today announced the initiation of a Phase I clinical trial with LGD-4033, a next-generation selective androgen receptor modulator (SARM) designed to provide the benefits of androgen receptor stimulation on skeletal muscle and bone without the side effects of currently marketed androgens. The Phase I study will evaluate the safety, tolerability and pharmacokinetic profile of orally administered LGD-4033.

In preclinical studies, LGD-4033 demonstrated a highly tissue-selective profile with increased skeletal muscle mass and bone mineral density while largely sparing the prostate in males and masculinizing effects in females. Extensive preclinical studies with LGD-4033 demonstrate the following:

- LGD-4033 is highly selective for the androgen receptor.
- Gene transcriptional regulation assays using muscle or bone cells demonstrate that LGD-4033 is a potent, full agonist producing efficacy comparable to the natural steroidal androgen dihydrotestosterone.
- In repeat oral dosing studies LGD-4033 increases skeletal muscle mass.
- In the ovariectomized rat model of post-menopausal osteoporosis, LGD-4033 had anabolic activity in cortical bone, significantly increasing cortical bone formation rates, bone strength and bone density. LGD-4033 also suppressed bone turnover at cancellous bone sites, leading to an increase in lumbar spine bone density and strength.
- In repeat oral dosing studies, LGD-4033 is a weak partial agonist on the prostate gland with more than 500-fold selectivity for muscle versus prostate. This indicates an absence of the prostatic hypertrophy that occurs with the currently marked androgens.

"LGD-4033 has shown an excellent SARM profile to date in terms of efficacy, potency and selectivity, and it is potentially a novel therapeutic for muscle and bone-related disorders such as cachexia and frailty," said John L. Higgins, President and Chief Executive Officer of Ligand Pharmaceuticals. "This program is another example of how the success of Ligand's research platform, which so far includes five approved drugs, allows us to continue investing in and strengthening a portfolio of promising candidates to address major clinical needs and commercial market opportunities."

SARM Program

SARMs are designed to elicit the desired biological effects without the undesirable side effects or potential risks over time of currently marketed androgens, providing a wide range

of opportunities for the treatment of many diseases and disorders in both men and women. Tissue-selective androgen receptor agonists may provide utility in the treatment of a number of medical conditions, including frailty, cachexia, osteoporosis, sexual dysfunction and hypogonadism. Ligand has discovered orally active, non-steroidal SARM compounds, such as LGD-4033 and LGD-3303, based on tissue-specific gene expression and other functional, cell-based technologies.

About Ligand Pharmaceuticals

Ligand discovers and develops new drugs that address critical unmet medical needs of patients with muscle wasting, frailty, hormone-related diseases, osteoporosis, inflammatory diseases, anemia, asthma, rheumatoid arthritis and psoriasis. Ligand's proprietary drug discovery and development programs are based on advanced cell-based assays, gene-expression tools, ultra-high throughput screening and one of the world's largest combinatorial chemical libraries. Ligand has strategic alliances with major pharmaceutical and biotechnology companies, including Bristol-Myers Squibb, Celgene, Cephalon, GlaxoSmithKline, Schering-Plough, Pfizer and Wyeth Pharmaceuticals. With nine pharmaceutical deals and more than twenty different molecules in various stages of development, Ligand utilizes proprietary technologies for identifying drugs with novel receptor and enzyme drug targets.

Caution Regarding 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 release. These statements include those related to clinical trials of LGD-4033, other SARM related drugs, market size and potential, LGD-4033's profile, efficacy, potency, selectivity, and competitiveness, and the strength of Ligand's product portfolio. Actual events or results may differ from our expectations. For example, there can be no assurance that LGD-4033 or other potential drugs will progress through clinical development or receive required regulatory approvals within the expected time lines or at all, that clinical trials will confirm any characteristics or profile presented here, that there will be a market of any size for LGD-4033, or that LGD-4033 or any drugs will be beneficial to patients or successfully marketed. Additional information concerning these and other risk factors affecting Ligand can be found in prior press releases as well as in public periodic filings with the Securities and Exchange Commission, available via www.ligand.com. Ligand disclaims any intent or obligation to update these forward-looking statements beyond the date of this release. This caution is made under the safe harbor provisions of the Private Securities Litigation Reform Act of 1995.

Source: Ligand Pharmaceuticals Incorporated