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Peregrine Pharmaceuticals Announces Presentation of Preclinical Study Results Highlighting Potential of PS-Targeting Antibodies to Enhance Anti-Tumor Activity of Adoptive T Cell Transfer Therapy with No Added Off-Target Toxicities

-- Latest Findings from Ongoing Collaboration with Memorial Sloan Kettering (MSK) Support Potential Applications for Combining CAR T and Anti-PS in Treatment of Solid Tumors --

TUSTIN, Calif., April 03, 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 presentation of positive new data from the company's ongoing collaboration with researchers from Memorial Sloan Kettering Cancer Center (MSK). Presented preclinical study results highlighted the potential of the company's phosphatidylserine (PS)-targeting antibodies to enhance the anti-tumor activity of adoptive T cell transfer therapy without triggering any off-target toxicities. Data were presented this morning by MSK researchers at the 2017 Annual Meeting of the American Association for Cancer Research (AACR), which is being held April 1-5, 2017 in Washington, D.C.

For this study, a team of MSK researchers led by cancer immunotherapy thought-leaders, Taha Merghoub, Ph.D. and Jedd D. Wolchok, M.D., Ph.D., evaluated and compared the anti-tumor activity and off-target toxicities of adoptive T cell transfer therapy in combination with either PS-targeting antibodies or anti-OX40 antibodies in mice with advanced melanomas. Whereas PS-targeting and anti-OX40 demonstrated comparable tumor regression when administered in combination with transferred adoptive T cells, only the PS-targeting combination achieved these results without any off-target toxicities. By contrast, the anti-OX40 treatment combination triggered off-target inflammatory destruction of healthy tissues.

"While adoptive T cell transfer remains one of the most exciting new approaches to treating cancer, to date the toxicity associated with the treatment has limited its potential. We are encouraged that these study results showed that the combination of anti-PS and adoptive T cell treatment led to enhanced anti-tumor effect without any evidence of additional off-target side effects," said Taha Merghoub, Ph.D., co-director of the Ludwig Collaborative Laboratory at MSK. "We believe that these findings may support potential applications for this combination in solid tumors in the future."

Additional study results demonstrated that the PS-targeting antibodies decreased tumor-induced immunosuppression as evidenced by a decrease in immunosuppressive regulatory T cells (Tregs) and M2 macrophages. This finding is consistent with Peregrine's belief that bavituximab may modulate the immunosuppressive tumor microenvironment and enhance the activity of immunotherapy agents.

"These study results provide further support for our belief that anti-PS agents such as bavituximab can play an important role as part of combination cancer treatments. This is directly tied to the agents' ability to modulate the tumor microenvironment to combat the immunosuppression that limits the activity of CAR T and immunotherapies," said Joseph Shan, vice president of clinical and regulatory affairs at Peregrine. "Importantly, we are now also seeing evidence that this targeted modulation of the tumor microenvironment by anti-PS allows for enhanced activity of these other treatments without triggering any off-target toxicities. This is opposed to other conventional immunotherapies such as anti-OX40 with systemic mechanisms of action. We believe this advantageous tolerability profile will be a key benefit in positioning anti-PS agents for inclusion in optimal combination cancer regimens."

Bavituximab is an investigational chimeric monoclonal antibody that targets phosphatidylserine (PS). Signals from PS inhibit the ability of immune cells to recognize and fight tumors. PS-targeting antibodies have demonstrated an ability to shift the functions of immune cells in tumors, resulting in multiple signs of immune activation and anti-tumor immune responses. Bavituximab is believed to override PS immunosuppressive signaling by blocking the engagement of PS with its receptors and sending an alternate immune activating signal.

Peregrine's clinical development strategy for bavituximab currently focuses on small, early-stage, proof-of-concept trials evaluating the drug in combination with other cancer treatments. This approach includes the recently announced grants awarded by the National Comprehensive Cancer Network (NCCN) to support three different clinical trials of bavituximab treatment combinations. These trials will evaluate novel bavituximab combinations in glioblastoma, head and neck cancer, and hepatocellular carcinoma including an immunotherapy combination. Additionally, Peregrine continues to advance its pre-clinical collaboration with MSK with the goal of evaluating combinations of bavituximab with other checkpoint inhibitors

and immune stimulatory agents. The intent behind this strategy is to focus our research and development spending to further validate bavituximab's combination potential as we seek to advance the program though a pharmaceutical or biotechnology partner.

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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