



April 2, 2012

## **AVID Bioservices Highlights Antibody Engineering, Expression and Bioassay Expertise at AACR**

### **Antibodies Modified Through Several Genetic Methods Have Improved Biological Activity**

TUSTIN, CA -- (Marketwire) -- 04/02/12 -- Avid Bioservices, a subsidiary of Peregrine Pharmaceuticals, Inc. (NASDAQ: PPHM), today presented data at the Annual Meeting of the American Association of Cancer Research (AACR), demonstrating its ability to make genetic modifications to monoclonal antibodies, resulting in enhanced Fc related functions while retaining full biological binding capabilities. The resulting candidates have been scaled-up successfully for further comparison in animal models of life threatening diseases, including cancer.

The data highlight the capabilities of Avid Bioservices to offer expanded services to support client projects throughout the product development lifecycle. Avid undertook a client project that focused on engineering a monoclonal antibody to improve activity through increased binding to Fc gamma receptors on immune cells. The goal was to enhance effects through various mechanisms, including antibody-dependent cell mediated cytotoxicity (ADCC) and cytokine induction, for the client's proof of concept studies.

"ADCC enhancements represent the next generation in antibody therapies. Avid has successfully demonstrated its protein engineering expertise through developing this new process for our clients in order to investigate the latest options in therapeutic antibody engineering," said Steven W. King, president of Avid Bioservices. "Antibody engineering of the Fc region has the potential to increase potency, reduce the therapeutic dose, or even enhance clinical efficacy of an antibody."

"In the presented studies, we have been able to successfully make several modified versions of an existing monoclonal antibody and to individually characterize those molecules through a number of analytical methods, including a number of in-house developed bioassays. These studies highlight our capabilities in protein expression and complex product characterization, which are both services available to our clients," said Jon S. Gingrich, manager of business development at Avid Bioservices. "Avid has been able to develop broad capabilities that allow us to be an ideal development partner in the biologics area, whether it be for novel products in early development, products in early clinical development, or later stage products, including biosimilars."

*Presented Today at AACR:*

**[Abstract Number: 2510](#)**

*Presentation Title:* Increased Fc-FcR interaction of human phosphatidylserine targeting antibody enhances pro-inflammatory and ADCC mechanisms

*Presentation Time:* Monday, Apr 02, 2012, 1:00 PM - 5:00 PM

*Location:* McCormick Place West (Hall F), Poster Section 19

*Poster Board Number:* 5

*Author Block:* Jeanette R. Doerr(1), Gary Larson(1), Rich Archer(1), Jian Gong(1), Van Nguyen(1), Aditi Iyengar(1), Mary Wakabayashi(1), Matthew Peacock(2), Christopher Hughes(2), Connie Chang(1), Bruce Freimark(1). 1. Peregrine Pharmaceuticals, Tustin, CA; 2. Univ. of California at Irvine, Irvine, CA

#### *About Avid Bioservices*

Avid Bioservices provides a comprehensive range of high quality cGMP manufacturing services for the biotechnology and biopharmaceutical industries to support manufacturing of cGMP commercial and clinical products. With over 10 years of experience producing monoclonal antibodies and recombinant proteins in batch, fed-batch and perfusion modes, Avid's services include cell banking, stability testing, clinical and commercial product manufacturing and purification, bulk packaging, final product filling and regulatory strategy, submission and support. The company also provides a variety of process development activities, including cell line optimization, analytical methods development and product characterization. For more information about Avid, please visit [www.avidbio.com](http://www.avidbio.com).

#### *About Peregrine Pharmaceuticals*

Peregrine Pharmaceuticals, Inc. is a biopharmaceutical company with a portfolio of innovative monoclonal antibodies in clinical trials for the treatment of cancer and serious viral infections. The company is pursuing multiple clinical programs in cancer and infectious diseases with its lead product candidate bavituximab and novel brain cancer agent Cotara®. Peregrine also has in-

house cGMP manufacturing capabilities through its wholly-owned subsidiary Avid Bioservices, Inc. ([www.avidbio.com](http://www.avidbio.com)), which provides development and biomanufacturing services for both Peregrine and outside customers. Additional information about Peregrine can be found at [www.peregrineinc.com](http://www.peregrineinc.com).

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