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Peregrine Pharmaceuticals Presents Data On Vasopermeation Enhancement Agent Technology At American Society of Clinical Oncology Annual Meeting

TUSTIN, Calif., May 21, 2002 (BW HealthWire) --

Pre-Clinical Data Demonstrates VEA Can Substantially Increase the Efficacy of Some Chemotherapeutic Drugs for the Treatment of Solid Tumors

Peregrine Pharmaceuticals Inc. (Nasdaq:PPHM) announced that Alan L. Epstein, M.D., Ph.D hosted a poster presentation and discussion session "Improved Uptake and Therapy of Chemotherapeutic Drugs in Human and Murine Solid Tumors by Pretreatment with a Vascular Enhancing Agent" today at the American Society of Clinical Oncology's (ASCO) 38th Annual Meeting being held in Orlando, Florida. Dr. Epstein, a professor of pathology at the Keck School of Medicine of the University of Southern California (USC), presented new research demonstrating Peregrine's Vasopermeation Enhancement Agent (VEA) technology can improve the efficacy of some chemotherapeutic drugs for the treatment of various solid tumor cancers. A slide presentation summarizing the discussion can be viewed on the ASCO Annual Meeting Virtual Meeting website at http://www.asco.org beginning tomorrow. The work presented in this presentation was partially funded by sponsored research agreements with the Keck School of Medicine of the University of Southern California.

"This pre-clinical data demonstrates that VEAs represent a powerful new approach to increasing the efficacy of chemotherapy drugs in the treatment of solid tumors," said Dr. Epstein, who invented the VEA platform technology. "We used Peregrine's most advanced VEA clinical candidate, NHS76/PEP2, as a pretreatment for six approved chemotherapy drugs to demonstrate the viability of the VEA approach. These studies show that pretreatment with NHS76/PEP2 can markedly increase the clinical efficacy of chemotherapeutic drugs for the treatment of solid tumors. This approach may significantly enhance the value of approved drugs by possibly improving anti-tumor activity and potentially decreasing the toxicity of chemotherapy. I look forward to assisting Peregrine in moving this promising new compound into human clinical studies later this year."

Pretreatment with VEAs in tumor-bearing mice resulted in a 150-300% enhancement of chemotherapeutic drug uptake in tumors with no concomitant increase seen in normal tissues. Based upon these results, tumor-bearing mice were treated with single agents (5-FU, Doxorubicin, Vinblastine, BCNU, Taxol, or VP-16) daily x4 or every three days x4 with and without NHS76/PEP2 pretreatment (30ug). The results could be divided into three categories: (1) those tumors which normally respond to a given drug (e.g. LS174T human colon carcinoma treated with Doxorubicin) were found to have a dramatic response to pretreatment; (2) those tumors which normally do not respond to a given drug (e.g. MAD 109 lung carcinoma treated with Taxol) were now found to have a significant response; and (3) those tumors resistant to a given drug (e.g. LS174T human colon carcinoma treated with BCNU) remained unaffected or had only a minor response with pretreatment. Results of the LS174T human colon carcinoma study showed that Doxorubicin (dose 4mg/kg) alone produced a 47% shrinkage of the tumor mass over control while the combined NHS76/PEP2 (dose 30ug)/Doxorubicin (4mg/kg) produced an 85% shrinkage of the tumor mass over control. Results of the MAD 109 lung carcinoma study showed that Taxol (dose 10mg/kg) alone produced no significant shrinkage of the tumor mass over control while the combined NHS76/PEP2 (dose 30ug)/Taxol (10mg/kg) produced a 54% shrinkage of the tumor mass over control. The research concluded that by using this approach, it may be possible to improve the anti-tumor activity of chemotherapeutic drugs and decrease the drugs' toxicity.

About Vasopermeation Enhancement Agents

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. These structural barriers permit very little of the drug injected into a patient's blood stream to actually reach and destroy cancer cells. Peregrine's proprietary VEAs circumvent these problems by increasing the permeability of the blood vessels within the tumor, permitting more therapeutic drug to reach and kill significantly more cancer cells.

Vasopermeation Enhancement Agents are a new class of drugs that 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 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 feed the tumor. In Peregrine's pre-clinical studies, drug uptake has been increased up to 300% 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 Peregrine Pharmaceuticals Inc.

Peregrine Pharmaceuticals is a biopharmaceutical company focused on the development, commercialization, and licensing of unique technologies for the treatment of cancer, primarily based on its three "collateral targeting technologies." Peregrine's Tumor Necrosis Therapy (TNT), Vasopermeation Enhancement Agents (VEA), and Vascular Targeting Agents (VTA) target cell structures and cell types that are common among solid tumor cancers, giving them broad applicability across various tumor types. The company's lead TNT anti-cancer drug, Cotara™, is currently in a multi-center Phase II clinical trial for brain cancer and Phase I trials for colorectal, pancreas, liver, soft tissue sarcoma and biliary cancers. Final preparations are being made to start a multi-center, multi-national Phase III trial for brain cancer. Peregrine's Oncolym®, for the treatment of non-Hodgkin's B-cell lymphoma, is currently in a multi-center Phase I/II study. Copies of Peregrine press releases, SEC filings, current price quotes and other valuable information for investors may be found on the website http://www.peregrineinc.com.

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