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Titan Completes Preclinical Study of a Continuous, Dopamine Agonist Treatment for Parkinson's Disease

SOUTH SAN FRANCISCO, CA -- (Marketwire) -- 07/09/12 -- Titan Pharmaceuticals, Inc. (OTCBB: TTNP) today announced that it has successfully completed investigation into the feasibility of a long-term, round-the-clock, non-fluctuating dopamine agonist treatment for Parkinson's disease. The preclinical study was primarily funded by a $495,000 grant awarded to Titan by the National Institutes of Health (NIH) under the Small Business Innovation Research (SBIR) program, and administered by the National Institute of Neurological Disorders and Stroke (NINDS).

Parkinson's disease (PD) is a progressive disorder associated with a loss of dopamine producing neurons in the brain. There are more than 1.5 million PD patients in the U.S., with about 50,000 new patients diagnosed each year. The cornerstone of symptomatic treatment for PD is dopamine replacement therapy, and dopamine agonists (DA) such as ropinirole, pramipexole, apomorphine, and lisuride play a key part in the treatment of early as well as advanced stages of the disease. There is increasing evidence that maintaining continuous and stable blood levels of the dopamine agonists may minimize the motor fluctuations and dyskinesias (involuntary movements) that are a debilitating side effect of the frequent oral administration of current dopamine replacement therapies.

This preclinical study included in-vitro characterization of implant formulations of two dopamine agonists created using Titan's ProNeura™ technology, and based on the drug release profile, ropinirole containing implants were selected for in-vivo testing in a subcutaneously administered dose escalating study in the standard MPTP (1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine) induced preclinical primate model of PD. This initial evaluation of the preclinical safety, pharmacology and efficacy of the ropinirole implants was conducted in collaboration with Krystof Bankiewicz, M.D., Ph.D., Professor of Neurosurgery and Neurology, Kinetics Foundation Chair in Translational Research, Neurological Surgery, University of California, San Francisco. The data suggests that a sustained, non-fluctuating, subcutaneous dose of ropinirole delivered by the implant, significantly and safely decreased clinical symptoms of PD in this model over a period of several months, and the measured plasma levels of the drug were within the therapeutic window reported for treating PD in human subjects.

"The results of this study are promising and support further investigation of the safety and efficacy of this implantable, continuous drug delivery product for treating Parkinson's disease," said Dr. Bankiewicz. "The goal of treatment with such a product would be to potentially alleviate 'on/off' motor fluctuations and treatment-related dyskinesias that may be associated with current dopamine-replacement treatment regimens."

Full results of the study are expected to be submitted for publication and presentation at an appropriate scientific meeting.

"We are pleased with the results and thank Dr. Bankiewicz and his colleagues for their collaboration on this study," said Sunil Bhonsle, President of Titan. "We believe this program could be beneficial to the growing numbers of PD patients in the U.S. and around the world, and we will seek opportunities, as appropriate, to protect the intellectual property and advance this program in the future."

About Titan's ProNeura™ Technology
The ProNeura™ continuous drug delivery technology consists of a small, solid implant made from a mixture of ethylene-vinyl acetate (EVA) and a drug substance. The resulting solid matrix product is placed subcutaneously, normally in the upper arm in a simple office procedure, and is removed in a similar manner at the end of the treatment period. The drug substance is released slowly, at continuous levels, through the process of dissolution-controlled diffusion. This results in a constant rate of release similar to intravenous administration. This technology can potentially be used in a subcutaneous implant that provides round-the-clock delivery of dopamine agonists while maintaining a stable, non-fluctuating plasma drug level for six months or longer following a single treatment. Titan's ProNeura™ technology is the basis for Probuphine®, a novel product for the long-term treatment of opioid dependence that has completed Phase 3 clinical development and for which a New Drug Application (NDA) is expected to be submitted in September 2012.

About Titan Pharmaceuticals
For information concerning Titan Pharmaceuticals, Inc., please visit the Company's website at www.titanpharm.com.

The press release may contain "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. Such statements include, but are not limited to, any statements relating to the Company's development program and any other statements that are not historical facts. Such statements involve risks and uncertainties, including, but not limited to, those risks and uncertainties relating to difficulties or delays in development, testing, regulatory approval, production and marketing of the Company's drug candidates, adverse side effects or inadequate therapeutic efficacy of the Company's drug candidates that could slow or prevent product development or commercialization, the uncertainty of patent protection for the Company's intellectual property or trade secrets, and the Company's ability to obtain additional financing. Such statements are based on management's current expectations, but actual results may differ materially due to various factors, including those risks and uncertainties mentioned or referred to in this press release.

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