April 21, 2009

Studies Presented at AACR Annual Meeting Highlight Multiple Immunomodulatory Mechanisms of Peregrine's PS-Targeting Antibodies

-- - Preclinical Studies Highlight the Ability of PS-Targeting Antibodies to Reverse the Immune Suppressing Effects of Tumors by Changing the Tumor Microenvironment and Mobilizing Key Components of the Immune System - -- - Studies Confirm Peregrine's PS-Targeting Antibodies Stimulate Dendritic Cell Maturation, Inflammatory Cytokine and Chemokine Release and Recruitment of Macrophages to Tumors -

DENVER and TUSTIN, Calif., April 21, 2009 /PRNewswire-FirstCall via COMTEX News Network/ -- Peregrine Pharmaceuticals, Inc. (Nasdaq: PPHM), a clinical stage biopharmaceutical company developing monoclonal antibodies for the treatment of cancer and serious virus infections, today reported that two preclinical studies presented during the AACR 100th Annual Meeting 2009 provided further confirmation of the immunomodulatory mechanisms contributing to the anti-tumor activity of its phosphatidylserine (PS)-targeting antibodies. One study confirms the anti-tumor effects and immune stimulating ability of a fully human anti-PS antibody and the other demonstrates the ability of a second fully human anti-PS antibody to stimulate development of a critical component of the adaptive immune system.

These human PS-targeting antibodies, which are currently being evaluated for both anti-cancer and anti-viral applications, increase the number of product candidates in Peregrine's anti-PS pipeline. Peregrine's lead anti-PS antibody bavituximab is currently in Phase II clinical trials in advanced breast and lung cancers.

"These preclinical studies further elucidate the unique immunomodulatory mechanisms contributing to the observed anti-tumor activity of anti-PS antibodies in preclinical and clinical studies," said Dr. Philip Thorpe, professor of pharmacology at UT Southwestern Medical Center in Dallas, a scientific advisor to Peregrine and co-author of one of the AACR presentations. "These presentations provide additional insight into the mechanisms that act to selectively destroy the blood vessels supporting tumor growth and spread and also to reverse the ability of tumors to suppress the body's natural immune response, resulting in the mobilization of important inflammatory and other anti-tumor components of the immune system. Together, the studies provide compelling evidence suggesting that PS-targeting antibodies facilitate an important cytokine shift in the tumor environment that subsequently encourages multiple types of immune system cells to mount anti-tumor responses."

In a presentation(1) on Monday, a series of preclinical studies by a team of scientists from Peregrine Pharmaceuticals and Affitech A/S used a fully human anti-PS antibody, PGN635, to confirm previous observations that in vitro, anti-PS antibodies stimulate the tumor microenvironment to recruit monocytes and other immune cells to the tumor with resulting anti-tumor effects, most likely via cell-mediated mechanisms such as antibody-dependent cell-mediated cytotoxicity (ADCC). Their data further define the role of anti-PS antibodies in mediating tumor cell cytotoxicity and the tumor microenvironment, showing that the anti-PS antibody induced a sequential release of cytokines and beta-chemokines and stimulated enhanced macrophage recruitment to tumors. Furthermore, the researchers showed that in vitro, PGN635 induced antibody-dependent death of endothelial cells, the same cell type found in the tumor vasculature, a key target of anti-PS cancer therapy. The studies also demonstrated the anti-tumor potential of PGN635 in vitro and in a number of animal cancer models.

"Data from our experiments has helped to clarify details regarding the mechanisms responsible for the anti-tumor results observed with Peregrine's PS-targeting antibodies," said Dr. Monica Friedrich, a Peregrine research scientist and lead author of the study. "In data presented at this conference last year, we demonstrated that our fully human antibody PGN635 localizes to tumors and causes an increase in several inflammatory cytokines while decreasing an important anti-inflammatory cytokine. The new data we present confirms that PGN635 also triggers immune cells to produce other chemokines and cytokines that have the potential to alter the suppressed immune environment commonly found in tumors, attracting additional immune cells and stimulating more aggressive anti-tumor responses. We believe this upregulation of the immune response contributes to the encouraging anti-tumor effects demonstrated by PGN635 and other anti-PS antibodies."

A second study(2) presented on Monday by researchers from UT Southwestern Medical Center and Affitech demonstrated the ability of Peregrine's fully human PS-targeting antibody PGN632 to promote the maturation of dendritic cells, important antigen-presenting cells of the immune system. In the in vitro studies, immature dendritic cells cultured in the presence of PGN632 exhibited a significant increase in the production of inflammatory cytokines and chemokines. PGN632 also induced an increase in the expression of cell-surface molecules that are indicative of mature dendritic cells and that assist in antigen presentation functions, as well as in stimulating T-cell proliferation.

Dr. Xianming Huang, assistant professor of pharmacology at UT Southwestern Medical Center and lead author of the study, noted, "Dendritic cells are the professional antigen-presenting cells of the immune system and they play a crucial role in initiating adaptive immune responses. Dendritic cells must be mature, or activated, to be effective, yet tumors and other pathogens such as viruses often possess the ability to undermine this maturation, thereby suppressing the immune response. The results presented today suggest that by blocking exposed PS, anti-PS antibodies have the potential to promote dendritic cell maturation in the body and thereby stimulate a more effective immune response."

The fully human PS-targeting antibodies in these studies were developed through Peregrine's collaboration with Affitech A/S. The study by Dr. Huang, et al. was partly supported by the Gillson Longenbaugh and Meredith D. Chesler Foundations.

Peregrine president and CEO Steven King commented, "It is noteworthy that these studies were primarily conducted using our new fully human antibodies, which could serve as the basis for the next generation of anti-PS therapies. Our PS-targeting antibody platform now includes several promising antibodies in preclinical evaluation that vary in their binding profile and in their specific immunomodulatory activity. The unique functional characteristics of these different antibodies open the door to new product candidates and extended applications for our anti-PS technology. We are more encouraged than ever that our anti-PS platform has very broad potential, and we look forward to further development of our growing preclinical pipeline of PS-targeting candidates both through internal efforts and collaborations with partners."

About Peregrine's Clinical Stage Anti-PS Antibody Bavituximab

Peregrine's clinical stage PS-targeting antibody bavituximab binds to the cellular membrane component phosphatidylserine (PS) that is usually located inside 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. By binding to PS, bavituximab is believed to help mobilize the body's immune system to destroy the tumor and the tumor blood vessels. Bavituximab currently is in two separate Phase II combination therapy trials for the treatment of advanced breast cancer and a Phase II combination therapy trial for the treatment of non-small cell lung cancer. A Phase I bavituximab monotherapy trial in advanced solid cancers is also continuing.

(1) Monica L. Friedrich, Claudia I. Guevara, Longen Zhou, Daniel Falcon, Cristina Bautista, Michael Brown, Anita Kavlie, Connie Chang, Bruce Freimark. Peregrine Pharmaceuticals, Inc., Tustin, CA, Affitech AS, Oslo, Norway. Induction of chemokines and cytokines by human phosphatidylserine antibody facilitates cell-mediated anti-tumor responses. In: Proceedings of the 100th Annual Meeting of the American Association for Cancer Research; 2009 Apr 18-22; Denver, CO. Philadelphia (PA): AACR; 2009. Abstract 2408

(2) Xianming Huang, Dan Ye, Philip Thorpe, Anita Kavlie. UT Southwestern Medical Ctr., Dallas, TX, Affitech AS, Oslo, Norway. A novel anti-phosphatidylserine antibody that promotes dendritic cell maturation. In: Proceedings of the 100th Annual Meeting of the American Association for Cancer Research; 2009 Apr 18-22; Denver, CO. Philadelphia (PA): AACR; 2009. Abstract 2407

About Peregrine Pharmaceuticals

Peregrine Pharmaceuticals, Inc. is a biopharmaceutical company with a portfolio of innovative monoclonal antibodies in clinical trials for the treatment of cancer and serious viral infections. The company is pursuing three separate clinical programs in cancer and hepatitis C virus infection with its lead product candidates bavituximab and Cotara(R). Peregrine also has in-house manufacturing capabilities through its wholly owned subsidiary Avid Bioservices, Inc. (www.avidbio.com), which provides development and biomanufacturing services for both Peregrine and outside customers. Additional information about Peregrine can be found at 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 results from future preclinical studies and clinical trials will not correlate with the results of these preclinical studies, the risk that the fully human antibodies will not provide comparable results in combination with other cancer therapies and the risk that the Company will experience delays in enrolling patients in its existing and planned clinical studies. 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 the company's SEC reports including, but not limited to, the annual report on Form 10-K for the year ended April 30, 2008 and the quarterly report on Form 10-Q for the quarter ended January 31, 2009. 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.

Contacts:
GendeLLindheim BioCom Partners
Investors
info@peregrineinc.com
(800) 987-8256

Media
Barbara Lindheim
(212) 918-4650

SOURCE Peregrine Pharmaceuticals, Inc.

http://www.peregrineinc.com