ATNM-US Department of Energy

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DOE User Meeting

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Actinium Pharmaceuticals, Inc.

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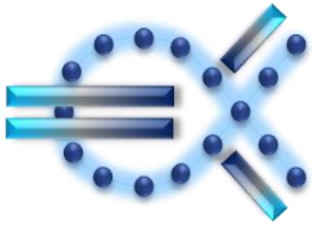
Executive Overview

Actinium is on the cusp of clinical successes that can realize our vision for a fully integrated specialty oncology company built on our innovative R&D capabilities



- Leading radiotherapy company with a late-stage pipeline focused on conditioning for bone marrow transplant (BMT)
- Iomab-B, a Ph III-complete, paradigm shifting induction and conditioning agent, for R/R AML; topline data expected in Q3:2022. Immedica AB secured as EU commercial partner
- Actimab-A investigated in R/R AML trials including in combination with Bcl-2 targeted venetoclax and the salvage chemotherapy CLAG-M, the latter demonstrating 80% ORR
- Next-generation clinical-stage targeted conditioning pipeline for the large and rapidly growing Cell and Gene Therapy markets advancing
- Leading edge innovation in radiopharma R&D drives partnerships including Astellas in solid tumor theranostics, AVEO with first in class HER3-targeted radiotherapy, EpicentRx with CD47 immunotherapy and proprietary radiotherapy combinations in solid tumors

r/r AML – Relapsed/Refractory Acute Myeloid Leukemia
* Unaudited proforma cash figure based on cash on hand and $35 million upfront payment from Immedica

AWE Platform Powers Our Pipeline of ARCs

Deep pipeline of potent Antibody Radiation-Conjugates with significant therapeutic and combination potential in hematology and oncology

Targeted Conditioning & CD33 Therapeutic Pipeline	Phase 1	Phase 2	Phase 3	2022 Milestones
Iomab-B BMT – CD45	r/r AML 55+	**Pivotal Phase 3 SIERRA – Fully Enrolled**	Immedica pharma EU/MENA Commercial Partner	*Data update at TCT Top line data Q3 2022*
Iomab-ACT CAR-T – CD45	CD19 r/r B-ALL, DLBCL	**Phase 1/2**	Memorial Sloan Kettering Cancer Center; NIH National Institutes of Health	*POC data*
Iomab-ACT GeneTx – CD45	Anti-HIV	**Phase 1/2**	**GeneTx**	
Actimab-A + CLAG-M	R/R AML **Phase 1 – Complete**	**Developing registration-enabling regulatory strategy**		*Development Update*
Actimab-A + venetoclax	R/R AML **Phase 1/2**	**Determine Phase 2 dose**		*Full Phase 1 Data Initiate Phase 2*

AWE Platform Collaborations

astellas	**Ac-225 + undisclosed Astellas targeting agents for solid tumor theranostics**
AVEO ONCOLOGY	**Ac-225 HER3 ARC for solid tumor indications**
EpicentRx	**Ac-225 + RRx-001 (small molecule CD47-SIRPα inhibitor) in AML**

AWE Preclinical Programs

HER2 ARC + Magrolimab (CD47) in solid tumors	**Ac-225-Daratumumab (CD38)**
Actimab-A + Magrolimab (CD47) in AML	**ARCs + undisclosed targets**

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AML – Acute Myeloid Leukemia, MM – Multiple Myeloma, ALL – Acute Lymphoblastic Leukemia, DLBCL – Diffuse Large B-Cell Lymphoma, HIV = Human Immunodeficiency Virus r/r= relapsed/refractory

AWE Platform Drives Pipeline, Enables Future Opportunities

Our AWE technology platform allows us to create ARCs for multiple areas of clinical development

AWE Technology Platform

Scientific Founders

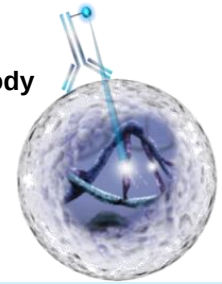
Memorial Sloan Kettering Cancer Center

Organon

Collaborators

astellas

EpicentRx



Strong, Growing IP Portfolio of 170+ Patents

Multiple Validated Targets

CD45
Leukemia, Lymphoma and immune cells

CD33
AML, MDS and MM

Undisclosed
Solid tumor theranostics

astellas

CD38
MM and leukemia cells

HER2 & HER3
Solid tumors

CD47
Solid tumors and blood cancers

EpicentRx

Multiple Therapeutic Isotopes(1)

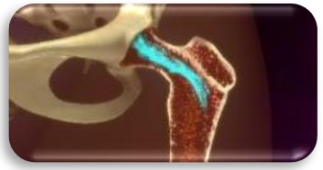
Iodine-131
Range: 2.3 mm
Energy: 0.6 MeV

Actinium-225
Range: .048 mm
Energy: 5.8 MeV

Lutetium-177
Range: 1.8 mm
Energy: 0.50 MeV

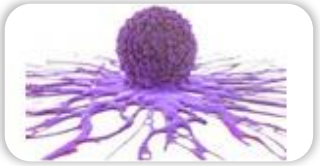
Areas of Focus

Targeted Conditioning



CD45 | CD33

Solid Tumors

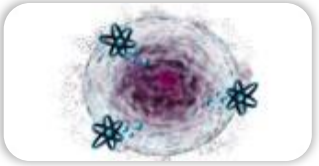


astellas | CD47 | HER2/3

Therapeutic Combinations

CD33 | CD47

Next-Generation ARCs



CD38 | Undisclosed

Enhanced R&D Infrastructure & Capabilities

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1) Pouget J.-P. *et al. Nat. Rev. Clin. Oncol.* 8, 720–734 (2011); published online 8 November 2011.

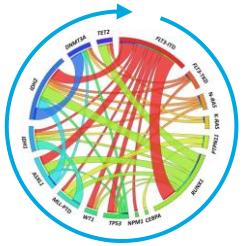
Highly Differentiated CD33 Program

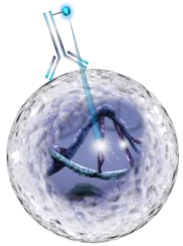
Focused on establishing Actimab-A as a backbone therapy for r/r AML

- Actimab-A targets highly validated CD33 with potent Ac-225 alpha emitter
- Clinical experience in ~150 patients in 6 clinical trials driving combination "backbone" strategy with high response rates
- Minimal non-hematologic toxicities > grade 3 outside of myelosuppression in Phase 1/2 trial
- Multiple opportunities to use Actimab-A in combination with chemotherapy, targeted agents and immunotherapy

Actimab-A Phase 1/2 Results

Dose Level (µCi/kg/fraction)	Response Rate (%) (CR, CRp & Cri)
0.5 µCi/kg[1]	0%
1.0 µCi/kg[1]	17% (1 CR)
1.5 µCi/kg[2]	22% (3 CRp, 3 CRi)
2.0 µCi/kg[3]	69% (1 CR, 2 CRp, 6 CRi)





Broad Applicability

- CD33 is expressed in virtually all patients with AML
- CD33 is expressed regardless of cytogenetics or mutations

Differentiated MoA

- Potent radiation via Ac-225 directed at radiosensitive AML cells
- ARCs are agnostic to cytogenetics or mutations

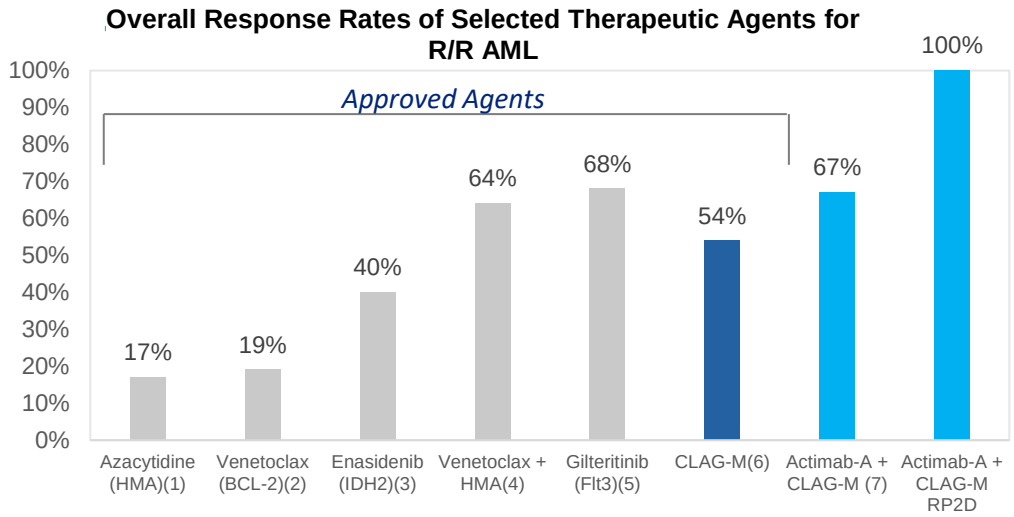
Targeted Precision

- Short path length of Ac-225 limits bystander effect
- Well-tolerated
- Minimal extramedullary toxicity

1) Jurcic et al. ASH 2016. (N=9) 2) Atallah et al. Blood (2018) 132 (Supplement 1): 1457 (N=27) 3(Finn et al. Blood (2017) 130 (Supplement 1): 2638; (N=13)

Promising Phase 1 Results: Actimab-A + CLAG-M Combo

High remission and MRD- rates vs approved agents from Actimab-A + CLAG-M combo in R/R AML



MRD Negativity Rate in R/R AML

CLAG-M[8]	Actimab-A + CLAG-M[7]
39%	72%

- 100% remission rate (1 CR, 2 CRp) in cohort 3, which has been determined Phase 2 dose
- CR/CRp in all dose cohorts, including subtherapeutic doses
- 80% ORR in patients receiving less than 4 prior therapies
- 60% ORR in patients with prior venetoclax treatment

- MRD negativity in 72% of all patients with remissions (9/12)
- CR/CRi and MRD- observed in all dose cohorts
- No 30-day mortality reported in any cohort

High MRD negativity rates and ORR in patients with prior venetoclax therapy support continued development

1) Itzykson et al. Azacitidine for the treatment of relapsed and refractory AML in older patients. Leuk Res. 2015 Feb;39(2):124-30. 2) Konopleva et al. Efficacy and Biological Correlates of Response in a Phase II Study of Venetoclax Monotherapy in Patients with Acute Myelogenous Leukemia. Cancer Discov. 2016 Oct;6(10):1106-1117. 3) Stein et al. Enasidenib in mutant IDH2 relapsed or refractory acute myeloid leukemia. Blood. 2017 Aug 10;130(6):722-731. 4) Aldoss et al. Efficacy of the combination of venetoclax and hypomethylating agents in relapsed/refractory acute myeloid leukemia. Haematologica. 2018 Sep;103(9):e404-e407. 5) Perl et al. Gilteritinib or Chemotherapy for Relapsed or Refractory FLT3-Mutated AML. N Engl J Med. 2019 Oct 31;381(18):1728-1740. 6) Mushtaq et al. Comparison of Salvage Chemotherapy Regimens in Relapsed/Refractory Acute Myeloid Leukemia. ASH Annual Meeting 2018 7) Jurcic et al. Phase 1 trial of targeted alpha-particle therapy with LDAC in patients age 60 or older with untreated AML. ASH 2016 7) Abedin, S., et. al, A Phase 1 Study of Lintuzumab Ac225 in Combination with CLAG-M Chemotherapy in Relapsed/Refractory AML, *Blood, 2020* ASH 2020 Abstract #165; 8) Mushtaq et al. Comparison of salvage chemotherapy regimens and prognostic significance of minimal residual disease in relapsed/refractory acute myeloid leukemia. Leukemia & Lymphoma 2020;

Actimab-A + Venetoclax Combination Trial

Venetoclax is used widely across AML segments, however, most patients ultimately relapse - preclinical and clinical data support mechanistic synergy of Actimab-A with Venetoclax

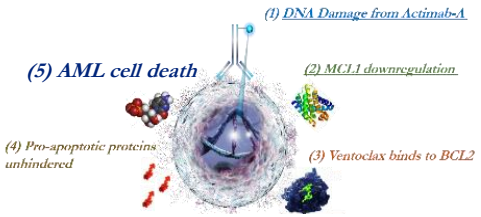
- Venetoclax is a Bcl-2 inhibitor approved in 3 hematologic indications and is recommended for fit and unfit patients with AML with HMA or LDAC per NCCN guidelines. **Venetoclax showed a 19% ORR in R/R AML as single agent[1]**

Actimab-A + Venetoclax Phase 1 Results

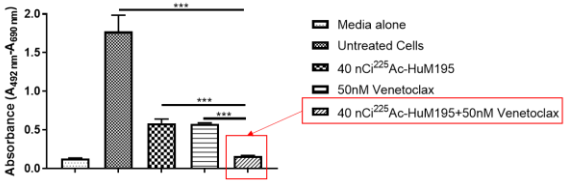
- **67% ORR in Patients with TP53 mutation, including one patient in follow-up 200+ days**
- Trial to advanced to dose cohort 3 of 1.5 µCi/kg of Actimab-A
- No early deaths reported
- Additional Phase 1 data from continued dose escalation expected in 2022

Actimab-A restores sensitivity to venetoclax and has single agent anti-leukemic activity supporting the rationale for ongoing Phase 1/2 combination trial

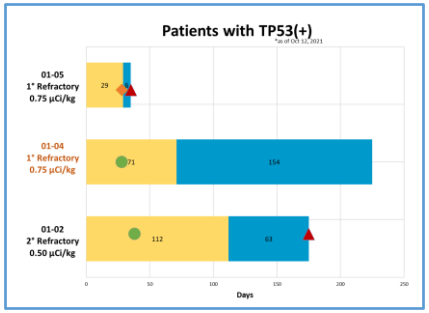
Rationale: Actimab-A depletes Mcl-1, a mediator of venetoclax resistance



Demonstrable Mechanistic Synergy[2]



Results in Patients with TP53(+)[3]



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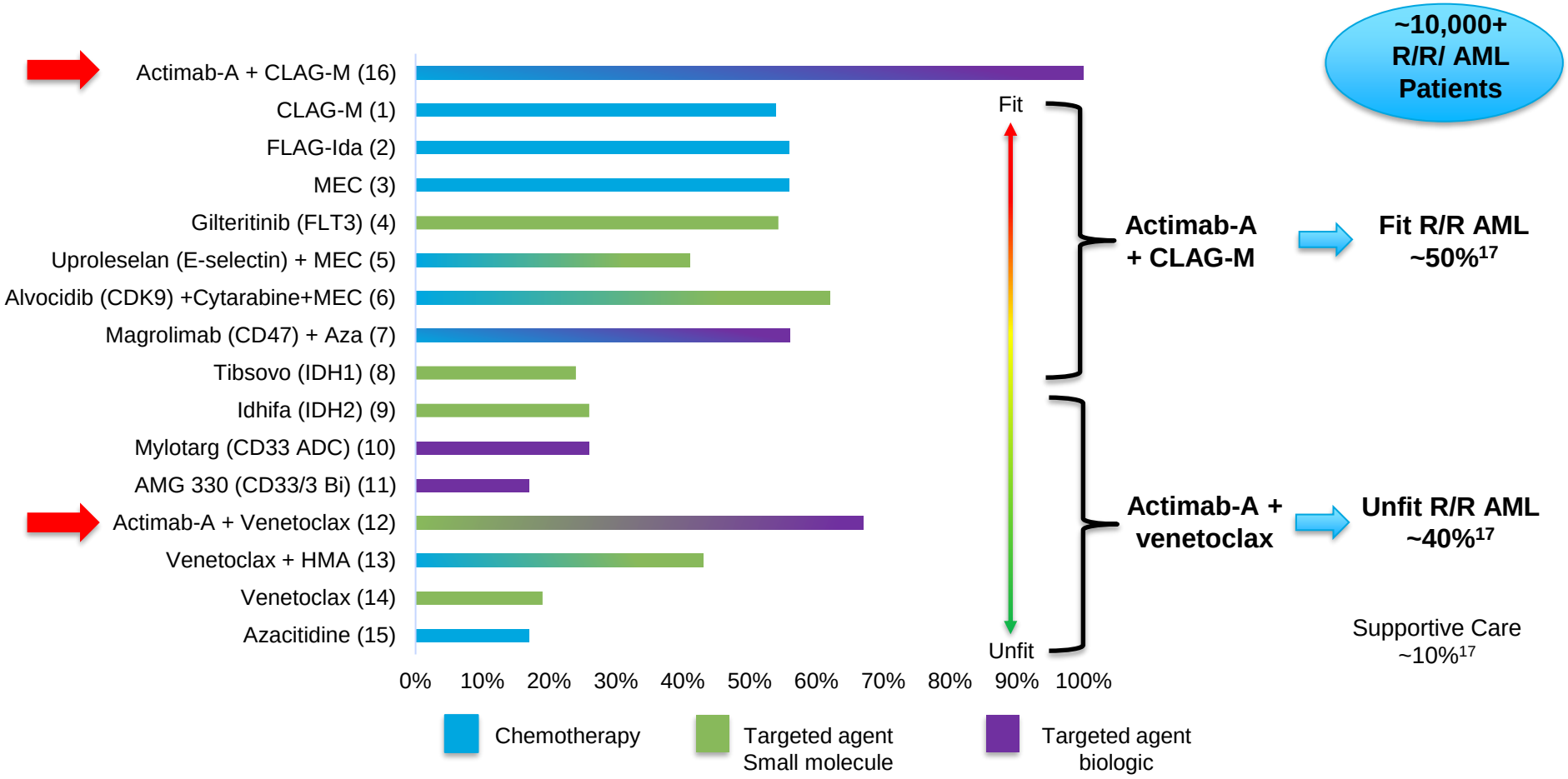
1) Aldosset al. Efficacy of the combination of venetoclax and hypomethylating agents in relapsed/refractory acute myeloid leukemia. Haematologica2018.1888094.; 2) Garg et al. 225-Ac-CD33 radioimmunotherapy potently increases the sensitivity of resistant acute myeloid leukemia lines to the Bcl-2 inhibitor venetoclax by mediating a reduction in cellular Mcl-1 levels. Poster 3808. AACR Annual Meeting 2019. 3) Hegazi, et. al. Lintuzumab-225Ac in Combination with Venetoclax in Relapsed/Refractory AML: Early Results of a Phase I/II Study Poster 2875. 62nd ASH Annual Meeting 2020.

Actimab-A Combinations Showing Impressive Results in R/R AML

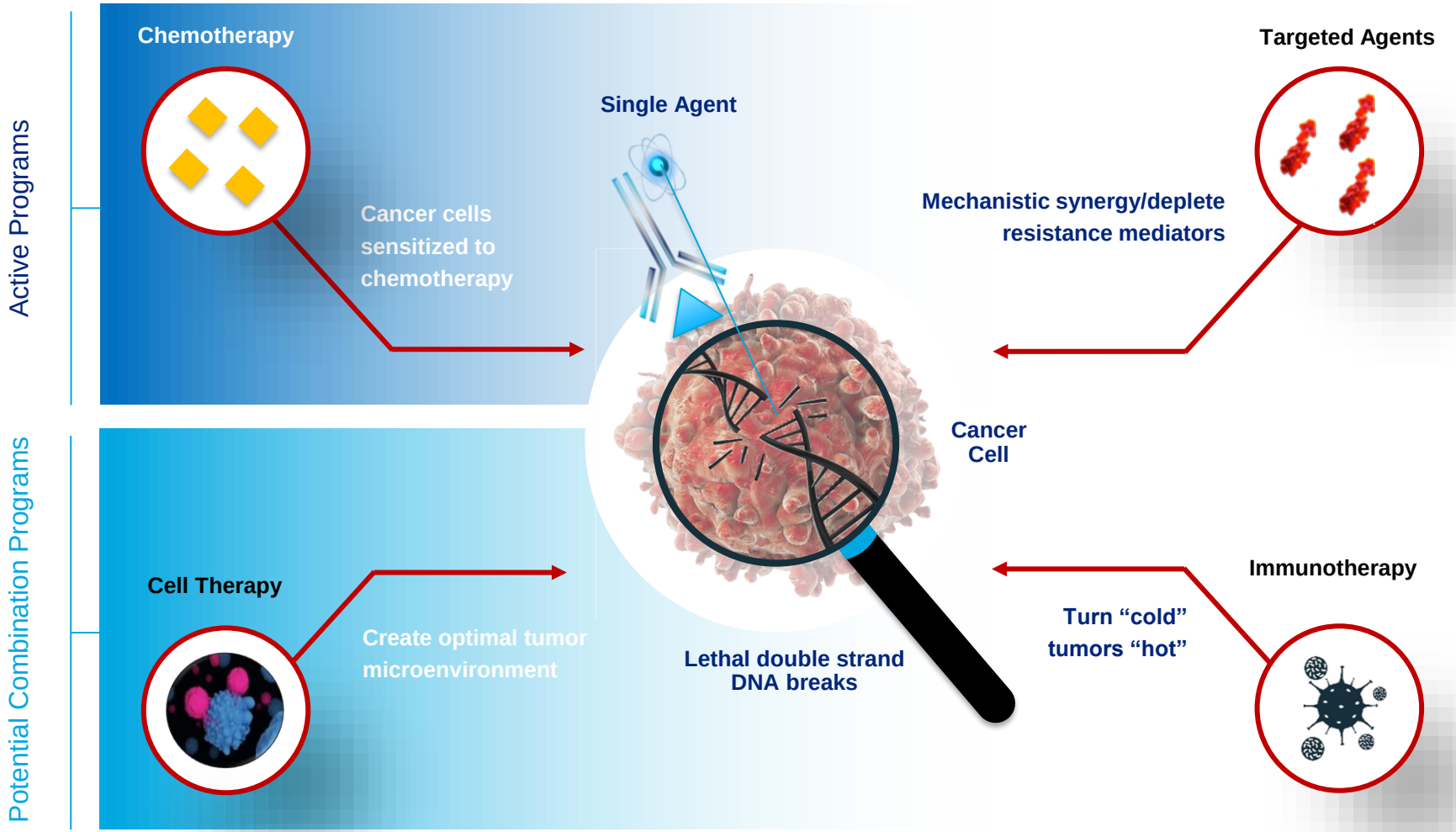
Potential best in class profiles for both fit and unfit patients with R/R AML



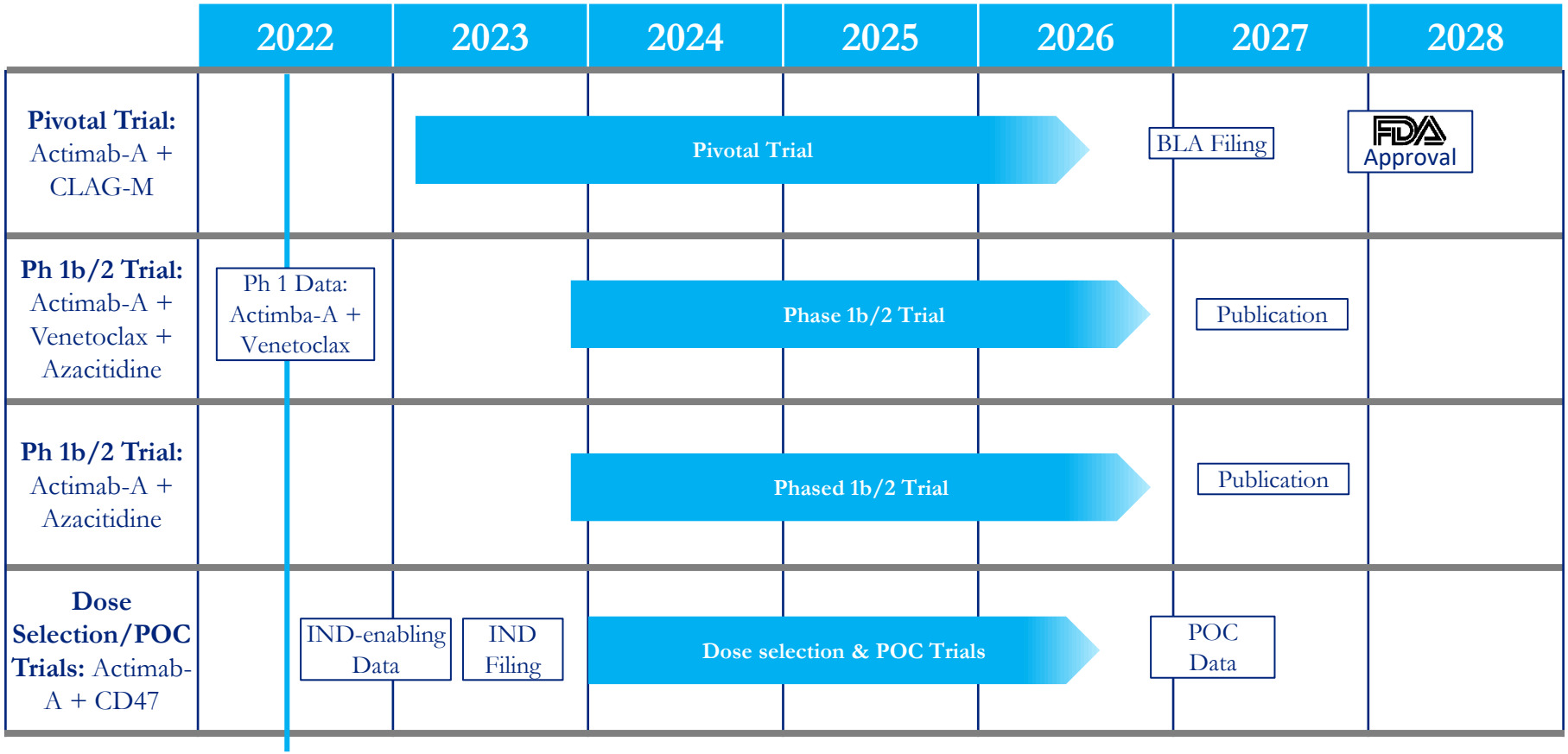
1) Mushtaq, et al. Leukemia & Lymphoma 2020, September (9)] ; 2) Westhus, et. al., Leuk Lymphoma. 2019 Apr ; 60(4) :1014-1022; 3) Scheckel, et. al., Leuk Res. 2020 Mar ;90 :106300; 4) Perl, et. al, N Engl J Med 2019; 381:1728-1740; 5) DeAngelo, et. al., Blood (2018) 132 (Supplement 1): 331; 6) Zeidner, et. al., Blood (2018) 132 (Supplement 1): 30 7) Sallman, et. al., J Clin Oncol 38 : 2020 (suppl ; abstr 7507); 8) Pollyea, et. al., J Clin Oncol 36 : 2018 (suppl 15); 9) Stein, et. al., Blood 2017 Aug 10 ; 130(6) : 722-731; 10) FDA Label: https://www.accessdata.fda.gov/drugsatfda_docs/label/2020/761060s003lbl.pdf; 11) Ravandi, et. al., J Clin Oncol 38 (suppl 15; abstr 7508); 12) Ram, et. al., Ann Hematol. 2019 Aug; 98(8)1927-1932; 13) Konopleva, et. al., Cancer Discov. 2016 Oct; 6(10):1106-1117; 14) Itzykson, et. al., Leuk Res. 2015 Feb ;39(2) :124-30; 15) Abedin, S., et. al, A Phase 1 Study of Lintuzumab Ac225 in Combination with CLAG-M Chemotherapy in Relapsed/Refractory AML, Blood, 2020; 17) Borlenghi, et. al., Validting the Patient's "Fitness" Criteria Proposed to Guide Treatment Decisions in Elderly AML: a Multicenter Study on a Population-Based Series of 362 Patients by the Network "Rete Ematologica Lombarda" (REL), Blood (2014) 124(21):279

Potential Mechanistic Synergies Drive CD33 Program Expansion

Actinium has data demonstrating the potentiating and synergistic effect of targeted radiotherapy



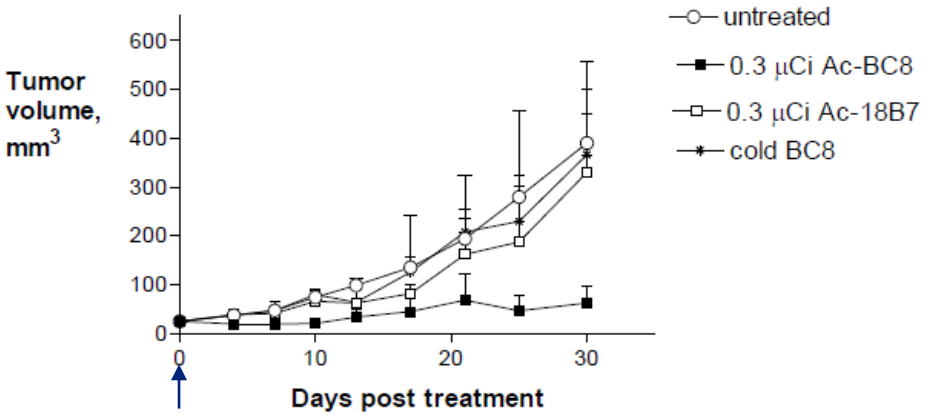
Actimab-A Clinical Development Timelines



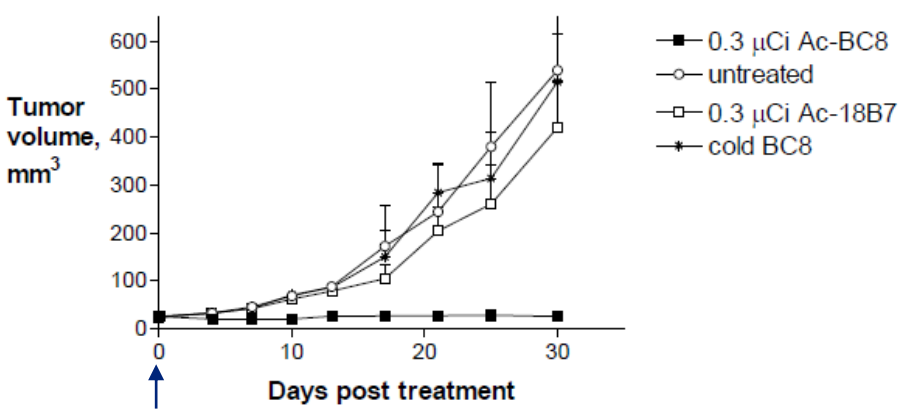
Single-dose potency of Actimab-B (^{225}Ac-BC8) activity in Multiple Myeloma

- Single dose treatment of subcutaneous xenografts of MM tumors with Actimab-B effected complete tumor growth control for the duration of study
- Neither cold BC8 or nonspecific control 225Ac-18B7 had any anti-tumor effect demonstrating the selective tumor killing of Actimab-B

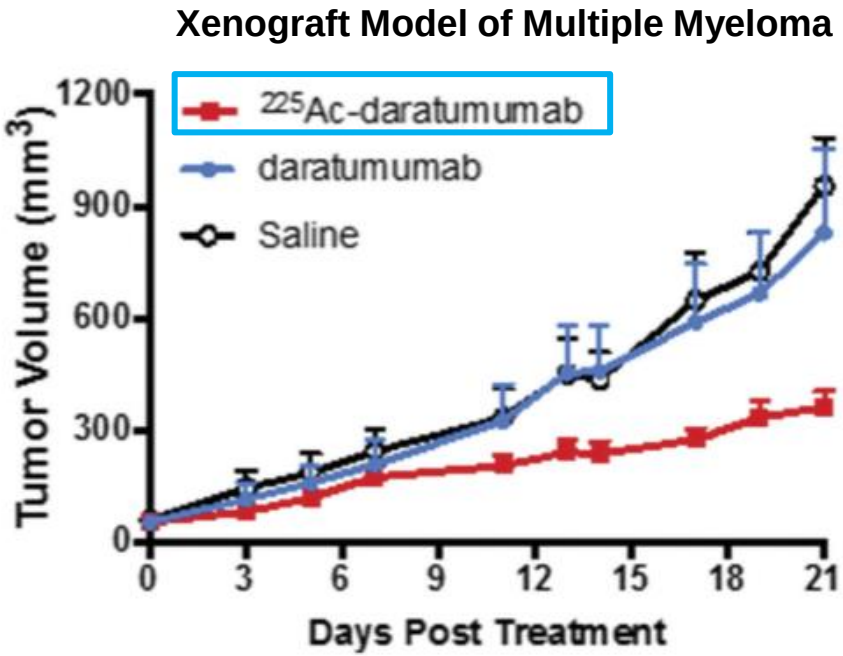
U266 Tumor xenograft



H929 Tumor xenograft



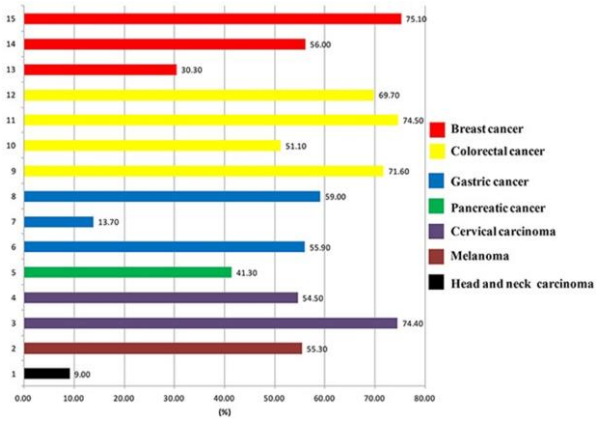
Radio-Conjugation with ^{225}Ac Empowers Daratumumab (Anti-CD38 mAb)



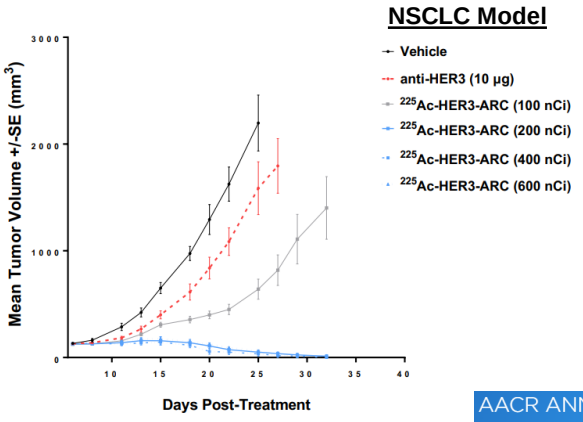
Dawicki et al. OncoImmunology (2019)

ATNM is committed to Ac-225 Solid Tumor Programs

HER3 Is Widely Expressed Across Solid Tumors



First-in-Class ^{225}Ac-HER3 ARC Leads to Dramatic Tumor Regression



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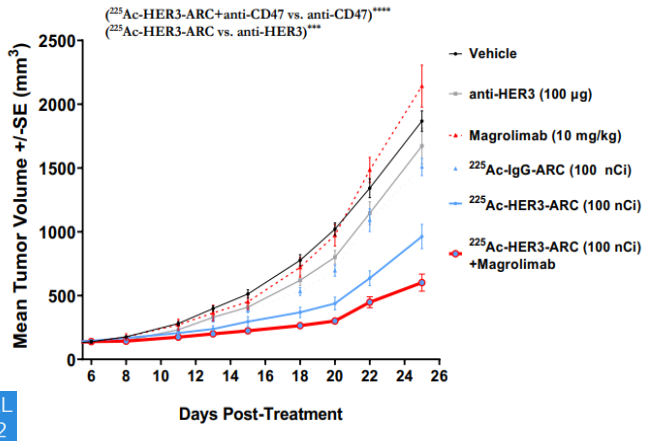
^{225}Ac-HER3 ARC Potentiates CD47 Immunotherapy



Li et al. Oncotarget. (2017)

Our ^{225}Ac ARCs have the potential to treat numerous patients with limited options:

- Monotherapy
- Combination with immunotherapy

Actinium Pharmaceuticals is also generating ^{225}Ac conjugates against multiple undisclosed tumor targets including ongoing collaboration with astellas

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Summary

- ATNM proudly holds the leadership position in the development of Ac-225 radiotherapies and has the most clinical experience with over 100 patients dosed with Actimab-A, our clinical stage Ac-225 ARC

- Actimab-A is poised to move into phase 3 as a 'backbone" therapy for treatment of patients with AML, an area of high unmet need and low survival outcomes

- Reliable and high-quality supply of Ac-225 is critical to bringing patients this potentially transformative option

- ATNM sincerely appreciates the ongoing support from DOE and is eager to expand and further develop its partnership with DOE and enabling our commitment to bring better options to cancer patients.


Actinium
Pharmaceuticals, Inc.



Thank You
ATNM: NYSE AMERICAN