December 10, 2017

ZIOPHARM Announces Presentation of Data from T-Cell Therapy Programs at ASH Annual Meeting

— Clinical data show continued survival benefit, tumor response, and multi-year persistence of Sleeping Beauty*-modified CD19-specific CAR$^+$ T cells —*

— Point-of-care CD19-specific CAR$^+$ T cells co-expressing mbIL15 with control switch show sustained persistence, anti-tumor effect in preclinical models without the need for culturing —

— Point-of-care clinical trial planned for 2018 —

BOSTON, Dec. 10, 2017 (GLOBE NEWSWIRE) -- ZIOPHARM Oncology, Inc. (Nasdaq:ZIOP), a biopharmaceutical company developing new gene and cell-based immunotherapies for cancer, today announced data supporting its non-viral approach to rapid manufacture of chimeric antigen receptor (CAR)-modified T cells to treat patients with cancers were presented at the 59th American Society of Hematology (ASH) Annual Meeting and Exposition in Atlanta.

ZIOPHARM is advancing its non-viral *Sleeping Beauty* (SB) platform towards point-of-care (P-O-C) for very rapid manufacturing of genetically modified CAR$^+$ T cells. Data presented from first- and second-generation SB clinical trials demonstrate safety, tolerability, disease response, long-term survival, and persistence of infused CD19-specific CAR$^+$ T cells. Preclinical studies showed that P-O-C CAR$^+$ T cells co-expressing membrane-bound interleukin-15 (mbIL15) and a control switch manufactured within two days do not require activation or propagation in tissue culture to achieve anti-tumor effects and prolonged T-cell survival. Building on these data, the Company plans to initiate its first P-O-C clinical trial in 2018.

"Together, these results underpin the paradigm-shifting potential of our P-O-C platform by demonstrating the persistence of our *Sleeping Beauty*-modified T cells, optimization of the CAR, and pro-survival effect resulting from mbIL15 expression. This reinforces our plans to deliver genetically modified products in less than two days," said Laurence Cooper, M.D., Ph.D., Chief Executive Officer of ZIOPHARM Oncology. "The need for a non-viral approach for commercialization of cell therapy is becoming increasingly evident as the challenges of lengthier, more complex, and more expensive viral-based approaches are scaled up. We look forward to advancing *Sleeping Beauty* and our P-O-C approach with the goal of producing genetically modified T cells to fight cancers at a fraction of current costs and manufacturing time."

These ASH presentations are based on clinical trials and research being conducted in collaboration with The University of Texas MD Anderson Cancer Center and Intrexon Corporation (NYSE:XON). The three posters and slides for one oral presentation are available in the Presentations and Publications section of the Company's website, www.ziopharm.com.

Poster Presentation: "Long Term Follow up after Adoptive Transfer of CD19-Specific CAR$^+$ T Cells Genetically Modified Via Non-Viral *Sleeping Beauty* System Following Hematopoietic Stem-Cell Transplantation (HSCT)"

Partow Kebriaei, M.D., Professor, Department of Stem Cell Transplantation & Cellular Therapy, The University of Texas MD Anderson Cancer Center, presented updated results, building upon findings previously published in the Journal of Clinical Investigation. Two trials demonstrated that first-generation SB-modified CD19-specific CAR$^+$ T cells appear to provide long-term cancer control when infused after hematopoietic stem-cell transplantation (HSCT) for patients with advanced CD19$^+$ malignancies and could be detected years after administration in some recipients. All seven patients with advanced CD19$^+$ non-Hodgkin's lymphoma (NHL) that received autologous T cells were alive at a median survival of 40 months since infusion, with progression-free survival (PFS) reported at 86% and overall survival (OS) at 100%. For 19 patients with advanced CD19$^+$ acute lymphoblastic leukemia (ALL) and NHL infused with allogeneic T cells following HSCT, nine patients were alive with a median survival of 31 months. The PFS rate and OS rates are 32% and 49%, respectively. Of the subset of eight patients who received donor-derived T cells after haploidentical HSCT, PFS and OS rates are 50% and 63%, respectively. Persistence of circulating SB-modified CAR$^+$ T cells was demonstrated at two years in an autologous and allogeneic patient and for four years in two autologous patients.

Oral Presentation: "Shortening the Time to Manufacture CAR$^+$ T Cells with *Sleeping Beauty* System Supports T-

Cell Engraftment and Anti-Tumor Effects in Patients with Refractory CD19$^+$ Tumors"

Dr. Kebriaei presented interim data from an ongoing second-generation trial demonstrating that the manufacture of SB-modified T cells could be shortened from four weeks to two weeks and that autologous T cells infused after lymphodepleting chemotherapy could be detected, and exhibited anti-tumor effects and an encouraging safety profile in patients with relapsed/refractory CD19$^+$ malignancies. Complete responses at one month were reported in four of eight patients with either ALL (n=5), chronic lymphocytic leukemia (n=1), or diffuse large B-cell lymphoma (n=2), with two morphologic complete responses at three months. Follow up blood tests demonstrated sustained persistence of infused T cells and targeting of malignant and normal B cells. There were no dose limiting toxicities with only grade 1 or 2 adverse events being reported. T-cell dose escalation continues.

Poster Presentation, "CD19-Specific Chimeric Antigen Receptor-Modified T Cells with Safety Switch Produced Under 'Point-Of-Care' Using the *Sleeping Beauty* System for the Very Rapid Manufacture and Treatment of B-Cell Malignancies"

Rutul Shah, interim Head of Operations, Intrexon Human Therapeutics, presented preclinical findings showing T cells expressing CD19-specific CAR, mbIL15, and control (safety) switch were generated under P-O-C using the SB system. These T cells were manufactured in less than two days and did not require *ex vivo* activation or propagation and demonstrated potent anti-tumor effect and sustained CAR$^+$ T-cell persistence in mice. These data support clinical evaluation of genetically modified T cells very rapidly manufactured using the SB system.

Poster Presentation, "Autologous T Cells Modified to Co-express CD33-Specific Chimeric Antigen Receptor and a Kill Switch for Treatment of CD33$^+$ Acute Myeloid Leukemia"

Tim Chan, PhD, Senior Director, Intrexon Human Therapeutics, presented preclinical data supporting an ongoing Phase 1 study of CD33-specific CAR$^+$ T-cell therapy for the treatment of relapsed or refractory acute myeloid leukemia. *In vitro* analyses demonstrated that CAR$^+$ T cells exhibited redirected specificity for CD33. Co-expression of a kill switch was shown to eliminate CAR$^+$ T cells by cetuximab-mediated antibody-dependent cellular cytotoxicity both *in vitro* and *in vivo*.

About ZIOPHARM Oncology, Inc.

ZIOPHARM Oncology is a Boston, Massachusetts-based biotechnology company employing innovative 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® (RTS®) 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.

Forward-Looking Safe-Harbor Statement

This press release contains certain forward-looking information about ZIOPHARM Oncology, Inc. that is intended to be covered by the safe harbor for "forward-looking statements" provided by the Private Securities Litigation Reform Act of 1995, as amended. Forward-looking statements are statements that are not historical facts, and in some cases can be identified by terms such as "may," "will," "could," "expects," "plans," "anticipates," and "believes." These statements include, but are not limited to, statements regarding the progress and timing of the development of the Company's research and development programs. All of such statements are subject to certain risks and uncertainties, many of which are difficult to predict and generally beyond the control of the Company, that could cause actual results to differ materially from those expressed in, or implied by, the forward-looking statements. These risks and uncertainties include, but are not limited to: the Company's ability to finance its operations and business initiatives and obtain funding for such activities; whether chimeric antigen receptor T cell (CAR-T) approaches, Ad-RTS-hIL-12, TCR and NK cell-based therapies, or any of other product candidates will advance further in the preclinical research or clinical trial process and whether and when, if at all, they will receive final approval from the U.S. Food and Drug Administration or equivalent foreign regulatory agencies and for which indications; whether chimeric antigen receptor T cell (CAR-T) approaches, Ad-RTS-hIL-12, TCR and NK cell-based therapies, and the Company's other therapeutic products it develops will be successfully marketed if approved; the strength and enforceability of the Company's intellectual property rights; competition from other pharmaceutical and biotechnology companies; as well as other risk factors contained in the Company's periodic and interim reports filed from time to time with the Securities and Exchange Commission, including but not limited to, the risks and uncertainties set forth in the "Risk Factors" section of the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2017 and

subsequent reports that the Company may file with the Securities and Exchange Commission. Readers are cautioned not to place undue reliance on these forward-looking statements that speak only as of the date hereof, and the Company does not undertake any obligation to revise and disseminate forward-looking statements to reflect events or circumstances after the date hereof, or to reflect the occurrence of or non-occurrence of any events.

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