February 6, 2019

Actinium Provides Patent Portfolio Update for its Iomab-ACT Next-Generation CAR-T Lymphodepletion Program

- Iomab-ACT program intended to displace non-specific chemotherapy with targeted, single-dose, outpatient conditioning to improve CAR-T access and outcomes

- Iomab-ACT patent estate covers composition of matter, formulation and methods of use for Iomab-ACT related to several forms of adoptive cell therapies

NEW YORK, Feb. 6, 2019 /PRNewswire/ -- Actinium Pharmaceuticals, Inc. (NYSE American: ATNM), announced that it has further expanded the intellectual property portfolio for the technology underpinning its Iomab-ACT program. The Iomab-ACT program is being developed for lymphodepletion, which is also referred to as conditioning, prior to administration of CAR-T based therapies. Due to the targeted nature of the ARC or Antibody Radiation-Conjugate technology, the Iomab-ACT program could provide a superior means of conditioning that could displace or replace chemotherapy based conditioning regimens such as Flu/Cy or Fludarabine and Cyclophosphamide that are used as the standard of practice today.

The patent estate related to Iomab-ACT covers composition of matter, formulation and methods of use. Actinium believes this patent estate is important to potential partners in industry and academia as it may enable the optimization of CAR-Ts through improved lymphodepletion, which may not be possible with Flu/Cy given patents that exist on its use in conjunction with CAR-T. In addition, the patent estate is broad and is applicable to indications where CAR-Ts have already been approved and to emerging indications that the growing field of CAR-T developers are pursuing such as solid tumors. Key filings of the estate cover claims including composition and methods of use in targeted lymphodepletion prior to adoptive cell therapies such as CAR-T with autologous and allogeneic cell therapy in solid or hematologic cancer indications. The filings also include methods of use for targeted lymphodepletion in combination with genetically engineered CAR cells, including those that lack expression of endogenous checkpoint receptors or T cell receptors and targeted conditioning in preparation for administration of gene edited cell therapy for the treatment of non-malignant inherited genetic disorders.

Actinium's Chief Scientific Officer, Dr. Dale Ludwig said, "Our Iomab-ACT program is an exciting progression of our targeted conditioning portfolio that exemplifies how we can utilize our AWE or Antibody Warhead Enabling technology platform to customize targeted radiation for specific applications. We see a major opportunity to replace non-specific chemotherapy

with ARC based targeted lymphodepletion, which we wanted to capitalize on quickly and with strong intellectual property protection. I believe we have succeeded as the claims covered in our filings are robust, cover key concepts related to adoptive cell therapies and further bolster our leadership position in targeted conditioning. I look forward to working with the team to continue to advance the Iomab-ACT program into one or more clinical trials while continuing to build our intellectual property portfolio through our renewed R&D efforts."

Actinium's Iomab-ACT program is an ARC that targets CD45. CD45 is an antigen expressed on many cells that are relevant to CAR-T including lymphocytes, macrophages and regulatory T-cells that have been associated with CAR-T challenges such as durability of response, CRS or Cytokine Release Syndrome and neurotoxicity. Iomab-ACT is derived from, and is a lower dose of, Actinium's lead program Iomab-B, which has been studied in over 500 patients and is currently being investigated in a pivotal Phase 3 trial for targeted conditioning prior to a BMT or Bone Marrow Transplant. Actinium's Iomab-ACT program is highly differentiated when compared to Flu/Cy or other chemo-based lymphodepletion regimens. Unlike chemotherapy, its targeted nature is expected to improve CAR-T cell expansion more efficiently, potentially resulting in responses that are more durable and reduced CAR-T related toxicities. Also, the Iomab-ACT program enables lymphodepletion through a single-dose outpatient administration versus Flu/Cy or other chemo-based lymphodepletion regimens that require multiple infusions in an inpatient setting over several days. Because of this potentially superior profile, the Iomab-ACT technology could result in improved access to CAR-T therapy and also better outcomes. A webinar highlighting the Iomab-ACT program can be accessed here.

Sandesh Seth, Actinium's Chairman and CEO said, "The Iomab-ACT program is emblematic of our team's ability to identify and move rapidly to exploit opportunities where our AWE technology platform can deliver solutions not achievable with other approaches. Also, it strengthens our targeted conditioning portfolio and bolsters our claim of having the leading if not only multi-disease, multi-target, multi-indication pipeline for targeted conditioning in the industry. We are able to now offer the rapidly expanding universe of companies pursuing drug development via CAR-T and other adoptive cell therapies with an IP backed solution that can potentially increase the value of their programs by providing an improved means of conditioning prior to their therapies. We look forward to further developing the program and extending our technological lead in this area."

About Actinium Pharmaceuticals, Inc.

Actinium Pharmaceuticals Inc. is focused on improving patient access and outcomes to cellular therapies such as bone marrow transplant (BMT) and CAR-T with its proprietary, chemotherapy free, targeted conditioning technology. Actinium is the only company with a multi-disease, multi-target, drug development pipeline focused on targeted conditioning. Its targeted conditioning technology is enabled by ARCs or Antibody Radiation-Conjugates that combine the targeting ability of monoclonal antibodies with the cell killing ability of radioisotopes. Actinium's pipeline of clinical-stage targeted conditioning ARCs target the antigens CD45 and CD33 for patients with a broad range of hematologic malignancies including AML or Acute Myeloid Leukemia, MDS or Myelodysplastic Syndrome and MM or Multiple Myeloma.

Iomab-B, Actinium's lead targeted conditioning product candidate, is currently enrolling patients in the pivotal Phase 3 SIERRA trial in patients age 55 or older, with active, relapsed

or refractory AML. Iomab-B (Iodine-131 apamistamab), combines the anti-CD45 monoclonal antibody labeled with iodine-131 for myeloablation prior to a bone marrow transplant. CD45 is expressed on leukemia, lymphoma and normal immune cells. Iomab-B has been studied in over 500 patients in 10 clinical trials in numerous hematologic diseases. Actinium's Iomab-ACT program is an expansion of its CD45 program that is intended to be a universal, chemo-free solution for targeted lymphodepletion prior to CAR-T. Through targeted lymphodepletion, the Iomab-ACT program is expected to improve CAR-T cell expansion, reduce CAR-T related toxicities and expand patient access to CAR-T treatment and potentially other adoptive cell therapies. Due to its lower payload dose, lymphodepletion with the Iomab-ACT program can be accomplished through a single outpatient infusion. Actinium intends to advance its Iomab-ACT program with CAR-T focused collaborators from academia and industry.

Actinium's pipeline also includes a potentially best-in-class CD33 program with its ARC comprised of the anti-CD33 antibody lintuzumab labeled with the alpha-particle emitter actinium-225. Its CD33 program is currently being studied in multiple Phase 1 clinical trials for targeting conditioning, in combinations and as a therapeutic in multiple diseases and indications including AML, MDS and MM.

Actinium is also developing its proprietary AWE or Antibody Warhead Enabling technology platform which utilizes radioisotopes including iodine-131 and the highly differentiated actinium-225 coupled with antibodies to target a variety of antigens that are expressed in hematological and solid tumor cancers. The AWE technology enables Actinium's internal pipeline and with the radioisotope Actinium-225 is being utilized in a collaborative research partnership with Astellas Pharma, Inc. Actinium's clinical programs and AWE technology platform are covered by a portfolio of over 75 patents covering composition of matter, formulations, methods of use and also methods of manufacturing the radioisotope Actinium-225 in a cyclotron.

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

Forward-Looking Statements for Actinium Pharmaceuticals, Inc.

This press release may contain projections or other "forward-looking statements" within the meaning of the "safe-harbor" provisions of the private securities litigation reform act of 1995 regarding future events or the future financial performance of the Company which the Company undertakes no obligation to update. These statements are based on management's current expectations and are subject to risks and uncertainties that may cause actual results to differ materially from the anticipated or estimated future results, including the risks and uncertainties associated with preliminary study results varying from final results, estimates of potential markets for drugs under development, clinical trials, actions by the FDA and other governmental agencies, regulatory clearances, responses to regulatory matters, the market demand for and acceptance of Actinium's products and services, performance of clinical research organizations and other risks detailed from time to time in Actinium's filings with the Securities and Exchange Commission (the "SEC"), including without limitation its most recent annual report on form 10-K, subsequent quarterly reports on Forms 10-Q and Forms 8-K, each as amended and supplemented from time to time.

Contacts:

Actinium Pharmaceuticals, Inc.
Steve O'Loughlin
Principal Financial Officer
investorrelations@actiniumpharma.com

Hans Vitzthum
LifeSci Advisors, LLC
Hans@LifeSciAdvisors.com
(617) 535-7743

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