



**ZIOPHARM Oncology, Inc.**

## **ZIOPHARM and Intrexon Announce Cooperative Research and Development Agreement with the National Cancer Institute Utilizing *Sleeping Beauty* System to Generate T cells Targeting Neoantigens**

**BOSTON, MA and GERMANTOWN, MD – January 10, 2017** – ZIOPHARM Oncology, Inc. (Nasdaq:ZIOP), a biopharmaceutical company focused on new immunotherapies, and Intrexon Corporation (NYSE:XON), a leader in the engineering and industrialization of biology to improve the quality of life and health of the planet, today announced the signing of a Cooperative Research and Development Agreement (CRADA) with the National Cancer Institute (NCI) for the development of adoptive cell transfer (ACT)-based immunotherapies genetically modified using the *Sleeping Beauty* (SB) transposon/transposase system to express T-cell receptors (TCRs) for the treatment of solid tumors.

The principal goal of the CRADA is to develop and evaluate ACT for patients with advanced cancers using autologous peripheral blood lymphocytes (PBL) genetically modified using the non-viral SB system to express TCRs that recognize specific immunogenic mutations, or neoantigens, expressed within a patient's cancer. Clinical evaluations of the ability of these SB-engineered PBL to express TCRs reactive against cancer mutations to mediate cancer regression in patients with metastatic disease will be performed.

Research conducted under the CRADA will be at the direction of Steven A. Rosenberg, M.D., Ph.D., Chief of the Surgery Branch at the NCI's Center for Cancer Research, in collaboration with researchers at ZIOPHARM and Intrexon.

"Treating liquid tumors with chimeric antigen receptors has yielded extraordinary results with genetically engineered T cells and the next stage in the evolution of this immunotherapy is the expression of T-cell receptors to target solid tumors," said Laurence Cooper, MD, PhD, Chief Executive Officer of ZIOPHARM. "Through use of the scalable non-viral *Sleeping Beauty* platform to express an array of TCRs that recognize neoantigens within each patient's tumor, we can customize T-cell therapies and enhance their function through cytokines and switches."

The SB transposon-transposase is a unique system for introducing genes encoding chimeric antigen receptors (CARs) and TCRs into lymphocytes. This non-viral platform may play an important role in immunotherapy and has several potential advantages over viral-based delivery systems including lowering the cost of genetic modification and the generation of T cells with minimal *ex vivo* processing supporting the personalization of T-cell therapy.

Dr. Cooper added, "The *Sleeping Beauty* system is the most advanced non-viral cell engineering platform in clinical development and we look forward to working with Dr. Rosenberg and the NCI to explore its potential to express neoantigen-specific TCRs to develop individualized immunotherapies for patients with cancer."

**About Intrexon Corporation:**

Intrexon Corporation (NYSE: XON) is Powering the Bioindustrial Revolution with Better DNA™ to create biologically-based products that improve the quality of life and the health of the planet. Intrexon's integrated technology suite provides its partners across diverse markets with industrial-scale design and development of complex biological systems delivering unprecedented control, quality, function, and performance of living cells. We call our synthetic biology approach Better DNA®, and we invite you to discover more at [www.dna.com](http://www.dna.com) or follow us on Twitter at @Intrexon, on Facebook, and LinkedIn.

**About ZIOPHARM Oncology, Inc.:**

ZIOPHARM Oncology is a Boston, Massachusetts-based biotechnology company employing novel gene expression, control and cell technologies to deliver safe, effective and scalable cell- and viral-based therapies for the treatment of cancer and graft-versus-host-disease. The Company's immuno-oncology programs, in collaboration with Intrexon Corporation (NYSE:XON) and the MD Anderson Cancer Center, include chimeric antigen receptor T cell (CAR-T) and other adoptive cell-based approaches that use non-viral gene transfer methods for broad scalability. The Company is advancing programs in multiple stages of development together with Intrexon Corporation's RheoSwitch Therapeutic System® technology, a switch to turn on and off, and precisely modulate, gene expression in order to improve therapeutic index. The Company's pipeline includes a number of cell-based therapeutics in both clinical and preclinical testing which are focused on hematologic and solid tumor malignancies.

**Trademarks**

RheoSwitch Therapeutic System® (RTS®) technology is a registered trademark of Intrexon Corporation.

**Safe Harbor Statement**

Some of the statements made in this press release are forward-looking statements. These forward-looking statements are based upon our current expectations and projections about future events and generally relate to our plans, objectives and expectations for the development of our business. Although management believes that the plans and objectives reflected in or suggested by these forward-looking statements are reasonable, all forward-looking statements involve risks and uncertainties and actual future results may be materially different from the plans, objectives and expectations expressed in this press release.

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