



**NORTHWEST
BIOTHERAPEUTICS**

Northwest
Biotherapeutics, Inc.

7600 Wisconsin Avenue www.nwbio.com
Seventh Floor, Suite 750 OTCBB: NWBT
Bethesda, MD 20814

Media Contact
Linda Powers
240-497-4060

Northwest Biotherapeutics Receives Approval of US Patent for Cost Saving Automation of High-Concentration DCVax® Manufacturing

Already Cleared by FDA for Use in Clinical Trials

BETHESDA, MD – December 4, 2009 – Northwest Biotherapeutics, Inc. (“NWBT” or the “Company”) (OTCBB: NWBO) announced today that the US Patent and Trademark Office has allowed its patent application on a system for automation of the initial stages of the manufacture of the Company’s DCVax® therapeutic cancer vaccines. These initial manufacturing stages are key to the very high concentration of dendritic cells (which are the critical ingredient) in the finished DCVax® vaccine.

The current first generation (non-automated) manufacturing is highly precise, and achieves a concentration of at least 80% or more dendritic cells in the vaccines. (In contrast, various immune therapy products being developed by other parties contain much lower levels of active ingredient.) The automation system covered by the US patent maintains NWBT’s very high levels of dendritic cells, while also enabling major reductions in costs and scale-up to handle large numbers of patients.

The essential active component in the DCVax® vaccine is the patient’s own master immune cells, called “dendritic cells.” The dendritic cells are responsible for mobilizing the entire immune system, and its many players (including T cells, B cells and the antibodies they produce, natural killer cells and others). The dendritic cells are obtained through a blood draw from the patient, with the desired cells carefully separated from the many other types of cells in the patient’s blood. The more rigorously and precisely the dendritic cells are isolated, the higher the concentration of this active ingredient in the vaccine.

The automated system developed by NWBT maintains this very high level of precision and purity of dendritic cells in DCVax®. After years of development work, the system is able to consistently and reliably separate the desired cells from the many other kinds of cells in a patient’s blood, despite similarities among the cells and despite size differences of as little as a few microns. (By comparison, a human hair is around 50 microns in size.)



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Use of NWBT's automated system has already been cleared by FDA for human clinical trials. The INDs (Investigational New Drug applications) which have been cleared by the FDA for five different cancers include use of the automated system in the manufacturing process for DCVax®.

Such automation of the initial stages of manufacturing DCVax® will greatly reduce the costs involved, including a more than 10-fold reduction in labor costs. For example, under current (first generation) processes, it takes 24 man hours to complete the initial manufacturing stage for 6 patients' vaccines. With the automated device, it takes only 2 man hours to complete the same work for 6 patients' vaccines. In addition, the need for certain high-cost materials is eliminated.

In addition to major reduction of direct costs, the automation also offers significant reduction of indirect costs: the reduction of capital costs for manufacturing facilities. Each manufacturing step that is "open" (i.e., in which the cells have any exposure to the air) must be carried out in "cGMP" clean room facilities where the air is sterile in the whole manufacturing suite. Such facilities are extremely costly to build, operate and maintain – so costly that the recoupment forms a large part of the costs of the vaccine. Automation can turn an "open" manufacturing step into a "closed" step, in which the cells remain enclosed in a machine or container, and have no exposure to the air. That eliminates the need for the air to be sterile, and enables those automated steps to be conducted in low-cost, ordinary space and facilities.

The automated system developed by NWBT, on which the US patent has now been allowed, makes just such a change: it turns the initial stages of DCVax® manufacturing into "closed" steps. Accordingly, a substantial portion of the high costs of sterile clean room facilities can be eliminated from the cost of producing DCVax®.

"We have spent over a decade working on manufacturing technologies to achieve cost efficiencies and scalability," said Dr. Marnix Bosch, Chief Technology Officer of NWBT. "NWBT has already achieved significant cost efficiencies by pioneering a unique batch manufacturing process. These efficiencies will be further enhanced by the automated system we have developed, and it is very gratifying to receive the allowance of this important US patent on our automated device."

The batch manufacturing process that NWBT has pioneered produces several *years* (typically at least 3 years) of personalized DCVax® vaccine for a patient in a single manufacturing run. The large, multi-year batch of the patient's vaccine is then frozen in single-dose vials and stored in standard bio freezers, making DCVax® an "off-the-shelf" product for that patient throughout the multi-year treatment period (and avoiding very costly repeat-cycles of manufacturing). The batch manufacturing process takes only 10 days. The shelf life and potency of the frozen DCVax® product have been validated.

About Northwest Biotherapeutics

Northwest Biotherapeutics is a biotechnology company focused on developing immunotherapy products that treat cancers more effectively than current treatments, without toxicities of the kind



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associated with chemotherapies, and on a cost-effective basis. The Company has two broad platform technologies: dendritic cell-based vaccines and therapeutic antibodies. The Company is focusing on development of its dendritic cell vaccines. The Company's lead clinical trial is a 240 patient double blind, randomized, placebo controlled Phase II trial in GBM. The Company has also received clearance from the FDA for a 600+ patient Phase III trial in prostate cancer, and clearance from the FDA for Phase I trials in five other cancers. The Company is also conducting a Phase I/II trial with DCVax[®] for recurrent metastatic ovarian cancer. The Company's second technology platform, involving antibodies to CXCR4, is at the late pre-clinical development stage.

For further information about clinical sites and Company information please visit the company web site at www.nwbio.com.

Disclaimer

Statements made in this news release that are not historical facts, including statements concerning future treatment of patients with GBM using DCVax[®]-Brain and future clinical trials, are forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Words such as "expects," "believes," "intends," and similar expressions are intended to identify forward-looking statements. Actual results may differ materially from those projected in any forward-looking statement. Specifically, there are a number of important factors that could cause actual results to differ materially from those anticipated, such as the Company's ability to raise additional capital, risks related to the Company's ability to enroll patients in its clinical trials and complete the trials on a timely basis, the uncertainty of the clinical trials process, uncertainties about the timely performance of third parties, and uncertainties about whether the Company's products will demonstrate safety and efficacy. Additional information on these and other factors, including Risk Factors, which could affect the Company's results, is included in its Securities and Exchange Commission ("SEC") filings. Finally, there may be other factors not mentioned above or included in the Company's SEC filings that may cause actual results to differ materially from those projected in any forward-looking statement. You should not place undue reliance on any forward-looking statements. The Company assumes no obligation to update any forward-looking statements as a result of new information, future events or developments, except as required by securities laws.