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Recent Publication Highlights Proof-of-Concept Data Supporting the Diagnostic Potential of Phosphatidylserine-Positive Exosomes in Ovarian Cancer

TUSTIN, Calif., Feb. 09, 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 the publication of positive proof-of-concept data for a novel exosome-based cancer detection platform. Results of the study, conducted at University of Texas (UT) Southwestern Medical Center, showed researchers were able to distinguish between healthy subjects and patients with ovarian tumors based on the levels of exosomes containing phosphatidylserine (PS) found in their plasma. Furthermore, analysis of the PS-positive exosome levels allowed researchers to distinguish between malignant and benign tumors. These data were recently published online by the peer-reviewed journal, *Oncotarget*, in a paper titled, "Detection of phosphatidylserine-positive exosomes as a diagnostic marker for ovarian malignancies: a proof-of-concept study."

Peregrine is currently advancing the proprietary exosome-based cancer diagnostic technology, licensed from UT Southwestern Medical Center in July 2016, with the goal of developing an optimized test for further clinical testing. As part of these efforts, the company is in the process of seeking a strategic partner for collaboration on developing and commercializing the technology. The platform is based on the diagnostic potential of tumor exosomes, which are small vesicles from tumor cells that are released into the blood as tumors grow. Tumor derived exosomes have PS on their surface as a detectable marker. It is believed that even small tumors begin to release PS-positive exosomes and thus the ability to detect these exosomes in the blood may be an indicator of the presence of a tumor.

In the study published by *Oncotarget*, plasma samples from 34 patients with ovarian tumors and 10 healthy subjects were analyzed for the presence of PS-expressing exosomes in a blinded test. Results demonstrated that those patients with malignant ovarian cancer displayed significantly higher blood PS exosome levels than those with benign tumors (median 0.237 vs. -0.027, p=0.0001) and the malignant and benign groups displayed significantly higher blood PS exosome levels than the healthy subjects (median 0.237 vs -0.158, $p < 0.0001$ and -0.027 vs -0.158, p=0.0002, respectively).

"These initial proof-of-concept results are encouraging as they appear to support the underlying concept that the measurement of PS-positive exosome levels in blood could be a simple way to detect and monitor cancer. While the work is still early, we think these data serve as an important first step in highlighting the diagnostic potential of this platform," said Steven W. King, president and chief executive officer of Peregrine. "This type of diagnostic technology is particularly important in an area such as ovarian cancer, in which screening options are limited and the ability to detect the disease at an early stage is inadequate. We look forward to continuing to explore the potential of the technology platform in ovarian as well as other types of cancer."

"There is a significant and growing interest in the healthcare industry around the ability to detect cancer and monitor its progression with more readily accessible blood tests. With this area being one of the fastest growing segments of the oncology diagnostics market, we believe that our exosome-based technology represents a significant product development and licensing opportunity," stated Stephen Worsley, vice president of business development at Peregrine. "Based on the fact that PS is a marker associated with a broad range of cancer types, we believe our platform has potential applications in several solid tumors beyond ovarian cancer. With that in mind, we look forward to aligning with a partner to help explore the potential of this promising technology."

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.

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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 the company may not be able to replicate the findings of this study in larger studies, the risk that the company may not develop, or may experience delays in developing, an optimized test that is commercializable and/or regulatory approvable, the risk that the company experiences difficulties in developing a test that is able to distinguish between PS-positive exosomes from blood samples of cancer patients and PS-positive exosomes from patients with other diseases or illnesses that express PS-positive exosomes, the risk that the company is unable to attract a strategic partner or generate partnering interest in the PS-positive exosome testing technology, and the risk that the company is unable to secure patent protection or other intellectual property protection for the PS-positive exosome testing technology. 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, 2016 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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