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Study Published in Clinical Cancer Research Confirms Potential Of Peregrine's Bavituximab Combined With Radiation In Lung Cancer

- Bavituximab Equivalent Combined With Radiation Reduced Tumor Growth by 80% in Preclinical Lung Cancer Model -

- Findings Confirm Key Aspects of Bavituximab's Mechanism of Action in Combination with Radiation Therapy -

- Results Further Support Future Clinical Trials Testing Bavituximab in Combination With Radiation Therapy -

TUSTIN, Calif., Sept. 4 /PRNewswire-FirstCall/ -- Peregrine Pharmaceuticals, Inc. (Nasdaq: PPHM), a clinical stage biopharmaceutical company developing targeted monoclonal antibodies for the treatment of cancer and hepatitis C virus infection, today reported that researchers have published a new study in a lung cancer model showing that the combination of a mouse equivalent of bavituximab and radiation is significantly more effective in reducing tumor growth than either therapy alone. The study was published in the September 1 issue of Clinical Cancer Research. Bavituximab, Peregrine's lead anti-phosphatidylserine (anti-PS) immunotherapy, is currently in clinical trials for the treatment of solid tumors including lung cancer.

"This new publication further supports the concept that radiation therapy and bavituximab may work synergistically to treat solid tumors." said Steven W. King, president and CEO of Peregrine. "We are particularly pleased to see these positive results in a model of radiation resistant lung cancer, by far the leading cause of U.S. cancer deaths. This is the latest in a series of preclinical studies that have demonstrated the potential of either radiation or chemotherapy to enhance bavituximab's anti-tumor effects. We look forward to evaluating a combination of bavituximab plus radiation therapy in future clinical studies."

Peregrine completed a pilot Phase I study evaluating bavituximab in combination with chemotherapy in advanced cancer patients earlier this year and reported promising results. Based on these results, Peregrine recently submitted a Phase II clinical protocol to test bavituximab plus carboplatin/paclitaxel in lung cancer patients and plans to file several additional combination therapy clinical protocols this year.

Lung cancer is the leading cause of cancer deaths in the U.S. with a 5-year survival rate of only about 15%. With more than one million new cases diagnosed worldwide each year, lung cancer is also the leading cause of cancer deaths globally. About half of all lung cancer patients receive radiation therapy, but many become resistant to its tumor-killing effects. In this study, researchers tested a bavituximab equivalent combined with radiation therapy in a radiation-resistant mouse model of lung cancer.

The UT Southwestern Medical Center researchers found that in this lung cancer model, radiation therapy increased by over six-fold the percentage of tumor blood vessel cells that exposed bavituximab's PS target on the external surfaces. As a result, more of the bavituximab equivalent antibodies became concentrated in the tumor blood vessels. This increased localization may have contributed to the finding that the density of tumor blood vessels was reduced by more than 90% and tumor growth was reduced by 80% in animals treated with combination therapy, significantly greater efficacy than was achieved with either treatment alone.

"Approximately 50% of all cancer patients receive radiation therapy, so these findings could potentially apply to millions of patients," noted Dr. Philip Thorpe, professor of pharmacology at UT Southwestern and a member of Peregrine's Scientific Resource Board. "We are also pleased that these results confirm our previous work that demonstrated that the enhanced therapeutic effects of bavituximab combination therapy do not appear to be accompanied by an increase in side effects, offering the possibility of more effective and less toxic anti-cancer regimens."

Bavituximab is a monoclonal antibody that binds to a phospholipid called phosphatidylserine that is normally located inside normal cells, but which becomes exposed on the outside of the cells that line the blood vessels of tumors, creating a specific target for anti-cancer treatments. Bavituximab is believed to help mobilize the body's immune system to destroy the blood vessels needed for tumor growth and spread. In a Phase Ib trial in advanced cancer patients bavituximab plus chemotherapy appeared to have a safety profile consistent with chemotherapy alone and showed positive signs of clinical activity. In the

study, objective response or disease stabilization was achieved in 50% of patients evaluated for tumor response. A protocol for a Phase ll trial of bavituximab in combination with chemotherapy in patients with non-small cell lung cancer (NSCLC) has been filed and is currently undergoing regulatory review. Bavituximab is also in clinical trials in the U.S. in patients with advanced solid tumors and in patients co-infected with HCV and HIV.

The study, titled 'Radiation-Enhanced Vascular Targeting of Human Lung Cancers in Mice with a Monoclonal Antibody That Binds Anionic Phospholipids," was co-authored by Philip Thorpe, Jin He, and Troy A. Luster. The research was funded with assistance from the Gillson Longenbaugh Foundation and the American Cancer Society.

About Peregrine Pharmaceuticals

Peregrine Pharmaceuticals, Inc. is a biopharmaceutical company with a portfolio of innovative product candidates in clinical trials for the treatment of cancer and hepatitis C virus (HCV) infection. The company is pursuing three separate clinical programs in cancer and HCV infection in the U.S. and India with its lead product candidates bavituximab and Cotara®. Peregrine also has in-house manufacturing capabilities through its wholly owned subsidiary Avid Bioservices, Inc. (http://www.avidbio.com), which provides development and bio-manufacturing services for both Peregrine and outside customers. Additional information about Peregrine can be found at http://www.peregrineinc.com.

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