November 16, 2018

Dear Fellow Shareholders:

It has been a critical year for Actinium as your management team have developed a new strategy and focus for your company. This refocused strategy has been driven in large part by a strengthened leadership team, valuable clinical data and a good deal of foresight.

Today, Actinium's pipeline is refocused on two key areas: first, targeted conditioning prior to adoptive cell therapies such as BMT or bone marrow transplant and CAR-T; and second, on therapeutic combinations with our ARCs or Antibody Radiation Conjugates. We are optimistic that executing toward key milestones across a multi-asset, multi-disease pipeline will provide clinically positive outcomes and yield positive returns for shareholders. We encourage you to read the list of Actinium's expected milestones in 2019 in Appendix A that have been made possible by our many accomplishments in 2018 which we have highlighted in Appendix B.

We recognize that the SIERRA trial has taken longer than originally expected and understand how this could create angst for our shareholders. We share your frustration and we thank you for your continued support and greatly appreciate your patience. Without appearing sanguine, we believe that the SIERRA trial is on solid footing under a stronger team after we have restructured and rebuilt various aspects of the company, particularly the clinical organization. This has occurred while simultaneously forging ahead on multiple fronts across our pipeline, which has resulted in a much stronger strategic focus for the company in 2018. Let us also take comfort in the heartening interim feasibility and safety data from the Iomab-B SIERRA trial that has been accepted for oral presentation at the American Society of Hematology (ASH) Annual Meeting in early December. Today, we feel confident that we have the right team in place and that the changes we have made were necessary to deliver the positive data we look forward to presenting. Overall, we are proud of our accomplishments in 2018 and are energized by our refocused vision and the opportunities that have been created.

In 2018 we were able to build the leading franchise in targeted conditioning. With our Phase 3 Iomab-B as the foundation, we added two new programs: Iomab-ACT for lymphodepletion prior to CAR-T and near-pivotal Actimab-MDS for conditioning high-risk patients with myelodysplastic syndrome prior to a BMT. These additions afford us a multi-asset, multi-disease pipeline that is unrivalled in the industry. Each of these programs offers the potential to improve patient access and outcomes based on the superior ability of our ARCs to safely and efficiently deliver the appropriate dose of radiation needed to condition the marrow or lymph system compared to chemotherapy. Chemotherapy, which currently is used as the standard of care, has side effects as a result of being non-targeted. These side effects limit both outcomes and eligibility

of patients, especially older adults. What is most exciting is that these new programs not only hold the potential to treat a significant unmet medical need in a broad population, but they provide Actinium with the potential for multiple product launches and label expansion initiatives in the two to three years starting in 2020.

At ASH, we will demonstrate that Iomab-B feasibility and safety interim results look very promising during our high-visibility, oral presentation for our Phase 3 SIERRA trial. There are multiple interim milestones for safety and efficacy for Iomab-B through next year, including trial completion. In addition, we are preparing for Actimab-MDS to enter a pivotal trial after a short dose-confirmatory Phase 1 trial planned in 2019. We also have several Iomab-ACT clinical events planned as outlined in our key milestones section in Appendix B. These value creating events also will afford us important opportunities to engage in discussions with various constituencies who can support our goals, including potential collaborators. We believe that the highly differentiated focus of our pipeline, the lack of visible competition, and the high-value potential of our products presents a very real opportunity for Actinium to play a leadership role in addressing this area of high unmet medical need.

The therapeutic combinations approach affords us yet another opportunity to use the potential of our ARCs in combination with other chemotherapeutic or immuno-oncology-based drugs. Examples are the trials we are doing with Actimab-A and the CLAG-M regimen and with the high-profile drug Venclexta or venetoclax. Combination approaches to oncology drug development have are increasingly common, especially with larger companies in the immuno-oncology field. Radiation therapy is used effectively in solid tumors, but it is not a viable option for blood cancers, which are too diffuse to be treated with external radiation that cannot be targeted. Our ARCs have the ability to target the radiation to be delivered in a safe manner. The possibility of adding a highly-effective, potentially synergistic modality such as radiation to immuno-oncology drugs via an ARC, as we have demonstrated pre-clinically with Actimab-A and venetoclax, has the potential to lead to superior combinations and superior outcomes. We look forward to the several data events from our combination trials and other CD33 program expansion trials, and to making our technology and CD33 program available to collaborators as part of our value-creating strategy.

Our new strategy has been enabled in part due to our Antibody Warhead Enabling, or AWE, platform in combination with a revitalized research capability that we built this year at Actinium. As a result, we were able to enter into a collaboration with the Top-20 big-pharma company Astellas. Further, in a few short months, we were able to conduct validating experiments that supported the Iomab-ACT program for CAR-T and combination trials with venetoclax, file the patents to protect these ideas, and make these programs known publicly. As a result of these and other research activities, we will continue to strengthen our leading AWE technology platform and we expect it to be a profit center for the company along with the Iomab-ACT program. Recent strategic activity in the radiopharmaceutical space is contributing to growing recognition and acceptance of the value of targeted radiation among large and medium-sized biopharma

companies. Actinium is well positioned to address these needs "in the age of Radiopharma 2.0". (Please see Appendix C for a list of FAQs that we think put in perspective the rapid pace of Actinium's accomplishments and the positive impact we anticipate these changes will support).

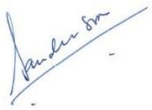
Certainly, it was no small feat to develop a new strategic focus, launch new clinical trials, advance existing trials toward clinical milestones while simultaneously recruiting for and restructuring our small, 30-person team. Today, we have successfully reinvigorated Actinium's research team. We also have made advances in securing our intellectual property and have entered into an important and validating collaboration. We are proud that a 30-person company, with a just-in-time, personalized medicine supply chain, can support not only an ongoing Phase 3 trial that is showing great promise, but also several phase 1/proof of concept trials, all boding well for truly transformational results.

Due to our efforts this year, Actinium is well-positioned for an exciting future built on strong science, positive clinical data, and a committed and talented team. We want to reiterate that besides our differentiated focus on targeted conditioning with a multi-asset, late-stage pipeline with visible and promising clinical data, our technological leadership extends to expertise in alpha-radiation with the work we are doing in our Ac-225 isotope program. The scarcity value of independent companies, which is the result of a number of acquisitions in the space, also contributes to a much more attractive profile for our company. These factors are only just becoming apparent to investors and strategic players as we have only recently completed the refocusing and have now begun an extensive and months-long process of educating people about the "new Actinium." Taking this into account, we are requesting your support for all of our proposals in the proxy card, some of which are being requested to enable the company to be in the best position to protect shareholder interests in the event certain strategic actions occur.

We are pleased to be able to report that progress has been made to set up the pipeline for success with multiple value-generating drivers before year-end, into 2019 and beyond. We thank you for your continued support and belief in our drug candidates, technologies and efforts, and hope you are as excited and optimistic as the team at Actinium is about the year ahead and the longer-term future of your company.

On behalf of Team Actinium.

Respectfully,



Sandesh Seth

Chairman and Chief Executive Officer

Appendix A – Key Milestones for 2019

	Milestone	Status
Targeted Conditioning & Lymphodepletion	**Iomab-B Phase 3 SIERRA Trial**	
	♦ Interim Data/DMC Analysis	4Q:18 - 2019
	♦ Complete Enrollment/Topline Data	2H:2019/1H:2020
	♦ BLA Filing	2020
	♦ Commercial Launch	2020 - 2021
	Iomab-ACT	
	♦ IP filings and updates	4Q:2018
	♦ Publications highlighting value of approach	4Q:18 - 2019
	♦ Clinical updates	4Q:18 - 2019
	♦ Strategic updates	4Q:18 - 2019
	Actimab-MDS	
	♦ Initiate Phase 1 clinical trial	1H:2010
	♦ Initiate Pivotal trial	4Q:2019
CD33 Program Therapeutics and Combinations	**Actimab-A, Actimab-A CLAG-M, Actimab-MRD, Actimab-M**	
	♦ Trial Updates on Actimab-A Phase 2 and Actimab-A and CLAG-M	4Q:2018
	♦ Initiate Actimab-MRD trial	2019
	♦ Initiate Actimab-A Venetoclax combination trials	1H:2019
	♦ Topline results from multiple trials	2019 - 2020
Collaborations & Pipeline	♦ Execute Astellas research collaboration	2018 - 2019
	♦ Secure additional AWE collaborations and/or partnerships	2018 - 2019
	♦ Launch IP driven pipeline expansion, partnerships	2018 - 2019

Appendix B – Key Achievements in 2018

Significantly strengthened our leadership team and capabilities bringing decades of experience to Actinium resulting in a new level of execution across the Company

- Enhanced Transplant Expertise to Support Strategic Refocus: Added significant bone marrow transplant expertise to our clinical development team to support our strategic focus in targeted conditioning. This has allowed us to expand and develop a franchise opportunity with three targeted conditioning programs including Iomab-ACT for CAR-T that progressed from conceptualization to launch in less than a year, near-pivotal Actimab-MDS for conditioning high-risk patients with myelodysplastic syndrome prior to a BMT and Phase 3 Iomab-B as the foundation.
- Strengthened Clinical Operations to Strengthen Trial Execution and Pipeline Expansion: We have made key hires including a head of clinical operations as a new function within Actinium. The strengthened team is dedicated to the efficient, timely and cost-effective execution of our clinical trials and in a short time has developed and is implementing initiatives designed to complete enrollment of the SIERRA trial as quickly as possible.
- Established Research Team: Reinvigorated our research efforts by establishing a research group. This enabled our work with Ac-225 labeled daratumumab and led to our first publication at AACR and new patent filings that extend our IP portfolio in line with our strategic vision. Our research team is working in alignment with our clinical development team resulting in highly supportive data for our Iomab-ACT program and the Actimab-A plus Venetoclax combination trials. The improved internal alignment also benefits our business development efforts.

Executed our first AWE platform partnership with Astellas Pharma, Inc., a Top 20 global biopharma company

- Validates the utility of our technology platform and its potential value to large biopharma companies as well as our leadership position with the Ac-225 isotope.

Began a combination trial with Actimab-A and CLAG-M

- This trial studies our ARC approach with other modalities, in this case chemotherapy, where we expect to see synergies that can improve patient outcomes.

Launched the Actimab-A MRD trial for a significant unmet need and potentially large market opportunity

- Aligns our clinical development with key advancements in the field as minimal residual disease or MRD is becoming an increasingly important biomarker and emerging endpoint. Success of this trial implies a large market opportunity as frequent dosing of Actimab-A could be required to maintain a disease free or MRD negative AML state.

Initiated our Iomab-ACT program for targeted lymphodepletion for CAR-T therapies

- Builds on our targeted conditioning strategy by leveraging our clinical experience with Iomab-B to position us as a potentially universal solution for targeted lymphodepletion with improved access and outcomes. Actinium is at the forefront with this solution for the large and rapidly growing CAR-T industry.

Successfully completed the Actimab-A Phase 2 trial as a single agent in a difficult-to-treat patient population with identification of an attractive future development pathway

- Strong single agent activity and minimal extramedullary toxicities in the Phase 2 Actimab-A AML trial paved the way for key opinion leaders to support our Actimab-MDS trial for targeted conditioning and our two Actimab-A plus Venetoclax combination trials. This pathway forward differentiates the asset and provides an attractive and high-value route for further development compared to a high-risk, controlled Phase 3 trial for AML patients.

Announced two clinical trials that will study Actimab-A with Venetoclax, a targeted therapy

- Further aligns Actinium with the most recent advancements in the AML field and with the support of thought leading physicians from MD Anderson Cancer Center and UCLA Medical Center.

Positive outcomes from our interactions with the FDA regarding Actimab-MDS

- Resulted in an accelerated regulatory pathway that will now consist of a small dose finding Phase 1 trial before moving to a pivotal trial for our second targeted conditioning indication. Also resulted in a broader patient population than what was proposed to FDA.

Multiple abstracts accepted at for ASH including the acceptance of preliminary feasibility and safety results of the Iomab-B Phase 3 SIERRA trial for oral presentation

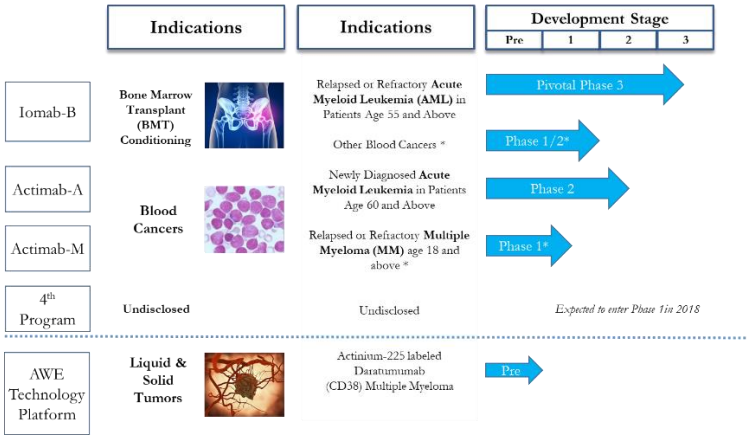
- Gives Iomab-B and the ongoing SIERRA trial significant exposure at ASH, the largest blood cancer-focused medical conference in the world, where only approximately 10% of accepted abstracts are elevated to oral presentations.

Appendix C – FAQ's or Frequently Asked Questions

How has Actinium transformed itself from a year ago? What is the new focus?

November 2017 Pipeline

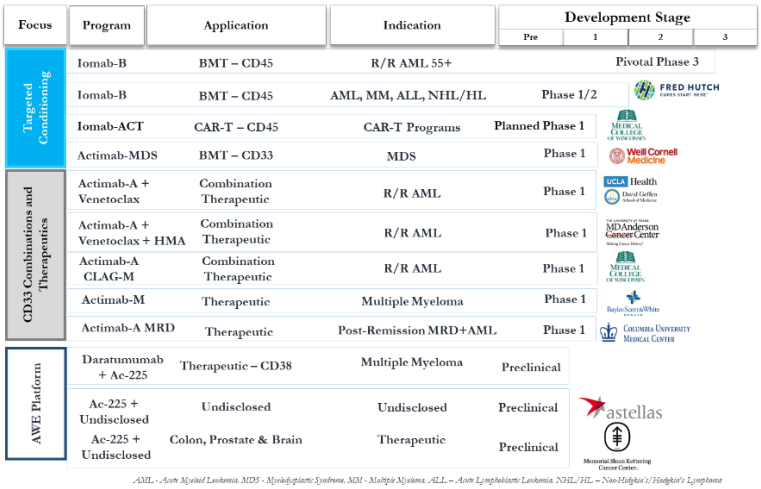
At this time last year, we had 3 trials in our pipeline, 1 targeted conditioning trial and 2 single-agent therapeutic trials.



- Iomab-B was our only targeted conditioning program with the Phase 3 trial in the early stages of enrollment
- Our CD33 program had just been expanded to Multiple Myeloma
- Early efforts with our AWE platform had been initiated

November 2018 Pipeline

Fast forward to today and we are advancing 3 targeted conditioning trials (1 pivotal and 1 near-pivotal) 3 therapeutic combination trials and 2 single-agent therapeutic trials in highly differentiated indications.



- Targeted conditioning program expanded to 3 trials including Iomab-ACT for CAR-T and near pivotal Actimab-MDS
- SIERRA trial reached 25% enrollment with interim data to be presented in oral presentation at ASH
- CD33 program expanded to best in class with the largest addressable patient population and breadth of applications
- AWE platform validation via our collaboration with Astellas and expanded research efforts

We have expanded our pipeline efficiently and cost-effectively by leveraging the strengths of our ARC candidates without undertaking significant de novo development by utilizing our AWE

platform and enhanced R&D capabilities to support these new initiatives. Because our CD45 and CD33 targets are applicable to multiple diseases and indications, each of our ARCs become a pipeline within a drug. We believe there is much more still to come. Given our ARC approach, we can utilize a high-dose to facilitate targeted conditioning and low-dose strategy to leverage the proven modality of radiation for novel therapeutic combinations.

Targeted Conditioning Related FAQs

Why Is Targeted Conditioning so attractive?

We focus on targeted conditioning because it enables treatments that are potentially curative in nature, such as BMT and CAR-T, for a significant number of patients with a range of diseases. In advance of BMT or CAR-T, patients must have their bone marrow and immune system conditioned to make room for the new cells. This is done today with non-targeted chemotherapy and external beam radiation. Our targeted conditioning approach delivers potent radiation to specific cells to enable more effective conditioning while at the same time minimizing effects to normal cells with the hopes of having the strongest and healthiest patient prior to their BMT or CAR-T. Our focus on targeted conditioning sets us apart as we believe we are the only company with a multi-disease, multi-target, late-stage pipeline for targeted conditioning. Further, we are not aware of any other company with a focus on targeted conditioning that is as advanced as we are in clinical trials. Our antigen targets CD45 and CD33 are widely expressed in many hematologic indications. We believe there is an opportunity to expand the addressable patient population for our programs. For example, CD45 is expressed on leukemia cells, lymphoma cells and multiple myeloma cells and significant data has been generated in these indications at the Fred Hutchinson Cancer Research Center which we can use for label expansion of Iomab-B. With CD33 we are targeting high-risk MDS patients with the Actimab-MDS program. Because the addressable market for our targeted conditioning drug candidates is limited to 50-100 medical centers that perform a majority of BMT and CAR-T procedures, we believe we have a tremendous opportunity to create a leading, independent organization in this space that has little competition.

What was accomplished via the Iomab-B and the SIERRA Trial? What can we expect in future?

We have strong talent supporting the SIERRA trial. Our team includes a transplant physician who has more than 20 years of clinical experience and a Head of Clinical Operations, a new position, who brings to Actinium more than 25 years of experience. Both of these clinical experts are focused on the trial's execution and completion. In addition, a third M.D. and a nurse educator who has significant oncology drug experience are focused on providing training and support to trial sites. Finally, we have two clinical research associates dedicated to the operations of the SIERRA trial. Effectively, the clinical team was restructured in April of this year and the average

tenure for the team members is seven months. In this short time, this new team has positively impacted execution of the SIERRA trial and we have great confidence in their capabilities.

We expect to achieve the following milestones going forward as indicated in Appendix B and below. We look forward to updating you as each of these milestones is reached and believe the analyzed data at each point will provide many valuable insights into this important trial.

- Enrollment of the 70th patient – an efficacy and safety analysis may occur when the 70th patient reaches the primary endpoint
- 50% Enrollment – a DMC safety analysis will occur just like the analysis that occurred after 25% of patients were enrolled
- Enrollment of the 110th patient – a second efficacy and safety analysis may occur when the 110th patient reaches the primary endpoint
- 75% Enrollment – the third and final safety analysis
- Completion of Enrollment – a major milestone in any trial but perhaps more so with SIERRA as it is the only trial focused on targeted conditioning for older patients with active, relapsed or refractory AML.

What is the value of the Iomab-ACT program?

We believe our Iomab-ACT program has the potential to offer a chemotherapy-free conditioning regimen prior to CAR-T that can effectively achieve lymphodepletion in a single-dose and in an outpatient setting. Current approaches for lymphodepletion rely on chemotherapy, typically the combination of fludarabine and cyclophosphamide or Fly/Cy, which is non-specific, toxic and sub-optimal. We believe that lymphodepletion with the Iomab-ACT construct will result in superior outcomes from CAR-T including improved patient responses and long-term outcomes, increased access to CAR-T and reduced toxicities associated with CAR-T. We believe the Iomab-ACT program can be a universal solution for all CAR-T therapies and a potentially valuable expansion of our targeted conditioning franchise. In addition, the Iomab-ACT program represents the new level of innovation and execution that exists within Actinium as this concept went from ideation to existence in rapid fashion by leveraging the deep clinical experience and data of our CD45 program and the expanded research capabilities of the company. As we have done with all of our latest initiatives, we have generated an intellectual property portfolio which in this case currently encompasses six patents pertaining to the Iomab-ACT program. We are committed to improving patient outcomes and generating value from our Iomab-ACT program in a rapid fashion with this being a top priority for Actinium in 2019.

What is Actimab-MDS expected to add?

We believe it is rare for a 30-person biotech company to have the opportunity to have not just one but two pivotal trials in a field by itself. This is the opportunity created by Actinium in 2018 by adding Actimab-MDS to our clinical pipeline. Just as we did with the Iomab-ACT program where

we leveraged our experience with CD45 and Iomab-B, with Actimab-MDS, we leveraged the extensive experience with CD33, the isotope Ac-225 and Actimab-A to develop this exciting opportunity.

The vision that brought the Actimab-MDS into a clinical trial was the result of our team and our collaborators' ability to take the seeming limitation of Actimab-A - namely prolonged myelosuppression - and consider the possibility that it could be a useful attribute in a setting in which myelosuppression is not a limitation but a desired outcome. This was in the context of using highly myelosuppressive doses of the construct to myeloablate or "burn out" the bone marrow prior to a bone marrow transplant. A great deal of credit is due to Dr. Gail Roboz, Director of Leukemia at Weill-Cornell Medical Center, who conceptualized the idea after serving as an investigator in our Actimab-A Phase 2 trial. This trial enrolled patients whose MDS had progressed to AML. As we have reported, Actimab-A had potent myelosuppression capabilities with minimal toxicities outside of the bone marrow. Recognizing that a bone marrow transplant is the only potentially curative treatment option for patients with high-risk MDS and that myelosuppression can be alleviated with a bone marrow transplant, the decision to advance this trial was made.

Having been guided toward a significantly faster regulatory pathway by the FDA than we had originally expected, we plan to conduct a pivotal trial after completing a small Phase 1 trial to confirm the myeloablative dose. Originally, we had proposed a 60-80 patient Phase 2 trial that would then be followed by a pivotal trial. Also, we had originally proposed a patient population limited to only those patients with a specific mutation to the TP53 gene, but the FDA guided that we should expand the addressable patient population to intermediate and high-risk MDS patients. In 2019, we look forward to working with Dr. Roboz and her colleagues from the MDS Clinical Research Consortium to complete the Phase 1 trial, with the goal of moving toward Actinium's second pivotal trial.

Actimab-A AML Phase 2 Trial and CD33 Program Questions

What did the Actimab-A Phase 2 trial in AML yield? What happens next?

We are excited that the Actimab-A Phase 2 AML trial demonstrated the potent single-agent activity of the Ac-225 – lintuzumab targeting agent. However, in the older unfit patient population enrolled in the Phase 2 trial, myelosuppression proved challenging. Rather than move ahead into a large, lengthy and expensive Phase 3 trial in the increasingly crowded field of AML therapies, we made the decision to follow the signals the drug candidate was giving us and move into what we believe to be more attractive opportunities with this agent at different doses in targeted conditioning and in combination with other drugs. This decision led to our Actimab-MDS trial giving us our second targeted conditioning asset. Actimab-MDS will utilize a high dose of the Ac-225 – lintuzumab construct to achieve effective myeloablation for high-risk MDS patients prior to a bone marrow transplant.

At a lower dose of the construct, we see the opportunity to use Actimab-A in combination with chemotherapies, targeted therapies and immunotherapies. We have already begun executing on this strategy with our three exciting combination trials. As a result, we have aligned Actinium with targeted therapies that will allow us to generate additional data that could prove valuable to potential partners. We have seen increased activity in targeted radiation both in terms of company acquisitions and research publication volume that we believe is creating a ground swell of interest for this approach amongst the industry. We believe we are solidly positioned at this opportune time given the breadth of our pipeline, versatility of our platform and strong IP portfolio.

What is the attractiveness of combinations? Why does the industry care?

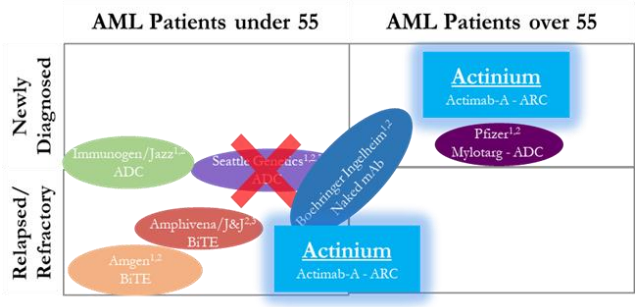
Therapies based on the combination of two or more agents have long been used in the treatment of patients with cancer with the goal that a synergistic effect would emerge and the use of combination therapies continues to grow rapidly. Our ARC drug candidates utilize the power of radiation, which is a proven therapeutic modality that is used to treat more than half of all cancer patients. However, we harness the powers of radiation inside the body in a targeted manner, thereby eliminating the side effects that come with delivering radiation to cancer cells from outside the body. It has been demonstrated that radiation causes cancer cell DNA and a tumor's microenvironment to work in synergy with other agents. We believe better outcomes are possible through Ac-225 – Lintuzumab in certain cancers cells that express the CD33 antigen because it delivers radiation in a way no other drug candidate can to these cancer cells that are radiation sensitive. This is the basis for our combination trials with Venetoclax and CLAG-M, both of which are grounded in strong scientific rationales as well as preclinical and clinical data.

We feel that demonstrating the synergy of our ARCs with other therapeutic modalities will increase their attractiveness to potential partners. For instance, if we could demonstrate that Ac-225 can make cancer cells and or tumors "hot," that is to say more noticeable to the immune system, we believe that would be of interest to the large universe of big pharma companies that have strong immuno-oncology franchises.

How do you support your claim that you have a CD33 Program that is best in class? What can we expect from this program?

The CD33 field is largely dominated by big pharma and biotech companies that are partnered with larger biopharma firms. These companies are focused on AML and employ antibody drug conjugate, bispecific antibody and naked antibody approaches. Actinium is the only company utilizing an antibody radiation conjugate.

CD33 AML Programs



Through our ARC approach we have expanded our CD33 program from a single trial in AML to now six trials that are ongoing or planned for 2019. Our ARC technology allows us to move into indications that other CD33 program sponsors have not been able to address because of the inherent limitations of their technological approaches. We believe our CD33 program is best in class because it not only addresses three diseases; AML, MDS and Multiple Myeloma, which is the broadest in scope compared to competing CD33 focused programs and provides for the largest addressable patient population or market opportunity. Further, it is the only CD33 program for patients with Multiple Myeloma and the only CD33 program for targeted conditioning.

Actinium's Multi-Disease, Multi-Indication CD33 Program

Disease	BMT	Therapeutics				Patient Population
	Targeted Conditioning	Newly Diagnosed	Consolidation	Relapsed/Refractory		Addressable US, EU Market
AML	Actimab-A CLAG-M	Actimab-A Ven*	Actimab-A MRD	Actimab-A CLAG-M	Actimab-A Ven	69,300
MDS	Actimab-MDS					37,500[1]
Multiple Myeloma				Actimab-M (penta refractory)		47,400[2]
						Total 154,200[3]

Given our extensive experience and clinical data from our CD33 program, we believe this can be leveraged to move into new indications and start new trials in a cost-effective manner without having to fund de novo development. We will continue to identify applications and indications for our CD33 program that build on its best-in-class profile. Given that our CD33 program is the most advanced and has the broadest scope, companies seeking to enter this area may find our program very attractive. Further, our focus on therapeutic combinations allows us to engage with potential partners who are interested in the radiation modality for combinations with their therapeutic modalities, which we believe can leveraged strategically to drive value.

How does the AWE Platform add value?

Our AWE platform is an engine that can drive growth in our pipeline as well as collaborations and partnerships. We view the AWE platform as an immensely valuable asset that is now being leveraged properly under the stewardship of our dedicated, talented and experienced research team. Our AWE platform underpins our clinical programs and is supported by extensive preclinical data, clinical data and 75 patents. We will continue to build our intellectual property portfolio to further bolster AWE's profile as we seek to monetize it.

We believe AWE can drive partnerships in numerous ways including our biobetter strategy. This strategy takes an established biologic drug and using a radioisotope like Ac-255, we demonstrate enhanced potency, efficacy or improved administration. We demonstrated this with our work labeling daratumumab, the blockbuster CD38 antibody therapy for multiple myeloma that is marketed as Darzalex by Johnson & Johnson. In this case, we were able to increase cell killing and demonstrate efficacy on cell lines that displayed resistance to unlabeled daratumumab.

Another approach is to find antibodies or other targeting agents that are no longer being pursued by their pharma or biotech sponsor and reinvigorate them given that ARC's cell killing capabilities, which are not dependent on genetic factors, high antigen density, and do not require internalization of the target. These attributes are major differentiators from other modalities like antibody drug conjugates or ADCs. Finally, we can work with collaborators to research our radioisotope-based warhead payloads in conjunction with novel targeting agents. We have already established a track record in this regard through our research collaboration with Astellas that resulted in non-dilutive capital from Astellas and ongoing funding.

Why do you say the Astellas transaction was "particularly validating"?

The decision by Astellas to collaborate with Actinium is the first instance of corporate validation of our alpha platform technology. We are very pleased and honored to work with a leading innovator and science-driven company like Astellas. Astellas had previously prioritized ADC or Antibody Drug Conjugate technology with its purchase of Agensys Inc. for over $400MM. Subsequently, Astellas appears to have disinvested in this approach and has announced a wind-down of this effort. We believe that the decision to pursue an ARC development approach by a knowledgeable company like Astellas who certainly has considerable experience with alternative ADC technology is a tacit acknowledgement of the inherent advantages of ARC technology as a targeting agent. Further, the selection of Actinium by such an experienced player is a testimony to our AWE platform for sure but also our research capabilities and due to our not being a part of a larger company. Other factors that were considerations in selection of Actinium that will be relevant for future AWE partnerships are the clinical validation of the safety and efficacy of our linker technology and our years of experience in handling the isotope Ac-225 and the patent portfolio surrounding it. Further, we believe that our stage-appropriate supply chain, which has the demonstrated capability of manufacturing and supplying radiolabeled drug to top cancer centers across the U.S. is a major point of differentiation for Actinium and will be a consideration for most partners unless they wish to invest years and millions of dollars to acquire such a capability.

How is the R back in R&D at Actinium? What can we expect going forward?

Prior to the last 12 months, Actinium's efforts focused largely on clinical development of existing trials. In 2018, with our renewed focus on research we have generated new IP, demonstrated the utility of our AWE platform, signed our first collaboration with a top 20 pharma company, supported the launch of Iomab-ACT and supported our Actimab-A and Venetoclax combination trials.

We believe that our platform has immense potential for liquid and solid tumors with the flexibility to attenuate our dose for desired outcomes like our high-dose myeloablation/low-dose lymphodepletion strategy with Iomab. We will continue to explore new indications for our existing focus on CD45 and CD33 and CD38 targets, file new IP and work towards additional collaborations and partnerships.

We have heard the phrase "it is the age of Radiopharma 2.0 now" being used recently? Please explain and what does it mean for Actinium?

In the last 12 months alone, we have seen two multi-billion-dollar acquisitions of companies with radiopharmaceutical-based therapies. The first being Advanced Accelerator Applications, Inc., acquired by Novartis for $3.9 billion and the most recent being Endocyte, also acquired by Novartis, for $2.1 billion. These follow Algeta that was acquired by Bayer in 2013 for $2.9 billion. There are also a growing number of publications demonstrating the utility of radiotherapy in combination with other modalities which is creating further interest in this technology.

As a result of these acquisitions, there are just a few unpartnered radiopharmaceutical therapies remaining, creating a scarcity of assets in the field. From our assessment of the landscape, we believe we have the broadest, most late-stage pipeline which addresses a large patient population with unmet or underserved needs. Iomab-B, Actimab-MDS and the Iomab-ACT program provide Actinium the only multi-disease, multi-target pipeline for targeted conditioning that is intended to improve access and outcomes to potentially curative cellular therapies such as bone marrow transplant and CAR-T.

We believe that our targeted conditioning pipeline allows Actinium a viable pathway to commercialize these drug candidates as an independent company and without a partner. However, we also recognize that at the right time our pipeline may be recognized as a strategic business unit opportunity for a strategic partner. Further, our best in class CD33 therapeutics program which will also have multiple data readouts in the 2019-2020 timeframe may further increase attractiveness as a partner for larger companies seeking a revenue base with differentiated assets which we have in plenty along with our AWE platform which can generate further opportunities.