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Peregrine Pharmaceuticals Announces Patent Grant For Vasopermeation Enhancement Technology

TUSTIN, Calif., Feb. 24 /PRNewswire-FirstCall/ -- Peregrine Pharmaceuticals (Nasdaq: PPHM) announced today the issuance of U.S. Patent No. 6,696,276 that covers its Vasopermeation Enhancement Agent (VEA) technology. The patent, titled "Vasopermeability-Enhancing Conjugates," further expands Peregrine's patent coverage for general concepts of using agents that localize to tumors and induce tumor blood vessels to become more permeable in order to make chemotherapy drugs and diagnostic agents more effective.

Vasopermeation Enhancement Agents are sensitizing agents that enhance the effectiveness of cancer therapy or diagnosis by allowing a greater amount of an administered drug or diagnostic agent to reach the target tumor cells. VEAs are pre-treatments that use a targeting agent, such as a monoclonal antibody, to deliver an effector that works to make tumor blood vessels more leaky. As a result, chemotherapy and tumor cell-targeted therapeutics are better able to move beyond the tumor blood vessels and reach the tumor cells, resulting in improved anti-tumor effects. The Company has successfully used its proprietary Tumor Necrosis Therapy (TNT) technology as the targeting agent and the cytokine interleukin 2 (IL-2), or fragments and mutants of IL-2, as the basis of its VEA technology platform.

In published reports, VEA pre-treatment increased by almost 400% the normal amount of chemotherapeutic agent taken up by solid tumors. In pre- clinical studies, Peregrine's VEA technology has been shown to significantly improve the effectiveness of chemotherapeutic agents including Doxorubicin, Taxol, Vinblastine, VP-16 and Taxotere in tumor therapy experiments. Peregrine's VEAs utilize its human TNT targeting platform to make it possible to use a single VEA as a pre-treatment for a variety of different tumor types and chemotherapeutic agents. Data related to the VEA technology platform has been published in a number of peer reviewed journals, including, most recently, the "Journal of the National Cancer Institute" and the technology has been reviewed in "Lancet Oncology" and "Nature Reviews Cancer."

About Peregrine Pharmaceuticals

The Company's primary research focus is on using various approaches to targeting tumor blood vessels as a means to treat cancer. Peregrine is developing three different approaches to attacking tumor blood vessels as a means to treat cancer: Vascular Targeting Agents (VTAs) work by targeting and destroying tumor blood vessels; Vasopermeation Enhancing Agents (VEAs) work by making tumor blood vessels leaky, thus allowing more cytotoxic cancer agents to reach cancer cells; and Anti-Angiogenesis Agents that work by stopping the formation of new tumor blood vessels, stopping the growth and spread of cancers. Peregrine believes that tumor blood vessels represent the next generation target for anti-cancer therapy and diagnosis. The Company also has identified a biological marker that is common to the majority of solid tumors as a byproduct of tumor growth. This target, called Tumor Necrosis Therapy (TNT), forms the targeting basis of its Cotara™ clinical program. Th Company has developed antibodies that target tumor necrosis and can be used to carry a variety of therapeutic agents directly to the tumor site.

The company is focused on development and licensing collaborations for all of its technologies under development. The company operates a cGMP contract manufacturing facility for monoclonal antibodies and recombinant proteins through its wholly owned subsidiary Avid Bioservices, Inc. (www.avidbio.com). Copies of Peregrine press releases, SEC filings, current price quotes and other valuable information for investors may be found on the website www.peregrineinc.com.

About Vasopermeation Enhancement Agents

Barriers to Existing Cancer Therapies

Most traditional approaches to cancer therapy attempt to destroy individual cancer cells. Drugs that target cancer cells must overcome a significant number of structural barriers within the tumor in order to be effective. They must first exit the tumor blood vessels, migrate past the support structures that underlie the vessels and eventually make their way to the cancer cells. As result of these structural barriers, very little drug injected into the blood stream of a patient is able to reach and destroy cancer cells. One potential solution to this problem is to increase the permeability of the blood vessels within the tumor, which will permit more therapeutic drug to reach and kill substantially more cancer cells.

Mechanism of Action

Vasopermeation Enhancement Agents are a new class of drugs, which are designed to increase the uptake of cancer therapeutics and imaging agents at the tumor site, potentially resulting in greater efficacy. VEAs work by using monoclonal antibodies, or other biologically active targeting agents, to deliver known vasoactive compounds (i.e. molecules that cause tissues to become more permeable) selectively to solid tumors. Once localized at the tumor site, VEAs alter the physiology and the permeability of the vessels and capillaries that supply the tumor. In pre-clinical studies, drug uptake has been increased up to 400% in solid tumors when VEAs were administered several hours prior to the therapeutic treatment. VEAs are intended to be used as a pre-treatment for most existing cancer therapies and imaging agents. VEAs may be effective across multiple tumor types.

About Interleukin-2

Interleukin-2 (IL-2) is a naturally occurring cytokine, which is produced by helper T lymphocytes. Cytokines are proteins in the body that stimulate and regulate the immune system. Interleukin-2 is an important cytokine and occupies a central role in the augmentation of cell-mediated immune response. In addition to its cytokine activity, IL-2 has been shown to contain a domain, which produces vascular permeability when administered systemically (capillary leak syndrome). When IL-2 is used in a clinically effective dose for the treatment of cancer, it causes massive leaking of blood outside of the vascular network. This toxic side effect has limited the clinical effectiveness of IL-2 for the treatment of cancer.

About Permeability Enhancing Peptide

The goal of Peregrine's research on IL-2 was to develop a drug compound that had the ability to induce vasopermeation at, and only at, the tumor site. To achieve this, scientists at Peregrine mapped out the structure of IL-2 and identified the region that is responsible for causing capillary leak syndrome. This region was then synthesized and tested for suitability as a vasopermeability agent. Pre-clinical studies showed this region has 100% of the vasopermeability activity of intact IL-2 but lacked its cytokine activity. This proprietary new compound is called Permeability Enhancing Peptide (PEP) and has been exclusively licensed to Peregrine. By attaching PEP to a monoclonal antibody that targets tumors, vasopermeability can be localized only at the tumor site.

Safe Harbor Statement: This release may contain certain forward-looking statements that are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Actual events or results may differ from the company's expectations as a result of risk factors discussed in Peregrine's reports on file with the U.S. Securities and Exchange Commission, including, but not limited to, Peregrine's report on Form 10-Q for the quarter ended October 31, 2003 and on Form 10-K for the year ended April 30, 2003.

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