March 25, 2021

Actinium Announces Completion of Enrollment of Second Dose Cohort in Actimab-A Venetoclax Combination Trial for Patients with R/R AML

- Proof-of-concept Phase 1 data expected in 2H:2021 will evaluate safety, response rates, MRD negativity and cytogenetic profiles

- Complete response in patient with TP53 and other mutations and one partial response reported in patient with poor risk adverse cytogenetics reported in first dose cohort with subtherapeutic dose of Actimab-A with venetoclax

NEW YORK, March 25, 2021 /PRNewswire/ --**Actinium Pharmaceuticals, Inc.** (NYSE AMERICAN: ATNM) ("Actinium" or the "Company") today announced that initial patient enrollment in the second dose cohort in the Phase 1 portion of the Actimab-A venetoclax Phase 1/2 combination trial in fit and unfit patients with relapsed or refractory Acute Myeloid Leukemia (r/r AML) has been completed. The Phase 1 portion of the trial is a 3 + 3 dose escalation study to determine the maximum tolerable dose of Actimab-A that is to be studied in the Phase 2 portion of the study. Based on the progress of enrollment, Actinium expects to complete the Phase 1 portion and present further proof-of-concept data in the second half of 2021.

First-in-human data from the first dose cohort of 0.5 µCi/kg of Actimab-A and Venetoclax were presented at the 62nd American Society of Hematology annual meeting in December 2020. Patients enrolled in the first dose cohort had a median of 2 prior therapies (range 2-3) and a median bone marrow blast percentage of 30% (range 20 - >60). All 3 patients had poor risk disease with adverse cytogenetics, and each patient had an additional high-risk marker (FLT3-ITD+, antecedent JAK2+ myelofibrosis, or TP53 mutation). One patient who had multiple genetic mutations including IDH2, RUNX1, TP53 and others, achieved a complete remission with incomplete blood count recovery (CRi) after the first cycle of Actimab-A and venetoclax. Next generation sequencing at the end of the first cycle showed that the patient was negative for the known IDH2 and RUNX1 mutations. In addition, another

patient achieved a partial response after one cycle of Actimab-A and venetoclax. There were no Actimab-A related dose limiting toxicities or nonhematologic Grade 3 or greater related AEs reported in the first cohort.

Dr. Mark Berger, Actinium's Chief Medical Officer, said, "We are encouraged by the strong progress we are making in this novel combination trial and excited to be studying Actimab-A with venetoclax. Venetoclax has emerged as a standard of care and backbone therapy for patients with AML who are both fit and unfit, however, patients with relapsed or refractory disease have poor outcomes and therefore need better treatment options. Based on the synergistic mechanism of action and preliminary clinical evidence from the first cohort, we are optimistic that Actimab-A in combination with venetoclax can improve outcomes for patients with relapsed or refractory disease using the unique targeted radiation mechanism of Actimab-A. We look forward to presenting data from this cohort of patients as well additional clinical data from the Phase 1 portion of the trial and working to advance this novel combination in the clinic."

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. Further, the induction of direct AML cell death via double-stranded DNA breaks via the radioisotope Actinium-225 in Actimab-A provides a second mechanism for enhancing synergistic potency with venetoclax. Venetoclax is a B-Cell Lymphoma 2 (Bcl-2) inhibitor that is jointly developed and marketed by AbbVie and Genentech and is approved for patients with AML, Chronic Lymphocytic Leukemia (CLL), and Small Lymphocytic Leukemia (SLL). Despite its approval in AML, venetoclax has produced low response rates of 19% as a single agent in R/R AML.[1] A Phase 2 trial studying Actimab-A as a single agent produced a 69% overall response rate in older unfit patients with newly diagnosed AML.

Sandesh Seth, Actinium's Chairman and CEO, added, "This trial is an exciting evolution of our Actimab-A program and application of the isotope Actinium-225. Actinium-225 is a potent medical isotope that can kill a cancer cell with a single alpha particle hit, emits four alpha particles in its decay and can cause double strand DNA breaks for which cancer cells have no known repair or resistance mechanism. Its energy is also emitted over a very short path length equal to a few cells in diameter enabling precise cell killing while sparing normal cells to limit systemic toxicities. With clinical experience in nearly 150 patients, robust IP and a clinically validated supply chain, we are leaders in the rapidly growing field of targeted alpha radiotherapy and specifically Actinium-225. Through continued clinical progress and innovation driven by our R&D efforts, we are committed to advancing our leadership position in the field of Actinium-225 based therapies and applying them with the goal of improving patient outcomes."

[1] Aldoss et al. Efficacy of the combination of venetoclax and hypomethylating agents in relapsed/refractory acute myeloid leukemia. Haematologica2018.1888094.

About Actinium's CD33 Program

Actinium's CD33 program is evaluating the clinical utility of Actimab-A, an ARC comprised of the anti-CD33 mAb lintuzumab linked to the potent alpha-emitting radioisotope Actinium-225 or Ac-225. CD33 is expressed in the majority of patients with AML and myelodysplastic syndrome, or MDS, as well as patients with multiple myeloma. The CD33 development

program is driven by data from over one hundred treated patients, including a Phase 1/2 trial where Actimab-A produced a remission rate as high as 69% as a single agent. This clinical data is shaping a two-pronged approach for the CD33 program, where at low doses the Company is exploring its use for therapeutic purposes in combination with other modalities and at high doses for use for targeted conditioning prior to bone marrow transplant. Actinium currently has multiple clinical trials ongoing including the Phase 1 Actimab-A CLAG-M and Phase 1/2 Actimab-A venetoclax combination trials and is exploring additional CD33 ARC combinations with other therapeutic modalities such as chemotherapy, targeted agents or immunotherapy.

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 seventy-five percent enrolled and positive single-agent, feasibility and safety data has been highlighted at ASH, TCT, ASCO and SOHO annual meetings. Iomab-ACT (low dose I-131 apamistamab) is also be studied as a targeted conditioning agent in a Phase 1 study with a CD19 CAR T-cell Therapy with Memorial Sloan Kettering Cancer Center and is intended to be studied for conditioning prior to gene therapy. 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 140 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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