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Actinium Pharmaceuticals Highlights Promising Data From its AWE Program Featuring a Potent Actinium-225 Labeled Daratumumab Labeled ARC or Antibody Radio-Conjugate Presented at ASH Annual Meeting

- Higher cell death observed with Actinium-225 labeled daratumumab with up to ten-fold higher potency as compared to naked daratumuamb

- ARC of Daratumumab-Actinium-225 labeled with high yield, high stability and preserved immunogenicity demonstrated

NEW YORK, Dec. 12, 2017 (GLOBE NEWSWIRE) -- **Actinium Pharmaceuticals, Inc.** (NYSE American:ATNM) **("Actinium" or "the Company")**, presented data at the 59th Annual American Society of Hematology (ASH) Meeting & Exposition on the labeling of daratumumab, a CD38 targeting antibody which is marketed commercially by Johnson and Johnson (JNJ) under the trade name Darzalex®, with the radioisotope Actinium-225. The ARC or Antibody Radio-Conjugate of daratumumab labeled with the radioisotope Actinium-225 demonstrated enhanced targeted cancer cell killing *in vitro* compared with naked daratumumab. Actinium is a clinical-stage biopharmaceutical company focused on developing and commercializing targeted therapies for safer myeloablation and conditioning of the bone marrow prior to a bone marrow transplant, and for the targeting and killing of cancer cells, This initiative comes from Actinium's AWE or Actinium Warhead Enabling Technology Platform that combines the isotope Actinium-225 with monoclonal antibodies to create ARC's.

The poster highlighted the capabilities of the Company's recently announced AWE or Actinium Warhead Enabling Program that studied the effect of Actinium-225 labeled daratumumab on DAUDI, 28BM and 28PE cell lines at the 48, 72 and 96 hour time points as well as U226, a cell line that does not express CD38. The results showed that when daratumuamb is labeled with Actinium-225, cell death was increased as much as ten-fold, approaching one-hundred percent cell death in certain cell lines and at certain time points, and in all three cell lines tested the Actinium-225 labeled daratumumab had higher cell death compared to naked daratumumab. In addition, immunogenicity was preserved with most or all of daratumumab's CD38 targeting ability maintained, high rates of radioisotope labeling of the antibody from 82-85% was demonstrated, as was high rates of stability from 73-87% at various temperatures forty-eight hours post labeling. As a result of this promising data, Actinium is continuing to investigate Actinium-225 labeled daratumumab further, with *in vivo*

experiments ongoing.

The abstract for the poster can be accessed through the following link: https://ash.confex.com/ash/2017/webprogram/Paper105329.html

Dr. Mark Berger, Actinium's Chief Medical Officer said, "These promising results showcase the power of our AWE Technology Platform. The ability to increase the cell killing power of an antibody while preserving its targeting ability is a powerful premise that can have profound impacts on the treatment of patients and outcomes. Given these initial positive results we look forward to continuing to expand our AWE Program by labeling additional antibodies, and even other targeting moeities, with Actinium-225 to fully leverage the targeted potency of Actinium-225, our proprietary technology, and our team's expertise and know how."

Daratumumab (Darzalexâ, Janssen) is an immunoglobulin G1 kappa (IgG1κ) cytolytic human monoclonal antibody directed against the CD38 antigen that is approved to treat patients with multiple myeloma. First approved in 2015 as a monotherapy for patients who have received three prior therapies, daratumumab is now approved for use in combination and has also received approvals in earlier lines of treatment and has achieved blockbuster sales in excess of one billion dollars in the last twelve months. Daramtumumab's effective targeting of the CD38 antigen and its success in the clinical setting indicates a high efficacy baseline, making it an ideal candidate antibody for which to demonstrate additional benefits in efficacy as a result of Actinium-225 enablement. While daratumumab is increasingly being used to treat patients, infusion reactions are common, likely due in part to administration of a large dose at 16 mg/kg, which requires long infusion times. Additionally, the infusions must take place frequently – weekly for the first 8 weeks, followed by bi-weekly infusions up to week 25, after which monthly infusions are required.

Sandesh Seth, Actinium's Chairman and CEO added, "There has been a renaissance in radioisotope based therapies of late while antibodies continue to prove to be beneficial therapies for patients in numerous oncology indications. Our AWE Technology Platform is able to combine the strengths of these modalities to create ARC's or Antibody Radio-Conjugates that leverage the targeted potency of the actinium-225 isotope and our proprietary technology. With this detailed data now available, we look forward to showcasing this capability to potential partners and collaborators as an example of the value generating potential of our AWE Program. We are confident that enhanced cell killing power via Actinium-225 will be attractive to developers of both novel and approved antibodies as a means to generate pipeline opportunities via de novo efforts and life cycle management. We look forward to actively promoting our AWE program in 2018 based on the 2017 enhancements in technology, scientific capabilities and team at Actinium."

About Our Actinium Warhead Enabling Technology Platform

The Actinium Warhead Enabling (AWE) Technology Platform enables a highly potent and selective form of targeted therapy that combines the powerful alpha-emitting radioisotope actinium-225 with targeting agents, which are designed to seek out cancer cells in the body that express particular markers. Actinium-225 emits significant alpha radiation making it a potent treatment modality against targeted cancer cells while limiting damage to healthy tissues as its radiation travels extremely short distances in the body. When labeled to targeting agents, actinium-225 can be delivered directly to cancer cells where the high linear

energy transfer resulting from the emission of alpha particles results in irreparable DNA double stranded breaks and ultimately cancer cell death. Despite this superior cell killing power, actinium-225 when delivered in a targeted manner is sparing of the surrounding environment in the body due to the short path length of its alpha-particle radiation and can result in a superior safety profile. Actinium Pharmaceuticals owns or has licensed the rights to several issued and pending patents that pertain to its AWE Technology Platform including technology to manufacture Actinium-225 in a cyclotron. In addition, the Company obtains actinium-225 from various sources such as the U.S. Department of Energy at Oak Ridge National Laboratories and has developed considerable know-how, expertise and validated processes related to production of antibody radio-conjugates (ARC), management of the supply chain and dealing with various regulatory bodies. The AWE Technology Platform can be utilized to potentially improve the cell-killing power of targeting agents such as antibodies, peptides, Fab fragments, nanobodies etc. via labeling with Actinium-225. In addition to increased efficacy, these Actinium-225 enhanced targeting agents can offer optimized dosing or administration and in the case of approved targeting agents provide an opportunity to extend intellectual property protection by the creation of biobetters or improved versions of the approved agent. The Company's Actinium Warhead Enabling (AWE) Program can be accessed by biopharmaceutical companies that are interested in creating biobetters through the utilization of the AWE Platform Technology. To learn more about the AWE Technology Platform or the AWE Program please contact Keisha Thomas, Ph.D., Corporate Development at kthomas@actiniumpharma.com.

About Actinium Pharmaceuticals, Inc.

Actinium Pharmaceuticals Inc. is a clinical-stage biopharmaceutical company focused on developing and commercializing targeted therapies for safer myeloablation and conditioning of the bone marrow prior to a bone marrow transplant and for the targeting and killing of cancer cells. Our targeted therapies are ARC's or Antibody Radio-Conjugates that combine the targeting ability of monoclonal antibodies with the cell killing ability of radioisotopes. Three of our four ARC drug candidates are based on our AWE or Actinium Warhead Enabling Technology Platform that utilizes the isotope Actinium-225 (Ac-225), which emits alpha particles. We are currently conducting clinical trials for our four product candidates; Iomab-B, Actimab-A Actimab-M and Actimab-MDS, as well as performing research on other potential drug candidates utilizing our proprietary AWE Technology Platform. Our most advanced product candidate, Iomab-B, an ARC developed by the Fred Hutchinson Cancer Research Center, is comprised of an anti-CD45 monoclonal antibody labeled with iodine-131. We are currently conducting a pivotal Phase 3 trial of Iomab-B for myeloablation and conditioning of the bone marrow prior to a bone marrow transplant for patients with relapsed or refractory acute myeloid leukemia (AML) age 55 and older. A bone marrow transplant is a potentially curative treatment for patients with AML and other blood cancers including leukemias, lymphomas and multiple myeloma as well as certain blood disorders. Iomab-B has been tested in several of these other cancers with over four hundred patients treated in several Phase 1 and 2 trials with promising results. Upon successful completion of our Phase 3 clinical trial for Iomab-B we intend to submit this candidate for marketing approval in the U.S. and European Union where it has been designated as an Orphan Drug. We are also developing a potentially best in class CD33 program using an ARC comprised of the anti-CD33 monoclonal antibody lintuzumab labeled with the alpha-particle emitter Ac-225. Our most advanced CD33 program candidate, Actimab-A, is currently in a Phase 2 clinical trial for patients over the age of 60 who are newly diagnosed with AML and ineligible for

standard induction chemotherapy. Actimab-A is also has Orphan Drug designation in the US and EU. Actimab-M, our second CD33 targeting ARC, is being studied in a Phase 1 trial for patients with refractory multiple myeloma. Actinium is also planning a Phase 2 trial for Actimab-MDS, our third CD33 program candidate, as a conditioning regimen prior to a bone marrow transplant for patients with MDS that have a p53 genetic mutation. Our AWE or Actinium Warhead Enabling Technology Platform, originally developed in conjunction with Memorial Sloan Kettering Cancer Center, is focused on leveraging Actinium's know how and intellectual property to create additional ARC drug candidates by labeling Ac-225 to targeting moieties that we will either progress in clinical trials ourselves or out-license.

More information is available at www.actiniumpharma.com and our Twitter feed @ActiniumPharma, www.twitter.com/actiniumpharma.

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