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Peregrine Pharmaceuticals Announces First Patient Dosed in Phase II Clinical Trial Evaluating Bavituximab Treatment Combination in Patients with Newly Diagnosed Glioblastoma

Trial is First of Three Planned Bavituximab Combination Studies Being Conducted as Part of Collaboration with National Comprehensive Cancer Network® (NCCN®)

TUSTIN, Calif., Sept. 07, 2017 (GLOBE NEWSWIRE) -- Peregrine Pharmaceuticals, Inc. (NASDAQ:PPHM) (NASDAQ:PPHMP), a biopharmaceutical company committed to improving patient lives by manufacturing high quality products for biotechnology and pharmaceutical companies and advancing its proprietary R&D pipeline, today announced dosing of the first patient in a Phase II clinical trial evaluating the combination of bavituximab, temozolomide, and radiation therapy in patients with newly diagnosed glioblastoma. Elizabeth R. Gerstner, MD, at Massachusetts General Hospital Cancer Center, is the primary investigator for the trial, which is one of three bavituximab clinical studies being funded by the National Comprehensive Cancer Network® (NCCN®) Oncology Research Program (ORP) through a grant provided by Peregrine.

The single group, interventional Phase II trial will enroll approximately 36 patients with newly diagnosed glioblastoma. Patients will receive standard of care radiation, as well as daily temozolomide treatment and weekly bavituximab treatment, throughout the 18-week study. The primary objective of the trial is overall survival at twelve months. Secondary outcome measures include progression free survival (PFS) and radiographic response.

"We are hopeful that results from this trial, as well as from the two additional studies at NCCN Member Institutions, will continue to support our belief that bavituximab works to create a more immune active tumor microenvironment in which other therapies are able to have a greater anti-tumor effect," said Joseph Shan, MPH, vice president, clinical and regulatory affairs of Peregrine. "We look forward to following this important study at the Massachusetts General Hospital Cancer Center, as well as the planned trials at the Moffitt Cancer Center and The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins."

Results from a previous preclinical study highlighted that PS-targeting antibodies similar to bavituximab synergize with radiation to improve anti-tumor activity in the F98 rat model of glioblastoma. These study data, generated by researchers at the University of Texas, Southwestern, demonstrated that PS-targeting treatment in combination with radiation more than doubled the median survival time of glioma-bearing rats and was significantly superior to either PS-targeting or radiation alone ($p < 0.001$). Additionally, 13% of the glioma-bearing rats treated with the combination were rendered disease free. These disease-free animals were immune to a rechallenge with F98 glioma cells, suggesting that the combination treatment had induced an adaptive immunity to the tumor cells.

NCCN, a not-for-profit alliance of 27 leading cancer centers devoted to patient care, research, and education, is dedicated to improving the quality, effectiveness, and efficiency of cancer care so that patients can live better lives. Funding for the three investigator-initiated clinical studies has been provided by Peregrine in the form of a research grant to NCCN ORP. NCCN is responsible for oversight and monitoring of the clinical studies through the research grant.

Details of the two additional NCCN-supported studies are as follows:

- A Phase I Trial of Sorafenib and Bavituximab Plus Stereotactic Body Radiation Therapy (SBRT) for 1st Line Treatment of Unresectable Hepatocellular Carcinoma; Jessica Frakes, MD, Moffitt Cancer Center.
- Phase II Study of Pembrolizumab and Bavituximab for Progressive Recurrent/Metastatic Squamous Cell Carcinoma of the Head and Neck; Ranee Mehra, MD, The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins.

Bavituximab is an investigational immune-modulatory monoclonal antibody that targets phosphatidylserine (PS), a phospholipid that inhibits the ability of immune cells to recognize and fight tumors. Bavituximab is believed to reverse PS-mediated immunosuppression by blocking the engagement of PS with its receptors, as well as by sending an alternate immune activating signal. PS-targeting antibodies have been shown to shift the functions of immune cells in tumors, resulting in multiple signs of immune activation and anti-tumor immune responses. This mechanism may play an important

role in allowing other cancer therapies to more effectively attack tumors by reversing the immunosuppression that limits the impact of those treatments.

Importantly, bavituximab has also demonstrated a favorable safety and tolerability profile across several clinical trials conducted to date, which may offer the compound a key advantage as the evolving cancer treatment landscape continues to shift to a combination therapy approach. The ability to be added to a range of other cancer therapies without causing added safety concerns may position bavituximab favorably as a component of combination treatments.

About Peregrine Pharmaceuticals, Inc.
Peregrine Pharmaceuticals, Inc. is a biopharmaceutical company committed to improving the lives of patients by delivering high quality pharmaceutical products through its contract development and manufacturing organization (CDMO) services and through advancing and licensing its investigational immunotherapy and related products. Peregrine's in-house CDMO services, including cGMP manufacturing and development capabilities, are provided through its wholly-owned subsidiary Avid Bioservices, Inc. (www.avidbio.com), which provides development and biomanufacturing services for both Peregrine and third-party customers. The company is also working to evaluate its lead immunotherapy candidate, bavituximab, in combination with immune stimulating therapies for the treatment of various cancers, and developing its proprietary exosome technology for the detection and monitoring of cancer. For more information, please visit www.peregrineinc.com.

About the National Comprehensive Cancer Network
The National Comprehensive Cancer Network® (NCCN®), a not-for-profit alliance of 27 leading cancer centers devoted to patient care, research, and education, is dedicated to improving the quality, effectiveness, and efficiency of cancer care so that patients can live better lives. Through the leadership and expertise of clinical professionals at NCCN Member Institutions, NCCN develops resources that present valuable information to the numerous stakeholders in the health care delivery system. As the arbiter of high-quality cancer care, NCCN promotes the importance of continuous quality improvement and recognizes the significance of creating clinical practice guidelines appropriate for use by patients, clinicians, and other health care decision-makers.

The NCCN Member Institutions are: Fred & Pamela Buffett Cancer Center, Omaha, NE; Case Comprehensive Cancer Center/University Hospitals Seidman Cancer Center and Cleveland Clinic Taussig Cancer Institute, Cleveland, OH; City of Hope Comprehensive Cancer Center, Los Angeles, CA; Dana-Farber/Brigham and Women's Cancer Center | Massachusetts General Hospital Cancer Center, Boston, MA; Duke Cancer Institute, Durham, NC; Fox Chase Cancer Center, Philadelphia, PA; Huntsman Cancer Institute at the University of Utah, Salt Lake City, UT; Fred Hutchinson Cancer Research Center/Seattle Cancer Care Alliance, Seattle, WA; The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins, Baltimore, MD; Robert H. Lurie Comprehensive Cancer Center of Northwestern University, Chicago, IL; Mayo Clinic Cancer Center, Phoenix/Scottsdale, AZ, Jacksonville, FL, and Rochester, MN; Memorial Sloan Kettering Cancer Center, New York, NY; Moffitt Cancer Center, Tampa, FL; The Ohio State University Comprehensive Cancer Center - James Cancer Hospital and Solove Research Institute, Columbus, OH; Roswell Park Cancer Institute, Buffalo, NY; Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine, St. Louis, MO; St. Jude Children's Research Hospital/The University of Tennessee Health Science Center, Memphis, TN; Stanford Cancer Institute, Stanford, CA; University of Alabama at Birmingham Comprehensive Cancer Center, Birmingham, AL; UC San Diego Moores Cancer Center, La Jolla, CA; UCSF Helen Diller Family Comprehensive Cancer Center, San Francisco, CA; University of Colorado Cancer Center, Aurora, CO; University of Michigan Comprehensive Cancer Center, Ann Arbor, MI; The University of Texas MD Anderson Cancer Center, Houston, TX; University of Wisconsin Carbone Cancer Center, Madison, WI; Vanderbilt-Ingram Cancer Center, Nashville, TN; and Yale Cancer Center/Smilow Cancer Hospital, New Haven, CT.

Clinicians, visit NCCN.org. Patients and caregivers, visit NCCN.org/patients. Media, visit NCCN.org/news.

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 this trial and/or from the two additional NCCN studies, will not support our current belief that bavituximab works to create a more immune active tumor microenvironment in which other therapies are able to have a greater anti-tumor effect, the risk that the initiation of one or both of the two additional NCCN studies is delayed and the risk that the company may not be able to partner the bavituximab program. 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, 2017 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.

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