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Actinium Pharmaceuticals Successfully Completes First Dosing Cohort in the Phase 1 Study of Actimab-A and Venetoclax Combination Therapy in Relapsed/Refractory AML Patients

-- Combination trial, led by UCLA Medical Center and Principal Investigator Gary Shiller, MD, supported by mechanistic rationale and demonstrated synergy of combining venetoclax with targeted radiation from Actimab-A in preclinical studies

NEW YORK, Sept. 23, 2020 /PRNewswire/ --**Actinium Pharmaceuticals, Inc.** (NYSE AMERICAN: ATNM) (the "Company" or "Actinium") today announced that it has successfully completed the first dosing cohort in the Actimab-A and venetoclax combination, multi-center Phase 1 trial for patients with Relapsed or Refractory ("R/R") Acute Myeloid Leukemia (AML) age 18 and above. All patients from the first dosing cohort (0.50 uCi/kg of Actimab-A) completed treatment and cleared their initial safety evaluation, thus allowing the study to proceed to the second dose cohort of 1.0 uCi/kg Actimab-A added to venetoclax. In a poster presentation at the American Association of Cancer Research (AACR) Annual Meeting 2019, Actimab-A was shown to be synergistic with venetoclax in venetoclax resistant cell lines, by depleting MCL-1, a protein shown to mediate resistance to venetoclax. The ongoing Phase 1 study was planned to replicate this synergy in a clinical setting. Actinium plans to report study proof of concept results in 2021.

Venetoclax is a B-Cell Lymphoma 2 (BCL-2) inhibitor jointly developed and marketed by AbbVie and Genentech that is approved in combination with hypomethylating agents ("HMAs") for patients with AML. The use of venetoclax has become widespread in the treatment of fit and unfit patients with R/R AML following its inclusion in the recently expanded National Comprehensive Cancer Network ("NCCN") guidelines. Actinium's preclinical research has demonstrated that by adding Actimab-A to venetoclax, the targeted internalized radiation from Actimab-A can deliver potent AML cell killing, as well as

effectively deplete MCL-1 levels. The overexpression of MCL-1, a member of the BCL-2 family which venetoclax does not inhibit, promotes resistance to venetoclax. Thus, Actimab-A reverses resistance to venetoclax and has independent anti-leukemic activity mediated by CD33 as well.

"We are pleased to confirm that the second combination trial in our CD33 program is advancing through the dose escalation study as planned. Despite approval in multiple blood cancers, including AML, most AML patients are not cured with venetoclax regimens and eventually relapse. Based on the preclinical data, synergy with venetoclax and Actimab-A should lead to higher remission rates in R/R AML," said Dr. Mark Berger, Actinium's Chief Medical Officer. "We continue to generate promising data from our broader combination program. For example, the Actimab-A combination trial with chemotherapy agent CLAG-M increased the complete response rate compared to CLAG-M alone in R/R AML patients by 60%. We expect to complete the proof of concept Actimab-A venetoclax combination trial in 2021."

This Phase 1 study is a multicenter, open label trial of Actimab-A added to venetoclax for patients with CD33 positive R/R AML. The study will continue to enroll patients that have been previously treated with venetoclax as well as venetoclax naïve patients. Gary Schiller, MD, Professor, Hematology-Oncology and Director, Hematologic Malignancy/Stem Cell Transplant Program at the UCLA Medical Center is the Principal Investigator for this study. The trial is also active at the University of Louisville.

Sandesh Seth, Actinium's Chairman and Chief Executive Officer, said, "We continue to advance the CD33 program for fit and unfit R/R AML patients as there is still a significant unmet need despite multiple recently approved agents. These therapeutic agents are not curative and patients continue to experience low response rates and/or high relapse rates. Our CD33 program, which also includes the Actimab-A CLAG-M combination trial, is anchored in leveraging mechanistic synergies of Actimab-A with approved or novel therapeutic agents in order to improve patient outcomes. We look forward to multiple clinical trial updates by year-end from our three ongoing trials in R/R AML, including our Iomab-B SIERRA Phase 3 pivotal trial."

Rationale for Actimab-A Venetoclax Combination Trial

This Phase 1/2 trial is a multicenter, open label trial of Actimab-A (lintuzumab-Ac225) added to venetoclax for patients with CD33 positive relapsed/refractory (R/R) Acute Myeloid Leukemia. The Phase 1 portion of the study is designed to determine the maximum tolerated dose (MTD) of Actimab-A added to venetoclax for R/R AML. The Phase 2 portion of the trial will assess the percentage of patients with CR, CRh, or Overall Response (CR + CRh), up to six months after the start of the treatment without receiving other AML therapies. The trial will enroll R/R AML patients who have been treated with venetoclax as well as venetoclax-naïve patients. At the 1.0 uCi/kg dose, Actimab-A is administered on Day 1 of each cycle for four cycles and venetoclax is taken on Days 1-21 of each cycle for up to 4 cycles. Each cycle is 28 days, with a potential to expand to 42 days to allow for full hematologic recovery. Gary Schiller, MD, Professor, Hematology-Oncology and Director, Hematologic Malignancy/Stem Cell Transplant Program at the UCLA Medical Center is the Principal Investigator for this study.

More information on the clinical trial design is available at clinicaltrials.gov (NCT03867682).

About Actinium's CD33 Program (Actimab-A)

Antibody Radiation Conjugate (ARC) Actimab-A targets the CD33 antigen that is expressed on virtually all AML cells with the antibody lintuzumab which delivers potent alpha radiation via its Actinium-225 radioisotope payload. Blood cancers like AML are highly sensitive to radiation but cannot treated with the current standard of external beam delivery because the disease is too widespread throughout the body. The combination of targeted radiation with Actimab-A potentially allows for greater cancer cell death than a standalone chemotherapy regimen such as CLAG-M or venetoclax, which are frequently used in the treatment of fit and unfit patients with relapsed or refractory AML per National Comprehensive Cancer Network (NCCN) guidelines. Prior clinical results in over 100 patients treated with Actimab-A, including a Phase 1/2 trial of 58 patients, demonstrated a safety profile with minimal non-hematologic toxicities and an unmatched ability to deliver attenuated doses of radiation internally to CD33 expressing cancer cells. In the Phase 1/2 trial, Actimab-A as a single agent produced a 69% remission rate (CR, CRi, CRp) at high doses in patients with newly diagnosed AML but Actinium elected to pursue low dose combination trials for therapeutic development based on observed myelosuppression. In the Actimab-A CLAG-M Phase 1 combination trial, the second cohort with CLAG-M plus the 0.50 uCi/kg dose showed that 86% (6/7) of patients achieved complete remission (CR/CRi) after receiving the 0.50 uCi/kg dose of Actimab-A. This is a nearly 60% increase over the remission rate reported in a trial of seventy-four patients with relapsed or refractory AML who received CLAG-M alone. The company expects trial results, including the third dose cohort, in 2020. The Actimab-A Venetoclax Phase 1 trial continues to enroll patients in a maximum tolerated dose and expects to announce proof-of-concept results in 2021.

About Actinium Pharmaceuticals, Inc. (NYSE: ATNM)

Actinium Pharmaceuticals, Inc. is a clinical-stage biopharmaceutical company developing ARCs or Antibody Radiation-Conjugates, which combine the targeting ability of antibodies with the cell killing ability of radiation. Actinium's lead application for our ARCs is targeted conditioning, which is intended to selectively deplete a patient's disease or cancer cells and certain immune cells prior to a BMT or Bone Marrow Transplant, Gene Therapy or Adoptive Cell Therapy (ACT) such as CAR-T to enable engraftment of these transplanted cells with minimal toxicities. With our ARC approach, we seek to improve patient outcomes and access to these potentially curative treatments by eliminating or reducing the non-targeted chemotherapy that is used for conditioning in standard practice currently. Our lead product candidate, I-131 apamistamab (Iomab-B) is being studied in the ongoing pivotal Phase 3 Study of Iomab-B in Elderly Relapsed or Refractory Acute Myeloid Leukemia (SIERRA) trial for BMT conditioning. The SIERRA trial is over fifty percent enrolled and positive single-agent, feasibility and safety data has been highlighted at ASH, TCT, ASCO and SOHO annual meetings. I-131 apamistamab will also be studied as a targeted conditioning agent in a Phase 1/2 anti-HIV stem cell gene therapy with UC Davis and is expected to be studied with a CAR-T therapy in 2020. In addition, we are developing a multi-disease, multi-target pipeline of clinical-stage ARCs targeting the antigens CD45 and CD33 for targeted conditioning and as a therapeutic either in combination with other therapeutic modalities or as a single agent for patients with a broad range of hematologic malignancies including acute myeloid leukemia, myelodysplastic syndrome and multiple myeloma. Ongoing combination trials include our CD33 alpha ARC, Actimab-A, in combination with the salvage chemotherapy CLAG-M and the Bcl-2 targeted therapy venetoclax. Underpinning our clinical

programs is our proprietary AWE (Antibody Warhead Enabling) technology platform. This is where our intellectual property portfolio of over 100 patents, know-how, collective research and expertise in the field are being leveraged to construct and study novel ARCs and ARC combinations to bolster our pipeline for strategic purposes. Our AWE technology platform is currently being utilized in a collaborative research partnership with Astellas Pharma, Inc. Website: https://www.actiniumpharma.com/

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.

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