Actinium Pharmaceuticals, Inc.

CD33 Program Overview and Update

Introducing Combination Study of Actimab-A + CLAG-M

February 13, 2018

Disclaimer and Safe Harbor

Some of the information presented herein may contain projections or other forward-looking statements regarding future events or the future financial performance of the Company which the Company undertakes no obligation to update. These statements are based on management's current expectations and are subject to risks and uncertainties that may cause actual results to differ materially from the anticipated or estimated future results, including the risks and uncertainties associated with preliminary study results varying from final results, estimates of potential markets for drugs under development, clinical trials, actions by the FDA and other governmental agencies, regulatory clearances, responses to regulatory matters, the market demand for and acceptance of Actinium's products and services, performance of clinical research organizations and other risks detailed from time to time in Actinium's filings with the Securities and Exchange Commission (the "SEC"), including without limitation its most recent annual report on form 10-K, subsequent quarterly reports on Forms 10-Q and Forms 8-K, each as amended and supplemented from time to time.

This presentation does not constitute an offer to sell securities including but not limited to within any jurisdiction in which the sale of such securities would be unlawful. This presentation does not constitute a solicitation or offer to sell securities. Such offer and the information set forth herein have not been reviewed, approved or disapproved, nor has the accuracy or adequacy of the information set forth herein been passed upon, by the SEC or any state securities administrator. Any representation to the contrary is a criminal offense. An investment in the securities offered by the company is speculative and involves a high degree of risk. Investment in the securities offered hereby is suitable only for persons of substantial financial means who can afford a total loss of their investment.

Today's Call Leaders

Dr. Ehab Atallah

Associate Professor of Medicine

MEDICAL COLLEGE OF WISCONSIN

Sandesh Seth

Chairman & CEO

Dr. Mark Berger

Chief Medical Officer

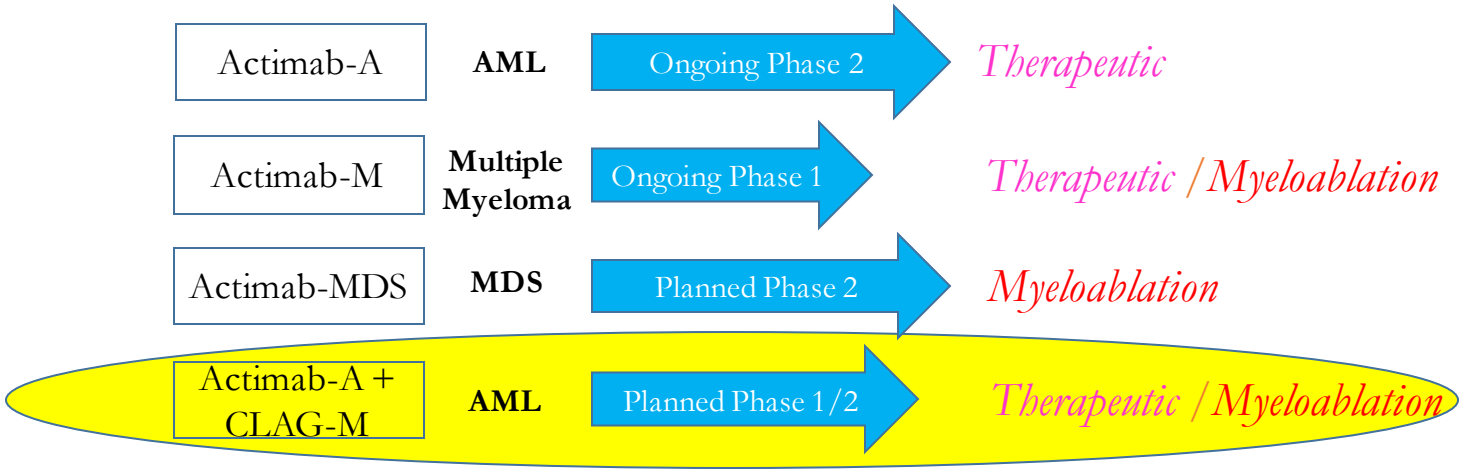
Actinium Pharmaceuticals, Inc.

Agenda for Today's Call

CD33 Program Expansion – Combination Therapy

Program Expansion Enabled By ARC Technology Capabilities Spurring Investigator Led Trials to Address Unmet Needs

- Only multi-disease CD33 asset in development
- Expansion driven by investigator support
- Highly differentiated technological approach



Actinium's CD33 Program Strategy for 2018

Objective is to extend our leadership position as the only multi-disease CD33 Program in the industry with best in class potential

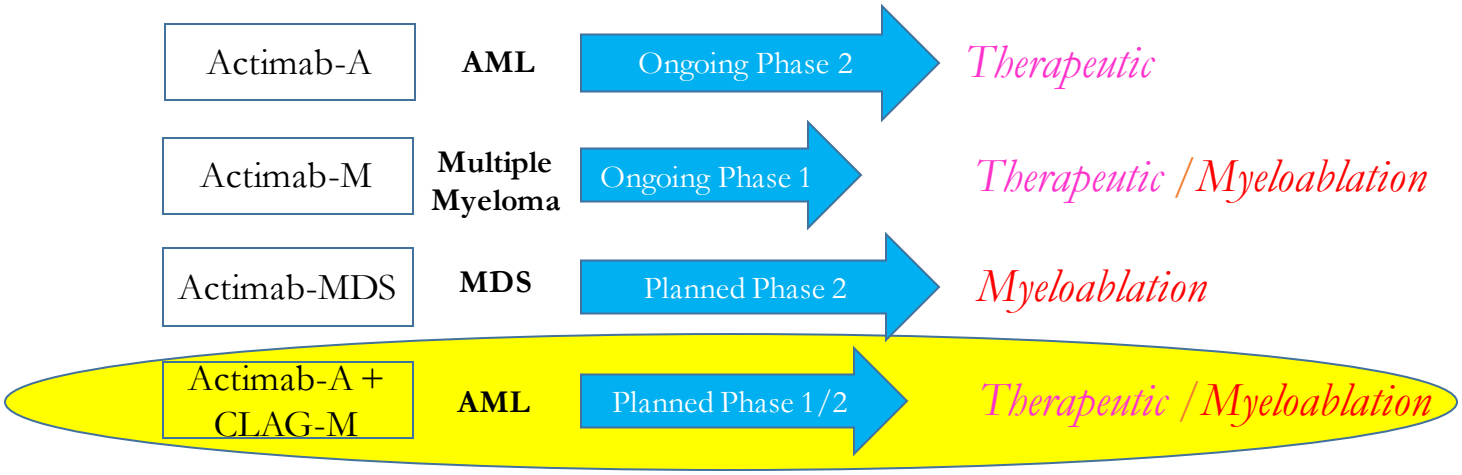
- Maximize the value of our CD33 program for 2018 by
  - Generating proof-of-concept data for the Actimab-A Phase 2 trial by mid-2018
  - Generating proof-of-concept data for the Actimab-M Phase 1 trial in 2018
  - Receiving FDA guidance for Actimab-MDS by mid 2018
  - Initiating the Actimab-MDS trial with the MDS Clinical Consortium in 2H:2018
  - Develop Actimab-A in combination [e.g. cytotoxic chemotherapy, targeted agents , immunotherapy] in preparation for further development
- Unveil new information that will further strengthen and differentiate our CD33 program and solidify its best-in-class status
- Optimize the profile of the CD33 program to enable collaborations and partnering as appropriate

CD33 Program Overview

Introduction to CLAG–M

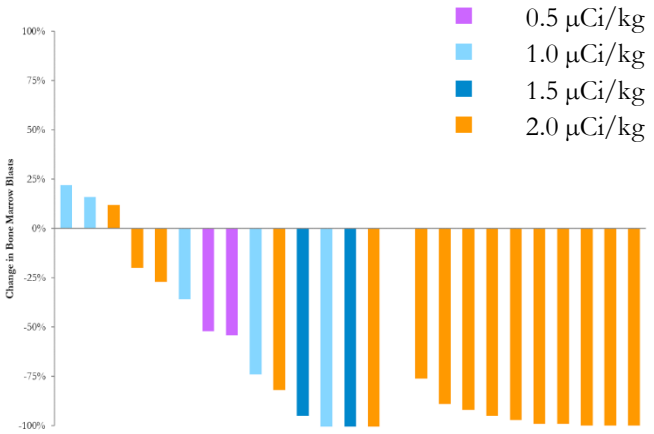
CD33 Program Birdseye View

- ARC technology has multiple advantage over other approaches
  - Minimal extramedullary toxicities – particularly no veno-occulive disease
  - Construct is not reliant on internalization for efficacy
  - Potency of isotope results in minimal protein doses
  - Treatment consists of 1 or 2 infusions



Actimab-A: Compelling Clinical Data in AML

High blast reduction and strong response rates



Phase 1 Results[2]

Dose Level (µCi/kg/ fraction)	Low PB patient Response Rate (CRc)
2 x 0.5	0%
2 x 1.0	33%
2 x 1.5	67%
2 x 2.0	50%

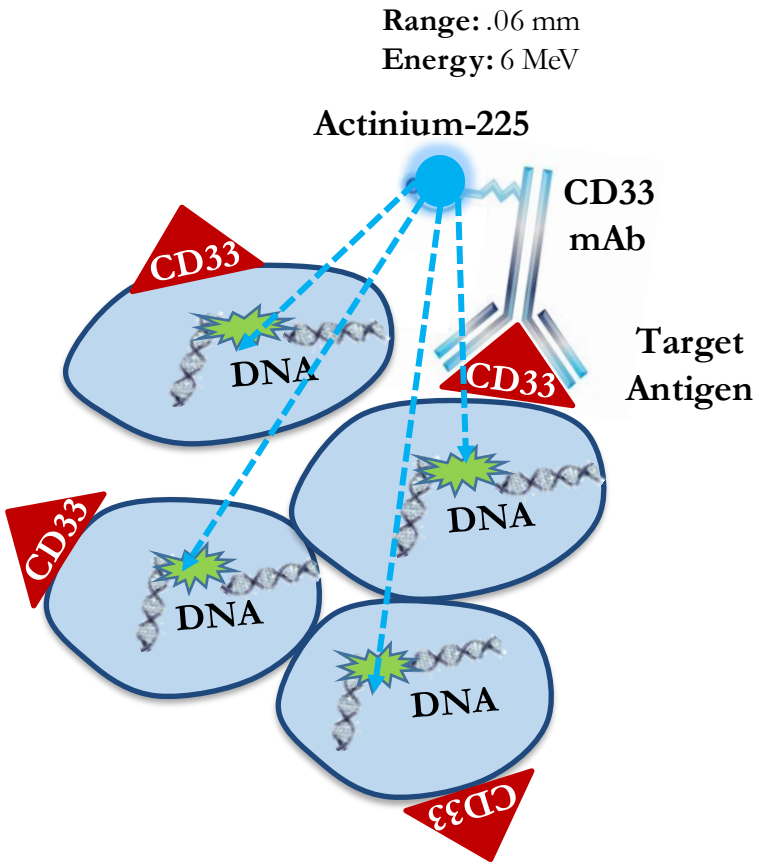
Phase 2 – ASH '17[3]

Dose Level (µCi/kg/ fraction)	Response Rate (CRc) All low PB
2 x 1.5	Enrolling
2 x 2.0	69% (9/13)

- Actimab-A Phase 2 trial data was reported at ASH in December 2017
- Overall Response Rate (ORR) of 69% and median reduction in bone marrow blasts of 98%
- Median patient age of 75, with 67% having prior hematologic disease and all patients being unfit
- Minimal extramedullary toxicities, myelosuppression was prolonged given patient population
- Enrollment continuing at 1.5 µCi/kg/fraction
- Phase 2 data driving potential combinations with other therapeutic modalities

Advantages of ARC's or Antibody Radiation Conjugates

ARC technology has distinct advantages over other modalities targeting CD33

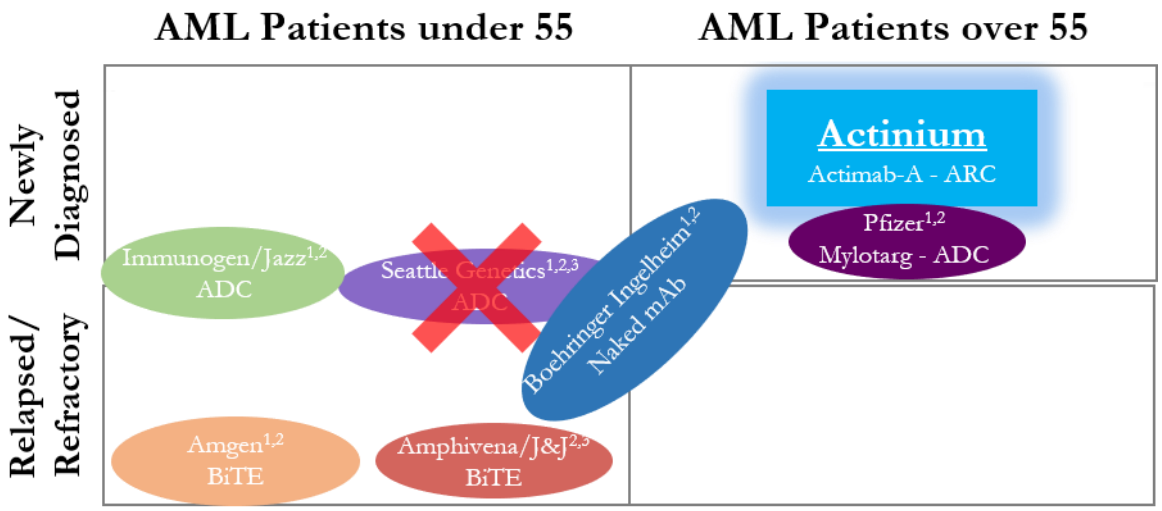


CD33 is expressed in approximately 90% of AML patients, 25%-35% of Multiple Myeloma patients and 75% of MDS patients

Advantages of the ARC approach in CD33

- ARC – Actinium Radio-Conjugate
- Very high potency - actinium-225 can kill a cell with a single alpha hit
- No internalization required unlike antibodies or ADCs
- No known resistance mechanism
- Ac-225 potentially capable of overcoming chemotherapy resistance
- High potency allows for monotherapy
- Easy administration, short infusion of one or two doses
- Short path length minimizes damage to normal cells
- Enhanced safety/tolerability allows focus on "unfit" patients

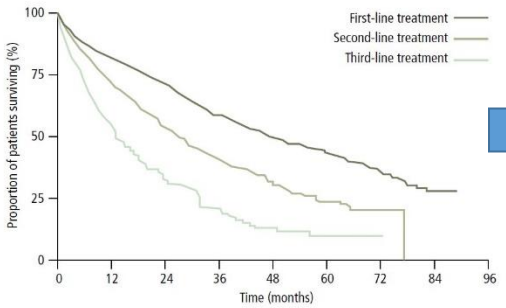
ARC's vs Other CD33 Targeting Approaches



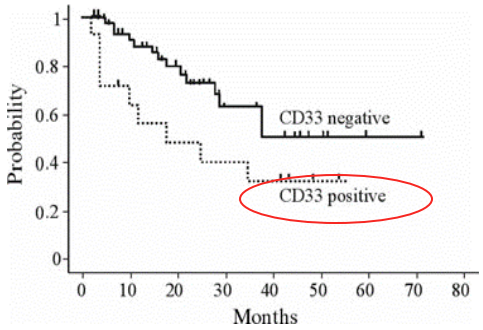
	Naked Antibodies	ADCs	Bispecifics	Actimab-A/ARC
Monotherapy	✗	✓	✓	✓
Requires Internalization	Preferable	✓	Preferable	✗
Known Resistance Mechanism	✓	✓	✓	✗
Administration	Simple Infusion	Complex Combinations	Continuous IV	Simple 30 min Infusion
Dosing Schedule/Regimen	Complex in Combinations	Complex Combinations	Continuous IV May require pump	2 infusions 7 days apart

Actimab-M: Phase 1 Trial for Multiple Myeloma

Multiple myeloma remains incurable, limited treatment options for refractory patients



Poorer outcomes associated with CD33 expression[1]



Sizeable addressable market underserved by existing treatment options

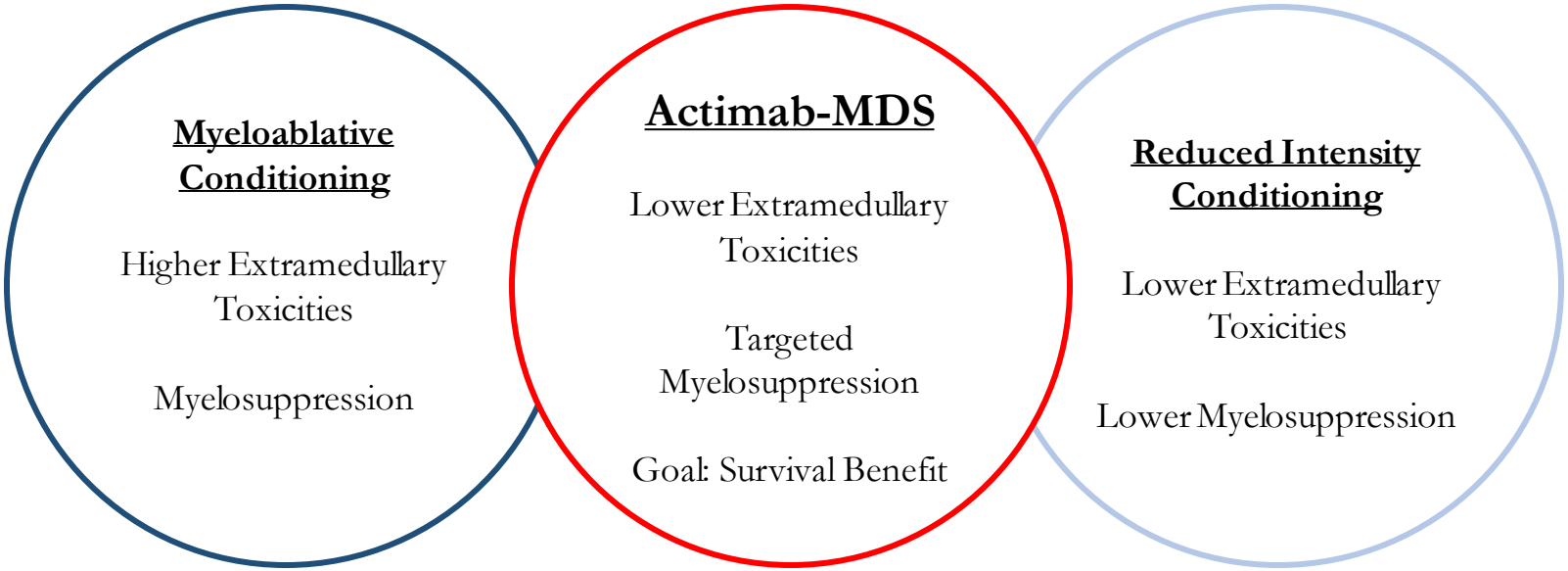
Multiple Myeloma Prevalence	Total # of Patients[3]	CD33 Positive[2]
US	89,600	22,400
Europe	100,000	25,000
Total	**189,600**	**47,400**

- Significant numbers ~25% - 35% of all myeloma patients have CD33 expression[1]
- CD33 is a risk factor with 3-year mortality 60% greater in CD33+ patients[3]
- Actimab-M Proof of Concept trial data expected in 2018
- Actimab-M is the first and only trial targeting CD33 in multiple myeloma and the only alpha particle therapy for radiation sensitive multiple myeloma

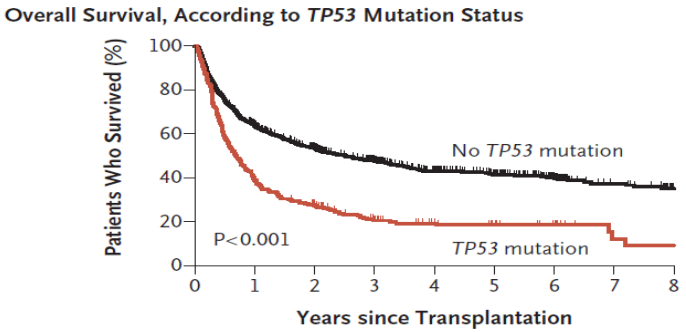
1) Levy, Moshe et al "CD33 Is Expressed in a Significant Subset of Multiple Myeloma Patients in the US and May Represent a Viable Therapeutic Target." Blood 130.Suppl 1 (2017): 5378. Web. 05 Jan. 2018.
2) H Avet-Loiseau, CD33 is expressed on plasma cells of a significant number of myeloma patients, and may represent a therapeutic target, Leukemia (2005) 19, 2021–2022.)
3) Onyx Pharmaceuticals, SEER, NCI, ACS, Celgene, Myeloma Euronet, GLOBOCAN, CIBMTR, Kyprolis insert, W Matsui JHI estimate, Ferlay et al *Eur J Cancer* 2013

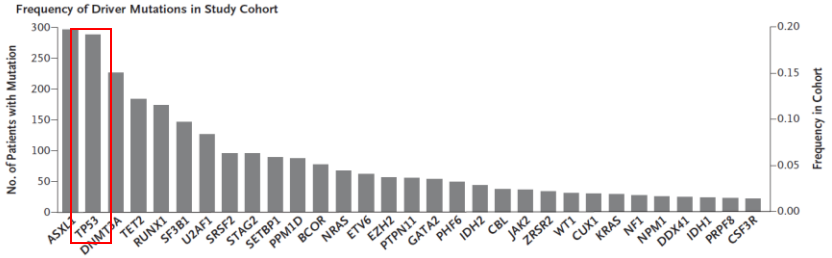
Actimab-MDS: Trial Rationale

- At 2.0 µCi/kg/fraction Actimab-A demonstrated prolonged myelosuppression
- Minimal extramedullary toxicities were seen at this dose level
- Dr. Gail Roboz, Director, Leukemia Program and Professor of Medicine, saw this data and came up with her "brain child" Actimab-MDS
- Actimab-MDS will leverage the strengths of our ARC approach to bridge patients with high-risk MDS to a bone marrow transplant



Actimab-MDS: Planned Phase 2 Trial for Myeloablation





Gail J. Roboz, M.D

Principal Investigator

Weill Cornell Medicine

NewYork-Presbyterian

Phase 2 Trial Consortium

THE UNIVERSITY OF TEXAS MD Anderson Cancer Center

JOHNS HOPKINS MEDICINE

DANA-FARBER CANCER INSTITUTE

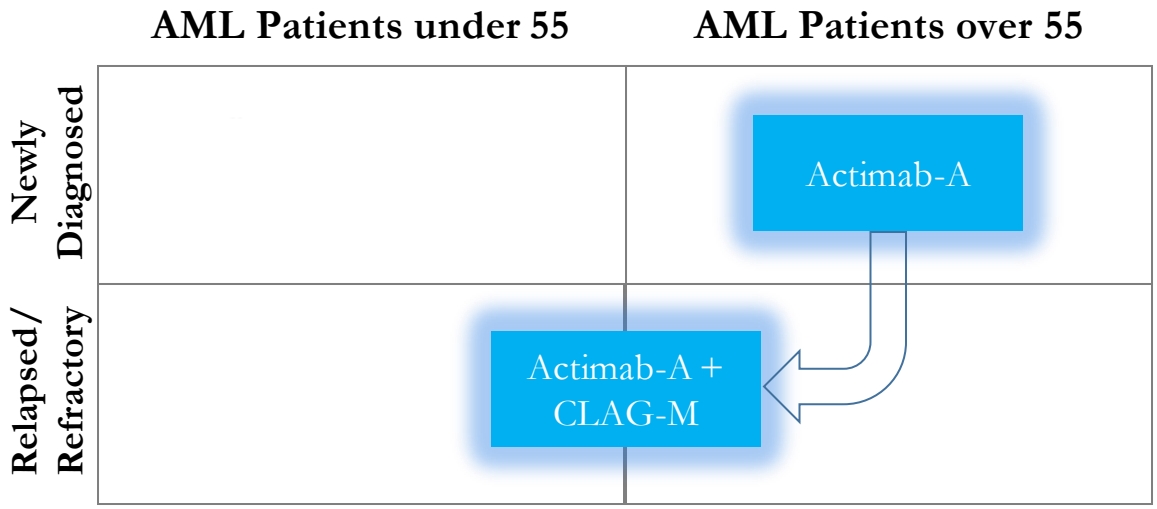
Cleveland Clinic

MOFFITT CANCER CENTER

- CD33 is well expressed in 75% of MDS patients , which is a precursor disease to AML
- Median survival for higher risk MDS patients is < 2 years
- Especially high unmet medical need in p53 patients, poor survival even with SCT
- Meeting with FDA in first half 2018 and initiating trial mid-year

1) Lindsley, Saveer, Mar, et al, Prognostic Mutations in Myelodysplastic Syndrome after Stem-Cell Transplantation, The New England Journal of Medicine 376:536-47, 2017
2) P53 is also referred to as TP53

Actimab-A + CLAG-M: Expanding Patient Access



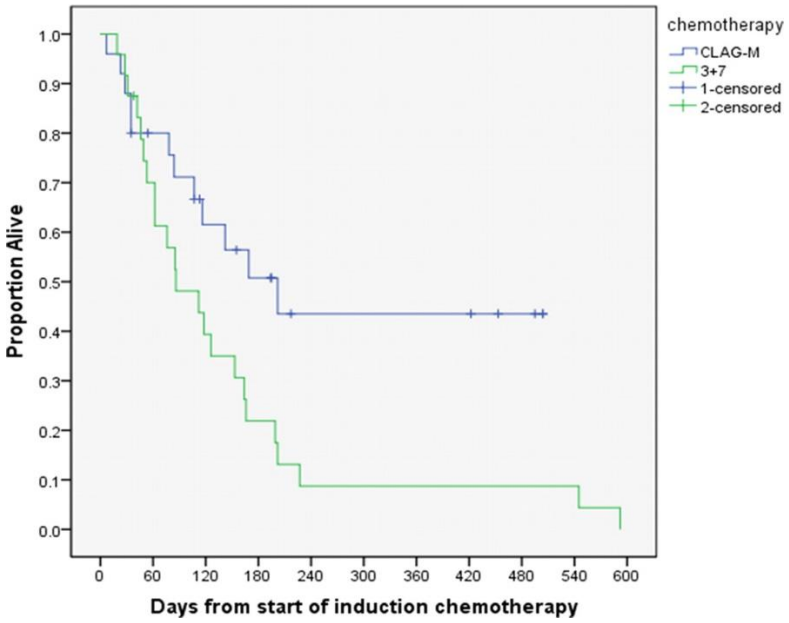
- Majority of AML patients are over the age of 55
- Of the patients below 55, ~70% relapse or become refractory to therapy
- Actimab-A + CLAG-M could be used therapeutically in patients with refractory or relapsed disease, and may also be used in patients in preparation for allogeneic transplant
- Expands addressable market beyond older, unfit patients to patients that are eligible for chemotherapy as well as younger patients
- Will demonstrate Actimab-A's ability to be used in combination
- Further expands our leadership position in development of anti-CD33 therapies

Actimab-A + CLAG-M for Relapsed/Refractory AML

What is CLAG-M?

- CLAG-M is a salvage chemotherapy regimen used increasingly at leading centers; it consists of:
  - Cladribine (approved for hairy cell leukemia)
  - Cytarabine (approved for combination use in AML)
  - G-CSF (approved for myeloid cell mobilization; stimulates AML cells to divide and thus be more susceptible to cytotoxic chemotherapy)
  - Mitoxantrone (approved for ND AML in combo with Cytarabine)
- CLAG-M showed great promise in single institution retrospective analysis of AML patients
  - CR of 38%, vs 24% for MEC
  - In primary refractory disease, CR of 46% vs 22%
  - In first relapse, CR of 37% vs 26%

Additional Data Supporting CLAG-M



- CLAG-M has proven to be effective in secondary AML patients
- Benefit seen in these patients when compared to 7+3

Efficacy of Cladribine, Cytarabine, G-CSF (Neupogen), Mitoxantrone (CLAG-M Regimen) Compared to Standard 3+7 (Anthracydine and Cytarabine) in Secondary Acute Myeloid Leukemia (sAML) After Azanudeosides Failure
Michael V. Jaglal, Vu H. Duong, Celeste M. Bello, Najla H Al Ali, Hugo F. Fernandez, Jeffrey E. Lancet, Alan F. List and Rami S. Komrokji
Blood 2011 118:256;

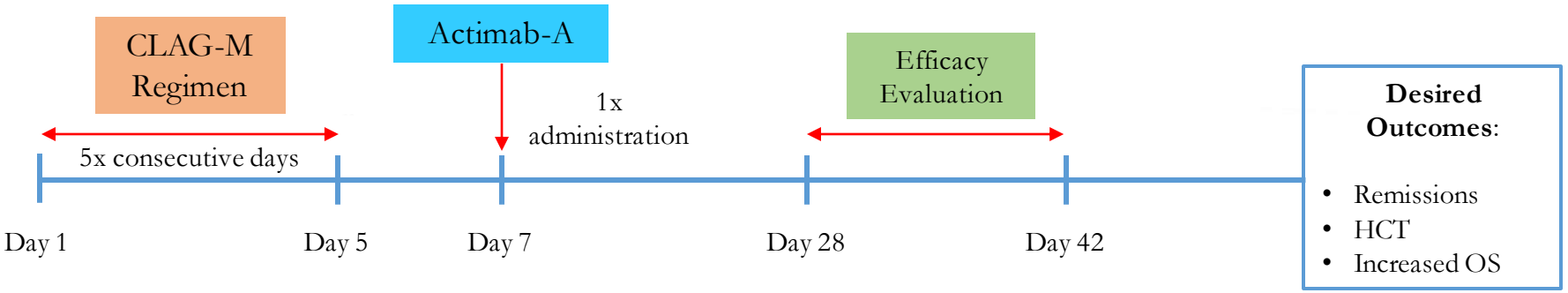
Actimab-A + CLAG-M Study Rationale

- Relapsed/refractory AML remains a significant unmet medical need
  - Majority of patients ultimately relapse / are refractory to treatment
  - For these patients, at all ages, including younger ones, access to transplant is limited
  - Regimens such as MEC, FLAG, FLAG-IDA have limited success (~15% CR in Phase 3)

- However, CLAG-M on its own in relapsed/refractory AML has some limitations
  - CR duration is short with limited gains in OS
  - Modest number of patients proceed to transplant
  - Those who do proceed to transplant mostly relapse
- There remains no single accepted standard of salvage chemotherapy regimen

- Allow more AML patients to be eligible for transplant
- Actimab-A lacks extramedullary toxicity and would allow escalated leukemic cell killing
- More patients achieving durable CR (ability of Actimab-A to kill chemo-resistant cells)
- More patients achieving CRi (ability of Actimab-A to kill chemo-resistant cells; potential transplant benefit)
- Fewer patients relapsing and longer CR duration (eliminate small clusters of leukemic cells (MRD)

Phase 1 Clinical Trial Details



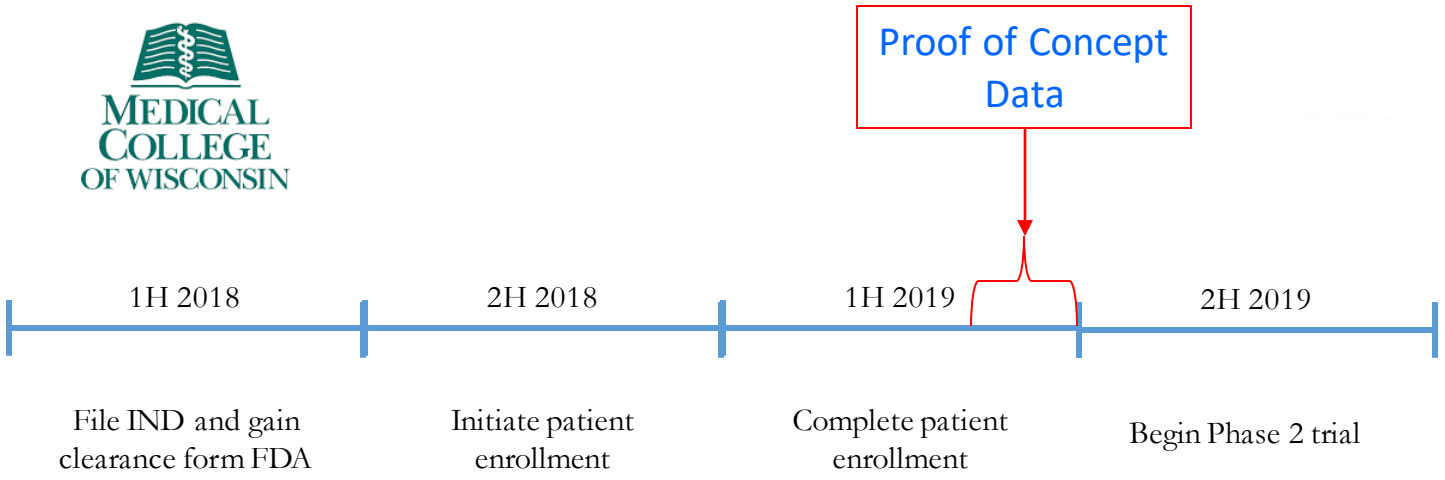
Study Design

- Single dose of Actimab-A on Day 7, CLAG-M clears blasts from peripheral blood by that time, optimizing Actimab-A efficacy
- Explore 3 dose levels (0.25, 0.50 and 0.75 uCi/kg)
- N = up to 18 subjects
- Duration: at least 1 year

Clinical considerations

- Safety monitoring (DLTs, MTD)
- Efficacy determined by CR, CRp, CRi rates; OS (1 year) and PFS
- Patients achieving at least CRi offered transplant 42 days post Actimab-A or after full peripheral blood recovery – whichever occurs sooner
- Future studies will evaluate Actimab-A + CLAG-M at MTD or higher dose for myeloablation prior to transplant

Expected Trial Timeline

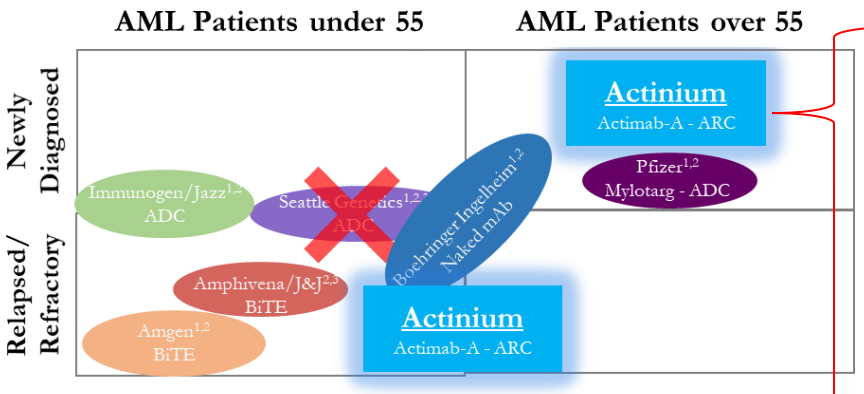


- Goal is to demonstrate proof of concept as efficiently as possible
- Medical College of Wisconsin is a leading hematology and transplant center
- Regulatory and cohort expansion updates to be provided starting in 2H:2018

Outlook for CD33 Program and Summary

Impact of Actimab-A + CLAG-M Trial

Industry focused on AML



Actinium has the only unpartnered CD33 program

Actinium's CD33 Program Expansion

Indication	Development Stage		
	Pre	1	2
AML newly diagnosed	Actimab-A		
High-risk MDS myeloablation	Actimab-MDS (planned)		
Multiple myeloma refractory	Actimab-M		
AML relapsed/refractory	Actimab-A+ CLAG-M		

CD33 Program Disease Prevalence is Meaningful To Even Large Companies

Drug	Disease	Addressable US, EU Market[4]
Actimab-A,	AML	69,800
Actimab-M	CD33 Positive Multiple Myeloma	47,400
Actimab-MDS	MDS – SCT Prep	14,250
Addressable Patient Population:		**131,450**

Actinium Pharmaceuticals

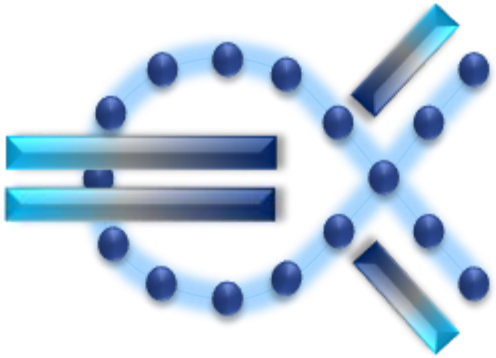
1. Clinicaltrials.gov 2. Company Materials 3. Conference Abstracts (ASH, AACR, ASCO) 4. Company estimates

Summary – CD33 Program Objectives for 2018

Objective is to extend our leadership position as the only multi-disease CD33 Program in the industry with best in class potential

- Maximize the value of our CD33 program for 2018 by
  - Generating proof-of-concept data for the Actimab-A Phase 2 trial by mid-2018
  - Generating proof-of-concept data for the Actimab-M Phase 1 trial in 2018
  - Receiving FDA guidance for Actimab-MDS by mid 2018
  - Initiating the Actimab-MDS trial with the MDS Clinical Consortium in 2H:2018
  - Develop Actimab-A in combination [e.g. cytotoxic chemotherapy, targeted agents, immunotherapy] in preparation for further development
- Unveil new information that will further strengthen and differentiate our CD33 program and solidify its best-in-class status
- Optimize the profile of the CD33 program to enable collaborations and partnering as appropriate

Thank-You



Actinium Pharmaceuticals, Inc.