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Peregrine Pharmaceuticals Announces Publication of Data Related to Its Tumor Necrosis Therapy Technology Platform

Pre-clinical Data Presented at the American Association of Cancer Research Annual Meeting

TUSTIN, Calif., March 30 /PRNewswire-FirstCall/ -- Peregrine Pharmaceuticals (Nasdaq: PPHM) announced today that data related to its Tumor Necrosis Therapy (TNT) technology platform was presented at the American Association of Cancer Research annual meeting. The presented research describes the expression and testing of Peregrine's human TNT monoclonal antibody (NHS76) linked to the human cytokine Interleukin-2 (IL-2). The expressed fusion protein retained functional activity of IL-2 and had a very low toxicity profile in animal studies. TNT directed cytokines are currently under development by Merck KGaA of Darmstadt, Germany, under a licensing agreement with Peregrine.

The presentation titled, "Engineering of an IL-2 immunocytokine with very low toxicity that retains potent anti-tumor activity in immune competent and immune deficient mouse tumor models," detailed a new TNT-based immunocytokine under evaluation at Merck KGaA. The immunocytokine consisted of the NHS76 targeting antibody linked to a mutant version of the cytokine IL-2 known as D2OT, which has an improved safety profile compared with native IL-2. Presented were studies in several mouse tumor models demonstrating that NHS- IL-2(D20T) is extremely well tolerated and retains most of its anti-tumor activity against established metastases. The immunocytokine also retains significant anti-tumor activity, although somewhat higher doses are required to achieve equivalent effects. The studies also showed that "small metastatic tumors can be targeted using an immunocytokine with specificity for a necrotic marker such as DNA."

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.

The combination of a targeting monoclonal antibody linked to a cytokine is known as an immunocytokine. In the newly published article, an immunocytokine was constructed using a TNT antibody linked to the cytokine IL-2. The TNT antibody guides IL-2 to the tumor where the cytokine can help boost the body's ability to fight the cancer. Immunocytokines are expected to have lower side effects than conventional chemotherapy and thus represent an attractive alternative to standard tumor therapy.

About Tumor Necrosis Therapy (TNT)

Rapidly growing tumors quickly outgrow their blood supply resulting in a region of tumor cells that does not receive adequate oxygen, nutrients and waste removal. The accumulation of dying cells results in the formation of a dead, or necrotic, core present in virtually all solid tumors beyond a very small size. Tumor Necrosis Therapy (TNT)-based products directly target and bind to dead and dying tumor cells found in virtually all solid tumors. Hence, TNT-based therapeutic agents have the potential to deliver therapeutic agents preferentially targeted to virtually all solid tumors.

Peregrine's TNT antibodies bind to universal intracellular antigens, DNA/Histone complexes, exposed in the necrotic core of malignant solid tumors. Since DNA and Histone are not normally accessible in normal tissues, the DNA/Histone complex represents a stable and specific marker of tumors.

Given TNT's near universal appearance as a tumor marker, TNT antibodies make excellent delivery molecules for a wide variety of anti-cancer killing agents. To date, the TNT technology platform has been used to deliver various killing agents such as radioactive isotopes and cytokines to solid tumors.

About Peregrine Pharmaceuticals, Inc.

Peregrine's research and development efforts focus on discovering and developing products that affect blood flow to tumors. Peregrine's vascular research programs fall under several different proprietary platforms including Anti-Phospholipid Therapy (APT), Vascular Targeting Agents (VTAs), anti- Angiogenesis and Vasopermeation Enhancement Agents (VEAs). The company has research collaborations with pharmaceutical and biotechnology companies to develop its VTA platform for therapeutic and diagnostic applications and expects to enter its first APT compound into clinical trials for cancer therapy during calendar year 2004.

Peregrine's vascular agents may also have applications in other angiogenesis-dependent diseases besides cancer such as diabetes, arthritis, skin disorders and eye diseases. Peregrine currently has exclusive rights to over 190 U.S. and foreign patents and patent applications that broadly cover its vascular programs. In addition, the company is currently evaluating its proprietary technology for use in treating non-angiogenesis dependent diseases such as viral infections. The company believes that the pre-clinical data generated by the company and the broad nature of its intellectual property may provide many opportunities for product development, partnering and licensing.

Peregrine's most clinically advanced therapeutic program is based on a targeting platform outside vascular biology. This technology platform is known as Tumor Necrosis Therapy (TNT) and targets dead or dying tumor cells that are common to the majority of different tumor types. Cotara™, the most clinically advanced TNT program, is currently in a Phase I clinical trial for the treatment of colorectal carcinoma at Stanford University Medical Center. In addition, we have received protocol approval from the U.S. Food and Drug Administration ("FDA") to initiate a registration clinical study for the treatment of brain cancer. The company is currently seeking a development or funding partner to move the brain cancer program forward. The company believes that continuing the clinical development of Cotara™ in tumor types other than brain cancer will add significant value t the program. The company has a research collaboration to develop immunocytokines based on the TNT platform and a TNT-based agent has been developed and approved for the treatment of lung cancer in China under a licensing agreement.

The company also operates a cGMP contract manufacturing facility for monoclonal antibodies and recombinant proteins through its wholly owned subsidiary Avid Bioservices, Inc. (www.avidbio.com). Avid produces clinical trial materials to support Phase I through Phase III clinical trials for biotechnology companies including Peregrine. 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.

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 January 31, 2004 and on Form 10-K for the year ended April 30, 2003.

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