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Actinium Pharmaceuticals, Inc. (ATNM – NYSE American)

ATNM: Initiating Coverage – Diversified Nuclear Medicine Portfolio

We use a discounted cash flow (DCF) model and apply an overall 29% probability of success to our forecasts for ATNM-400, Iomab-ACT, Actimab-A & Iomab-B in both domestic and international markets to generate our valuation. The DCF employs a 15% discount rate and terminal growth of -10%. Our model extends until 2047.

Current Price (9/14/2026)	$1.28
Valuation	**$4.00**

Actinium Pharmaceuticals is a biology-driven radiotherapy company advancing candidates in oncology and conditioning for solid tumors and hematological malignancies. Its approach is expanding the reach of radiopharmaceuticals to novel target-isotope combinations in acute myeloid leukemia, solid tumors & conditioning. It favors Ac-225 isotopes in its oncology pipeline and I-131 for conditioning candidates.

Primary R&D efforts emphasize ATNM-400 which is being developed for solid tumors in prostate, lung & breast cancer, showing an effect in resistant disease. It is an Ac-225-bound antibody pursuing an undisclosed, novel target preparing for an IND expected later in 2026.

The conditioning programs focus on bone marrow transplant and cell and gene therapy applications. Traditional conditioning agents are toxic and lack specificity. Actinium's radioimmunoconjugates address these shortcomings and may provide a less arduous path to bone marrow or hematopoietic stem cell transplant.

Actimab-A targets CD33 and carries an Ac-225 payload treating AML. Iomab-B & Iomab-ACT are I-131 conjugated isotopes in trials for conditioning prior to transplant.

The company is developing candidates for commercialization in both the US & developed global markets.

INITIATION SUMMARY DATA

52-Week High	**1.74**
52-Week Low	**0.74**
One-Year Return (%)	**-21.5**
Beta	**0.1**
Average Daily Volume (sh)	**142,624**
Shares Outstanding (mil)	**31.4**
Market Capitalization ($mil)	**40.2**
Short Interest Ratio (days)	**3.8**
Institutional Ownership (%)	**20.5**
Insider Ownership (%)	**9.8**
Annual Cash Dividend	**$0.00**
Dividend Yield (%)	**0.00**
5-Yr. Historical Growth Rates	
Sales (%)	**N/A**
Earnings Per Share (%)	**N/A**
Dividend (%)	**N/A**
P/E using TTM EPS	**N/A**
P/E using 2026 Estimate	**N/A**
P/E using 2027 Estimate	**N/A**
Zacks Rank	**N/A**

Risk Level	**Above Average**
Type of Stock	**Small-Growth**
Industry	**Med-Drugs**

ZACKS ESTIMATES

Revenue

(In millions of USD)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2025	$0.0 A	$0.0 A	$0.1 A	$0.0 A	$0.1 A
2026	$0.0 A	$35.0 A	$0.0 E	$0.0 E	$35.0 E
2027					$0.0 E
2028					$0.0 E

Earnings per Share

	Q1	Q2	Q3	Q4	Year
2025	-$0.51 A	-$0.22 A	-$0.16 A	-$0.19 A	-$1.09 A
2026	-$0.18 A	$0.89 A	-$0.22 E	-$0.24 E	$0.25 E
2027					-$0.65 E
2028					-$0.62 E

INITIATION

We are initiating coverage of Actinium Pharmaceuticals, Inc. (NYSE: ATNM) and assign a valuation of $4.00 per share. This valuation is based on our estimates for successful development, approval and commercialization of ATNM-400 in solid tumors, Actimab-A, Iomab-ACT and Iomab-B in acute myeloid leukemia (AML), solid tumors and conditioning regimens in the United States and developed world. Actinium is a clinical-stage biopharmaceutical company developing radiopharmaceuticals for both therapeutic and conditioning applications in multiple areas.

Source: Actinium Pharmaceuticals, Inc. Website

Actinium is developing a pipeline of therapeutic and conditioning assets pursuing important indications in oncology and gene therapy. This includes targets in solid tumors for its preclinical ATNM-400 program and cell surface protein targets CD33, CD45 and CD38 in other areas. In alignment with its name, Actinium's warhead portfolio includes Ac-225; however, it employs other radioisotopes including Iodine-131 for its conditioning candidates and Lutetium-177 in preclinical work. Combination therapies are another area of interest for Actinium where it is working with checkpoint, FLT3 and menin inhibitors.

Actinium's primary focus is on ATNM-400, which is being developed for an undisclosed target expressed in prostate, lung and breast cancer. The radioconjugate's target is prolific in these tumors and is scarce on non-cancerous cells compared with the prevalence of prostate-specific membrane antigen (PSMA). Actinium's recent presentations suggest that ATNM-400 should be more effective in micrometastases compared with alternatives. The company has presented posters at leading oncology conferences characterizing the candidate's activity in several solid tumor settings. It is positioning ATNM-400 to be the next generation of therapy in prostate cancer, leveraging the effective emissions profile of Ac-225. Actinium is also developing other preclinical assets in relapsed/refractory (r/r) AML using its Actimab-A combinations and theranostic applications in solid tumors.

Actinium's most advanced candidate is Iomab-B which has been evaluated in a Phase III trial. It is a CD45-directed monoclonal antibody called apamistamab conjugated to Iodine-131. The candidate was evaluated as a targeted conditioning agent in hematopoietic stem cell transplantation (HSCT) for older patients with r/r AML. While the Phase III trial results were positive, the FDA changed its requirements for accepting the biologic license application (BLA) prior to evaluation and did not accept it. The program is on hold pending partner identification. A derivative of Iomab-B called Iomab-ACT, which has the same construct, is designed to deliver nonmyeloablative or lymphodepleting conditioning prior to CAR-T or gene therapy. These indications are in early-stage clinical trials.

Actimab-A is Actinium's hematology franchise and is being investigated in multiple AML indications. The company has advanced the Actimab-A candidates in clinical trials and is seeking to collaborate. These programs are supported by a Cooperative Research and Development Agreement (CRADA) with the National Cancer Institute, which enables cost-effective clinical development with commercial rights retained by Actinium. Actimab-A is a targeted α-particle radiotherapeutic composed of a humanized anti-CD33 monoclonal antibody, called lintuzumab, conjugated to Actinium-225. The most clinically advanced Actimab-A program is pursuing r/r AML with a combination approach including CLAG-M and is preparing for a Phase II/III study. The radiotherapeutic is also being evaluated in combination therapy with venetoclax and a menin inhibitor among other agents. The other important Actimab-A program targets myeloid-derived suppressor cells (MDSCs) in combination with checkpoint inhibitors. Eradicating CD33+ MDSCs may overcome resistance to immunotherapy and help checkpoint inhibitors work better.

Ac-225 is more difficult to source compared with other isotopes such as industry workhorses like Lutetium-177. Nevertheless, Ac-225 is an attractive alternative that combines high energy α-particles with an optimal half-life to treat resistant cancers. Furthermore, Actinium is developing a new process to more efficiently manufacture Ac-225, which can reduce its cost by a factor of 10 or more. The related facility should be operational by 2H:26. Ac-225's α

particles emit substantial energy over a short distance generating lethal double-strand breaks in DNA compared with β-emissions that transmit less energy over a wider field. Ac-225's decay mechanism releases four α particles, delivering a lethal dose to tumor tissue. Ac-225 can be chelated to a targeting vector such as a monoclonal antibody allowing it to be precisely delivered. Its half-life of ten days balances ease of distribution with patient radiation exposure.

Based on the candidates' status, management intent and capital resources, our valuation captures ATNM-400 in solid tumors, Iomab-ACT, Actimab-A and Iomab-B in AML and conditioning. We expect both Actimab-A and Iomab-B to be advanced with partners, who will carry the programs through regulatory approval and commercialization. In return, Actinium is expected to receive customary upfront payments, milestones and royalties. To simplify, our approach estimates a royalty rate that will represent all components of value received.

Radiopharmaceuticals are essential tools for diagnostic, therapeutic and conditioning applications across multiple disease states. In oncology, these agents enable early cancer detection, tumor localization and precise metastasis staging. Beyond diagnostics and direct cancer therapy, radiopharmaceuticals play a critical role in targeted conditioning regimens, such as myeloablation and lymphodepletion, to safely prepare patients for bone marrow transplants and other cellular therapies.

Key reasons to own Actinium Pharmaceuticals shares:

- **Diverse radiopharmaceutical pipeline with multiple indications under development**
  - **ATNM-400 for multiple solid tumor targets (prostate, lung & breast)**
  - **Actimab-A to resensitize the immune system by depleting MDSCs in solid tumors**
  - **Iomab-ACT conditioning directed against CD45 for gene therapy and CAR-T**
    - **Achieves selective lymphodepletion at lower doses**
    - **Preserves hematopoietic recovery**
- **Late stage partnering opportunities**
  - **Actimab-A + CLAG-M in AML**
  - **Iomab-B in AML directed against CD45 for bone marrow transplant conditioning**
    - **Offers improved access and outcomes**
    - **Reduced toxicity compared with standard-of-care**
- **Pipeline of in-development clinical assets**
  - **Combination therapies with PD-1 inhibitors**
  - **Undisclosed targets and theranostics**
- **$36 million cash position supporting operations into 2028**
- **No debt, material warrants or preferred issues on the balance sheet**

The initiation report introduces radiopharmaceuticals to investors, defining the industry and discussing the different types of radiation and particles involved. We start with a brief history, then describe the conditioning and therapeutic categories including details regarding the important subcategories of the therapeutic modality. Radiopharmaceuticals require advanced logistics, management and care compared to other biopharmaceutical offerings. We describe the framework behind their regulation, transportation and disposal. The report provides an industry review tracing the recent commercial history of the drug class, including new company formation and merger and acquisition activity.

The next section examines Actinium's primary end markets. Products and pipeline are next, as we review the firm's assets. Peers and competitors are reviewed including a summary of their industry focus. We list historical milestones and background on Actinium followed by a summary of recent financial performance. Key members of senior management are introduced and risks related to life sciences companies in general and for Actinium specifically are discussed. The report concludes with valuation work and a presentation of our model's assumptions. The target price relies on a discounted cash flow (DCF) model that estimates contributions from ATNM-400, Iomab-ACT, Actimab-A and Iomab-B in both the U.S. and developed countries. We initiate on Actinium Pharmaceuticals, Inc. with a valuation of $4.00 per share.

Radiopharmaceuticals

Radiopharmaceuticals are radioactive medicines or radioisotopes that are used to diagnose and/or treat disease. They are used to image a variety of conditions from cancer to cardiovascular disease to kidney dysfunction and neurodegenerative disease. They have also shown promise in conditioning prior to a stem cell transplant due to the precise delivery of radiation. In the treatment realm, this class of drug is predominantly used in cancer. Imaging has broader applications in oncology, neurology and cardiology. Radionuclides are radioactive forms of elements that can either occur naturally or be manufactured. The radioactive element contains an unstable nucleus which emits radiation as it decays. The particles and rays that it emits can either be detected by a variety of diagnostic devices or bombard tumors which causes DNA strand breaks and cancer cell death.

The agents can be further categorized depending upon what type of radiation they produce. These include products that release alpha (α) particles, beta (β) particles, gamma (γ) radiation, positrons and neutrons among other emissions. The emissions support applications in medicine, scientific research, industrial processes and energy production. Some of the most common radionuclides, which are also known as radioisotopes, are listed below.

Exhibit I – Common Isotopes Used in Radiomedicine

Actinium-225	Thallium-201	Indium-111	Yttrium-90
Samarium-153	Radium-223	Gallium-68	Carbon-11
Lutetium-177	Fluorine-18	Iodine-131	Cobalt-60

Compiled by Zacks Analyst

The physical half-life[1] of a radioactive isotope is a critical consideration in the use, safety, and efficacy of radiopharmaceuticals. It determines which facilities can accommodate a given product and constrains which clinical applications are feasible. For diagnostic use, an isotope must have a half-life short enough to decay away soon after imaging is completed, whereas for therapeutic applications, the physical half-life must be long enough to fatally damage the cancer cells it seeks to eradicate. The biological half-life is another vital consideration. It is the time required for the body to eliminate half the agent through metabolism, excretion, and other physiological processes. Together, the physical and biological half-lives combine to yield the effective half-life, calculated as $T_e = (T_p \times T_b) / (T_p + T_b)$,[2] which governs the elimination of radioactivity from the body. When estimating residual activity or performing radiation dosimetry calculations, the effective half-life is the most important value, as it accounts for both radioactive decay and biological clearance.

Radiopharmaceuticals undergo rapid decay and often must be prepared immediately before administration, placing operational demands on manufacturers, hospital pharmacies and nuclear medicine departments. This requires providers to balance limits on distribution range and scheduling flexibility against exposure to unnecessary radiation beyond the diagnostic or therapeutic window. From a patient safety standpoint, the radionuclide half-life of a diagnostic agent should ideally be as short as possible, since any radioactivity remaining after a scan has no diagnostic value and contributes only to patient radiation exposure. Radionuclide selection must be tailored to the specific clinical application, the logistics of delivery and the imperative to minimize patient risk.

Other features important to success include low cost and availability. The agent must specifically target the desired tissue but must either not accumulate in or clear quickly from non-target tissues in order to minimize background noise and organ exposure. The radionuclide should emit the proper type of radiation for its purpose, such as gamma rays for imaging and alpha or beta particles for therapy. Favorable pharmacokinetic properties are also essential such as effective targeting, stable labeling, predictable biodistribution, rapid clearance from non-target tissue and chemical stability.

[1] The half-life is the time it takes for half of any given amount of a radioactive isotope to decay into its daughter products. This rate remains constant regardless of the sample size.
[2] T_e is effective half-life, T_p is physical half life and T_b is biological half-life.

Types of Radiation

Radiomedicine is associated with many types of radiation including X-rays, gamma radiation, alpha and beta particles, positrons and Auger electrons. The most widely used type of radiation in modern medicine is the X-ray. It is used for body imaging, mammography, dental imaging and fluoroscopy. Gamma rays are important for their role in imaging, positron emission tomography (PET) scans and stereotactic radiosurgery (SRS) for treatment of brain tumors. Beta radiation is commonly used to treat certain types of cancer, eye conditions and to alleviate pain in bone metastases. Proton beam therapy is a radiation treatment that precisely delivers a beam of protons to disrupt and destroy tumor cells while ultraviolet radiation can be used to treat skin conditions like psoriasis.

Auger electrons are another type of particle that is used in therapy. The advantage of Auger electron therapy is high linear energy transfer. They deliver intense radiation damage within an extremely short range, potentially minimizing damage to surrounding healthy tissues when properly targeted to cancer cells.

Therapy most frequently employs beta or alpha emitters which offer tissue-damaging properties while imaging typically requires gamma or positron emitters which show up on scans. Some radioisotopes emit multiple types of radiation, allowing for the combination of therapy and diagnostic imaging. These are known as theranostic applications.

In the context of Actinium Pharmaceuticals, Ac-225 is the relevant radioisotope. It emits high energy alpha particles used in targeted alpha therapy. Several other radionuclides similarly emit alpha radiation including radium-223, lead-212, thorium-227 and astatine-211 among others. Alpha-emitters give off small, high-energy particles composed of two protons and two neutrons tightly bound together.[3] Their range rarely extends beyond a single cell and the particles are able to cause fatally damaging double-strand DNA breaks (DSBs). The short range helps reduce damage to healthy tissue. The nucleus emits the particles during its radioactive decay. Alpha emitters are contrasted by beta radiation which delivers lower linear energy transfer over a longer path length. While alpha therapy works best for small-volume, targeted disease, beta radiation is more appropriate for larger tumor masses.[4]

A Condensed History of Radiopharmaceuticals

Radiation has been associated with medicine for over a century with X-rays producing some of its earliest benefits. X-rays were used to image and treat cancer in the late 19th century in Germany.[5] In 1928, head and neck cancers were cured with fractionated X-rays and a decade later the first patient was treated with neutron beams.[6] As the science advanced, the first radiopharmaceuticals were developed that could serve as either diagnostic tracers or therapeutic agents.

Other mentions of radiopharmaceuticals in the early twentieth century relate to radiotracers and their use to conduct diagnostic procedures. The first use of a radiotracer is often credited to George de Hevesy in the 1920s. He used radioactive lead to study lead metabolism in plants, which is considered one of the pioneering experiments in nuclear medicine and radiotracer technology.[7] In 1925, at the Beth Israel Hospital in Boston, Hermann Blumgart measured circulation using radium C to generate vapor trails in a modified Wilson cloud chamber.[8] In the 1930s, Emilio Segre and Carlo Perrier isolated technetium, which was the first synthetic element and now widely used in medical imaging as technetium-99m.[9] After World War II, the Atomic Energy Commission began to regulate how radioactive materials were used. One of the early radioactive substances purchased from the US government's national laboratories was Iodine-131, which was employed as a radiotracer to diagnose thyroid cancer. Abbott Laboratories established a radiopharmaceutical laboratory in the mid-1950s which provided early products to researchers. Soon after, competitor E.R. Squibb emerged on the scene providing more flexible timing for radiopharmaceutical product availability which allowed scheduling of patient imaging any day of the week.

[3] Australian Radiation Protection and Nuclear Safety Agency. Alpha Particles. Accessed July 2026.
[4] Karimi, H., *et al*. Alpha and Beta Emitters in Translational Nuclear Medicine: Clinical Advances, Challenges, and Future Direction. International Journal of Molecular Sciences. February 2026.
[5] On November 8, 1895, physicist Wilhelm Conrad Röntgen (1845-1923) became the first person to observe X-rays, a significant scientific advancement that would ultimately benefit a variety of fields, most of all medicine. In 1896 Röntgen presented a lecture on the X-ray. Within months, systems were being devised to use x-rays for diagnosis, and within three years radiation was used to treat cancer. American Cancer Society, History of Cancer Treatments, Radiation Therapy.
[6] Connell, P.P., Hellman, S. Advances in Radiotherapy and Implications for the Next Century: A Historical Perspective. Cancer Research. January 2009.
[7] Hevesy, G. The Absorption and Translocation of Lead by Plants: A Contribution to the Application of the Method of Radioactive Indicators in the Investigation of the Change of Substance in Plants. The Biochemical Journal, 1923.
[8] Patton, D.D. The Birth of Nuclear Medicine Instrumentation: Blumgart and Yens, 1925. The Journal of Nuclear Medicine. 2003.
[9] Spagnolo, B. 1937, Palermo: the discovery of technetium. Il Nostro Mundo. February 2019.

The FDA first began to regulate radiopharmaceuticals in the 1970s. This regulatory change foreshadowed their wider use in oncology imaging and therapy in the 1980s. During the 1970s, the FDA withdrew the exemptions granted to radioactive products used in medicine and began regulating them as drugs in a process completed in 1977. With the realization that technetium-based products were effective for imaging, their use later expanded substantially. The 1980s saw the development of several new oncology agents such as I-meta-iodobenzylguanidine which could be used for imaging and treatment. The 1990s produced the first monoclonal antibody bound to a radionuclide for tumor imaging called In-satumomab pendetide. PET imaging was also evolving during the 1990s and 2000s as 3-D PET scanning was introduced and improved detector designs allowed for better resolution. The use of this modality also became more widespread for cancer staging and monitoring along with growing applications in neurology. PET/CT hybrid systems also were deployed beginning a multimodal imaging approach that improved accuracy and combined anatomical and functional information.

Radiotherapy

While many radiopharmaceuticals are used for diagnostics, some are used for treatment. Most of the therapies are directed towards hematological, solid organ cancers or blood dyscrasias. The autoimmune disorder Graves' disease is responsive to radioactive Iodine (I-131) therapy, which gradually shrinks the thyroid. Oncology related uses include I-131 for treating thyroid cancer and hyperthyroidism, lutetium-177 for treating neuroendocrine tumors and prostate cancer and yttrium-90 microsphere for liver cancer to name a few.

Radioligand Therapy
An emerging subcategory of radiopharmaceuticals is radioligand therapy (RLT). It is a form of targeted cancer treatment that combines molecular targeting with the killing ability of radiation. RLT employs a ligand that targets cancer cells expressing a specific biomarker which is bound to a therapeutic radionuclide to deliver cytotoxic radiation. The compound may provide both diagnostic features and therapy. Examples of RLTs include Lutathera and Pluvicto which were approved in 2018 and 2022 respectively.

Some of the more common ligands used are the prostate-specific membrane antigen (PSMA), somatostatin receptor ligands (SSTR2 for example) and CXCR4 ligands. The ligands are usually conjugated with chelators that can bind radioactive isotopes such as lutetium-177, actinium-225 or yttrium-90 for therapeutic purposes. The specific isotope chosen depends on the specific cancer type, target expression and treatment goals. Actinium's portfolio uses Ac-225 for its acute myeloid leukemia (AML) and solid tumor applications. The main emissions from Ac-225 are alpha particles. A feature of Ac-225 is that its decay chain daughter isotopes also emit alpha particles, justifying its utility in medical applications.

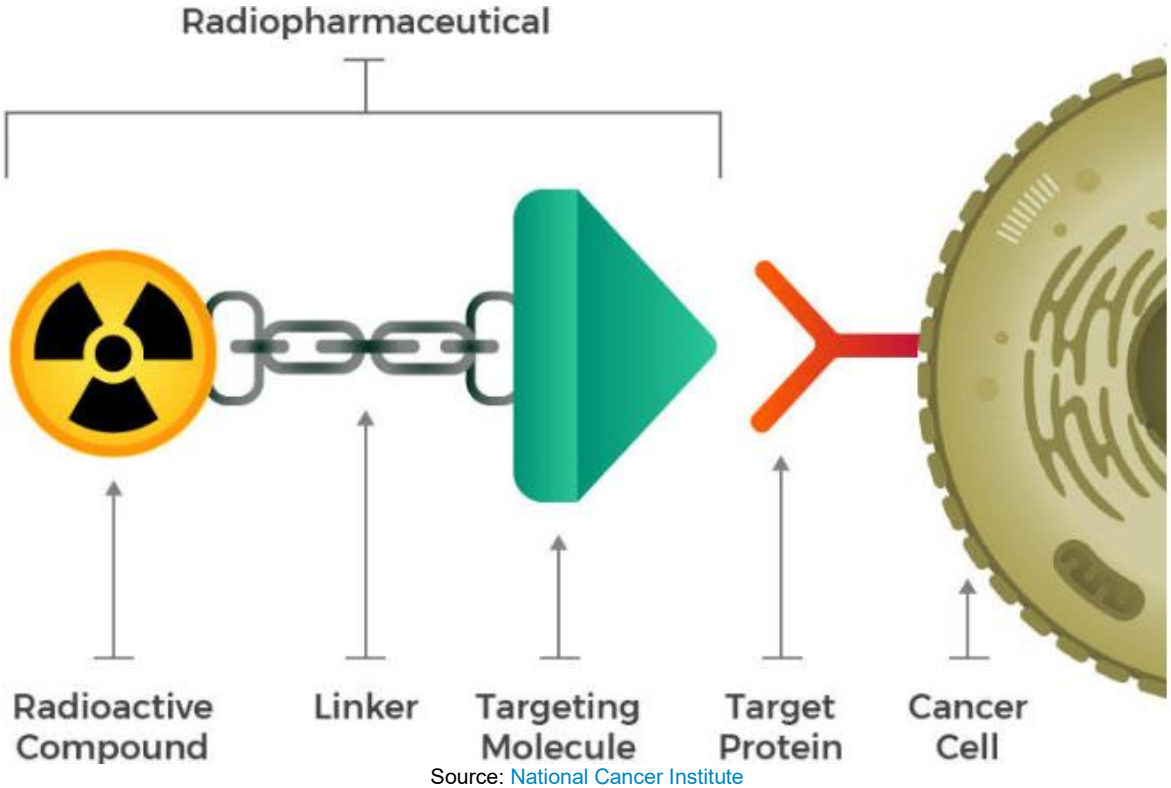
An important feature of RLT is the chemical structure of the attachment between the ligand and the radioisotope. For metal elements, a chelator is used to bind the two parts of the RLT. The chelator securely holds the radioisotope to prevent its early release into the body and to maintain the stability of the radioligand complex while the RLT is in the patient's circulation. The choice of a chelator can affect the pharmacokinetics and biodistribution of the radioligand. Other types of connections can be used including covalent bonding, encapsulation or nanoparticles.

Yet another domain of RLT uses monoclonal antibodies (mAbs) for molecular targeting in a discipline called radioimmunotherapy. The related medicines are called radioimmunoconjugates (RICJs) and can be used for both imaging and therapy. This technology labels mAbs with a radionuclide directed against tumor-associated antigens that is specific to a certain biomarker. This approach increases the dose delivered to tumor cells and avoids off-target binding to normal tissues.[10] Some of the common radioisotopes used with RICJs include Iodine-131, yttrium-90 and indium-111.[11] One example of an approved RICJ is Zevalin, which is indicated for non-Hodgkin's lymphoma and uses a mAb that targets the CD20 receptor. Antibody-bound complexes such as Zevalin are also called radioconjugates and are discussed further in the next paragraph.

Radiopharmaceutical Structure
Diagnostic and therapeutic radiopharmaceuticals are frequently designed with a targeting molecule-linker-radioisotope construct to bind selectively to specific receptors on or within target cells and deliver cytotoxic radioisotopes. This is illustrated in the following exhibit.

[10] Yeong, C.H., *et al*. Therapeutic radionuclides in nuclear medicine: current and future prospects. Journal of Zhejiang University. 2014
[11] Parakh, S. *et al*. Radiolabeled Antibodies for Cancer Imaging and Therapy. Cancers. March 2022.

Exhibit II – Structure of a Radiopharmaceutical



Source: National Cancer Institute

Traditional radiation therapy can damage healthy tissue near tumors that are receiving treatment. Radiopharmaceuticals can minimize this risk by direct delivery of the radionuclide to the diseased cell. The structure of many radiopharmaceuticals includes a radioactive compound that is bound to a targeting molecule with a linker, quite similar to the structure of an antibody drug conjugate (ADC). In some cases, a diagnostic can be combined with a therapeutic to measure and treat simultaneously. This class of product falls into the radiotheranostic domain.

Radiopharmaceuticals for Conditioning

Conditioning is a preparatory treatment given to a patient before a bone marrow transplant, gene therapy or chimeric antigen receptor (CAR) T cell therapy. It seeks to destroy cancer cells or other mutant cells, suppress the immune system and create space in the bone marrow for new stem cells to engraft and grow. Traditional conditioning involves administration of chemotherapy, radiation therapy and immunosuppressive drugs in an approach that varies depending on the underlying disease, type of transplant and the patient's health. Major categories include full-intensity myeloablative conditioning, reduced intensity conditioning (RIC) and non-myeloablative conditioning.

Myeloablative conditioning seeks to eradicate the patient's existing bone marrow and hematopoietic cells. In cases of blood cancers such as leukemia, lymphoma or myeloma, this means destroying malignant cells in the bone marrow and bloodstream. Eliminating the patient's immune cells is critical to prevent them from rejecting the incoming donor stem cells (in allogeneic transplants). This immunosuppression prevents host-versus-graft disease. Myeloablative conditioning creates space in the bone marrow niche for the new donor cells or collected stem cells to engraft and establish themselves. The bone marrow microenvironment has limited capacity, so clearing out existing cells allows the transplanted cells to home to the marrow and begin producing new blood cells.

RIC is used for patients who cannot tolerate the toxicity of myeloablative regimens. Older patients or those with comorbidities such as organ dysfunction may require a lower intensity approach. RIC may be considered when the therapy aims to induce the graft vs tumor effect. This may be used for chronic lymphocytic leukemia, follicular lymphoma or some myelodysplastic syndromes. RIC improves mortality for the conditioning component of treatment; however, it is associated with a higher risk of relapse following hematopoietic stem cell transplant (HSCT).

Nonmyeloablative conditioning is used for immunosuppression in order to allow donor engraftment. It has the benefit of supporting faster immunologic recovery after allogeneic stem cell transplant and can result in a mixed chimeric

state in the host, which may protect against graft vs. host disease (GVHD) by promoting immune tolerance.[12] Nonmyeloablative conditioning and lymphodepleting chemotherapy have differing objectives. Nonmyeloablative conditioning seeks partial cytoreduction of malignancy and sufficient immunosuppression to allow donor graft or adoptive T cells to engraft and exert graft-versus-tumor effects and removal of regulatory and competing lymphocyte populations. Nonmyeloablative conditioning is used specifically as a gentle, low-toxicity method to achieve lymphodepletion, which suppresses the patient's existing immune system to create space and an optimal biological environment for newly infused cells to thrive, multiply and target cancer.

Appropriate Populations
Myeloablative conditioning is most appropriate for younger patients in otherwise good overall health with acute myeloid leukemia (AML), acute lymphoblastic leukemia (ALL), high-grade lymphomas and myelodysplastic syndromes. RIC falls between myeloablative and nonmyeloablative conditioning and uses moderate doses of chemotherapy and radiation. RIC seeks to significantly damage the bone marrow but not completely ablate it. Older patients with co-morbidities, heavily pretreated patients and patients with prior transplants are candidates. The option of RIC has opened up transplantation for populations that were previously too sick or weak to undergo full-intensity myeloablative conditioning. Nonmyeloablative conditioning is an alternative for elderly patients or those with comorbidities. This less intense approach contributes to improved non-relapse mortality. Gene therapy requires nonmyeloablative conditioning which must be sufficiently intense to allow the modified cells to engraft and produce a therapeutic level of corrected blood cells. Dosing is tailored to achieve adequate engraftment while minimizing toxicity.

Toxicities
Specific toxicities for myeloablative conditioning include irreversible cytopenia which requires a stem cell graft to recover. Less toxic approaches such as RIC decrease these risks but more intensive regimens are associated with a lower relapse rate, a higher transplant related mortality and similar overall survival. The lesser intensity approach may produce worse outcomes in patients with active disease at transplantation and may be less effective for acute leukemia.[13]

Summary of Conditioning Risks and Toxicities[14]

- Hematologic toxicity and infections
- Organ damage
- Liver injury (hepatic veno-occlusive disease)
- Pulmonary fibrosis and interstitial pneumonitis
- Cardiomyopathy
- Hemorrhagic cystitis (bladder bleeding)
- Reduced kidney function
- Mucositis (painful inflammation/ulcers of mouth and gut lining)
- Nausea, vomiting & diarrhea
- Seizures
- Infertility & endocrine effects (gonadal failure)
- Secondary malignancies

Conditioning can directly or indirectly cause life-threatening complications, including severe infections, organ failure or toxic metabolic syndromes. High-dose cyclophosphamide can cause a syndrome of cardiac toxicity or inappropriate antidiuretic hormone secretion and tumor lysis can occur if there is residual tumor kill. GVHD is another common reaction caused by tissue damage, cytokine release and profound immune dysregulation brought on by conditioning. The regimen essentially brings patients to the brink of fatal organ failure that is addressed by the transplant. Reports of treatment-related mortality rates vary, but for myeloablative allogeneic transplants it can be in the range of 10-20%. Gene therapy trials for sickle cell disease using busulfan have also resulted in deaths attributed to conditioning toxicity.[15,16,17,18,19]

[12] Munchel, A.T., *et al*. Treatment of hematological malignancies with nonmyeloablative, HLA-haploidentical bone marrow transplantation and high dose, post-transplantation cyclophosphamide. Best Practice & Research Clinical Haematology. September 2011.
[13] Shimoni, A., *et al*. The EBMT Handbook: Hematopoietic Cell Transplantation and Cellular Therapies, Chapter 13, Conditioning. April 2024.
[14] Uchida, N., *et al*. Fertility-preserving myeloablative conditioning using single-dose CD117 antibody-drug conjugate in a rhesus gene therapy model. Nature Communications. October 2023.
[15] Sawyer, J., *et al*. Prevention and management of acute toxicities from conditioning regimens during hematopoietic stem cell transplantation. Clinical Hematology International. April 2024.

Unmet Needs in Conditioning

As discussed above, pre-transplant conditioning is harsh on the body. Patients need a regimen that can specifically and selectively ablate bone marrow and hematopoietic stem cells while sparing off-target tissues and organs. Approved genotoxic conditioning regimens are limited by significant morbidity and mortality, as they must simultaneously eradicate the patient's own hematopoietic stem cells, eliminate residual malignant cells and establish potent immunosuppression. Beyond off-target tissue injury, acute toxicities pose a serious clinical challenge. Chemotherapy-induced nausea and vomiting, mucositis, transplant-associated thrombotic microangiopathy and sinusoidal obstruction syndrome can present significant implications for patients. The side effects can coincide with the start of conditioning and persist into the post-transplant period. Prolonged cytopenia further heightens susceptibility to life-threatening infections, adding to the burden of treatment-related morbidity. Reducing toxicity often comes at the cost of disease control. Additional long-term risks include infertility, especially for pediatric patients, secondary malignancies and heightened sensitivity to DNA-damaging agents.[20,21]

A new approach to conditioning employs radiopharmaceuticals with targeting enhanced through the use of antibodies. Radioactive agents are delivered with precision essentially creating a targeted total body irradiation (TBI) centered on hematopoietic cells. Radiopharmaceutical conditioning links a radioisotope to a monoclonal antibody that is raised to bind to a specific receptor. When injected, the radio-labeled antibody circulates and binds to its target cells (for example, leukemia cells or HSCs in the marrow), and the radioactive decay of the isotope delivers lethal radiation to the target cells and, when β-emissions are present, to neighboring cells as well. This can achieve myeloablation and kill tumors with precision.

Actinium-225 Production

Actinium-225 is a rare radioisotope which naturally occurs only in trace amounts. It is manufactured using technically difficult production methods that are capacity limited and tightly controlled. Most Ac-225 is sourced from milking Thorium-229, itself a rare by-product of Uranium-233. Th-229 decays through radium to Ac-225; these Th-229 inventories are small and decay slowly, so the yield is low.[22] High-energy proton or other particle beams are needed to generate Ac-225 from targets such as thorium or radium, but only a few facilities have suitable accelerators and radiochemistry infrastructure, and these machines primarily serve other research missions. As a result, global annual production has been likened to less than a grain of sand in total mass.[23]

There are multiple methods that can be used to produce Actinium-225 including Radium-226 irradiation, use of Thorium-229 generators, and high-energy proton spallation. Each has favorable features with Radium-226 irradiation driving most production and generating non-carrier added (n.c.a.) product that is free of Ac-227 impurities. Cyclotron production is another method which directs a cyclotron to irradiate an Ra-226 target. The process must be precise otherwise the co-production of the Ac-226 impurity will be too high. Thorium-229 generators produce higher purity with the Th-229 extracted from Uranium-233. U-233 naturally decays into Th-229 which is placed in a generator which can be milked to produce Ac-225. Yet another approach emits high-energy protons using an accelerator to bombard a Th-232 target. The protons' impact spallates or fragments the thorium nucleus producing various isotopes including Ac-225.

The bulk material from these processes requires downstream processing such as separation and purification. Extraction chromatography is used for primary separation and is followed by secondary purification using lanthanide-selective resin and cation exchange. The thorium generator is preferred despite the limited supply of U-233 that is required to seed it. It generates fewer long-lived isotopic impurities, but only produces enough Ac-225 to treat fewer than 1,000 patients per year.[24] High energy separation results in the co-production of Ac-227, which has a ~22-year

[16] Zain, J.M., Safdar, A. Complications Arising from Preparatory Conditioning Regimens for Stem Cell Transplantation. Springer Nature. June 2019.
[17] Maffini, E., *et al*. Neurologic Complications after Allogeneic Hematopoietic Stem Cell Transplantation. Biology of Blood and Marrow Transplantation. March 2017.
[18] Styczynski, J., *et al*. Death after hematopoietic stem cell transplantation: changes over calendar year time, infections and associated factors. Bone Marrow Transplantation. August 2019.
[19] Penack, O., *et al*. How much has allogeneic stem cell transplant–related mortality improved since the 1980s? A retrospective analysis from the EBMT. Blood Advances. December 2020.
[20] Uchida, N., *et al*. Fertility-preserving myeloablative conditioning using single-dose CD117 antibody-drug conjugate in a rhesus gene therapy model. Nature Communications. October 2023.
[21] Agarwal, R. *et al*. Irradiation- and busulfan-free stem cell transplantation in Fanconi anemia using an anti-CD117 antibody: a phase 1b trial. Nature Medicine. July 2025.
[22] This Potential Cancer Treatment Requires Modern Alchemy. Scientific American. February 2024.
[23] Actinium-225: A breakthrough in cancer treatment. Canadian Nuclear Laboratories. Accessed March 2026.
[24] Robertson, A.K.H., *et al*. Development of ^{225}Ac Radiopharmaceuticals: TRIUMF Perspectives and Experiences. Current Radiopharmaceuticals. December 2018.

half-life. While small relative to Ac-225 production, the concentration of Ac-227 creates waste management burdens and additional regulatory hurdles.

Actinium is developing its own manufacturing process for Ac-225 which it believes produces higher quality output at lower cost than more common methods of production. The process generates Ac-225 that matches Ac-225 output from a thorium generator and is free from long-lived contaminants. The facility should be operational in 2H:26.

Actinium Pharmaceuticals' approach utilizes a proprietary, patented cyclotron-based approach for the commercial-scale production of Ac-225. The process is designed to provide high-purity material at a significantly lower cost than existing methods, addressing the global shortage of medical-grade alpha emitters. The traditional method relies on extracting Ac-225 from the natural decay of Th-229 which is in limited supply. Actinium's methodology involves the direct proton irradiation of Ra-226 targets. Its cyclotron method generates high yields and is commercially scalable.

Actinium's proprietary Ac-225 generation employs a medium-energy cyclotron of approximately 20 MeV. The method irradiates Ra-226 targets for approximately 120 to 150 hours. It produces up to 100 mCi of Ac-225 per production cycle, in contrast to the low availability of approaches using Thorium 229.[25,26] The company holds extensive intellectual property covering target design and proprietary methods for the purification and recycling of Ra-226 from various sources, which ensures a sustainable feedstock for continuous production. While Ra-226 requires special handling and has a 1,600-year half-life, it is able to produce Ac-225 with 99.8% radioisotopic purity and over 99% radiochemical purity. Ac-227 contaminants are less than 0.001%.

Exhibit III – Actinium's Ac-225 Production Profile

Actinium Pharmaceuticals, Inc. C13/2008-B

Specification of Ac-225 Radiochemical

General Information		
Active Ingredient:	Ac-225	
Chemical Composition:	Solid Ac nitrate, carrier free	
Batch number:	C13/2008-B	
Activity of Ac-225 in batch:	17	MBq @ EOP by high res. γ-spec.
Packing	Quartz glass vial with screw cap in lead container	
Quality Data		
Chemical Impurity:	Determination by weight:	not detected
Radioisotopic Purity:	99.8%	
	Ra-226*	not detected
Dose Rate		
Outside lead container	max. 1	mSv/h
On the vial	8	mSv/h
Remarks		
No precipitates noticed in the vial.		

Ra-226* = Ra-226 and daughters

Source: Actinium Pharmaceuticals Website

In March 2024, Actinium Pharmaceuticals launched a strategic initiative to scale this technology for commercial purposes. The company estimates that this method can provide material at a cost of 5% to 10% of standard approaches. According to Actinium, estimated costs range from $650 to $1,000 per mCi.

[25] Diamond, W.T., Ross, C.K. Actinium-225 Production with an Electron Accelerator. January 2021.
[26] National Isotope Development Center. Multiple Production Methods Underway to Provide Actinium-225. Webpage.

Radiopharmaceutical Considerations

Radiopharmaceuticals require additional considerations compared to biologic or chemical molecules with respect to inventory, shelf life, product safety, storing, handling, licensing and disposing among other factors. These requirements create barriers to entry that limit competition. These products are classified as specialty medicines containing radionuclides whose half-lives range from a few minutes to several days. This short product life requires efficient transportation timelines and protocols as well as local manufacturing.

Handling
Substances containing radioactive isotopes used for medical imaging or therapy require strict handling procedures to protect both healthcare personnel and patients from radiation exposure. Lead shielding is used to protect individuals transporting and manufacturing the nuclear medicines and products are clearly labeled. The International Atomic Energy Agency (IAEA) sets regulations for radioactive materials. Shipments must be meticulously documented, identifying the radioactive material and its properties. Transport security and emergency response plans must be in place.

Transportation
Time is of the essence when transporting radiopharmaceuticals. Over medium to long distances, air transport is frequently the most effective method to deliver these ephemeral products to their final destination. Radionuclides with short half-lives must be produced locally to allow for rapid delivery. For products with medium-term half-lives, transportation between distant cities is possible, but radioactive decay must be considered. Timely delivery requires expedited shipping and tightly coordinated logistics to avoid product loss. Type A packaging, which is durable against water and impact damage, is required during transport.

Regulation
In the United States, the primary regulators of radiopharmaceuticals are the US Nuclear Regulatory Commission (NRC) and the FDA. In Europe, the European Medicines Agency (EMA) oversees regulation of the class. The radioactive products must be manufactured in nuclear research reactors or cyclotrons which are approved by the NRC or its designated state agency. In the United States, F-18 radiolabeled products are manufactured using a cyclotron at a site which must be approved by the FDA. For a license from the NRC, a sponsor must apply for a license to manufacture and distribute the products. The Application for Materials License requires information about the radioactive materials to be used, their purpose, individuals responsible for the radiation safety program, training, facilities, radiation safety procedures and waste management practices. Following inspections and a review, a license may be granted for a specific type and quantity of radioactive material to be allowed and any limitations or conditions imposed are listed. The license must be renewed every ten years.

Waste Disposal
Radioactive material waste disposal is another consideration. Waste can either be short or long lived with each category requiring different treatment. Waste with a short half-life can be stored on site until it has reached radiological clearance. Generally, waste with a half-life of less than 120 days falls into this category. After radiation levels reach background levels, it can be disposed of as regular medical refuse. Longer lived waste may be sent to specialized long-term storage facilities. It is stored in specially shielded containers and can be transferred to a licensed disposal facility. Liquid waste from either the fluids used in the laboratory or urine or feces from a treated patient are many times placed into a separate septic system where it is held in tanks until it decays to background levels and is then placed into the regular sewer system.[27]

Finished Product
In contrast to other medical products, radiopharmaceuticals are decaying radioisotopes with half-lives ranging from a few hours to several days. Therefore, they are almost exclusively produced on demand with minimal lead time which requires an efficient production and distribution mechanism. Finished goods, especially diagnostics, cannot sit in inventory because of their rapid decay. These products are produced using just-in-time manufacturing, processing and distribution. Supply chains define the limitations that determine which products can be used and where.

Industry Review

After the dawn of the nuclear age, many new uses were found for radioisotopes and radionuclides. Substantial progress was made from the 1930s to the 1980s in imaging disease and treating cancer. The pace of advancement slowed in the 1990s and 2000s with attention shifting towards new imaging technologies and biologics. However, over the last decade, the industry has reemerged as an area driven by new scientific advancements in PET imaging

[27] Tas, A., Ozer, A.Y. Waste Disposal and Management in Radiopharmaceuticals. Journal of Pharmaceutical Science. 2020.

including Amyvid, Vizamyl and Neuraceq in the neuroimaging space, and Axumin, Xofigo, Netspot and Lutathera for both imaging and treatment of cancer. This resurgence in radiopharmaceuticals has led to new company formation and merger and acquisition activity over the last several years. Medical professionals more fully recognize the benefits of better radioisotopes to more clearly and precisely image disease. This extends to the use of precision medicine used to deliver radiation directly to cancerous cells, which sidesteps some of the side effects that come with beamed or implanted radiation.

A sampling of radiopharmaceutical startups launched in recent years include Germany-based Isotopen Technologien Munchen (ITM) developing its Peptide Receptor Radionuclide Therapy, Boston-based Aktis Oncology developing α-emitting agents for cancer treatment and Arizona Isotope Science Research Corporation producing medical grade isotopes with strontium-82, germanium-68, Iodine-123 and actinium-225.

Merger and acquisition activity has been vigorous. The first multi-billion-dollar deal that took place in the industry occurred over 10 years ago. Bayer bought Algeta in March 2014 for $2.9 billion and was eventually able to take its candidate through regulatory approval to market Xofigo for prostate cancer that has spread to the bones. Transaction activity slowed until 2017 when Novartis bought out Advanced Accelerator Applications (AAA) for Lutathera, the Lu-177 dotatate radionuclide for the treatment of somatostatin receptor-positive gastroenteropancreatic neuroendocrine tumors (GEP-NETs). The product was subsequently approved by the FDA in January 2018.

Novartis went to bat again for another radiopharmaceutical asset with its $2.1 billion acquisition of Endocyte in December 2018. It recognized the value of Pluvicto for metastatic castration resistant prostate cancer, which was later approved in 2022. Novartis continued its radiopharma buying spree in 2024 with Mariana Oncology in May picking up a portfolio of radioligand therapies including MC-330 for small cell lung cancer.

Another prolific acquiror in recent years has been the Australia-based Telix Pharmaceuticals which bought QSAM Biosciences (^{153}Sm-DOTMP) in 2023. In 2024 it picked up ATRMS (cyclotron-based isotope production) in March and RLS Radiopharma (31 US-based radiopharmacies) in September to further integrate its supply chain, manufacturing and distribution capabilities.

There are several other billion-dollar plus acquisitions that have taken place since 2023. This includes Eli Lilly and its buy of POINT BioPharma, which had previously partnered its lutetium-177 portfolio of Somatostatin Receptor 2 (SSTR2) and PSMA targeting molecules with Lantheus. Bristol Myers picked up Rayze Bio only months after the latter's IPO for $4.1 billion in December 2023, gaining its SSTR2 receptor product for GEP-NETs and small cell lung cancer. AstraZeneca also got in on the action, absorbing Canada's Fusion Pharma for $2.4 billion. Fusion is developing novel linker technology that can be used with alpha emitters to improve safety and reduce off target effects.

2025 began with several radiopharmaceutical acquisitions including two by Lantheus and one by Telix. Lantheus made a $750 million bid for Life Molecular Imaging in January 2025. The deal added the globally approved asset NeuraCeq and a pipeline of other neurodegenerative and cardiovascular imaging assets. The deal complements Lantheus' own neurodegenerative pipeline and is expected to help advance the commercialization of its in-development assets by one to two years. Lantheus' other acquisition also took place in January 2025 in a deal that offered over $1 billion for Evergreen Theragnostics. Evergreen has submitted the diagnostic agent Octevy for approval and offers other pipeline assets as well as manufacturing infrastructure. The Evergreen acquisition was completed in April 2025. Telix has continued its acquisition streak into 2025 with its $45 million bid for ImagineAb. ImaginAb is a cancer imaging purveyor featuring its pipeline of CD8-targeting ImmunoPET agents.

GE HealthCare picked up the 50% of Nihon Medi-Physics that it didn't already own from Sumitomo in March 2025. Nihon is a Japan-based radiopharmaceutical company with SPECT and PET imaging radiopharmaceutical assets. Nihon will act as an extension of GE's radiopharmaceutical marketing efforts in the island nation. SERB Pharmaceuticals completed its acquisition of Y-mAbs Therapeutics in the fall of last year. Y-mAbs is focused on using antibodies in the treatment of cancer and offers the Self-Assembly DisAssembly (SADA) Pre-Targeted (PRIT) Radioimmunotherapy technology platform which uses Lu-177 radionuclides. Lantheus divested its technetium and xenon-133 imaging business to SHINE Technologies along with manufacturing assets in the US and Canada which closed at the end of last year. BerGenBio, a Norwegian biopharmaceutical company merged with Oncoinvent to focus on advancing radiopharmaceutical therapies in a transaction completed in October 2025. Post-merger, Oncoinvent advanced the α-emitting Radspherin which relies on Ra-224. As of June 2026, Oncoinvent has recruited 50% of the target enrollment for its Phase II study in ovarian cancer. South Korea-based SK Biopharmaceuticals acquired worldwide rights for research, development, manufacturing and commercialization of WT-7695 in November 2025. The drug is a small-molecule radiopharmaceutical designed to target carbonic anhydrase IX (CA9), a transmembrane protein that is highly expressed in hypoxic tumor cells, especially in clear cell renal cell carcinoma (ccRCC)

as well as some pancreatic and colorectal cancers. As this space continues to mature and firms in early stages of development show promise, we expect there to be more activity here.

Lantheus moved from acquiring to being a target with the August 2026 announcement by Curium that it had agreed to buy Lantheus for $102.50 per share plus the issuance of a $12 per share contingent value right (CVR) to shareholders. The CVR payment is tied to achieving commercial milestones through 2030. If the CVR is completely realized, the value of the deal could reach $8.0 billion. Curium sees the acquisition as providing a foundation to further its global manufacturing footprint, expand its theranostics portfolio and penetrate US diagnostic markets.

Exhibit IV – Recent Merger & Acquisition Activity

Date Announced	Acquiror	Target	Amount ($MM)	Comment
8/3/26	Curium	Lantheus Holdings	$8,000	Provide access to US market. Incl $12/sh CVR
11/27/25	SK Biopharmaceuticals	UofWisconsin	not disclosed	Lu-177 linked CA9 target (WT-7695)
6/30/25	BerGenBio	Oncoinvent	NOK 65	RP α-therapy in oncology; Radspherin (Ra-224)
5/6/25	SHINE Technologies	Lantheus' SPECT Biz	not disclosed	Tc-99m imaging assets, Xe-133 gas
8/5/25	SERB	Y-mAbs Therapeutics	$412	Radioimmunotherapy & aB-based oncology
6/10/25	Bristol Myers (RayzeBio)	Philochem AG	$350mm upfront+$1B	Rights to OncoACP3 for prostate cancer
3/31/25	GE HealthCare	Nihon Medi-Physics	50% Stake	RPs for SPECT & PET imaging
1/28/25	Lantheus	Evergreen Theranostics	$1,003	Octevy, manufacturing assets & pipeline
9/23/24	Telix Pharmaceuticals	RLS Radiopharma	$250	31 radiopharmacies & radiometals production
8/24/24	Siemens	Novartis Mfng Network	$223	47 radiopharmacies in US & EU
5/2/24	Novartis	Mariana Oncology	$1,750	Radioligand therapies for cancer
3/19/24	AstraZeneca	Fusion Pharma	$2,400	Actinium based radioconjugates
3/5/24	Telix Pharmaceuticals	ATRMS	$82	Isotope production platform & manufacturing
12/26/23	Bristol Myers	Rayze Bio	$4,100	Actinium RP therapies in GEP-NETs & SCLC
11/13/23	Telix Pharmaceuticals	QSAM Biosciences	$125	^{153}Sm-DOTMP for bone cancer
10/3/23	Eli Lilly	POINT BioPharm	$1,400	Lu-177 RP targeting PSMA & SSTR2
11/28/22	Full-Life Tech	Tocus-X Tx	$245	RP based on peptides for cancer
3/28/22	PeptiDream	Toyama RP Biz	$177	PDPS platform for SPECT/PET
10/18/18	Novartis	Endocyte	$2,100	^{177}Lu-PSMA-617 in mCRPC
10/30/17	Novartis	AAA	$3,900	Lutathera for NETs
12/19/13	Bayer	Algeta	$2,900	Xofigo for mCRPC w/ abnormal bone

Source: Compiled by Zacks Analysts

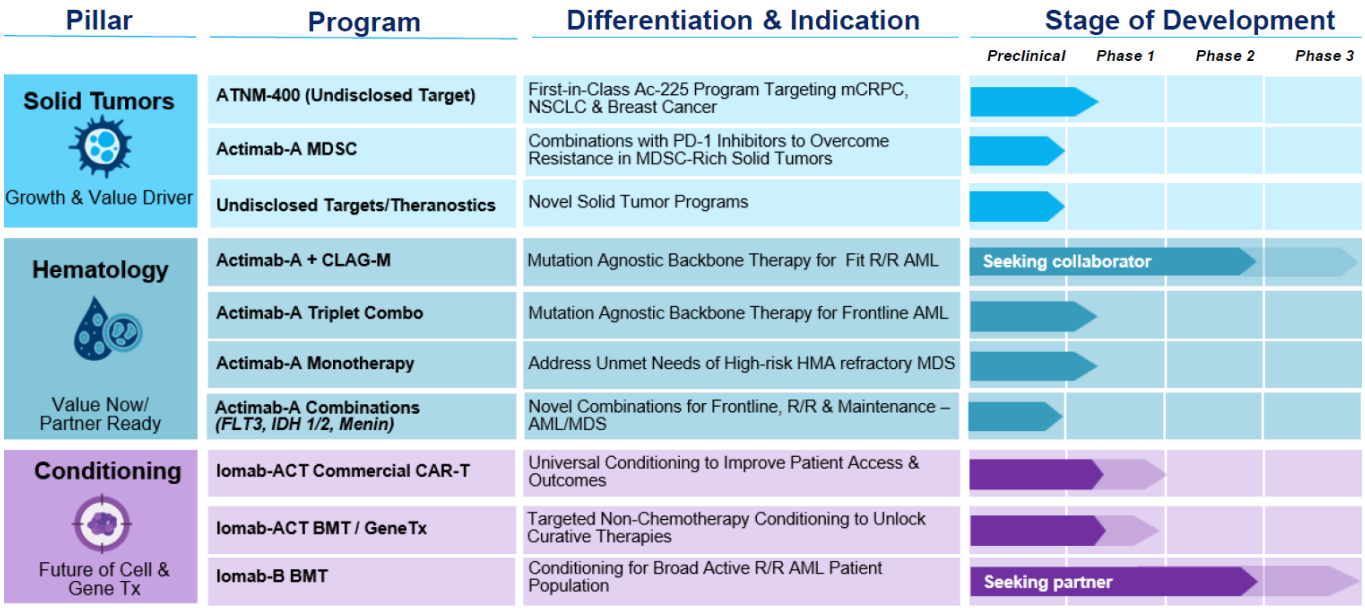
Despite the slow initial public offering (IPO) market in the life sciences since late 2021, there have been two new public companies launched of note. The first, which we referenced earlier, was Rayze Bio. It went public in September 2023 raising $358 million. It was only public for a short time as Bristol Myers Squibb announced that it intended to buy the asset in December of that year. The other IPO was more recent, occurring in January 2026. Boston-based Aktis Oncology raised gross proceeds of $365 million. It employs the α-emitting Ac-225 for its lead candidate AKY-1189 targeting Nectin-4-expressing cancers. Other financing deals in 2026 include Telix' $600 million issuance of convertible notes to support upcoming strategic pipeline investments, Full-Life Technologies' $150 million capital raise to fund its pipeline and support its manufacturing facility in Belgium and SpectronRx' $85 million financing to scale its specialized isotope network.

Indications & End Uses

Actinium Pharmaceuticals is developing radiopharmaceutical therapeutics addressing solid tumors, hematology and conditioning. The company's primary development focus is ATNM-400, a first-in-class Ac-225 program targeting an undisclosed novel non-PSMA antigen present in mCRPC, NSCLC and breast cancer. It was announced in March 2025. The most developed program is a conditioning application: Iomab-B BMT. Iomab-B and Iomab-ACT have made headway in bone marrow transplant (BMT), gene therapy and CAR-T cell therapy. The other clinical asset is hematology-focused Actimab-A. The candidate is being investigated in multiple combinations pursuing acute myeloid leukemia (AML) and other blood cancers. The most advanced Actimab-A program adds CLAG-M[28] to the regimen as a mutation-agnostic backbone therapy for fit relapsed/recurring AML. Actinium is seeking a collaborator for this program to advance it into pivotal trials.

Actinium research and development activities are primarily oriented towards solid tumors and conditioning. ATNM-400 is a mutation-agnostic radioconjugate, pursuing a novel target present in many tumors treated in later-line therapies. The conditioning portfolio addresses an unmet need for patients undergoing gene therapy. While conditioning is a less common use for radiopharmaceuticals, it addresses shortcomings present in existing approaches such as precision delivery, sparing non-target tissue and limiting radiation exposure.

Exhibit V – Actinium's Pipeline



Source: Actinium June 2026 Presentation

Solid Tumors

Solid tumors are abnormal masses of tissue that form when cancer cells grow together in a specific organ or body area. They are termed solid because they usually form a lump or mass and are distinct from blood cancers. This class of neoplasm can fall into two categories: carcinomas, which start in epithelial tissues and sarcomas which start in connective or supportive tissues.

Exhibit VI – Selection of Most Common Solid Tumors

Pancreatic	Lung	Breast	Brain Tumors
Prostate	Colorectal	Stomach	Melanoma
Ovarian	Liver	Uterine	Sarcomas

Source: Analyst Work

[28] CLAG-M is a cocktail of chemotherapies including **cladribine** (A purine analog that interferes with the cancer cell's ability to repair its DNA), **Ara**-C or cytarabine (halts DNA synthesis in rapidly dividing cells, **G**-CSF or filgrastim (recruits quiescent (non-cycling) leukemic blasts into the cell cycle, making them more vulnerable to cycle-dependent cytotoxic agents) and **mitoxantrone** (an antibiotic/anthracycline that prevents cancer cells from dividing).

The three most common solid tumor cancers are prostate, lung and breast cancer which comprise almost 900,000 estimated cancer cases per year in 2026 according to the American Cancer Society.

Exhibit VII – New Cases of Cancer, US and Global Markets[29,30]

	United States (2026)	Global (2022)
Prostate Cancer	333,830	1,467,854
Lung Cancer	229,410	2,480,675
Breast Cancer	324,580	2,296,840
Total	**887,820**	**6,245,369**

Source: Analyst Work

Highly responsive cancers include melanoma and Hodgkin lymphoma, which see 40% to 60% response rates to checkpoint inhibitors. Less responsive cancers include non-small cell lung, prostate, pancreatic and breast cancer.[31] A primary unmet need in solid tumors is therapy resistance. Even among patients initially responsive to targeted therapy, acquired resistance commonly develops. Prostate cancer builds resistance to abiraterone, enzalutamide and other standard-of-care therapies. Lung cancer acquires resistance to EGFR, ALK, ROS1, RET, MET HER2 and KRAS directed therapies. In breast cancer, several subtypes are particularly aggressive, such as triple-negative breast cancer (TNBC) which has limited options after failing chemotherapy, immunotherapy, PARP inhibitors, or antibody drug conjugates (ADCs). Many ER+ cancers eventually become resistant to endocrine therapy and CDK4/6 inhibitors.

Along with addressing the resistance that exists in solid tumors, better biomarkers are needed to predict benefit, more effective combinations are required to improve durability without worsening toxicity and treatment is needed for tumors that do not respond to immunotherapy.

Myeloid-Derived Suppressor Cells (MDSCs)

Checkpoint inhibitors such as Keytruda and Opdivo have revolutionized immuno-oncology. Despite their success in treating a wide variety of cancers, a minority of patients are responsive.[32] One of the reasons for the low success rate is the effect of myeloid-derived suppressor cells (MDSCs). These immature myeloid cells exert potent immunosuppressive effects on T cells, Tregs and antigen-presenting cells. They also promote tumor growth through non-immunological functions.[33] Actinium's lintuzumab, the monoclonal antibody component of Actimab-A, targets CD33, which appears on leukemic cells, MDSCs and other immature cells with myeloid lineage. When bound, Actimab-A induces lethal, double-stranded DNA breaks.

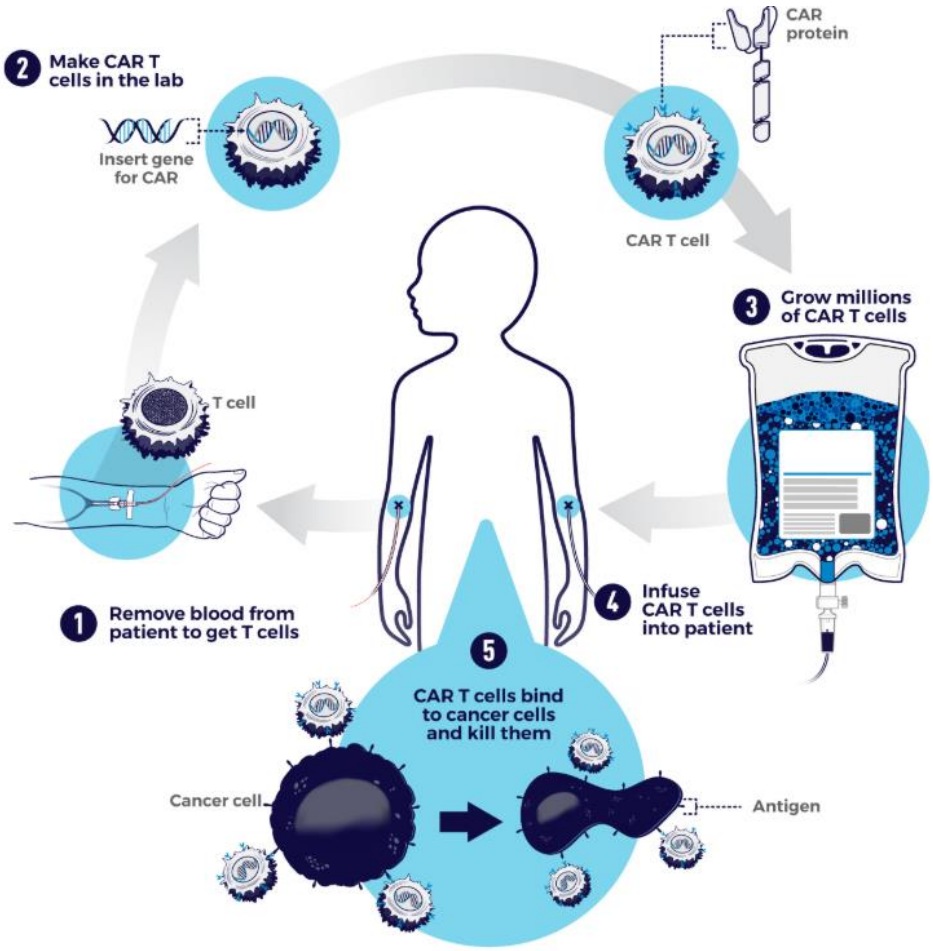
Chimeric Antigen Receptor T-cell (CAR-T) Therapy

Chimeric Antigen Receptor T-cell (CAR-T) therapy is a type of cancer treatment that uses T cells to recognize and destroy cancer cells. The approach requires harvesting T cells from patients and the use of gene therapy to encode a CAR to be specific to a desired target antigen. The engineered cells are then expanded in tissue culture and infused back into the patient. The key part of the process that pertains to conditioning and Actinium's Iomab-ACT product is the lymphodepletion step that is performed prior to the introduction of the CAR-T cells.

The first CAR-T therapy approved by the FDA was tisagenlecleucel (Kymriah) in 2017. There are now seven approved CAR-T products in the US, all of which are autologous. CAR-T success has been high in approved indications with many response rates in the 80%+ range.[34,35] The indications for this class of drug include leukemias, lymphomas and multiple myeloma. The approach has been attempted in solid tumors, but there have been no approvals. Solid tumors are harder to access and they present targets that are more difficult to isolate than those in blood cancers.

[29] American Cancer Society, Cancer Facts and Figures, 2026.
[30] World Health Organization. International Agency for Research on Cancer. GLOBOCAN 2022.
[31] Corti, C., *et al*. Recent Advances in Immune Checkpoint Inhibitors for Triple-Negative Breast Cancer. Immunotargets Therapy. April 2025.
[32] Haslam, A., *et al*. How many people in the US are eligible for and respond to checkpoint inhibitors: An empirical analysis . International Journal of Cancer. June 2025
[33] Silva-Romeiro, S., *et al*. Emerging Role of MDSCs as Novel Biomarkers and Therapeutic Targets for Cancer Immunotherapy. Dove Medical Press. October 2025.
[34] Cilta-cel Found Highly Effective in First Real-World Study. American Society of Hematology. October 2024.
[35] FDA package insert, Yescarta.

Exhibit VIII – CAR-T Cell Therapy



Source: Wikimedia Commons, CAR T Cell Therapy

Lymphodepletion

Lymphodepletion reduces the number of lymphocytes (white blood cells) in the body. It is used as a preparatory step before CAR-T therapy. It helps with the expansion, function and persistence of CAR-T cells by preventing the immune system from destroying the CAR-T cells and bringing about a favorable cytokine environment. Lymphodepletion frees up cytokines to bind to and activate cytokine and growth factor receptors expressed on incoming adoptively transferred therapeutic T cells, leading to enhanced expansion and engraftment. It may also prevent immune responses against autologous cells that have been engineered with foreign sequences. The process also adds toxicity risk that requires close monitoring. Cyclophosphamide and fludarabine are the most common chemotherapy agents used, which can damage host immune function and reduce the diversity of T cells in the body.[36]

Lymphodepletion may cause off-target side effects that can be both short and long-term in nature. These effects can reduce neutrophil, platelet and red cell counts. This can lead to longer periods of inpatient care during the lymphodepletion process and increased infection risk. There may also be long-term secondary malignancy risks related to induction of mutations in hematopoietic progenitors with long-term self-renewal potential. Cytopenia and myelodysplasia are other areas of concern.[37]

[36] Das, R.K., *et al*. Lingering effects of chemotherapy on mature T cells impair proliferation. Blood Advances. September 2020.
[37] Lymphodepletion White Paper. Umoja Biopharma. Accessed June 2026.

Exhibit IX – Side Effect Profile Comparison Between Chemotherapy and Radiopharmaceuticals[38,39]

Conventional Chemotherapy	Radiopharmaceutical Approach
Broad immunosuppression	Target restricted toxicity
Systemic cytotoxicity	No off target mucosal exposure
Prolonged cytopenias	Neurotoxicity risk largely avoided
Mucositis/GI toxicity	Dosimetry-guided personalization
Neurotoxicity risk	Potentially faster marrow recovery
Fixed dosing	Lymphocyte subset targeting feasible

Source: Compiled by Zacks' Analyst

Cost

We estimate the market price that Iomab-ACT may command by adding a premium to the cost of cyclophosphamide and fludarabine to reflect the added value and safety of the regimen. Lymphodepletion is frequently given on an outpatient basis, which keeps this component of the therapy relatively inexpensive. One resource finds that the chemotherapy drugs used in conditioning therapy for CAR-T average $3,168 prior to 2023.[40] Based on our industry experience, we apply a premium and inflation to prior year amounts to generate a net cost of $10,000 per course of Iomab-ACT conditioning treatment in our model for 2027. We apply a 60% discount to the cost in markets outside of the United States producing an estimate of $4,000 per course of Iomab-ACT conditioning treatment.

Iomab-ACT

Iomab-ACT is designed to provide targeted lymphodepletion and myeloablation when necessary while avoiding the off-target toxicities associated with chemotherapy conditioning. By delivering targeted radiation specifically to $CD45^+$ hematopoietic cells, Iomab-ACT aims to create an optimal environment for therapeutic cell engraftment while minimizing treatment-related morbidity and mortality. Actinium's goal for Iomab-ACT is to develop a universal targeted conditioning solution that replaces standard chemotherapy regimens. The initial National Institutes of Health (NIH)-funded pilot study[41] at Memorial Sloan Kettering saw no immune effector cell-associated neurotoxicity syndrome (ICANS) of any grade and minimal other toxicities compared to reported rates of 25% or higher for chemotherapy.[42]

Hematological Cancer Incidence and Prevalence

According to the American Cancer Society, there will be an estimated 144,330 cases of leukemia, lymphoma and multiple myeloma in the United States in 2026. We see this as roughly the addressable market for CAR-T treatment in the US. As with other indications, we see the addressable developed market outside of the US as being approximately three times the size of that inside the US.

At the end of 2025, there were an estimated 6,000 CAR-T procedures performed annually.[43] Market Data Forecast has estimated a 13.5% compound annual growth rate (CAGR) for CAR-T procedures over the 2025 to 2033 period.[44] We estimated the number of international CAR-T procedures by dividing the total CAR-T infusions in Europe (>10,000) by the number in the United States (24,782) to derive an estimated proportion of CAR-T being done in the developed world (40%).[45] Note that these numbers span over several years and show the relative number of procedures in each region. Using this very rough approach, we estimate about 2,400 CAR-T procedures being done outside the United States per year in 2025. Based on this information, we estimate a low double-digit growth rate for CAR-T procedures around the globe over the next several years.

[38] Dawicki, W., *et al*. Targeted lymphodepletion with a CD45-directed antibody radioconjugate as a novel conditioning regimen prior to adoptive cell therapy. Oncotarget. September 2020.
[39] Ludwig, D.L., *et al*. Lymphodepletion with CD45 Radioimmunotherapy as a Targeted Conditioning Regimen Prior to Adoptive Cell Therapy or CAR-T. Transplantation and Cellular Therapy. March 2019.
[40] Jagannanth, S., *et al*. Component Costs of CAR-T Therapy in Addition to Treatment Acquisition Costs in Patients with Multiple Myeloma. Oncology and Therapy. April 2023.
[41] Geyer, M.B., *et al*. Low-Dose Targeted Radioimmunotherapy (Iomab-ACT) Achieves Lymphocyte and Monocyte Depletion Prior to CD19-Targeted CAR T-Cell Therapy for Relapsed of Refractory B-Cell ALL or DLBCL with Minimal CRS and ICANS. Transplantation and Cellular Therapy. February 2024.
[42] Han, M.W., *et al*. Incidence of immune effector cell-associated neurotoxicity among patients treated with CAR T-cell therapy for hematologic malignancies: systematic review and meta-analysis. Frontiers in Neurology. October 2024.
[43] Yeager, A. OHSU study: CAR-T therapy shows long-term survival for patients with lymphoma. Oregon Health & Science University. December 2025.
[44] Market Data Forecast. Global CAR T Cell Therapy Market Size, Share, Trends & Growth Forecast. December 2025.
[45] Clé, D.V. *et al*. CAR-T in Resource-Limited Regions. Blood: Global Hematology. December 2025.

Conditioning for Gene and Cell Therapy

Conditioning is a process used to prepare a patient for transplant so that the body may receive new bone marrow or stem cells. In cancer applications, it serves multiple purposes to eradicate residual cancer cells, to suppress the patient's immune system and deplete the patient's hematopoietic stem cells. In gene therapies, there is no malignancy to destroy, so conditioning is oriented towards enabling long-term engraftment of gene corrected cells. Cells that carry the genetic disease must be partially or fully eliminated to vacate the bone marrow niches. There are several types of conditioning including myeloablative, reduced-intensity and nonmyeloablative.

Conditioning has historically used a combination of chemotherapy and radiation to destroy diseased cells, suppress the immune system and create space in the bone marrow to allow engraftment of transplanted cells. A conditioning regimen consists of myelodepletion and lymphodepletion which target the patient's stem cells and lymphoid system respectively. Myeloablative compounds include melphalan or busulfan while lymphodepleting agents include fludarabine or cyclophosphamide. Total body irradiation produces both myelosuppression and immune suppression. Chemotherapy, serotherapy[46], targeted compounds, monoclonal antibodies and radiolabeled antibodies have all been explored as alternatives to standard-of-care conditioning.

Myeloablative conditioning is the highest dose conditioning which is an intensive preparation given before allogeneic hematopoietic cell transplantation (HCT). Lethal doses of chemotherapy and/or irradiation cause irreversible ablation of bone marrow hematopoiesis, immunosuppression through ablation of host immune cells and cytoreduction of malignant disease. The process creates space for the incoming donor stem cells to engraft.[47,48,49]

Hematopoietic stem cell transplantation (HSCT) remains the only curative option for several hematological malignancies. Its use has continued to grow, with an estimated 23,500 transplants performed annually in the United States alone.[50,51]

Radiopharmaceutical Conditioning
A new class of conditioning takes advantage of radioactive agents that are delivered directly to the bone marrow in a construct called a radioimmunoconjugate. It combines the cell targeting ability of antibodies with the cell-killing power of radiation. The molecules can be targeted to hematopoietic cells rather than being delivered systemically.[52]

Radiopharmaceutical conditioning attaches a radioisotope to a molecule that will concentrate in the bone marrow or bind to hematopoietic cells. When bound to the target cells, the radioactive decay of the isotope delivers lethal radiation thereby killing that cell and frequently also those nearby. This approach can precisely achieve myeloablation. An advantage of the radioimmunotherapy regimen is its potential to deliver curative doses of radiation therapy to all disease sites that may overcome chemoresistance.

In many cases, relapsing patients will be chemoresistant, old or suffer co-morbidities that deter the use of myeloablative conditioning and will require an alternative approach. However, if RIC is used, there is an inverse correlation between the intensity of the conditioning and recurrence after transplant. Administering radiolabeled antibodies for conditioning can potentially deliver effective doses of radiation without many of the off-target effects characteristic of total body irradiation.

Actinium's Iomab conditioning regimen demonstrated the ability to deplete peripheral immune cells and hematopoietic progenitor cells, allowing the engraftment of donor cells. Early studies demonstrated a dose dependent response where low doses of the agent depleted white blood cells without impacting hematopoietic progenitor cells. The product can be adjusted to deplete lymphocytes at low doses, which can be applied to CAR-T therapy, or increased to provide full transplant conditioning and eliminate hematopoietic stem cells.

[46] Serotherapy is a medical treatment that involves administering serum containing antibodies to a patient in order to neutralize toxins, pathogens, or harmful immune targets. It is a form of passive immunotherapy, meaning the patient receives ready-made antibodies rather than making their own.
[47] Bejanyan, N., *et al*. Myeloablative Conditioning for Allogeneic Transplantation Results in Superior Disease-Free Survival for Acute Myeloid Leukemia and Myelodysplastic Syndromes with Low/Intermediate, but not High Disease Risk Index: A CIBMTR Study. Transplant Cell Therapies. January 2022.
[48] National Institutes of Health, National Cancer Institute. Intensive Pre-Stem Cell Transplant Regimen May be Best for Younger Patients with AML, MDS. May 2017.
[49] Gyurkocza, B., Sandmaier, B. Conditioning regimens for hematopoietic cell transplantation: one size does not fit all. Blood. June 2014.
[50] Sawyer, J., *et al*. Prevention and management of acute toxicities from conditioning regimens during hematopoietic stem cell transplantation. Clinical Hematology International. April 2024.
[51] Phelan, R., *et al*. Updated Trends in Hematopoietic Cell Transplantation in the United States with an Additional Focus on Adolescent and Young Adult Transplantation Activity and Outcomes. Transplant Cell Therapy. April 2022.
[52] Zhang, M., Gopal, A.K. Radioimmunotherapy based conditioning regimens for stem cell transplantation. Seminars in Hematology. April 2009.

Iomab targets CD45, a protein expressed on almost all cells of the immune and hematopoietic systems, with the exception of mature red blood cells and platelets. CD45 is alternatively known as protein tyrosine phosphatase, an enzyme involved in regulating immune cell function. Its broad expression on nearly all immune hematopoietic cells makes it an attractive pan-hematologic antigen that can allow precise targeting of these cells. It appears at high levels in the bone marrow as it is a common leukocyte antigen expressed by almost all nucleated white cells, including T cells, NK cells, and granulocytes.[53,54,55]

As described, radiopharmaceuticals can precisely deliver doses of radiation to target cells using monoclonal antibodies. This approach offers several advantages over traditional conditioning regimens. Radiopharmaceuticals are more selective and avoid high doses to non-target organs, lower toxicity, reduced dosing of short duration and efficacy in resistant disease.

Hematopoietic Stem Cell Transplantation Global Market Size and Growth Trends
There has been a steady increase of hematopoietic stem cell transplantation in the developed world over the last decades as the procedure has become more recognized, refined and adapted to a broader segment of the population. Based on data gathered by The Center for International Blood and Marrow Transplant Research (CIBMTR), 2023 allogeneic Hematopoietic Cell Transplantation (HCT), autologous HCT and CAR-T therapies in the United States totaled about 26,000. While autologous HCT has been relatively flat over the last few years, allogeneic HCT and particularly CAR-T have been growing.[56] The Health Resources & Services Administration found that there were about 23,000 HCTs performed in the US in 2023. The number is relatively flat from 2019 totals with commentary suggesting that COVID may have depressed the numbers of transplantations in 2020 and subsequent years. A trend in the United States in this population is the growth in the over 65 cohort, which has grown from 2% of allogeneic transplants in 2000 to 26% by 2019.[57] The autologous population has grown at a similar rate with both increases due to the rise in RIC regimens, improved supportive care and lower transplant related mortality.

Globally, there are an estimated 100,000 hematopoietic cell transplantations per year. In 2018, six regions under the World Health Organization reported 93,105 transplants[58] and anecdotal commentary suggests a dip and recovery during and after COVID. Europe reported 47,731 HCTs in 2023 and another 6,042 procedures related to advanced cellular therapies.[59] China has reported almost 22,000 HSCTs in 2023 growing almost 20% from the prior year.[60] More broadly, across the 22 countries in the Asia-Pacific region including China, saw 34,754 transplants in 2021.[61]

Diagnosis
Patients that are diagnosed with leukemia, lymphoma, multiple myeloma or may have non-malignant conditions such as bone marrow failure that require a stem cell transplant will require conditioning. Patients that are preparing for chimeric antigen receptor (CAR) T-cell therapy may undergo lymphodepletion or other conditioning before cell administration.

Treatment
Alkylating agents are the most common chemotherapies used including cyclophosphamide, busulfan, melphalan and treosulfan. Alkylating agents are the primary drivers of myeloablation and cytoreduction. They function by forming covalent bonds with DNA, particularly at the N7 position of guanine, leading to interstrand cross-linking, DNA strand breaks, and subsequent apoptosis. Fludarabine is a lymphotoxic agent frequently used in RIC. Total body irradiation (TBI) is frequently used for blood cancers, particularly acute lymphoblastic leukemia. It is able to penetrate into sanctuary sites and suppress the immune system. Some common myeloablative regimens include cyclophos-

[53] Stepanova, V.M., *et al*. Targeting CD45 by gene-edited CAR T cells for leukemia eradication and hematopoietic stem cell transplantation preconditioning. Molecular Therapy: Oncology. September 2024.
[54] Okalova, J., *et al*. Next generation targeted non-genotoxic conditioning for hematopoietic stem cell and hematopoietic stem cell-based gene therapy. Frontiers in Immunology. September 2025.
[55] Gillard, G., *et al*. Administration of a CD45 Antibody Drug Conjugate as a Novel, Targeted Approach to Achieve Immune System Reset: A Single Dose of CD45-targeted ADC Safely Conditions for Autologous Transplant and Ameliorates Disease in Multiple Models of Autoimmune Disease. American College of Rheumatology 2019 Annual Meeting Abstract.
[56] Current Uses and Outcomes of Cellular Therapies in the US. CIBMTR, 2024 Summary Slides.
[57] Phelan, R., *et al*. Updated Trends in Hematopoietic Cell Transplantation in the United States with an Additional Focus on Adolescent and Young Adult Transplantation Activity and Outcomes. Transplant Cell Therapy. April 2022.
[58] Atsuta, Y., *et al*. Continuous and differential improvement in worldwide access to hematopoietic cell transplantation: activity has doubled in a decade with a notable increase in unrelated and non-identical related donors. Haematologica. October 2024.
[59] Passweg, J.R., *et al*. The 2023 EBMT report on hematopoietic cell transplantation and cellular therapies. Increased use of allogeneic HCT for myeloid malignancies and of CAR-T at the expense of autologous HCT.
[60] Xu, L.P., *et al*. Hematopoietic stem cell transplantation activity in China 2022–2023. The proportions of peripheral blood for stem cell source continue to grow: a report from the Chinese Blood and Marrow Transplantation Registry Group. Bone Marrow Transplantation. September 2024.
[61] Iida, M., *et al*. Impact of the COVID-19 outbreak on the field of hematopoietic cell transplantation in the Asia-Pacific region: APBMT Activity Survey 2020/2021. Blood Cell Therapy. November 2024.

phamide with total body irradiation, busulfan/cyclophosphamide, fludarabine/busulfan, and BEAM (carmustine, etoposide, cytarabine, melphalan) for Hodgkin's lymphoma. Serotherapy uses immune-targeting antibodies as part of the conditioning regimen before HSCT and is most commonly used in allogeneic transplant settings.

Prognosis
The prognosis of patients receiving conditioning varies widely with the patients' health and the intensity of the conditioning that they receive. Conditioning is associated with many toxicities and side effects including chemotherapy-induced nausea and vomiting, mucositis, transplant-associated thrombotic microangiopathy and sinusoidal obstruction syndrome among others. The use of myeloablative conditioning improved long-term survival for HSCT, but had a higher transplant-related mortality. Four-year overall survival was 62% for myeloablative conditioning and 49% for RIC. Transplant related mortality in patients receiving myeloablative conditioning was 25.1% whereas it was 9.9% after RIC.[62] Other resources produce similar numbers, supporting the takeaway that higher intensity conditioning has higher mortality but reduces relapse after HSCT. We also reviewed the BMT-CTN[63] study that found myeloablative conditioning produced superior relapse-free survival compared to the RIC group. RIC produced lower treatment related mortality but higher relapse rates following a transplant compared with myeloablative conditioning.[64,65]

These studies suggest that effective conditioning which avoids the severe organ damage, infections and immunosuppression common in standard-of-care approaches can improve relapse rates in patients that advance to HSCT. Safer conditioning will improve related mortality and improve overall survival.

Programmed Death-Ligand 1 (PD-L1) Positive Cancers

PD-L1 positive tumors are cancers in which tumor cells express high levels of PD-L1, a protein that plays a critical role in immune evasion. PD-L1 binds to the PD-1 receptor on T cells, effectively suppressing their ability to attack cancer cells. This mechanism allows tumors to grow and spread by avoiding detection and destruction by the immune system. Blocking PD-L1 allows the body's natural immune response to be more effective as T cells are free to attack malignant cells and are no longer inhibited by the checkpoint. A third mechanism is also activated as the tumor cells are destroyed. Tumor antigens are released, absorbed and presented to antigen-presenting cells. When a CD8 cytotoxic T cell recognizes an antigen, it becomes activated and differentiates into a cytotoxic T lymphocyte (CTL). These CTLs are now specifically armed to recognize and kill other cancer cells displaying the same antigens.

Actinium is developing its Actimab-A for MDSCs in combination with PD-1 inhibitors. This approach leverages Actimab-A's ability to target and neutralize MDSCs allowing immunotherapies such as PD-1 inhibitors to overcome resistance.

Prevalence
PD-L1 expression is common across cancer types with prevalence varying by cancer site, disease stage and lines of treatment. Lung cancer[66] is one of the most common cancers to express PD-L1 with anywhere from 25% to 60% of cases presenting the marker and even higher rates in squamous cell carcinoma subtypes. PD-L1 expression in melanoma is also frequent with 40% to 60% of cases positive for PD-L1. Other cancers that have high rates of PD-L1 expression are head and neck squamous cell carcinoma and triple-negative breast cancer with just above half of all patients expressing the marker. Hodgkin lymphoma is regarded as having the highest prevalence rates. Based on search results, other cancers expressing the PD-L1 protein include hepatocellular carcinoma, bladder cancer, cervical cancer and colorectal cancer among others. One meta study that examined 59 studies capturing data for over 20,000 patients found that about 30% of tumors were PD-L1 positive.[67]

[62] Scott, B.L., *et al*. Myeloablative versus Reduced-Intensity Conditioning for Hematopoietic Cell Transplantation in Acute Myelogenous Leukemia and Myelodysplastic Syndromes—Long-Term Follow-Up of the BMT CTN 0901 Clinical Trial. Transplant Cell Therapy. February 2021.
[63] Bone Marrow Transplant Clinical Trials Network (BMT-CTN) study 0901.
[64] Scott, B.L., *et al*. Myeloablative Versus Reduced-Intensity Hematopoietic Cell Transplantation for Acute Myeloid Leukemia and Myelodysplastic Syndromes. Journal of Clinical Oncology. February 2017.
[65] Gagelmann, N., Kroger, N. Dose intensity for conditioning in allogeneic hematopoietic cell transplantation: can we recommend "when and for whom" in 2021?. Haematologica. July 2021.
[66] Fakhri, G., *et al*. Prevalence of programmed death ligand-1 in patients diagnosed with non-small cell lung cancer in Lebanon. Sage Open Medicine. September 2021.
[67] Xiang, X., *et al*. Prognostic value of PD –L1 expression in patients with primary solid tumors. Oncotarget. December 2017.

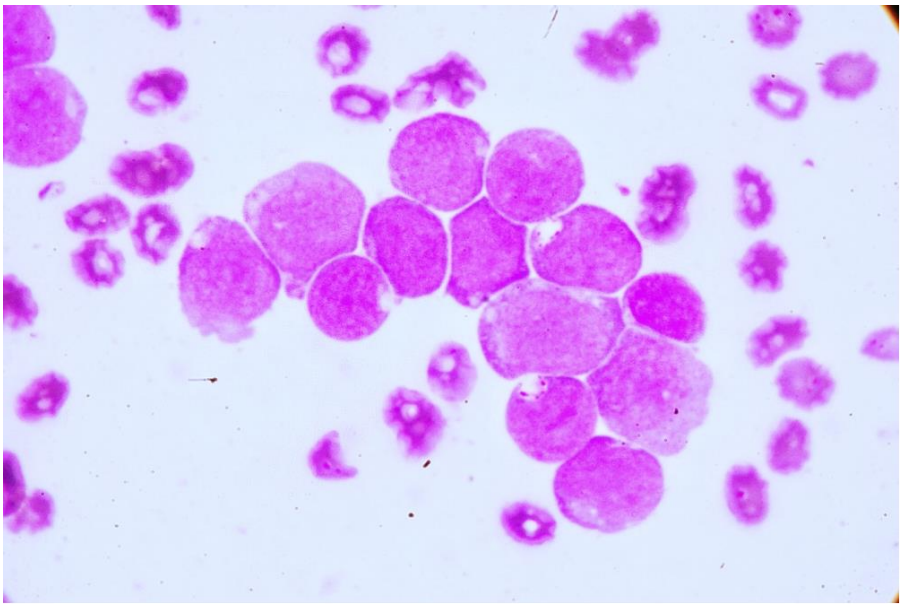
Diagnosis
A biomarker test can be used to measure the percentage of tumor cells expressing PD-L1 and identify the patient as a candidate for PD-1/PD-L1 therapy. Tumors with higher expression levels usually greater than 50% are often termed "PD-L1 positive" and may respond better to immune checkpoint inhibitors.

Treatment
Treatment for PD-L1 positive cancers varies depending upon the site of the cancer and its stage. Triple-negative breast cancer (TNBC), head and neck squamous cell carcinoma (HNSCC) and non-small cell lung cancer (NSCLC) should receive pembrolizumab plus chemotherapy as first-line therapy.[68] Many checkpoint therapies are part of combination approaches that seek to bring about synergistic effects, overcome resistance and boost immune response. PD-1, PD-L1 and CTLA-4 inhibitors are approved to treat melanoma, NSCLC, TNBC, renal cell carcinoma and other types of cancer. The drug is intended for advanced microsatellite-high (MSI-H) or mismatch repair deficient (dMMR) solid tumors, independent of site as well as tumors that have a high mutation burden. Some of the most widely used combination therapies pair a PD-1/PD-L1 inhibitor with chemotherapy, radiation therapy, CAR-T therapy, CTLA-4 inhibitors and angiogenesis inhibitors among others.[69,70,71]

Acute Myeloid Leukemia (AML)

Acute Myeloid Leukemia (AML) is a cancer of myeloid blood cells where the abnormal cells grow uncontrollably in the bone marrow and disperse in the blood to interfere with normal blood cell production. Hematopoietic stem or progenitor cells acquire specific mutations during early stages, providing them with a clonal advantage for expansion. The displacement of normal blood cell production by these mutated cells reduces white blood cell count making patients more susceptible to infections. Signs of AML include fatigue, weakness, shortness of breath, frequent infections, easy bruising or bleeding and weight loss.[72] It progresses quickly and requires prompt treatment to improve the likelihood of survival. Risk factors for AML include previous exposure to chemotherapy or radiation therapy, smoking, obesity and genetic mutations. AML is more common in older adults and survival is tied to treatment which includes chemotherapy, stem cell transplantation and targeted therapies.[73,74] Five-year overall survival is about 32% for AML, with a 50% rate for young patients and a 10% rate for those over 60. Relapsed or refractory AML remains a therapeutic challenge and also has a 5-year survival rate of 10%.[75]

Exhibit X – Blood Smear Showing AML



Source: Shutterstock image 546136447

[68] National Comprehensive Cancer Network guidelines, 2024.
[69] Yi, M., *et al.* Combination strategies with PD-1/PD-L1 blockade: current advances and future directions. Molecular Cancer. January 2022.
[70] Hayashi, H., *et al.* Combination therapy with PD-1 or PD-L1 inhibitors for cancer. International Journal of Clinical Oncology. September 2023.
[71] Chaney, P. Current State of Combination Therapy for Checkpoint Inhibitors. Hematology Advisor. December 2020.
[72] National Cancer Institute. Acute Myeloid Leukemia Treatment. Accessed February 2026.
[73] Acute Myeloid Leukemia Treatment (PDQ). National Cancer Institute. Accessed March 2024.
[74] Kristo, F., *et al.* Global Incidence and Survival of Acute Myeloid Leukemia with 20–29% Blasts: A Systematic Literature Review. Virtual ISPOR Europe. November 2021.
[75] Shimony, S. *et al.* Acute Myeloid Leukemia: 2025 Update of Diagnosis, Risk Stratification and Management. American Journal of Hematology. February 2025.

Incidence & Prevalence
The American Cancer Society estimates that there will be about 62,800 new cases of leukemia and 20,800 of AML in the United States in 2024. According to the Surveillance, Epidemiology and End Results (SEER) database, the rate of new AML cancer deaths per 100,000 was 4.1 in the United States in 2020. Deaths are expected to be about 11,200, heavily tilted towards the older age range of those afflicted.[76] The National Cancer Institute (NCI) estimates a 5-year survival rate of 31.7% based on 2013 to 2019 data. Males are more likely to suffer from AML in an approximate 1.3 to 1.0 ratio and African Americans present higher rates of mortality than Caucasians do.

Around the globe, a total of 474,519 cases of leukemia were reported in 2020 along with a rate of incidence of 5.4 per 100,000.[77] About a third of these are AML. Across the world, the annual number of newly diagnosed patients of all leukemias has increased by 46% in the past three decades while incidence for AML has increased by 15%.[78] Jani *et al*. found a global AML incidence rate of 1.85 and 1.37 per 100,000 for men and women respectively (2019). A literature review of studies examining AML around the globe found an average incidence of 1.54 per 100,000. 44 studies from 39 countries provided incidence rates ranging from 2.0 per 100,000 in Sweden to 5.4 per 100,000 in Denmark. The summary of several studies conducted in the United States produced rates from 3.8 to 4.6 per 100,000. Based on its prevalence AML is considered a rare disease, falling well below the 200,000-incidence level threshold in the United States.[79]

Risk Factors
The most important risk factor is age. AML is uncommon in those under age 45, but its risk rises at 50 and is highest in individuals older than 60. Exposure to certain chemicals such as benzene is a risk factor for AML as is smoking. Previous treatment with chemotherapies such as alkylating agents or topoisomerase II inhibitors are linked to a higher risk of the disease. Radiation exposure, blood disorders, including myeloproliferative neoplasms and myelodysplastic syndrome may develop AML. There are also a number of genetic syndromes that are associated with a higher risk of the malignancy.[80] Obesity or high body mass index (BMI) is a modifiable risk factor for a number of cancers with BMIs above 30 are at 1.5x greater risk of an AML diagnosis.[81]

Symptoms
The symptoms of AML that arise from the growth of abnormal blasts are many. Bleeding, bruising, fever, infections, lethargy and shortness of breath are a few. Others include chest pain, dizziness, headaches, blurred vision and joint pain. The anemia from low red blood cell counts contribute to the fatigue and weakness and the lack of normal white blood cells produces the infections. Low platelet counts cause the bruising and bleeding.

Diagnosis
After a review of a patient's medical history and exam, an AML diagnosis requires confirmation from several tests. The physical exam will pay particular attention to the eyes, mouth, skin, lymph nodes, liver, spleen, and nervous system, and will look for areas of bleeding or bruising, or possible signs of infection. A blood test measures blood cell counts and bone marrow aspiration is frequently performed in combination with collecting tissue for a biopsy. In rare cases, cerebrospinal fluid (CSF) may be withdrawn in a lumbar puncture or spinal tap to determine if the leukemia cells have spread into the brain and spinal cord. Imaging is sometimes used to identify infections related to AML and to determine if there has been spread of the cancer outside of the bone marrow. When the tissue samples are evaluated in the lab, in addition to confirming the subtype of leukemia, the testing also identifies which gene mutations are present.

The increasing ability to quantify lower levels of measurable residual disease has allowed improved management of AML and monitoring of the disease. Studies looking at measurable residual disease (MRD) found that it could serve as a valuable surveillance marker guiding early intervention for those with relapsed disease.[82]

Current Standard-of-Care
Cancer treatment is highly dependent on the type of AML as well as the age and health of the patient. The main treatment for most types of AML is chemotherapy, sometimes in combination with a targeted therapy drug. This

[76] American Cancer Society. Key Statistics for Acute Myeloid Leukemia (AML). Accessed March 2024.
[77] Huang, J., *et al*. Disease Burden, Risk Factors, and Trends of Leukaemia: A Global Analysis. Frontiers in Oncology, July 2022.
[78] Jani, C.T., *et al*. Burden of AML, 1990-2019: Estimates From the Global Burden of Disease Study. JCO Global Oncology. November 2023.
[79] Yi, M, *et al*. The global burden and attributable risk factor analysis of acute myeloid leukemia in 195 countries and territories from 1990 to 2017: estimates based on the global burden of disease study 2017. Journal of Hematology & Oncology. June 2020.
[80] American Cancer Society. Risk Factors for Acute Myeloid Leukemia (AML). Accessed February 2026.
[81] Poynter, J.N. Obesity over the Life Course and Risk of Acute Myeloid Leukemia and Myelodysplastic Syndromes. Cancer Epidemiology. February 2017.
[82] Shimony, S. *et al.* Acute Myeloid Leukemia: 2025 Update of Diagnosis, Risk Stratification and Management. American Journal of Hematology. February 2025.

might be followed by a stem cell transplant, more specifically called an allogeneic hematopoietic stem cell transplantation (allo-HSCT). For newly diagnosed AML patients who are fit enough for intensive chemotherapy, The historical and current standard induction therapy for patients with AML who are suitable for intensive chemotherapy consists of cytarabine (for days 1-7) and an anthracycline (on days 1-3).[83]

In some people with AML, the leukemia cells have a mutation in the FLT3 gene. This gene helps the cells make a protein (also called FLT3) that helps the leukemic cells grow. Drugs that target the FLT3 protein can help treat some of these malignancies. Midostaurin (Rydapt) and quizartinib (Vanflyta) are FLT3 inhibitors that can be used along with chemotherapy to treat newly diagnosed adults whose leukemia cells have a mutation in the FLT3 gene. Gilteritinib (Xospata) can be used to treat adults whose leukemia cells have a mutation in the FLT3 gene and whose AML has not improved or recurred.

Some leukemia cells have a mutation in the IDH1 or IDH2 gene which help cells make certain proteins called IDH1 and IDH2. Mutations in one of these genes can stop blood cells from maturing normally. Targeted drugs called IDH inhibitors can block these proteins. Agents with this mechanism of action include ivosidenib (Tibsovo), olutasidenib (Rezlidhia) and enasidenib (Idhifa) which help the leukemia cells differentiate into more normal cells. Gemtuzumab ozogamicin (Mylotarg) is a combination monoclonal antibody and chemotherapy drug that attaches to the CD33 protein on AML cells and delivers the anti-neoplastic agent to them.

In younger, otherwise healthy AML patients, a stem cell transplant may be given for remission consolidation and to prevent relapse. In patients that do not respond to first-line treatment and for relapsed/refractory AML, the allo-HSCT may also be appropriate. Higher doses of chemotherapy may be given in this circumstance. The chemotherapy kills most of the bone marrow which needs to be replaced with an HSCT. Both allogeneic and autologous transplants are given. In the allogeneic setting, which is more common, there are certain benefits including the graft vs. leukemia effect where donor cells recognize and kill remaining leukemia cells. However, this benefit may also be associated with complications related to graft vs. host disease (GvHD) where the donor immune system sees the patient's body tissues as foreign and attacks them. GvHD can be mild to serious. Autologous transplants may risk returning some of the leukemic cells to the patient.

Menin inhibitors have emerged as a new treatment modality that disrupts the interaction between menin[84] and Lysine (K)-methyltransferase 2 (KMT2A). Ziftomenib (Komzifti) and revumenib (Revuforj) are two menin inhibitors that are approved for relapsed or refractory acute leukemia for patients with a NPM1 mutation or a KMT2A translocation respectively. These medicines are positioned as salvage therapy for relapsed or refractory disease and as a bridge to transplant in high-risk patients.

AML Patients Advancing to Stem Cell Transplant

We reviewed several studies examining the proportion of AML patients that advance to stem cell transplant (SCT). The percent of patients moving to the transplant is inversely correlated to age. A Swedish study[85] found that 38% of AML and Acute Lymphocytic Leukemia (ALL) patients under 60 received an allogeneic SCT, while 8% of patients from 60 – 64 and 2% of those from 65 to 69 underwent the procedure. A California study evaluating AML patients over the 2001 to 2016 period found the use of allogeneic SCT increased over time. By age group, 13% of older adults (65-79), 41% of adults (40-64) and 49% of patients from 15-39 received an SCT. Overall, about 27% received the transplant.[86] An Ontario paper found that AML patients receiving transplants grew from 12% in 2010 to 25% in 2022. Overall, about 21% of the patients underwent allogeneic SCT over the period reviewed.[87]

[83] Okoniewski, M., *et al*. Moving Away From Standard Induction in Newly Diagnosed Acute Myeloid Leukemia. Hematologic Malignancies. June 2025.

[84] The MEN1 (multiple endocrine neoplasia I) gene provides instructions for making a 610-amino-acid protein called menin, which acts as a crucial tumor suppressor. Located in the cell nucleus, menin regulates cell growth and division, preventing tumors by interacting with proteins to control gene expression, DNA repair, and histone modification.

[85] Juliusson, G., *et al*. Proportion of Adult AML Patient Population Receiving Allogeneic Stem Cell Transplantation and Long-Term Outcome: Real World Data From the Swedish National Acute Leukemia Registry. Blood. 2009.

[86] Meyer, C.L., *et al*. Utilization of allogeneic hematopoietic stem cell transplantation among patients with newly diagnosed acute myeloid leukemia in California: a population-based linked dataset study. Haematologica. February 2025.

[87] Salter, B., *et al*. Impact of expanding allogeneic stem cell transplantation on survival in acute myeloid leukemia: a population-based study, Blood Cancer Journal. November 2025.

Products and Pipeline

Development Pipeline

ATNM-400 (Ac-225-Bound Monoclonal Antibody)

ATNM-400 is a first-in-class, multi-indication radioligand conjugating a monoclonal antibody to the alpha-emitter Actinium-225 (Ac-225). It has been evaluated in several pre-clinical studies including those evaluating breast cancer, lung cancer, and metastatic castration resistant prostate cancer (mCRPC). Its target is differentiated from Pluvicto, which targets the prostate specific membrane antigen (PSMA) found in prostate cancer. While Actinium has not identified the receptor, it has demonstrated its high expression in multiple cancers. It is also differentiated from what may be saturated markets for PSMA, SSTR2, Fibroblast Activation Protein (FAP) and Nectin targets. The company highlighted several features of the target such as its role in prostate cancer cell survival, its link to rapid disease progression, its ability to drive faster castration resistance compared with PSMA and its expression in multiple solid tumors.

Actinium presented data in several posters at leading oncology conferences including the San Antonio Breast Cancer Symposium (SABCS), American Association for Cancer Research (AACR), the Prostate Cancer Foundation Scientific Retreat and the Society of Nuclear Medicine and Molecular Imaging (SNMMI) among others. The posters illustrated the superior preclinical performance of ATNM-400 for tumor control compared to Pluvicto and enzalutamide in animal models for prostate cancer. The conference presentations also compared ATNM-400 to osimertinib in EGFR-mutant NSCLC showing favorable tumor volume suppression in murine models making a case for its use in 1st, 2nd and 3rd line patients.

FDA-approved β-emitting radiopharmaceuticals such as Pluvicto for metastatic castration-resistant prostate cancer (mCRPC) and Lutathera for neuroendocrine tumors, have demonstrated meaningful clinical benefit and shown that radiopharmaceuticals are effective. However, these agents predominantly target cell surface markers with limited roles in tumor progression. To address this shortcoming, Actinium is developing ATNM-400 which has demonstrated superior and durable anti-tumor activity in preclinical models of prostate cancer. This includes models resistant to enzalutamide and PSMA-targeted radiotherapies.

While its identity has not been publicly disclosed by Actinium, ATNM-400 selects for a disease-driving protein linked to tumor progression and to resistance against other targeted therapies. It offers a mechanism-based approach distinct from radiopharmaceuticals that pursue cell surface and tumor microenvironment markers. In preclinical work, ATNM-400 has shown promise as a next-generation Actinium-225 radiotherapy that can serve as monotherapy or in combination with existing therapies to address shortcomings in existing modalities. Suggested combinations include trastuzumab, enzalutamide, checkpoint inhibitors and tyrosine kinase inhibitors (TKIs) among others.

Breast Cancer
At the San Antonio Breast Cancer Symposium held in December 2025, Actinium presented a poster summarizing ATNM-400's performance in several breast cancer models. Conclusions from the presentation assert that the candidate shows strong anti-tumor efficacy and favorable tolerability across multiple breast cancer subtypes: HR+ and TNBC, including models resistant to endocrine therapy tamoxifen and HER-2 antibody trastuzumab. Patients resistant to standard-of-care (SoC) had increased target expression, resulting in potent cytotoxicity and efficacy by ATNM-400 as monotherapy and in combination with SoC. The findings from this breast cancer study support further development of ATNM-400 as a novel therapeutic approach for patients with limited options following endocrine or HER2-targeted therapy failure. It shows promise in both monotherapy and combination regimens.

Prostate Cancer
ATNM-400 showed anti-tumor efficacy and a favorable safety profile in preclinical prostate cancer models. The data was reported in a poster at The Prostate Cancer Foundation Scientific Retreat in October 2025. These findings demonstrate early potential for ATNM-400 as a next-generation Ac-225 therapy that can serve as monotherapy in CRPC (prior to ^{177}Lu-PSMA-617 or Pluvicto), combination therapy with androgen receptor (AR) pathway inhibitors, sequential therapy after AR pathway inhibitor or ^{177}Lu-PSMA-617 failure. ATNM-400 overcomes resistance to enzalutamide and PSMA-directed therapies and may address critical gaps in the mCRPC treatment landscape.

Lung Cancer
ATNM-400 shows strong anti-tumor efficacy and favorable tolerability across multiple lung cancer subtypes, including osimertinib-resistant models, and is also superior to both Dato-DXd (Trop2-ADC) and Amivantamab (EGFR-

cMET bispecific). The synergy between TKI osimertinib and ATNM-400 concurs with previous clinical data showing improved PFS when osimertinib was combined with external beam radiation. Actinium believes that the findings support the continued development of ATNM-400 for lung cancer patients with high unmet needs following TKI therapy failure, both as monotherapy, in rational combination regimens or post-resistance to TKIs.

Pan-Tumor
Actinium presented data at AACR this April providing data supportive of ATNM-400's pan-tumor activity across prostate, lung and breast cancer models. ATNM-400 demonstrates efficacy for both high- and low-expressing PSMA tumors. The agent was compared against three antibody drug conjugates (ADCs) both approved and in development. As reviewed in the previous paragraphs, ATNM-400 has demonstrated the ability in preclinical models to limit tumor growth in comparison with other agents.

Iomab-ACT CAR-T

Subsequent to its Iomab-B work, which sought to myeloablate patients prior to their bone marrow transplant, Actinium identified new indications for its radioconjugate. CAR-T and other patients receiving cell therapy require lymphodepletion to create a favorable environment for the therapy. Iomab-ACT is a lower dose, nonmyeloablative version of Iomab-B that should be safer than standard chemotherapy regimens. The I-131-apamistamab radioconjugate targets CD45 positive cells, including lymphocytes and monocytes, while sparing hematopoietic stem cells, red blood cells and platelets.

Actinium has conducted preclinical work examining the use of I-131 and other radionuclides along with an anti-CD45 antibody to effectively lymphodeplete in an animal model prior to adoptive cell therapy. This approach demonstrated enhanced tumor control over mice that did not receive lymphodepletion.

Key preclinical findings for I-131 apamistamab radioconjugate:

- Single low/nonmyeloablative doses produced potent but transient lymphodepletion of CD45+ cells;
- Spared bone marrow hematopoietic stem cells, red blood cells, platelets and neutrophils;
- Enabled better engraftment and persistence of transferred T cells;
- Both the I-131 and Lu-177 version worked well and may provide a safer and more precise alternative to standard chemotherapy lymphodepletion.

Subjects undergoing cell therapy are exposed to serious adverse events, cytokine release syndrome (CRS), ICANS and receive a chemotherapy regimen that is non-specific. Targeted lymphodepletion with radioimmunotherapy (RIT) directed to CD45 may be a safer and more effective alternative to target and deplete immune cells.[88] Actinium sees Iomab-ACT as a potential universal targeted conditioning agent to improve patient access and outcomes in cell and gene therapy.

Actinium could launch a Phase II trial next year and based on supportive data, start a Phase III in 2029. Assuming continued success, Actinium would be in a position to submit a BLA to the FDA in 2032 and generate first sales in 2033. Resources estimate more than 144,000 individuals are diagnosed with hematological malignancies in the US every year; however, there are only about 6,000 CAR-T procedures annually, expanding at a double-digit rate.

Iomab-B[89,90]

Iomab-B is an apamistamab-conjugated, Iodine-131 (I-131) isotope radiopharmaceutical targeting CD45 for bone marrow transplantation in relapsed/refractory acute myeloid leukemia (AML) patients. Apamistamab is an anti-CD45 recombinant murine monoclonal antibody also known as BC8. Its I-131 toxic payload is a beta-emitting radioisotope with an 8.0-day half-life and tissue penetration of 0.8 mm. The CD45 targeting antibody delivers the I-131 payload directly to bone marrow hematopoietic cells where it emits beta particles that induce cell death through DNA damage. Iomab-B is able to both eliminate leukemic blasts and ablate the patient's bone marrow.

The candidate was the subject of the Phase III SIERRA trial which began in 2016. The FDA granted an Orphan Drug Designation to Iomab-B in this indication. Following the Phase II study, the FDA had communicated that dura-

[88] Dawicki,W., *et al*. Targeted lymphodepletion with a CD45-directed antibody radioconjugate as a novel conditioning regimen prior to adoptive cell therapy. Oncotarget. September 2020.
[89] John Pagel, MD, Ph.D. discussing Iomab-B for HSCT
[90] Hillard Lazarus, MD discussing Iomab-B to expand bone marrow transplant

ble complete remission (dCR) would be an accept-able primary endpoint. Despite achieving this endpoint, the FDA did not accept the biologics license (BLA) application for Iomab-B in AML transplant patients. Actinium now has the program on hold and plans to finalize trial specifics with FDA and seek a U.S. partner before moving forward. Iomab is advancing under the Iomab-ACT moniker for conditioning prior to CAR-T treatment in hematological malignancies and prior to bone marrow transplant and gene therapy in sickle cell disease.

SIERRA Trial

Actinium launched its SIERRA (**S**tudy of **I**omab-B in **E**lderly patients with **R**elapsed or **R**efractory **A**ML) trial in June 2016 seeking to identify a clinically meaningful induction agent and conditioning regimen for bone marrow transplant patients. The trial was a 153-patient randomized, multicenter, controlled study at 24 sites in the US and Canada. Patients were age 55 and older with active relapsed or refractory AML. Subjects were required to have an 8/8 HLA allele-matched donor and adequate organ function to be considered for enrollment. Based on the trial's population statistics, it was considered high-risk, heavily pre-treated with biologically aggressive disease.

The trial design enrolled 75 subjects in the Iomab-B arm where patients received a personalized therapeutic dose followed by a reduced intensity conditioning (RIC) regimen containing fludarabine and low-dose total body irradiation prior to allogeneic hematopoietic stem cell transplant (HCT). The control arm enrolled 77 subjects with treatment consisting of conventional care as determined by the physician.[91] The study included a crossover provision of patients in the control arm where 44 of the 77 received Iomab-B treatment.

Details of the study are provided on clinicaltrials.gov under the designator NCT02665065. Beyond the requirements of age 55 years or greater and active relapsed, refractory AML, patients were also expected to survive more than 60 days, generate a Karnofsky score of 70 or more and have an 8/8 HLA allele matched donor.

SIERRA was a Phase III, multicenter, open label, 1:1 randomized, optional one-way crossover study. In the active arm, it evaluated I-131 apamistamab followed by fludarabine and total body irradiation (TBI) and allogeneic hematopoietic cell transplantation (HCT) while the control arm was the investigator's choice of conventional care. Conventional care comprised salvage therapy followed by standard-of-care allogeneic HCT if patients achieved a complete remission (CR) or CR with incomplete platelet recovery (CRp) within 28-42 days of treatment initiation. Patients with a CR/CRp per bone marrow assessment could proceed to conventional allogeneic HCT or continue treatment. Patients without a CR/CRp, or who had AML progression from day 14, could cross over to receive I-131 apamistamab and fludarabine-TBI followed by allogeneic HCT.

Endpoints
The primary endpoint was dCR defined as CR lasting 180 days or more following initial CR. Secondary measures included overall survival (OS) and event-free survival for a five-year period following treatment, salvage treatment failure in the conventional group, morphologic relapse or death. Exploratory endpoints included dCR and one-year OS rates in the crossover arm. Safety endpoints included the incidence and severity of treatment-emergent adverse events, non-relapse mortality, the incidence of GVHD among other common adverse events related to the procedure. The prespecified primary efficacy and safety cutoff was when all participants had completed the day 180 visit.

Results
The Iomab-B arm showed a higher CR compared with conventional care in older patients with relapsed or refractory AML. Investigators determined that Iomab-B was well tolerated. 72 patients were enrolled in the active arm and 66 received the therapeutic dose of I-131 apamistamab. 77 were enrolled in conventional care and 76 of them received salvage therapy. 14 of the control arm patients underwent standard-of-care allogeneic HCT: five after achieving CR/CRp and nine at the investigator's discretion following a morphologic leukemia-free state. Of the 62 patients who did not respond, 44 crossed over and 40 of them received the I-131 apamistamab–led regimen and underwent allogeneic HCT. The remaining 18 patients in the conventional care group had no further treatment. At the subsequent survival analysis cutoff date in January 2024, eight patients in the I-131 apamistamab group were alive and on study versus five in the conventional care group.

The median time to allogeneic HCT from random assignment was 29 days in the I-131 apamistamab group versus 66.5 days in the conventional care group and 61.5 days in crossover patients. The similar rates of engraftment seen after I-131 apamistamab and crossover were higher after conventional care. The median time to platelet engraftment was longer after I-131 apamistamab than conventional care while time to neutrophil engraftment was similar between treatment groups. Delayed neutrophil and platelet engraftment rates, respectively, were lower in the I-131

[91] Gyurkocza, B., *et al*. Randomized Phase III SIERRA Trial of ^{131}I-Apamistamab Before Allogeneic Hematopoietic Cell Transplantation Versus Conventional Care for Relapsed/Refractory AML. Journal of Clinical Oncology. September 2024.

apamistamab (1.5% and 15.2%) and crossover groups (2.5% and 5.0%) than in the conventional care group (7.1% and 21.4%). No graft rejections occurred in any patients who received I-131 apamistamab; one patient (7.1%) receiving standard-of-care allogeneic HCT in the conventional care group had a graft rejection.

OS was an exploratory endpoint and was at risk of becoming a confounding factor due to the crossover option in the SIERRA trial. While the initial understanding with the FDA for a registrational trial design did not require a statistically significant OS to be measured, upon submission, the agency called for a trial that measured it directly. Due to the crossover population, it was impossible to identify the benefit of Iomab-B as compared to the control arm. Despite the lack of statistically significant evidence, there was a trend towards improved OS in the Iomab-B arm compared to the results generated in the non-crossover arm.

Exhibit XI – SIERRA Trial Overall Survival Rates

Duration	I-131 Apam Arm	Conventional Arm	Non-Crossover Arm	Crossover Arm
1 Year	25.0%	23.4%	12.1%	31.8%
2 Year	15.8%	15.6%	9.1%	20.5%

Source: Analyst work sourced from Gyurkocza *et al*.

Actimab-A (Ac-225 CD33-directed antibody)

Actimab-A is a lintuzumab-conjugated, Actinium-225 isotope radiopharmaceutical used in high-risk relapsed/ refractory acute myeloid leukemia (AML) populations. Lintuzumab is a humanized recombinant monoclonal antibody that targets CD33, a myeloid cell surface antigen highly expressed on most AML blasts and some early hematopoietic progenitors. It was originally developed as an unconjugated anti-CD33 therapeutic for AML and related myeloid malignancies and was acquired by Actinium to use in its Actimab-A radioconjugate.[92]

Actimab A for MDSCs
Actinium's Actimab-A program for myeloid-derived suppressor cells (MDSCs) uses targeted α-radiation to destroy immunosuppressive cells in solid tumors and to boost the effectiveness of immunotherapy such as checkpoint inhibitors. MDSCs are a type of immune cells which can be disrupted, resulting in a heterogeneous population of immature myeloid cells that accumulate in solid tumors. MDSCs suppress anti-tumor T cell responses and resist PD1 and PD-L1 checkpoint inhibitors. The CD33 inhibitory receptor is also a key marker of MDSCs, which play critical protumorigenic roles in the tumor microenvironment of many malignancies.

Actimab-A binds to CD33 through its targeting antibody lintuzumab. CD33 is a common surface marker on MDSCs and work has shown that targeting it can endocytose the complex that is attached to it.[93] In the case of antibody drug conjugates and radioconjugates, the toxic payload destroys the MDSC when it is internalized. The elimination of the immature MDSCs restores T cell proliferation thereby allowing the immune system to engage the cancer.

MDSCs represent a resistance mechanism that can reduce cytotoxic T cell activity and checkpoint pathway dysregulation. Removing the suppressive MDSCs is shown to convert an immune-resistant tumor microenvironment into one that is more responsive to T cell directed treatment. Preclinical investigational work on a bispecific targeting CD33, designated AMV564, was able to reduce the burden of CD33 positive malignant cells in Acute Myeloid Leukemia (AML) patients. AMV 564 led to a significant decrease in CD33-high MDSC populations in bone marrow mononuclear cells.[94]

CD33 is a druggable, internalizing surface antigen expressed on human MDSC populations in blood and tumors, including CD33-high MDSCs. The cells can mediate T cell suppression and may contribute to checkpoint inhibitor resistance.[95] In patient derived models, CD33-directed interventions have depleted CD33-high MDSCs, restored T cell proliferation and cytotoxic activation and enhanced checkpoint inhibitor activity.[96]
Phase Ib/II Study of Actimab-A with CLAG-M

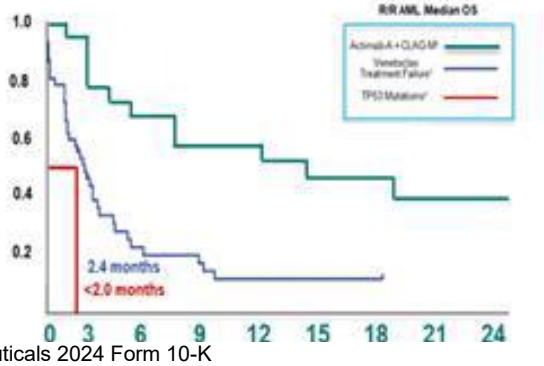
[92] Rosenblat, T.L. *et al*. Treatment of Patients with Acute Myeloid Leukemia with the Targeted Alpha-Particle Nano-Generator Actinium-225-Lintuzumab. Clinical Cancer Research. November 2022.
[93] Fultang, L, *et al*. MDSC targeting with Gemtuzumab ozogamicin restores T cell immunity and immunotherapy against cancers. EBioMedicine. 2019.
[94] Cheng, P., *et al*. Immunodepletion of MDSC by AMV564, a novel bivalent, bispecific CD33/CD3 T cell engager, ex vivo in MDS and melanoma. Molecular Therapy. February 2022.
[95] Ibrahim, A., *et al*. MDSC checkpoint blockade therapy: a new breakthrough point overcoming immunosuppression in cancer immunotherapy. Cancer Gene Therapy. March 2025.
[96] Li, X., *et al*. Targeting Myeloid-Derived Suppressor Cells to Enhance the Antitumor Efficacy of Immune Checkpoint Blockade Therapy. Frontiers in Immunology. December 2021.

Actinium conducted a Phase I study of Actimab-A combined with the salvage chemotherapy CLAG-M (cladribine, cytarabine, G-CSF, and mitoxantrone) which was listed on clinicaltrials.gov under the designator NCT03441048. The study enrolled 26 medically fit relapse/recurrent AML adult patients in the trial of which 23 were evaluable for efficacy. This included five patients treated in a pharmacokinetic expansion cohort. The trial's goals were to identify a maximum tolerated and Phase II dose along with an evaluation of safety.

The maximum tolerated and Phase II dose was 0.75 µCi/kg. Adverse events included febrile neutropenia (65.4%) and decreased white blood cells (50%). No early deaths were attributed to the combination treatment. Composite complete remission rates were 56.6%, with subgroups broken down by 50% in patients with mutated TP53 and 38.5% in prior venetoclax-treated patients. Estimated OS was 9.6 months and 7.3 months for patients with a TP53 mutation or prior venetoclax treatment.[97] Overall, Actimab-A plus CLAG-M was well tolerated with manageable toxicities. The regimen produced deep and meaningful responses in high-risk r/r AML patients.[98]

Exhibit XII – Overall Survival Outcomes with Actimab-A + CLAG-M

Patient segment	Median Overall Survival
1st/2nd Salvage (n=14)	18.4 mo.
Underwent allo HCT (n=5)	24 mo.
TP53mut (n=13)	9.6 mo.
Prior Venetoclax (n=13)	7.3 mo.

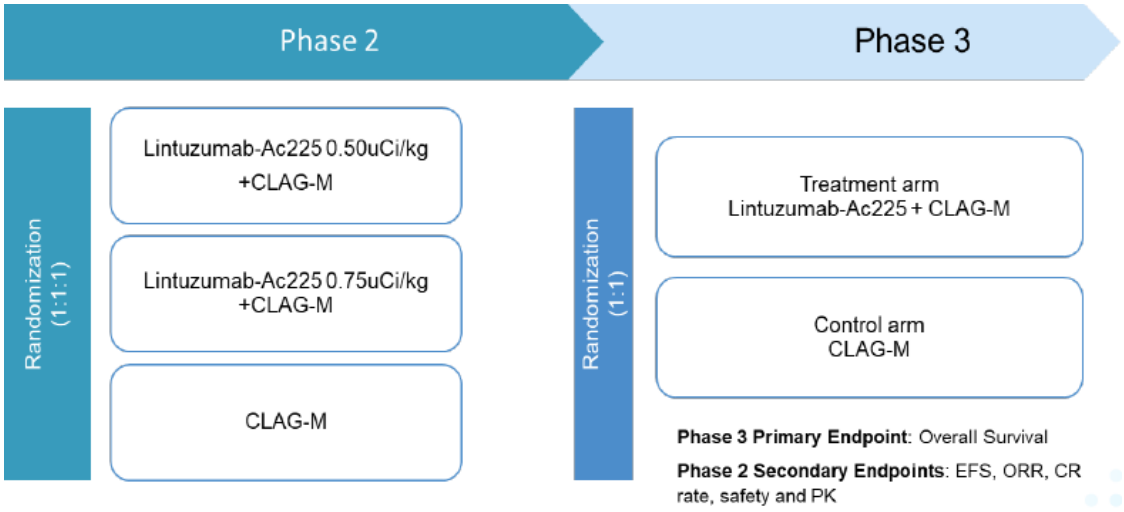


Source: Actinium Pharmaceuticals 2024 Form 10-K

Phase II/III Study of Actimab-A with CLAG-M

After the completion of multiple Actimab-A clinical trials, the resulting data supported further study. Actinium consulted with the FDA to develop a randomized pivotal Phase II/III study evaluating Actimab-A + CLAG-M to CLAG-M alone. Actinium is seeking a collaborator to advance the study. The trial design that combines the Phase II and Phase III is an efficient approach that will reduce time and resources required to advance the candidate.

Exhibit XIII – Actimab-A + CLAG-M Pivotal Phase 2/3 Trial Design



Source: Actinium Pharmaceuticals June 2026 Corporate Presentation

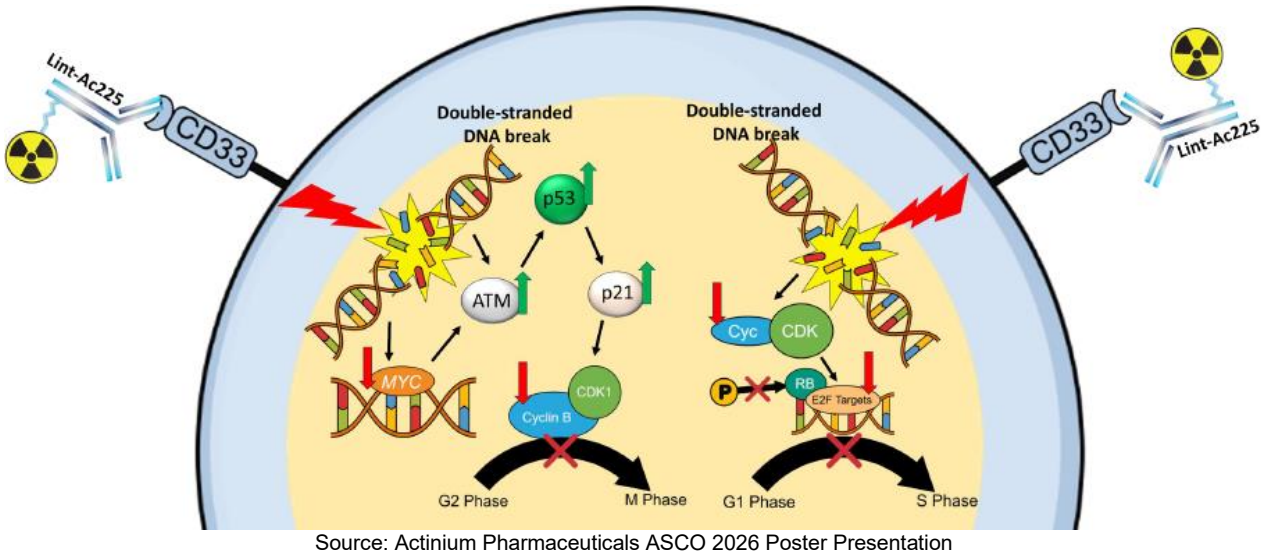
The primary endpoint for the Phase III trial is expected to be OS. Secondary endpoints are anticipated to include event-free survival along with safety.

[97] Abedin SM, *et al*. Phase 1 study of lintuzumab-Ac225 combined with CLAG-M salvage therapy in relapsed/refractory acute myeloid leukemia. Leukemia. February 2025.
[98] Abedin, S.M., *et al*. Phase 1 study of lintuzumab-Ac225 combined with CLAG-M salvage therapy in relapsed/refractory acute myeloid leukemia. Leukemia. February 2025.

AACR 2026 Presentations

Actinium presented Actimab-A data in AML at the 2026 American Association of Cancer Research (AACR) Annual Meeting. It was held from April 17 to 22 in San Diego, California. The content examined preclinical data evaluating the effectiveness of Actimab-A in combination with other therapies including revumenib (menin-KMT2A inhibitor), gilteritinib (FLT3 inhibitor), and azacitidine (hypomethylating agent). Actinium's agent exhibited robust cytotoxicity in primary AML patient samples with common mutations such as FLT3, KMT2A, NPM1, IDH1, IDH2 or TP53.

Exhibit XIV – Actimab-A (Lintuzumab-Ac-225) Mechanism of Action



Source: Actinium Pharmaceuticals ASCO 2026 Poster Presentation

The poster concluded that Actimab-A shows broad mutation-independent anti-leukemic activity in AML cell lines and primary AML patient samples. It also finds that when combined with standard therapies, Actimab-A drives complementary transcriptional programs that enhance depth and durability of response. The findings also support advancing Actimab-A into the clinic in combination with other agents as a strategy to overcome resistance and enhance therapeutic efficacy in AML.

Exhibit XV – Actinium Pharmaceuticals' Pipeline

Pillar	Program	Differentiation & Indication	Stage of Development (Preclinical / Phase 1 / Phase 2 / Phase 3)
Solid Tumors – Growth & Value Driver	ATNM-400 (Undisclosed Target)	First-in-Class Ac-225 Program Targeting mCRPC, NSCLC & Breast Cancer	
	Actimab-A MDSC	Combinations with PD-1 Inhibitors to Overcome Resistance in MDSC-Rich Solid Tumors	
	Undisclosed Targets/Theranostics	Novel Solid Tumor Programs	
Hematology – Value Now/ Partner Ready	Actimab-A + CLAG-M	Mutation Agnostic Backbone Therapy for Fit R/R AML	Seeking collaborator
	Actimab-A Triplet Combo	Mutation Agnostic Backbone Therapy for Frontline AML	
	Actimab-A Monotherapy	Address Unmet Needs of High-risk HMA refractory MDS	
	Actimab-A Combinations *(FLT3, IDH 1/2, Menin)*	Novel Combinations for Frontline, R/R & Maintenance – AML/MDS	
Conditioning – Future of Cell & Gene Tx	Iomab-ACT Commercial CAR-T	Universal Conditioning to Improve Patient Access & Outcomes	
	Iomab-ACT BMT / GeneTx	Targeted Non-Chemotherapy Conditioning to Unlock Curative Therapies	
	Iomab-B BMT	Conditioning for Broad Active R/R AML Patient Population	Seeking partner

Source: Actinium Pharmaceuticals September 2026 Corporate Presentation

Orphan Drug Designation

The FDA granted an orphan drug designation for Actimab-A in December 2014 for the treatment of newly diagnosed AML in patients over 60. In 2017, the European Medicines Agency (EMA) also granted an orphan drug designation for Actimab-A in the same population who were also ineligible for standard induction therapy.

The FDA (2014) and EMA (2016) also granted an orphan designation to Iomab-B for treatment of AML in both the United States and the EU. Elderly patients 55 and over who require a conditioning regimen prior to a bone marrow transplant comprised the eligible population.

Peers and Competitors

Actinium Pharmaceuticals' peers, competitors and rival technologies are focused on or have a presence in radiopharmaceuticals. There has been substantial merger and acquisition activity over the last several years with deals between Bristol Myers & RayzeBio, AstraZeneca & Fusion Pharma, Eli Lilly and POINT Biopharma and, in 2025, Lantheus' acquisition of Evergreen Theragnostics. Lantheus was later the target of acquisition by Curium for up to $8.0 billion. Collaborations and partnerships have been another area of activity such as Lilly's partnership with Aktis Oncology and Radiopharm Theranostics' relationship with Lantheus. Aktis completed a relatively large initial public offering in January 2026 and was subsequently listed on the NASDAQ. There are a number of other private and dominant radiopharmaceutical players that may also go public in the future such as Abdera Therapeutics or Convergent Therapeutics. In this section we summarize some of the more important players in the radiopharmaceutical space.

Radiopharmaceutical Companies
Aktis recently IPOed with a Phase Ib asset targeting Nectin-4 and a preclinical asset targeting B7-H3 both conjugated to Ac-225. It uses a miniprotein construct for its radioconjugates and is targeting solid tumors in a variety of sites. AstraZeneca acquired the Canadian-domiciled Fusion Pharmaceuticals in June of 2024. Fusion is developing a novel linker technology for use with alpha-emitters to improve the safety of radiopharmaceuticals and reduce off-target effects on healthy tissue. Blue Earth Diagnostics is a UK-based firm that offers an F-18 PET imaging agent that competes with Pylarify in prostate cancer. Bristol Myers acquired RayzeBio in 2024 which has an actinium-based radiopharmaceuticals development platform. Its current pipeline programs are targeting the treatment of solid tumors, including gastroenteropancreatic neuroendocrine tumors (GEP-NETs), small cell lung cancer, hepatocellular carcinoma and other cancers. In June 2025, the Rayze subsidiary acquired rights to Philochem's Onco-ACP3 asset, a radiotheranostic for prostate cancer. Cardinal Health is a dominant provider of radiopharmaceuticals in the United States, with a network of over 130 nuclear pharmacies and distribution of PET and SPECT products.

Curium Pharma is a developer, manufacturer and distributor of RPs with a portfolio of products that includes generators, cold kits, hot products and auxiliary products used in the diagnosis and treatment of a wide range of diseases affecting the thyroid, lungs, liver, bones, brain, heart, glands, kidneys and joints. Curium commercializes Pylclari[99] in Europe. Eli Lilly is another recent acquiror, picking up Lantheus' partner POINT Biopharma. Point has development programs for lutetium-based radiopharmaceuticals targeting PSMA and SSTR2, both in Phase III. GE Healthcare is another dominant player in the space which offers not only the imaging equipment which detects the radiotracers but also markets cERianna, DaTscan, Vizamyl, technetium products and other nuclear imaging agents. ITM Radiopharma offers targeted radionuclide diagnostics and therapies in precision oncology. Theranostic agents for neuroendocrine tumors (NETs). TOCscan is the diagnostic companion to non-carrier added ^{177}Lu-Edotreotide and is a ready to use radiopharmaceutical which ensures high-quality PET images. ITM also provides a GMP radiolabeling service. Jubilant Pharmova is headquartered in India offering numerous business segments including a US radiopharmacy presence and radiopharmaceutical products including the Rubidium ^{82}Rb Generator and Elution System. Life Molecular Imaging, recently acquired by Lantheus, develops neurodegenerative imaging assets with a PET RP for Alzheimer's disease (AD) and cardiovascular disease.

Novartis' buy of Mariana Oncology added a portfolio of radioligand therapy programs from lead optimization to early development across a range of solid tumor indications in breast, prostate and lung cancer. This includes development candidate MC-339, an actinium-based RLT being investigated in small cell lung cancer. Novartis also offers a ^{68}Ga-based PSMA PET imaging agent. Precirix is a private company focused on developing precision radiopharmaceuticals in oncology, using camelid single-domain antibodies labeled with radioisotopes. CAM-H2, a HER2-directed single domain antibody combined with Iodine-131 recently completed a Phase I clinical study. The company's Fibroblast Activation Protein (FAP)-targeting program is transitioning into the clinic. Research on multiple isotopes, linker technology and combination therapies further expand the platform. Precirix' technology allows for a theranostic approach, where patients can be selected using an imaging version of the product, followed by a therapeutic dose for treatment.

Telix Pharma and RLS Radiopharma recently announced a combination between the two where the former will expand its North American manufacturing and distribution platform with the latter. Telix will engage RLS' 31 licensed radiopharmacies to build a radiometal production and distribution network for key therapeutic and diagnostic isotopes along with last-mile delivery of finished unit doses. Sofie Biosciences licensed quinoline-based PET tracers, developed by the team at Heidelberg University, that act as FAP inhibitors (FAPI). The company is also developing

[99] Pylclari is the branded name for piflufolastat F-18 or Pylarify in Europe.

a gallium 68 product ([^{68}Ga]FAPI-46) along with a fluorine 18 product ([^{18}F]FAPI-74) in Phase II clinical studies. Sofie also works with GE Healthcare and has entered a licensing agreement to develop, manufacture and commercialize [^{68}Ga]FAPI-46 and [^{18}F]FAPI-74 for diagnostic and companion diagnostic use. Another Australia-based company, Clarity Pharmaceuticals, uses the SARTATE platform. It supports a theranostic approach pursuing prostate cancer, neuroblastoma, NETs and other cancers using a variety of targeting molecules and copper isotopes (Cu-64 and Cu-67). Clarity has multiple Phase II and Phase III trials underway in the US and Australia. Georgia-based UPPI manages a commercial nuclear and PET pharmacy network and represents over 80 institutional and independent sites throughout the United States. It serves as a group purchasing organization (GPO) for its client companies.

BWX Technologies manufactures and sells nuclear components around the globe. Business division BWXT Medical offers medical radioisotopes, radiopharmaceuticals and medical devices. Isotopes include Ac-225, Indium-111 and Lu-177. On August 3rd, 2026, BWX announced that it is selling its medical business to Nordic Capital for up to $800 million. The deal includes BWXT Medical and Kinectrics' stable medical isotopes business. Both of these businesses are located in Canada and supply isotopes to medical customers.

Conditioning and Related Cancer & Gene Therapy Companies
Allogene Therapeutics is a clinical-stage, immuno-oncology company developing allogeneic chimeric antigen receptor (CAR) T cell product candidates for hematologic malignancies with its CD19 targeting asset in Phase II. The company also offers a solid tumor franchise with a Phase I asset and several preclinical candidates. Vertex Pharmaceuticals is a biotechnology company developing Casgevy for the treatment of sickle cell disease and transfusion dependent beta thalassemia. It struck a deal with Orum Therapeutics to develop degrader-antibody conjugates as a preconditioning agent for gene editing therapies. While the deal took place in July 2024, the pre-conditioning program appears to remain in a preclinical status according to Orum's pipeline page.

Exhibit XVI – Peers and Competitors[100]

Ticker	Company	Price	MktCap (MM)	EV (MM)	Therapeutic Area
AKTS	Aktis Oncology	$23.17	$1,245	$728	Precision α therapy for breast, lung, colorectal, bladder & liver
ALLO	Allogene Tx	$1.78	$615	$282	Non-chemo conditioning w ith anti-CD52 mAb
AZN	AstraZeneca	$163.78	$254,008	$272,647	Acquired Fusion Pharma: PSMA radioconjugates (FPI2265)
BAYRY	Bayer	$14.27	$56,081	$86,407	α-therapies targeting GPC3, PSMA & Xofigo
BMY	Bristol Myers	$64.10	$130,938	$161,964	Acq RayzeBio, radiotherapeutics, solid tumors
BWXT	BWXT Medical	$148.53	$13,609	$15,017	Manufactures radioisotopes, radiopharmaceuticals & medical devices
CAH	Cardinal Health	$234.89	$54,630	$56,778	Full suite of PET/SPECT products, nuclear pharmacy, distribution
CATX	Perspective Tx	$2.92	$333	$98	Precision α (Pb212-VMT- α-NET) & β (Lutathera) therapies
CLRB	Cellectar Bioscienc	$2.31	$22	($12)	PDC platform employing multiple isotopes for solid & liquid tumors
CLRPF	Clarity Pharma	$1.65	$615	$444	SAR Tech for Cu-67 based theranostics
GEHC	GE Healthcare	$64.25	$29,021	$37,007	PET imaging agents, cyclotrons, Optison, PET/CT & SPECT equipment
GILD	Gilead Sciences	$146.41	$181,542	$202,195	Non-chemo conditioning
JUBLPHA	Jubilant Pharmova	INR1,011.95	INR160,280	INR185,680	Radiopharmaceuticals & radiopharmacy
LLY	Eli Lilly	$1,138.28	$1,071,528	$1,110,436	Acq Point Biopharma: PSMA, GEP-NET radioligands, LNTH partner
LNTH	Lantheus	$100.32	$6,548	$6,525	RP & microbubble franchises w ith AD imaging & radiotherapeutics
MLLCF	Molecular Partners	$4.02	$154	$74	DARPin platform for Pb212 RPs in partnership w ith Orano Med
MNPR	Monopar Tx	$108.32	$727	$593	anti-uPAR mAbs for RP imaging & treatment of solid cancers
NVS	Novartis	$138.99	$265,214	$295,013	Ga-68-based PSMA PET imaging, acq Mariana Oncology
RADX	Radiopharm Thera	$2.01	$29	$13	Diversified portfolio of theranostic isotopes
TLPPF	Telix Pharma	$12.00	$4,077	$4,340	Ga-68-based PSMA PET imaging agents
VRTX	Vertex Pharma	$519.51	$131,854	$124,002	Non-chemo conditioning using ADCs
pvt	Abdera				Targeted α therapies w ith mAbs/Δ-like ligand 3, NSCLC
pvt	Abdera Tx				ROVEr platform for optimizing tumor uptake & minimizing radiotoxicity
pvt	Ariceum Tx				SSTR2 (Lu-177) & PARPi (I-123). Collab w / UCB Pharma
pvt	ARTbio				Pb212 α-radioligand therapies. Ph1 for prostate cancer
pvt	Blue Earth Diag				F18 PSMA & brain metastases PET imaging agent
pvt	Bracco				Imaging agents, nuclear medicine. Lumason microspheres.
pvt	CarThera				Ultrasound, microbubble; Alzheimer's indication
pvt	Cerevast				Ultrasound & microsphere technologies
pvt	Convergent Tx				Lu-177 & Ac-225 mAb targeting PSMA in prostate cancer
pvt	CuraSight				Imaging & theranostics w / uPAR platform in solid tumors
pvt	Curium Pharma				Develop, manufacture & distribute RPs. Acquisition of Lantheus.
pvt	Full-Life Tech				Solid tumor RP therapies, manufacturing & logistics
pvt	Fusion Pharma				Ac-225 targeting PSMA (FPI-2265) for mCRPC & other solid tumors
pvt	Insightec				Ultrasound platform for treatment of neurological disease
pvt	Isotopen Munchen				Diagnostic & therapeutic RP & radionuclides for cancer treatment
pvt	ITM Radiopharma				RP precision therapeutics & diagnostics for hard-to-treat tumors
pvt	Orano Med				Pb212 RPs in solid tumors w / many partners
pvt	PharmaLogic				CDMO for PMF F18 production, SPECT & PET radiopharmacy
pvt	Precirix				Developing radio-immunotherapeutic drugs for cancer patients
pvt	RadioMedix				RP products & services + pipeline of diagnostics & treatments
pvt	Radionetics Onc				GPCR targeted RP w ith no isotope identified
pvt	Ratio Tx				RP for solid tumors using Trillium & Macropa platforms
pvt	RLS Radiopharm				Commercial radiopharmacy, distribution, compounding
pvt	Sofie Biosciences				Molecular PET imaging, 18F FAPI-74
pvt	SonoThera				Non-viral genetic therapies/ultrasound microbubbles/sonoporation
pvt	UPPI				Commercial nuclear & PET pharmacy netw ork
pvt	α-9 Oncology				Optimizes RP molecule design. Ph1 asset for melanoma (MC1R)
ATNM	Actinium	$1.28	$40	$4	Antibody Radiation-Conjugates R&D; AML, conditioning, solid tumor

Source: Compiled by Zacks Analyst Using Zacks Research System

[100] Price and market capitalization data is as of September 14, 2026

Milestones, History and Review of Financial Results

Corporate Milestones

- Licensing of Iomab-B precursor (BC8) from Fred Hutchinson – 2012
- Launch of Phase I Actimab-A trial - 2012
- Spin off of Actinium from Antigenics – 2013
- Launch of SIERRA Trial – 2016
- Appointment of Sandesh Seth as CEO – June 2017
- IND submission for Actimab-A with CLAG-M for relapsed or refractory AML patients – February 2018
- Completion of Phase I Actimab-A trial with CLAG-M – September 2020
- Research collaboration with Astellas – January 2021
- Technology transfer for Iomab-B – September 2021
- Launch of Iomab-ACT program – 2021
- Topline announcement of Iomab-B SIERRA trial in AML – February 2023
- NCI CRADA Agreement – February 2023
- NIH grant for Iomab-ACT in collaboration with Memorial Sloan Kettering for CAR-T – October 2023
- Iomab-ACT study in CAR-T with UT Southwestern Medical Center launched – March 2024
- FDA requirement for Iomab-B trial demonstrating overall survival - August 2024
- Initiation of ATNM-400 program in prostate cancer – March 2025
- Initiation of CRADA-NIH trial for Actimab-A and triplet combination – March 2025
- Initiation of Actimab-A clinical trial program in combination with checkpoint inhibitors – March 2025
- ATNM-400 and Actimab-A presentation at AACR– April 2026
- NYSE American notice of noncompliance for minimum stockholders' equity – May 2026
- Authorities issued patent allowances for Actimab-A and Iomab-ACT – May 2026
- Presentation at Society of Nuclear Medicine and Molecular Imaging (ATNM-400) – May/June 2026
- Appointment of Steffen Heeger, MD as Chief Medical Officer -June 2026
- Submission of compliance plan to NYSE American – June 18th, 2026
- NYSE accepts Actinium's plan to regain compliance with listing standards – August 2026
- Initial tumor targeting and biodistribution data for ATNM-400 – 2H:26
- Actimab-A, MDSC data from basket trial – 2H:26
- Initial data from SCD & CAR-T trial with Iomab-B (ACT) in conditioning – 2H:26
- Initiate Actimab-A + CLAG-M Phase II/III trial in r/r AML with partner – 2026/2027
- Identify partner for Iomab-B Phase II/III trial – 2026/2027
- Buildout of radioligand manufacturing facility and supply of first GMP batch – 2H:26
- Execute partnership agreement to produce Ac-225 in-house – 2026/2027
- Launch of clinical trial for ATNM-400 – 2026

Background

Actinium Pharmaceuticals was founded in 1998 and incorporated in 2000 in New York City with an initial objective of developing novel cancer treatments using targeted radiotherapy.[101] Its initial radioisotopes were Actinium-225 and Bismuth-213. The company shifted into higher gear when it licensed the monoclonal antibody BC8 (apamistamab) from the Fred Hutchinson Cancer Research Center in 2012. BC8 targets CD45 and was combined with Iodine-131 to produce Iomab-B to provide conditioning for bone marrow transplantation. The arrangement with Fred Hutch included milestone payments, research support funding and royalties on product sales.

[101] Business ABC. Actinium Pharmaceuticals.

Actinium became public via a reverse merger in 2013 to gain access to public markets. Capital raised following the transaction was directed towards advancing Actimab-A in AML and Iomab-B in bone marrow conditioning. The following year the company uplisted its stock from the OTC to the NYSE MKT exchange.

In 2016 the Phase III SIERRA trial was launched, which sought to study the effects of Iomab-B in elderly, relapsed or refractory AML patients. It was a 150-patient trial comparing Iomab-B followed by bone marrow transplant compared to SoC chemotherapy in this population. The FDA granted orphan status to both Iomab-B and Actimab-A for indications in over-55 relapsed and refractory AML patients in bone marrow transplant and elderly AML patients respectively.

2017 brought changes in management with the appointment of Sandesh Seth to the role of CEO from the Actinium board and the addition of former J&J executive Dr. Ajit Shetty to the board. Starting in 2021, Actinium entered into several collaborations including ones with Astellas, EpicentRx and AVEO Oncology to develop Ac-225 conjugated radiopharmaceuticals.

Despite a slowdown in SIERRA trial enrollment during COVID, the trial completed patient enrollment in 3Q:21. Approximately six months later, Actinium signed a commercialization deal with Immedica for rights to Europe, the Middle East and North Africa. The deal provided an upfront along with milestones and royalties on sales in these regions. In 2026, Actinium informed investors that Immedica would not pursue regulatory approval of Iomab-B. The Actimab-A program was advancing in parallel as the candidate was being combined with the salvage chemotherapy regimen CLAG-M in relapsed or refractory AML. Results presented at the 2022 ASH conference showed the combination produced deep remissions even in high-risk AML subsets. These findings positioned Actimab-A as a potent adjunct to intensive chemotherapy, capable of eradicating residual leukemia cells via its alpha-emitting payload.

Actinium reported topline results from its SIERRA trial in February 2023 reporting the achievement of its primary endpoint (dCR), a doubling of overall survival (OS) and improved transplant access. Following the report, Actinium began scaling up manufacturing and seeking a US commercialization partner. However, these efforts dissolved when the FDA changed its requirement for the trial's primary endpoint. The agency did not accept the Biologic License Application (BLA) and asked for a new Phase III with an OS endpoint. Following this turn of events, Actinium now seeks a partner to advance Iomab-B to approval.

In 2023, Actinium leveraged a Cooperative Research and Development Agreement (CRADA) with the U.S. National Cancer Institute to plan pivotal trials of Actimab-A with emerging AML therapies. This was achieved through the initiation of a triplet regimen combining Actimab-A with the BCL-2 inhibitor venetoclax and the hypomethylating agent ASTX-727 in frontline AML. In March 2025, the CRADA-Actimab-A trial was started in newly diagnosed AML patients (NCT06802523). A few weeks later, Actinium announced a clinical trial program in solid tumors combining Actimab-A with PD-1 checkpoint inhibitors. March was also the month when Actinium announced its new preclinical asset, ATNM-400, an Ac-225 isotope combined with a novel target in prostate cancer. Since the announcement, the company has presented numerous posters on ATNM-400 showing that it has superior activity to EGFR inhibitors, and robust anti-tumor efficacy in prostate, lung and breast cancer models. It is developing data for the investigational new drug (IND) application later this year.

1H:26 Financial and Operational Results

Actinium reported its first half 2026 financial and operational results in Form 10-Q, filed on August 7th, 2026. It recognized $35 million in non-cash revenues related to the 2022 upfront payment from Immedica for Iomab-B development and commercialization rights in select geographies. 1H:26 research and development (R&D) expense was $9.6 million, down 24% vs. prior year expense of $12.6 million. The decrease was due to lower stock option expense and lower headcount partially offset by higher preclinical and CMC expenses. General and administrative expense was $3.8 million, falling 67% from $11.6 million. The decline was attributable to lower non-cash stock-based compensation and compensation expense. During the second quarter of 2025, Actinium reduced headcount by approximately 14% to align with a more focused pipeline. Other income, comprised of net interest income, was $717,000, compared with $1.3 million. Lower net interest was attributable to a lower average cash balance in 1H:26. Net income was $22.4 million, reflecting the $35 million of revenue recognized compared with a net loss of $22.8 million.

Cash burn for 1H:26 was $11.5 million versus $13.0 million. The difference between net loss and cash burn is due primarily to the non-cash nature of revenues recognized. Cash used in financing was $5,000 representing payments on finance leases. As of June 30th, 2026, Actinium held $36.5 million in cash compared with $48.0 million at year end 2025.

MANAGEMENT PROFILES

Sandesh Seth, Chief Executive Officer, Principal Financial Officer and Chairman of the Board

Mr. Sandesh Seth has been Actinium's Chief Executive Officer since June 2017. Mr. Seth has been a Director since March 2012 and Chairman of the Board since October 2013, and served as Executive Chairman from August 2014 to June 2017. Mr. Seth has more than 25 years of experience in investment banking (Laidlaw & Co (UK) Ltd., Cowen & Co.), equity research (Bear Stearns, Commonwealth Associates) and in the pharma industry (Pfizer, Warner-Lambert, SmithKline in strategic planning, business development and R&D project management). Mr. Seth was chairman of Relmada Therapeutics Inc., a specialty pharma company focused on CNS therapeutics, which he helped co-found. Mr. Seth has an MBA in Finance from New York University, an M.S. in the Pharmaceutical Sciences from the University of Oklahoma Health Center and a B.Sc. in Chemistry from Bombay University. He has published several scientific articles and was awarded the University Regents Award for Research Excellence at the University of Oklahoma. Mr. Seth was designated as Regulatory Affairs Certified by the Regulatory Affairs Professionals Society which signifies proficiency with U.S. FDA regulations. He has several patents related to the use of radiopharmaceuticals as conditioning agents for adoptive cell therapies and as therapeutic combinations.

Adeela Kamal, Ph.D., Executive Vice President, Head of Research and Development

Adeela is an R&D executive with 25 years of experience in biotech and pharma, focused on the discovery and development of targeted Oncology therapies. She has led programs from early discovery through regulatory approval, contributing to 20+ Development Candidates, 12+ IND filings, and three approved cancer therapies across solid tumors and hematological malignancies. Her expertise spans the full R&D continuum—including target identification, lead generation/optimization for multiple modalities (small molecules, mAbs, bispecifics, ADCs, radioconjugates, immunotoxins, peptides), computational biology, nonclinical safety, CMC, translational medicine, clinical biomarkers, and regulatory submissions (IND/BLA/NDA). Prior to joining Actinium, Adeela served as SVP, Head of Biology and Translational Medicine at SpringWorks Therapeutics and previously as VP, Head of R&D at Emergent BioSolutions. She held earlier scientific leadership roles at Ferring Pharmaceuticals, AstraZeneca, Biogen, and Conforma Therapeutics. Adeela earned her B.S. in Biology from MIT, her Ph.D. in Molecular and Cell Biology from UT Southwestern and completed postdoctoral training with a fellowship from the Howard Hughes Medical Institute. She has published 40+ peer-reviewed articles, holds multiple patents and is a speaker at leading Oncology conferences.

Steffen Heeger, M.D., Chief Medical Officer

Dr. Heeger was appointed as Actinium's Chief Medical Officer in June 2026. Prior to this role, he was CMO of Full-Life Technologies, a clinical-stage radiotherapy company where he advanced a PSMA program into global development. He led global development, regulatory affairs, clinical operations, translational research, CMC, quality assurance and program management for Full-Life Technologies' radiotherapy pipeline. This effort included leading the translation of three targeted radioconjugate compounds including an anti-PSMA program in metastatic castration-resistant prostate cancer. The effort advanced the product from preclinical to clinical-stage development within two years, securing IND clearance and fast track designation. Prior to Full-Life, he was CMO of Pega-One, a clinical-stage oncology company that became part of Centessa Pharmaceuticals ahead of its $380 million initial public offering. Earlier, he served as CMO of NBE-Therapeutics, where he led the IND submission and initial clinical trial of NBE-002, a first-in-class immune-stimulatory antibody-drug conjugate targeting ROR1 in triple-negative breast cancer, non-small cell lung cancer and sarcoma. NBE-Therapeutics was subsequently acquired by Boehringer Ingelheim for $1.4 billion. Before NBE, Dr. Heeger was CMO of Selvita S.A., where he advanced the company's lead anti-cancer compound through IND and into its first clinical trial.

Earlier in his career, Dr. Heeger served as Vice President, Head of Clinical Development at MorphoSys AG, where he led the clinical strategy and execution of the company's lead hematology and oncology programs, including monoclonal antibody therapeutics targeting CD19, CD38 and PSMA. He began his pharmaceutical career at Merck KGaA. For more than a decade he led global clinical development and life cycle management for Erbitux (cetuximab) across colorectal, head and neck, gastric, and lung cancers in major markets including the US, Europe, Japan, and China.

Risks

All investments contain an element of risk which reflects business uncertainty and opportunity. Some investments offer greater predictability, with current cash flows and established sales. These enterprises will have a lower level of perceived risk, while other companies that are developing an undefined, new technology have a much higher level. Actinium is developing a portfolio of radiopharmaceuticals that treat a broad range of solid and liquid tumors and conditioning for cell and gene therapy. Beyond its early-stage development assets, the company has later stage programs that are available for collaboration and partnership. This pipeline exposes Actinium to geographical, partner and development risks. It is also exposed to risks specific to radioactive isotopes. These include additional layers of regulation and time constraints related to the radiation and half-lives of the products it is developing. We review the principal risk categories faced by Actinium Pharmaceuticals below.

Financing

Even if a company has a strong, experienced team that is developing a product with a high likelihood of success and a large addressable market, securing funding may be difficult. Access to financing comes and goes in cycles. During periods of improving confidence, capital may be easy to obtain; however, during a liquidity crisis or a period of heightened risk perception, even companies with bright prospects may be in trouble if they are dependent on the financial markets to fund their work. If capital is needed to sustain operations and it is not readily available, the company may be forced to suspend research and development, sell equity at a substantial discount to previous valuations and dilute earlier shareholders. A lack of funding may leave potentially promising therapies without a viable route forward or force a company to accept onerous terms.

Cost of capital increases can make previously attractive investments less so. Interest rates have increased over the last four years, materially changing the net present value and reward to risk ratio for many investments, especially those in higher risk categories such as clinical-stage assets. As a development company, Actinium is more exposed to the cost of capital than self-sufficient enterprises. The company has negative operating cash flow but holds more than one year of cash operating expenses on its balance sheet as of mid-2026 based on our estimates.

Regulatory Environment

All drugs and devices must navigate the regulatory approval process in the US, EU, Japan and other countries before commercialization. Success is uncertain and may take years to achieve depending upon the needs and demands of the determining authority. Substantial expense is undertaken to bring a device, molecule or compound through clinical trials and address all of the regulatory agencies' concerns. Companies with a long history of research success in product development, with opinion leaders and experts in the field, are in a stronger position to mitigate this risk. Companies that have achieved previous success with the FDA or other regulatory agencies also are more attractive than those who may be new to the process.

Partners & Collaborators

Partners represent both a risk and an opportunity. Actinium is seeking others to work with its Actimab-A and Iomab-B programs for further advancement. This approach reduces the cost and risk of any one development project and allows the company to hold a broader pipeline of assets that can contribute to future revenues. Actinium has invested in the next generation of conditioning and cancer therapy with its pipeline of assets and it is seeking a partner and collaborator for its Iomab-B and Actimab-A programs. It works with a number of university partners such as those at Columbia University and Fred Hutchinson Cancer Center. While these relationships may provide financial benefit, they may also divert company resources and distract from other investments that could be more profitable. Partners may withdraw their participation in the collaboration or refuse to advance work resulting in a loss for the efforts and funds invested.

Collaborators also include service providers who may have competing demands that can adversely affect the work they are managing on behalf of the firm. CROs and subcontractors must abide by strict execution and trial parameters that, if violated, can jeopardize trial execution or data validity. Patient recruitment may be difficult. Subcontractors supervise and execute research, biometrics and pharmacovigilance, which are complex tasks. Trial sites require sufficient capacity to enroll subjects and the candidate drug needs to be manufactured in compliance with current Good Manufacturing Practices (cGMP) and be available to administer to patients. Actinium's pipeline consists of multiple pre-clinical and clinical programs that must complete necessary investigatory trials before commercialization.

Actinium executed a license and development agreement with ISU Abxis Co in June 2024 for rights to the antibody used in ATNM-400. Abxis is a South Korean biopharmaceutical company that develops and markets treatments for cancer and rare diseases. Redacted details of the arrangement were included in Actinium's 2Q:26 Form 10-Q filing. The license provides worldwide rights to the licensed antibody in return for an upfront payment, regulatory and sales milestones along with royalties on net sales.

Competitive Environment

While there are many technologies that are used for disease imaging and cancer treatment, radiopharmaceuticals have emerged as an area of innovation. Targeting specific cells, enzymes, antigens and proteins, carrier molecules such as antibodies, glucose analogs, hormone analogs, nanoparticles or peptides has become more precise, allowing for improved safety and efficacy while delivering the desired radionuclide. The use of different radionuclides along with new targeting technologies have widened the applications for radiotherapies to new tumor types and gene and cell therapy conditioning.

There have been a number of high-profile radiopharmaceutical transactions in recent years demonstrating the value perceived in the space. We anticipate that the market will grow and that competition will increase as the field continues to advance into new imaging modalities and oncology indications. Actinium offers a broad portfolio of novel radiopharmaceuticals which provides potential commercialization opportunities in many modalities. On the other hand, many of the acquired radiopharmaceutical players are now part of larger and more financially dominant biopharmaceutical companies that can now compete from a position of greater strength against peers.

Management

Corporations are highly reliant on attracting and maintaining experienced and talented executives to advance their objectives. For small companies with management teams consisting of only a few people, the impact of each individual is greater, increasing the risk that the company faces with the loss of an executive. Actinium has a small senior executive team which includes a Chief Executive Officer and Chief Medical Officer. Actinium's board offers broad experience in the pharmaceutical industry and with specialties relevant to radiopharmaceuticals and the indications being pursued by Actinium.

Manufacturing

Manufacturing must align with precise and time-sensitive constraints in the radiopharmaceutical industry. In addition to current Good Manufacturing Practices requirements, the company must also conform to the demands of the Nuclear Regulatory Commission (NRC) in the United States and recognize the time sensitive nature of its product. During the development stage, many of these requirements are handled by CRO and hospital partners. Actinium contracts with a number of providers for radioisotopes including the Department of Energy and Eckert & Ziegler. Actinium maintains supply agreements with multiple domestic and international suppliers of Ac-225 and other radioisotopes. It also holds contract manufacturing agreements with partners able to produce its drug products under cGMP conditions which have geographic diversity and specialized capabilities aligned with radiopharmaceutical production.

Actinium is completing construction of a modern cGMP radiopharmaceutical manufacturing facility in New York. The facility will support alpha-emitter handling and radiopharmaceutical production. The site is designed to support radioconjugate synthesis, formulation, fill-finish and quality control testing. In the quality control and analytics sphere, Actinium's facility will conduct radiochemical purity testing, stability assessment, sterility testing and release testing. It has been designed for clinical-stage supply of radiolabeled therapeutic drug production.

Actinium has developed a distribution process for manufactured product that takes into account demand flow, production scheduling, real time tracking and regulatory compliance. This facility is expected to be operational and supply its first GMP clinical batch by 2H:26.

Intellectual Property

Despite the existence of patents, exclusivity, trademarks and trade secrets, infringement of intellectual property is a risk. Actinium offers a portfolio of late preclinical and clinical radiopharmaceutical assets that have been developed both internally and by distinguished research hospitals and universities, who then license the rights to develop and commercialize these assets. Actinium has an agreement with Fred Hutchinson Cancer Research Center (FHCRC) for apamistamab, the antibody component of Iomab-B. Actinium is a party to a license agreement with FHCRC which requires a milestone payment of $1 million upon FDA approval of any drug using apamistamab. Upon com-

mercial sale of the drug, royalty payments of 2% of net sales will be due to FHCRC. It also signed an agreement with Abbott Biotherapeutics Corp for the rights to use lintuzumab as the antibody used as part of Actimab-A. In August 2026, Actinium announced six different patents in the US and Canada protecting Actimab-A in multiple settings including MDSC treatment, low peripheral blast AML and in AML combination therapy.

Legal Exposure

Actinium is a party to several shareholder complaints and requests that arose in 2025 related to information communicated regarding the Iomab-B Phase III SIERRA trial. Shareholders claimed material misrepresentations and omissions. The matters are active and have not received final adjudication. Actinium intends to defend against the claims. There is insufficient information to quantify the risk related to these matters. Shareholder complaints are a frequent occurrence when running a public company. We account for legal matter risks in our model's probability of success and discount rate estimates. Full details of the issues are included in Actinium's 1Q:26 Form 10-Q.

Market Risk

Successful marketing of approved candidates relies on adoption by patients and providers. An approved product must have convincing clinical trial data and maintain a favorable reputation with prescribers. Marketing is expensive and requires an experienced sales force and a presence in the marketing region. Products remain under surveillance and any unexpected adverse effects may lead to regulatory authorities revoking marketing authorization. Inclusion of the drug in insurance plan offerings is also important. Rapidly obtaining a preferred position on health plan and payor formularies is critical to achieving target penetration rates. If health plans, formularies and payors cannot agree on appropriate pricing for the product and it fails to offer a significant benefit above standard-of-care, sales may be limited. All of Actinium's products are in development and we anticipate that the company will work with partners to commercialize its approved assets.

Geopolitical

Trade tensions and the imposition of tariffs by the United States have negatively impacted the global economy, slowed cross-border commerce and limited technology transfer. The tariff conflict may add an additional layer of cost to cross-border distribution of medical products and reduce the availability of capital. It may also limit the formation of partnerships and future development and commercialization deals between countries around the globe. Dramatic changes in the priorities and organization of the department of Health and Human Services (HHS), National Institutes of Health (NIH) and the Food and Drug Administration (FDA) have increased uncertainty in the regulatory environment and investment in drug research. This may allow competing regions such as China to attract more human and financial resources in the healthcare sector and life sciences industry, reducing the dominance of the United States in these areas. Conflict between Ukraine and Russia, Israel and Palestine as well as the US and Iran has led to disruptions in these countries and around the globe. Sanctions have been imposed on many Russian businesses which may lead to product shortages. Refugees fleeing the war in Ukraine may also impact nearby nations and their productivity which could affect clinical trials and commercialization in the region. Closure of the Strait of Hormuz has limited many energy, feedstock and raw materials from reaching global markets, creating shortages which may impact the health care sector. Actinium is reliant on raw material for its radioisotopes which are sourced from around the globe. Given the time sensitive nature of distributing radiopharmaceuticals, development is highly reliant on stable and reliable governments that allow efficient transportation.

Inflation

Drug price inflation has gained attention as it and other healthcare costs have risen at a materially faster pace than overall prices. As new therapies have been approved, drug prices have increased to reflect higher development costs and improved pricing power of pharmaceutical and biotech companies. On the demand side, deductibles and co-pays have steadily risen over the last decades, and in some cases, individuals and families must cover several thousand dollars in costs before the benefits of insurance begin. Cost sharing or co-insurance is another component of insurance plans that directly increases a patient's burden. This has resulted in greater elasticity in demand for drugs than was the case at the turn of the century. Individuals with high deductibles or no insurance may be very sensitive to price and avoid treatments with high cost.

While we have discussed a broad variety of risks above, we believe that our forecast parameters, discount rates, success probabilities and valuation metrics address these potential outcomes and our target price reflects an assumption of these risks faced by life sciences companies in general and Actinium Pharmaceuticals specifically.

VALUATION

Actinium offers a pipeline of therapeutic and conditioning candidates in preclinical and clinical stages of development. Actinium's primary focus is ATNM-400 and the Iomab-ACT program which are ready for Phase I and Phase II studies. The most advanced assets are the Actimab-A + CLAG-M and the Iomab-B targeted conditioning programs. Each is ready to begin pivotal studies. Actinium offers other candidates in its pipeline which we will value when a path forward is clear. These assets are used to generate our valuation. Market size assumptions are based on the overall number of patients with the identified therapeutic profile. However, we anticipate that if the products are successful and well-received by payors, providers and patients, the addressable market may be larger.

ATNM-400
ATNM-400 is an undisclosed antibody radioconjugate bound to Ac-225 being developed for solid tumors. We model a start to clinical trials within the next nine months. Given its early stage, the potential range of indications is wide and includes mCRPC, breast cancer and NSCLC. We anticipate once early-stage clinical trials are completed, one indication will emerge as the lead. At this stage, we include the entire population of the three indications as the potential addressable market and assume a very small penetration rate. Relying on American Cancer Society numbers, we use a population of 623,385 patients who will be diagnosed in 2026. This population is expected to grow at a 0.4% rate, in line with the overall population growth rate in the United States. We model a Phase I study starting in 2027 and progressing to Phase II and III over subsequent years in time for a 2033 BLA and first sales in 2034. Penetration into this market in year one is a modest 1 basis point growing to 20 basis points by year seven (2040). This equates to 68 patients in year one growing to 1,311 in year seven. This will be followed by single-digit penetration growth which flattens out by 2046. Pricing is in line with Actinium's other antibody radioconjugates and equals $160,000 per course of therapy in 2034, increasing at a 3% annual rate. In terms of revenues, ATNM-400 is expected to generate $10.9 million in year one sales rising to $250 million by year seven.

We estimate that the developed world ex-US market to be approximately three times the patient population of that in the United States. This equates to 1.87 million new cases of mCRPC, breast cancer and NSCLC in 2026. New case growth outside the United States is expected to be slightly higher with our estimates calling for a 1.5% annual increase. First sales are modeled to begin in 2035, one year later than in the US. Initial penetration is estimated at 68 patients in year one. By year seven (2041) this grows to 842 patients. We apply single digit growth to penetration in subsequent years. Net revenues per course of treatment are forecast at 40% of US levels or about $65,000 in 2035, increasing at 1% annually. This equates to $4.4 million of revenues in year one (2035) rising to $57.8 million by year seven (2041).

Iomab-ACT Conditioning for CAR-T
Iomab-ACT is the same construct as Iomab-B, binding apamistamab with I-131; however, since Iomab-ACT seeks nonmyeloablative conditioning, lower radiation doses are used. There are seven approved products for CAR-T in leukemias, lymphomas and multiple myeloma. These comprise a 2026 hematological malignancy population of 144,330 cases every year in the United States according to the American Cancer Society. We anticipate this population to grow at a 0.4% annual rate. The subset of CAR-T procedures is substantially lower than this at an estimated 6,000 procedures in 2026. We estimate growth in CAR-T procedures in the low double digits over the next decade, then slowing to single digit growth in subsequent years. The candidate is ready for Phase II studies which we anticipate starting in 2027. By 2032, pivotal studies are expected to be complete with a BLA filed in 2032. First sales are forecast in 2033 achieving 100-basis points of penetration into the CAR-T space representing 124 lymphodepletions. This is expected to expand to 871 basis points of penetration by year seven (2039) which is equivalent to 1,681 lymphodepletions. Subsequent penetration growth is expected in the single digit range over the life of the forecast. Pricing, as discussed in a previous section, is guided by costs for chemotherapy and are estimated to be $10,000 for the procedure with annual inflation of 3%. These assumptions support revenues of $1.5 million in 2033 increasing to $24.7 million by year seven (2039).

Outside the US, we estimate 2,400 Iomab-ACT procedures in 2026, which we explain in an earlier section. Growth in CAR-T procedures is estimated at a low double-digit rate given the low proportion of total hematological malignancies that this represents. We forecast growth falling to the single digits by 2035 and for the duration of our forecasts. First sales outside the US are expected in 2034 at which time the addressable market will have grown to almost 5,500 patients. We start with an estimate of 33 basis points of penetration in 2034 rising to 605 basis points by year seven in 2040. This yields 18 patients receiving Iomab-ACT in 2034 and 490 in 2040. Pricing, similar to the relative levels for Actinium's other products, is at 40% of US levels and is forecast to grow at 1.5% per annum. This yields revenues of $82,000 in 2034 increasing to $2.4 million in 2040.

Partnered Programs
Actinium is seeking a partner or collaborator for the Iomab-B and Actimab-A + CLAG-M programs. We think that the programs represent compelling solutions, especially in the field of conditioning. We balance this against the difficulties and complexities of attracting a partner and apply a 50% probability of partnership or collaboration to each of these assets. This represents another risk modification to the probability of success adjustment that we apply.

Actimab-A + CLAG-M
Actimab-A is being developed for treatment of r/r AML pairing the α-emitting Actimab-A with the salvage chemotherapy backbone CLAG-M to deepen response in fit patients. Actinium and the FDA are aligned on a pivotal Phase II/III study which is seeking a collaborator to begin. The addressable market of fit r/r patients is approximately 23%[102] of the total AML population or about 5,200 of 22,700 in the United States. The population is expected to grow at a 0.4% annual rate. We anticipate pivotal studies will advance in 2027 and 2028 providing sufficient data for a biologic license application (BLA) in 2029. First sales are expected in 2030. Given the small addressable population, we expect a relatively high initial penetration rate of 2.6% in the first year following approval rising to 11.7% penetration by year seven. Penetration growth in subsequent years is initially in the high single digit range falling to zero by 2042 then declining as competition emerges in 2043. In terms of treatments, in year one this equates to 139 treatments, rising to 638 by year seven. We estimate an average net price of $135,000 per course of treatment growing at an annual rate of 3%. This generates net revenues of $21 million in 2030 rising to $116 million by 2036.

The incidence of AML in international developed markets is estimated to be approximately three times the number in the United States reaching just over 68,000 in 2026. The addressable market of fit r/r patients is 23% of this amount, or 15,700 patients. We model 1% growth in this population over the forecast period. We anticipate that the sponsor will obtain approval for the Actimab-A combination in 2031. First sales in the developed markets are anticipated that same year with a modest 1.3% penetration level or 213 patients treated. We see this rising to a penetration rate of 8.4% by year seven (2037) which is equivalent to 1,446 patients treated. Growth in subsequent years is expected to be in the high single digits falling to zero by 2043, after which treatments are expected to decline by 10% due to competition. Net pricing is forecast at 40% the levels in the United States. In year one, total revenues are expected to be $13.3 million, rising to $108 million by 2037.

Iomab-B BMT Targeted Conditioning
Iomab-B is being developed for targeted conditioning in active r/r AML in patients over 55. It had previously completed a pivotal study and achieved the primary endpoint; however, upon BLA submission, the FDA determined that the data was insufficient to support a filing. Actinium has since reached alignment with the FDA on a Phase II/III trial design in an expanded population and is seeking a partner to advance the asset. In the US, the addressable patient population for Iomab-B conditioning will draw from the AML population which is expected to total 22,720 in 2026. About 60% of this group is considered to fall into the category of older subjects requiring a bone marrow transplant (BMT), yielding an addressable market of 13,600 in 2026. We expect the population to increase at a 0.4% annual rate. We model Actinium identifying a partner and launching a trial next year which would produce a BLA by 2030 in the US and first sales the following year. Due to the small population and high risk of myeloablation to patients undergoing the procedure, we anticipate a high rate of early penetration of 125 basis points in year one rising to 17.8 percentage points by year seven. This equates to 173 Iomab-B treatments in 2030 and 2,525 by 2037. Growth after this period is in the single digits until the mid-2040s when penetration declines due to anticipated competition. We estimate an average net price of $135,000 per regimen, in line with other biologic-radioisotope products and annual price inflation of 3%. These assumptions generate revenues of $27 million in 2031 rising to $472 million by 2037.

We estimate an AML population of 68,160 in developed markets around the world appropriate for Iomab-B, three times the US number. Matching our domestic assumptions, the addressable population is 60% of the AML population, or 40,900 individuals. The population is estimated to grow at a 1% rate per annum. We expect approval in international geographies in 2032. About 75% of BMTs are done outside the United States, with about a quarter in China and the rest in Europe and other countries. This could be a very attractive market if commercialized by a dominant and well-connected firm, although we anticipate substantial competition in China from local options. We forecast a slow start to penetration of 50 basis points rising to 8.9 percentage points by year seven (2038). This equates to 215 patients in 2032 and 4,061 in 2038. We forecast penetration growth in the single digits in subsequent years until 2044 when competition produces a 10% terminal decline in 2045 and beyond. Pricing for Iomab-B in international markets is expected to be at 40% the level in the United States or $54,000 in 2026. These assumptions generate revenues of $13.9 million in 2032 rising to $313 million in 2038.

[102] Brandwein, J.M., *et al*. Outcomes of patients with relapsed or refractory acute myeloid leukemia: a population-based real-world study. American Journal of Blood Research.

Probability of Success
An important part of our risk adjustment and valuation is based upon the probability of success for each of a sponsor's programs. This adjustment is based on historical success rates that have been published in the literature [103,104, 105,106,107,108,109] which review clinicaltrials.gov entries and follow their progress and ultimate approval or failure over time. Some of the factors that impact this include the stage of development, the indication, biomarker strategy, mechanism of action, familiarity of the industry and regulators with the mechanism, endpoints, management experience, unmet need and other elements. Based upon this data combined with our experience, we estimate a 50% probability of success to the Actimab-A CLAG-M program given its stage of development and other factors. We apply a 60% probability of success to the Iomab-B program for bone marrow transplant given that it has successfully achieved endpoints in a Phase III study. ATNM-400's preclinical status merits a 7% probability of success while the Iomab-ACT program, which is ready for a proof-of-concept trial receives a 15% probability of success. We further adjust the probability of success for the Actimab-A CLAG-M and Iomab-B BMT programs by applying a 50% probability of finding a partner, generating an anticipated program success rate of 25% and 30% respectively. We weight each program by its net present value to generate a weighted probability of success for the portfolio of assets to calculate a portfolio-wide probability of success of 29%.

License/Royalty Revenues
For almost all development stage companies with attractive assets but no commercialization force, we believe that finding a commercialization partner achieves the highest value of any approach. The sponsor is able to avoid the steep upfront expenses of creating a commercialization team and forging new relationships in a difficult industry. Conversely, layering on a new product with an established sales force adds minimal incremental cost and allows an established biopharmaceutical company to rapidly gain a position on formularies and with physicians and hospitals. Inside this framework, we model Actinium finding a partner for its products when approved and assume that a complex radiopharmaceutical product is able to secure 28% of the economic value created. While the licensing package will likely consist of upfronts, milestones and royalties, we assume that each of those components are captured in a 28% royalty. We adjust this amount down for programs that will be co-developed with others, including partnered programs (Actimab-A and Iomab-B), where we apply a 22% royalty.

Operational Costs
Estimates for operational costs call for $30.0 million in cash expense for 2027, $30.8 million for 2028 and $32.2 million in 2029 reflecting a ramp up in research and development expense related to advancement in the ATNM-400, Iomab-ACT, Actimab-A (partnered) and Iomab-B (partnered) programs. In subsequent years, we model a decline in research and development costs as assets are submitted to regulatory authorities and eventually commercialized. Following commercialization, research and development amounts are predicted to fall to zero for the programs they relate to. General and administrative expenses will rise at inflationary rates over the course of our forecast.

Following the generation of profits, net operating losses (NOLs) will be consumed. After NOLs are exhausted, we forecast a 25% cash tax rate on earnings. After tax cash flows to the company are discounted at a 15% rate with a terminal growth rate of -10% beginning in 2048. We apply a 29% likelihood of success as described above.

For our per share valuation, we use outstanding shares as of August 6th, 2026 and add another 11 million shares to reflect an anticipated capital raise over the next 18 months. Warrants and options are immaterial and are not included in our calculation. This generates total shares for calculating our valuation to 42.2 million.

Despite the conservative stance of our assumptions, penetration into addressable markets can potentially be higher for Actinium's portfolio of products. We note that the determinant for many of the variables in our model will be the success of pivotal trials, approval by the FDA and market acceptance of approved products. We will update our model accordingly as new information becomes available. Based on the assumptions identified in our discounted cash flow model, we generate a valuation of $4.00 per share.

[103] Dowden, H., Munro, J. Trends in clinical success rates and therapeutic focus. Nature Reviews. May 8, 2019.
[104] DiMasi, J.A., Feldman, L., Seckler, A. & Wilson, A. Trends in risks associated with new drug development: success rates for investigational drugs. Clin. Pharmacol. Ther. 87, 272–277 (2010).
[105] Yamaguchi, S., *et al.* Approval success rates of drug candidates based on target, action, modality, application, and their combinations. Clinical and Translational Science. April 8, 2021.
[106] Hay, M., *et al.* Clinical Development Success Rates and Contributing Factors 2011-2020. Bioitechnology Innovation Organization, Pharma Intelligence, Quantitative Life Sciences. February 2021.
[107] Hay, Michael; *et al*. Clinical Development Success Rates 2006 - 2015. Biotechnology Innovation Organization, Biomedtracker, Amplion. June 2016
[108] Wong, Chi; Sian, Kien; Lo, Andrew. Estimation of Clinical Trial Success Rates and Related Parameters. Biostatistics (2018) 00, 00, pp. 1–14 doi:10.1093/biostatistics/kxx069. 2018
[109] DiMasi, Joseph A., Ronald W. Hansen, and Henry G. Grabowski. 2003. The Price of Innovation: New Estimates of Drug Development Costs. Journal of Health Economics 22: 151–85.

PROJECTED FINANCIALS

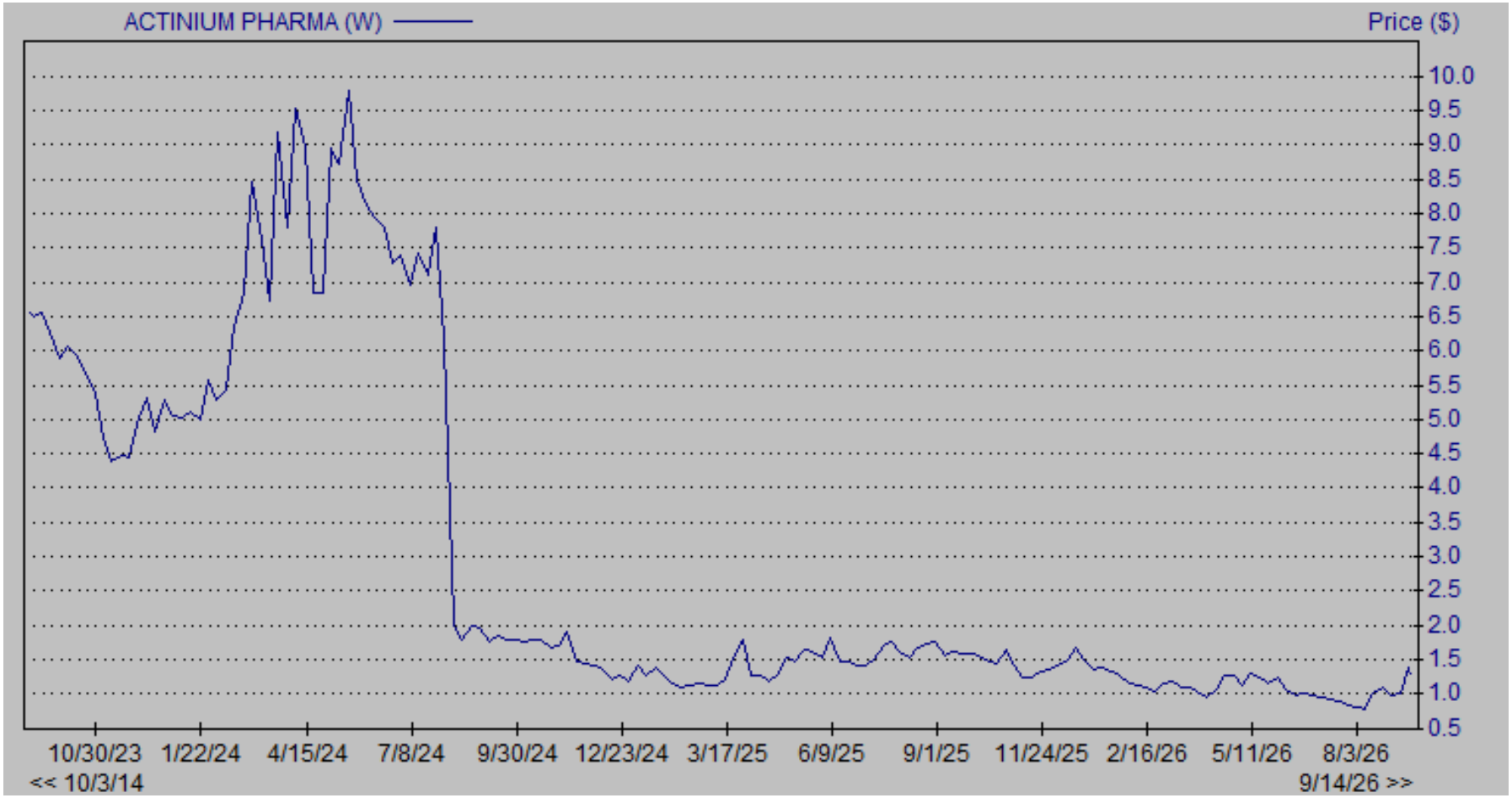
Actinium Pharmaceuticals, Inc. - Income Statement

Actinium Pharmaceuticals, Inc.	2025 A	Q1 A	Q2 A	Q3 E	Q4 E	2026 E	2027 E	2028 E
Total Revenues ($US '000)	**$90**	**$0**	**$35,000**	**$0**	**$0**	**$35,000**	**$0**	**$0**
YOY Growth								
Research & development	$21,124	$4,201	$5,377	$5,222	$5,685	$20,485	$22,050	$22,609
General & administrative	$15,213	$1,702	$2,058	$2,020	$2,100	$7,880	$8,116	$8,360
Other	$0	$0	$0					
Income from operations	($36,247)	($5,903)	$27,565	($7,242)	($7,785)	$6,635	($30,166)	($30,969)
Operating Margin								
Interest income (net)	$2,360	$381	$336	$299	$271	$1,287	$1,500	$1,000
Other income, net	$0	$0	$0	$0	$0	$0	$0	$0
Pre-Tax Income	($33,887)	($5,522)	$27,901	($6,943)	($7,514)	$7,922	($28,666)	($29,969)
Provision for Income Tax	$0	$0						
Tax Rate								
Net Income	**($33,887)**	**($5,522)**	**$27,901**	**($6,943)**	**($7,514)**	**$7,922**	**($28,666)**	**($29,969)**
Net Margin								
Reported EPS	**($1.09)**	**($0.18)**	**$0.89**	**($0.22)**	**($0.24)**	**$0.25**	**($0.65)**	**($0.62)**
YOY Growth								
Fully Diluted Shares	31,196	31,238	31,407	31,397	31,412	31,363	44,000	48,285

Source: Company Filing // Zacks Investment Research, Inc. Estimates

HISTORICAL STOCK PRICE

Actinium Pharmaceuticals, Inc. – Share Price Chart[110]



[110] Source: Zacks Research System

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