



## Titan Pharmaceuticals, Inc.

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### FOR IMMEDIATE RELEASE

#### TITAN ANNOUNCES FAVORABLE RESULTS OF PILOT CLINICAL STUDY OF SPHERAMINE® REPORTED IN ARCHIVES OF NEUROLOGY

##### *Data Demonstrate Improvement in Motor Function, Activities of Daily Living and Quality of Li*

**South San Francisco, CA – December 15, 2005** – Titan Pharmaceuticals, Inc. (AMEX:TTP) today announced that the *Archives of Neurology*, a publication of the American Medical Association, this week published results from an open label pilot study evaluating the safety and efficacy of Spheramine®, Titan's novel cell therapy product for the treatment of Parkinson's disease (PD). The study evaluated six patients with late-stage PD (Hoehn & Yahr Stage III & IV), who were treated with Spheramine. All patients demonstrated improvement in parameters related to severity of disease and motor function.

The publication reported study results at one year and two years post treatment. At one year post treatment, patients demonstrated a 48 percent average improvement in motor function over baseline, which was substantially sustained in the second year of evaluation. Additional data were presented at the International Congress on Parkinson's disease in June 2005 demonstrating continuing average improvement in motor function of approximately 43% in these patients, four years after treatment. The data also demonstrated significant improvement in quality of life for all patients treated, with no significant adverse events.

"Parkinson's disease is a progressive disorder, so the fact that these patients experience significant improvement that is largely sustained four years after treatment with Spheramine is quite encouraging," said Ray L. Watts, M.D., John N. Whitaker Professor and Chairman of the Department of Neurology at the University of Alabama at Birmingham, and principal investigator of the study. "These data indicate that Spheramine may hold promise for improved treatment of Parkinson's patients."

Parkinson's disease affects more than one million people in the United States and an estimated four million people worldwide.

Spheramine is being developed by Titan in collaboration with Schering AG, Germany (FSE:SCH, NYSE: SHR). Based on the encouraging results from this study, Titan and Schering AG, Germany are conducting a 68-patient, randomized, double blind, controlled Phase IIb clinical study to further evaluate the safety and efficacy of Spheramine. Titan has also obtained Fast Track designation for Spheramine from the FDA. The FDA's Fast Track Program is designed to facilitate the development and expedite the review of drug candidates that demonstrate the potential to treat serious or life-threatening diseases and address unmet medical needs. The FDA has also approved Orphan Drug designation for Spheramine for the treatment of advanced Parkinson's disease.

"Results of the pilot clinical study suggest the potential of Spheramine to contribute to the treatment of Parkinson's patients, and provide the basis for further evaluation of Spheramine in the randomized, double-blind, controlled Phase IIb clinical study that is now underway," said Louis R. Bucalo, M.D., Chairman, President and CEO of Titan.

Spheramine consists of fully differentiated human retinal pigment epithelial cells (RPE cells) attached to microcarriers. The RPE cells produce L-DOPA, the natural precursor of dopamine. RPE cells can be grown in large numbers using cell culture manufacturing methods. The microcarriers, to which the RPE cells are attached, enable long-term survival and function of the cells without the need for immunosuppression. Spheramine is injected into brain regions lacking dopamine, using a surgical technique called stereotactic injection.

### **Favorable Study Results Seen**

The open label pilot study was designed to preliminarily evaluate the safety of Spheramine and its efficacy in improving motor function. Patients were evaluated pre- and post-treatment, both 'on' and 'off' their normal medication, using the Unified Parkinson's Disease Rating Scale (UPDRS), a standard measure of Parkinson's disease severity. The primary efficacy endpoint was the 'off' state motor score of the UPDRS at 12 months, which was evaluated pre-treatment and every three months thereafter.

All patients in the study demonstrated significant improvement in motor function, and other outcome measures, with no significant adverse events:

- At 12 months post treatment, all patients experienced both a clinically and statistically significant improvement from baseline in the UPDRS motor "off state" score, with a 48 percent average improvement (range 41-61%; P= 0.03).
- The UPDRS total score also demonstrated significant improvement from baseline to 12 months post treatment, and this was sustained through the 24 month follow-up evaluation (P = 0.03).
- Improvements were also noted in quality of life and activities of daily living.
- Half the patients demonstrated a reduction in pre-existing dyskinesias (involuntary movements) while the remainder had no change from baseline.
- No 'off' state dyskinesias were observed (patients off PD medication overnight).
- All six patients completed the one-year study, with no significant adverse events.

### **About Titan Pharmaceuticals**

Titan Pharmaceuticals, Inc. (AMEX: TTP) is a biopharmaceutical company focused on the development and commercialization of novel treatments for central nervous system disorders, cardiovascular disease, bone disease and other disorders. Titan's products in development utilize novel technologies that have the potential to significantly improve the treatment of these diseases. Titan also establishes partnerships with government institutions and other leading pharmaceutical development companies. For more information, please visit the Company's website at [www.titanpharm.com](http://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, unexpected 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 if necessary. 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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Stover, Bakay, et. al.. *Intrastratial Implantation of Human Retinal Pigment Epithelial Cells Attached to Microcarriers in Advanced Parkinson Disease*, Archives of Neurology, 2005 Dec; (62):1833-7.