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Preclinical Data Presented at AACR Demonstrate Synergistic Anti-Tumor Effects of Peregrine Pharmaceuticals' Phosphatidylserine (PS)-Targeting Antibodies With Immune Checkpoint Inhibitors in Models of Melanoma and Breast Cancer

- Combination Treatment Reduces Tumor Immune System Blockade and Enhances Tumor Specific Immune Responses -

- Studies Reveal Significant Increases in Tumor-Infiltrating CD8+ T Cells and Immune-Activating Cytokines while Decreasing Tumor-Promoting Macrophages and Myeloid Cells -

TUSTIN, Calif., April 21, 2015 (GLOBE NEWSWIRE) -- Peregrine Pharmaceuticals, Inc. (Nasdaq:PPHM) (Nasdaq:PPHMP) today announced the presentation of data from preclinical studies demonstrating the combination of phosphatidylserine (PS) blockade with anti-PD-1 or anti-CTLA-4 immune checkpoint inhibitors promoted strong, localized and enhanced efficacy in models of melanoma and breast cancer. These data were presented at the 106th Annual Meeting of the American Association for Cancer Research (AACR) being held in Philadelphia, Pennsylvania from April 18-22, 2015. Peregrine's lead PS-blocking antibody, bavituximab, is currently being evaluated in second-line non-small cell lung cancer (NSCLC) in a Phase III clinical trial named Sunrise.

"The data presented this week at AACR showed in much greater detail the collective ability of PS and PD-1 blockade to change the immune response in melanoma and breast cancer models," said Jeff T. Hutchins, Ph.D., vice president of preclinical research at Peregrine. "These data showed that blocking PS resulted in a decrease in immune-blocking cell types such as myeloid-derived suppressor cells and M2 macrophages while increasing the number of activated T-cells that are able to specifically recognize and kill tumor cells which set the stage for anti-PD-1 therapy that keeps the immune response going. The result were synergistic anti-tumor effects in established melanoma and breast cancers. The consistency of the data generated from pre-clinical experiments, and, more recently, in clinical translational studies is impressive. When taken together with the additional lung cancer translational data presented Sunday, we are obtaining a clearer picture as to the potential of bavituximab in different immuno-oncology combinations. We look forward to presenting additional supporting data over the coming months."

In a poster titled: "Antibody-mediated phosphatidylserine blockade significantly enhances the efficacy of immune checkpoint blockades in K1735 and B16 mouse melanoma models," researchers from Peregrine, UT Southwestern Medical Center and the University of California at Irvine presented data assessing the antitumor effect of the combination of PS blockade and anti-CTLA-4 or anti-PD-1 antibodies in preclinical models of melanoma. Both combinations showed significantly superior tumor growth inhibition over single treatment, with many subjects achieving complete tumor regressions. The combination treatment showed significantly greater total and functional tumor-infiltrating CD8+ T, more IL-2- and interferon gamma (IFNγ)-producing splenic T cells, and lower number of splenic myeloid derived suppressor cells myeloid-derived suppressor cells (MDSCs) than did single treatment. In addition, the ratio of M2 to M1 macrophages in the tumor was significantly lower in the combination treatment than that in single treatment. Finally, no toxicity was observed in any of the treatment groups following multiple treatment doses.

In a poster titled: "Targeting of phosphatidylserine by monoclonal antibodies enhances the activity of immune checkpoint inhibitors in breast tumors," Peregrine researchers presented data demonstrating that PS blockade enhances the anti-tumor activity of combination therapies including anti-PD-1 antibodies in an immune competent model of breast cancer. Tumor growth inhibition correlates with statistically significant increases in the infiltration of CD8+ T cells and a reduction of myeloid-derived suppressor cells (MDSCs). The combination of these mechanisms promotes strong and localized anti-tumor responses without the side-effects of systemic immune activation.

Copies of these presentations can be found on the front page of Peregrine's website at www.peregrineinc.com.

About Bavituximab: A Targeted Investigational Immunotherapy

Scientific research has shown that tumors evade immune detection due partly to the expression of phosphatidylserine, or PS, a highly immunosuppressive molecule. Peregrine's immuno-oncology development program has developed bavituximab, an investigational monoclonal antibody that targets and binds to PS, blocking its immunosuppressive effects while activating tumor fighting immune cells, thus enabling the immune system with the ability to better recognize and fight cancer. Bavituximab's immune-stimulatory mechanism-of-action data is the subject of a manuscript published in the October 2013 issue of the

American Association for Cancer Research (AACR) peer-reviewed journal, Cancer Immunology Research. Bavituximab is currently being evaluated in several solid tumor indications, including non-small cell lung cancer (the SUNRISE Phase III trial), breast cancer, liver cancer, rectal cancer and advanced melanoma. In January 2014, bavituximab received Fast Track designation by the U.S. Food and Drug Administration (FDA) for the potential second-line treatment of patients with non-small cell lung cancer.

About Peregrine Pharmaceuticals, Inc.

Peregrine Pharmaceuticals, Inc. is a biopharmaceutical company with a pipeline of novel drug candidates in clinical trials for the treatment and diagnosis of cancer. The company's lead immunotherapy candidate, bavituximab, is in Phase III development for the treatment of second-line non-small lung cancer (the "SUNRISE trial") along with several investigator-sponsored trials evaluating other treatment combinations and additional oncology indications. The company is also advancing a molecular imaging agent, 124I-PGN650, in an exploratory clinical trial for the imaging of multiple solid tumor types. Peregrine also has in-house cGMP manufacturing capabilities through its wholly-owned subsidiary Avid Bioservices, Inc. (www.avidbio.com), which provides development and biomanufacturing services for both Peregrine and third-party customers. For more information, please visit www.peregrineinc.com.

Safe Harbor Statement: Statements in this press release which are not purely historical, including statements regarding Peregrine Pharmaceuticals' intentions, hopes, beliefs, expectations, representations, projections, plans or predictions of the future are forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. The forward-looking statements involve risks and uncertainties including, but not limited to, the risk that data from pre-clinical studies may not correlate with the results from human clinical studies. It is important to note that the company's actual results could differ materially from those in any such forward-looking statements. Factors that could cause actual results to differ materially include, but are not limited to, uncertainties associated with completing preclinical and clinical trials for our technologies; the early stage of product development; the significant costs to develop our products as all of our products are currently in development, preclinical studies or clinical trials; obtaining additional financing to support our operations and the development of our products; obtaining regulatory approval for our technologies; anticipated timing of regulatory filings and the potential success in gaining regulatory approval and complying with governmental regulations applicable to our business. Our business could be affected by a number of other factors, including the risk factors listed from time to time in our reports filed with the Securities and Exchange Commission including, but not limited to, our annual report on Form 10-K for the fiscal year ended April 30, 2014 as well as any updates to these risk factors filed from time to time in the company's other filings with the Securities and Exchange Commission. The company cautions investors not to place undue reliance on the forward-looking statements contained in this press release. Peregrine Pharmaceuticals, Inc. disclaims any obligation, and does not undertake to update or revise any forward-looking statements in this press release.

CONTACT: Christopher Keenan

Peregrine Pharmaceuticals, Inc.

(800) 987-8256

info@peregrineinc.com

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