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Magenta Therapeutics Announces Positive Preliminary Results from Phase 2 Clinical Trial of MGTA-145 in Multiple Myeloma

May 12, 2021

(NASDAQ:MGTA)

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Agenda & Introductions

- INTRODUCTIONS
- PIPELINE OVERVIEW
- MGTA-145 MULTIPLE MYELOMA PHASE 2: BACKGROUND, RESULTS AND NEXT STEPS
- Q&A SESSION
- CLOSING REMARKS

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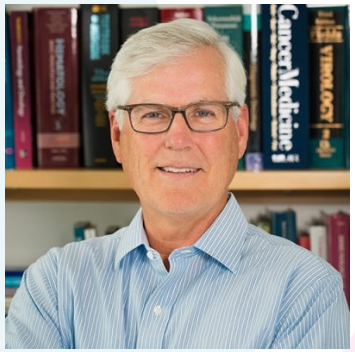

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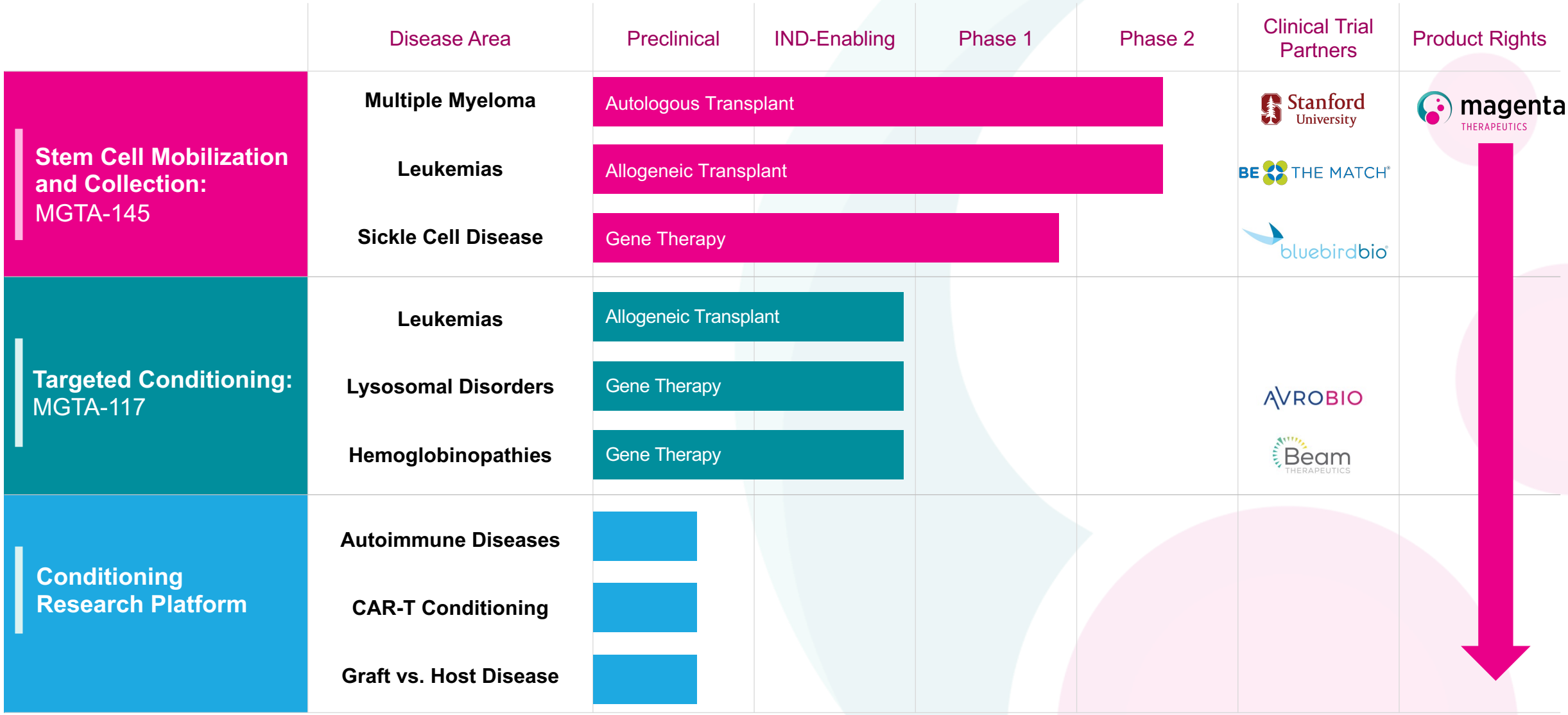
The Magenta Pipeline



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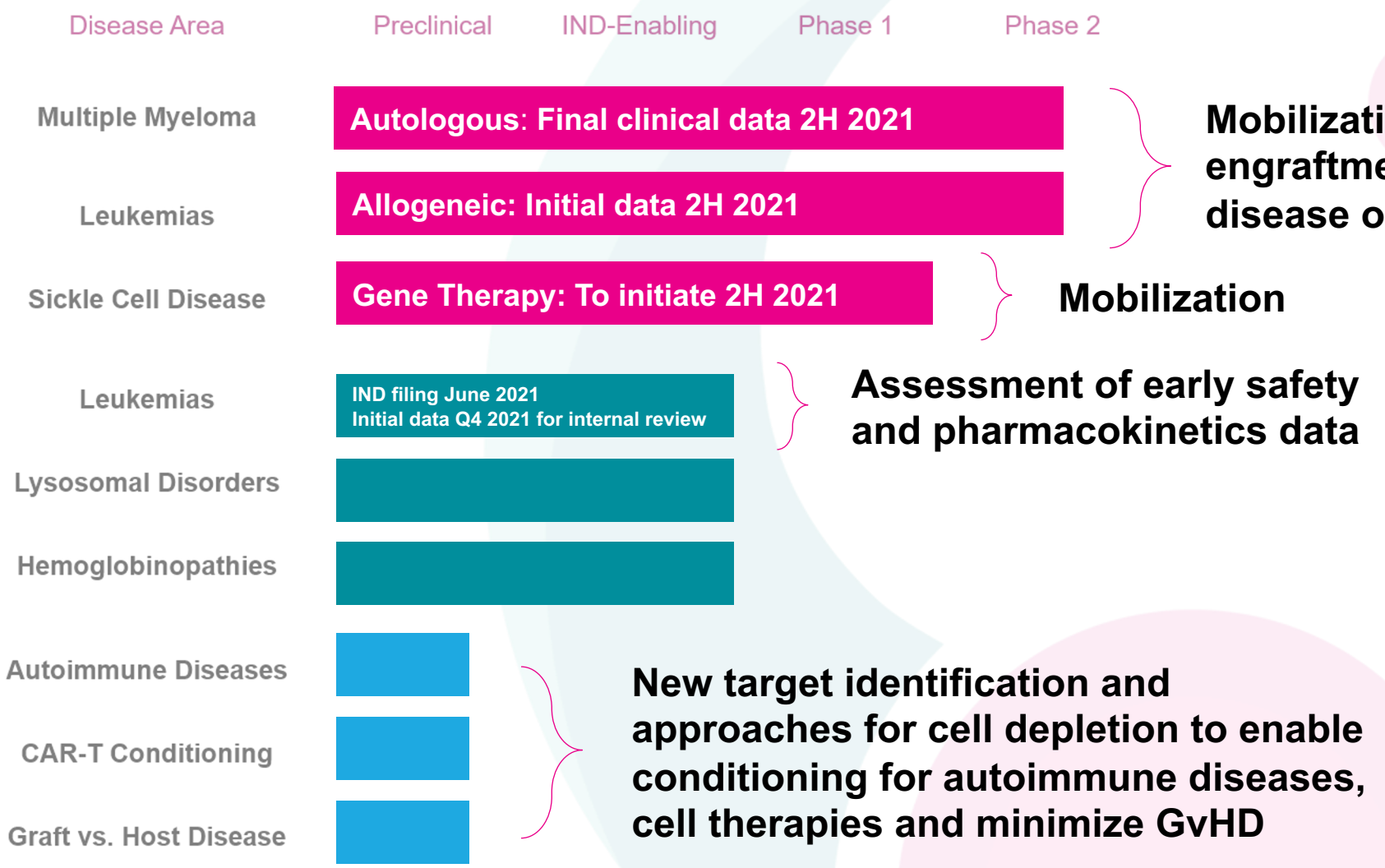
Magenta 2021: Deliver Clinical Data and Advance Platform

Stem Cell Mobilization and Collection: MGTA-145

Targeted Conditioning: MGTA-117

Conditioning Research Platform



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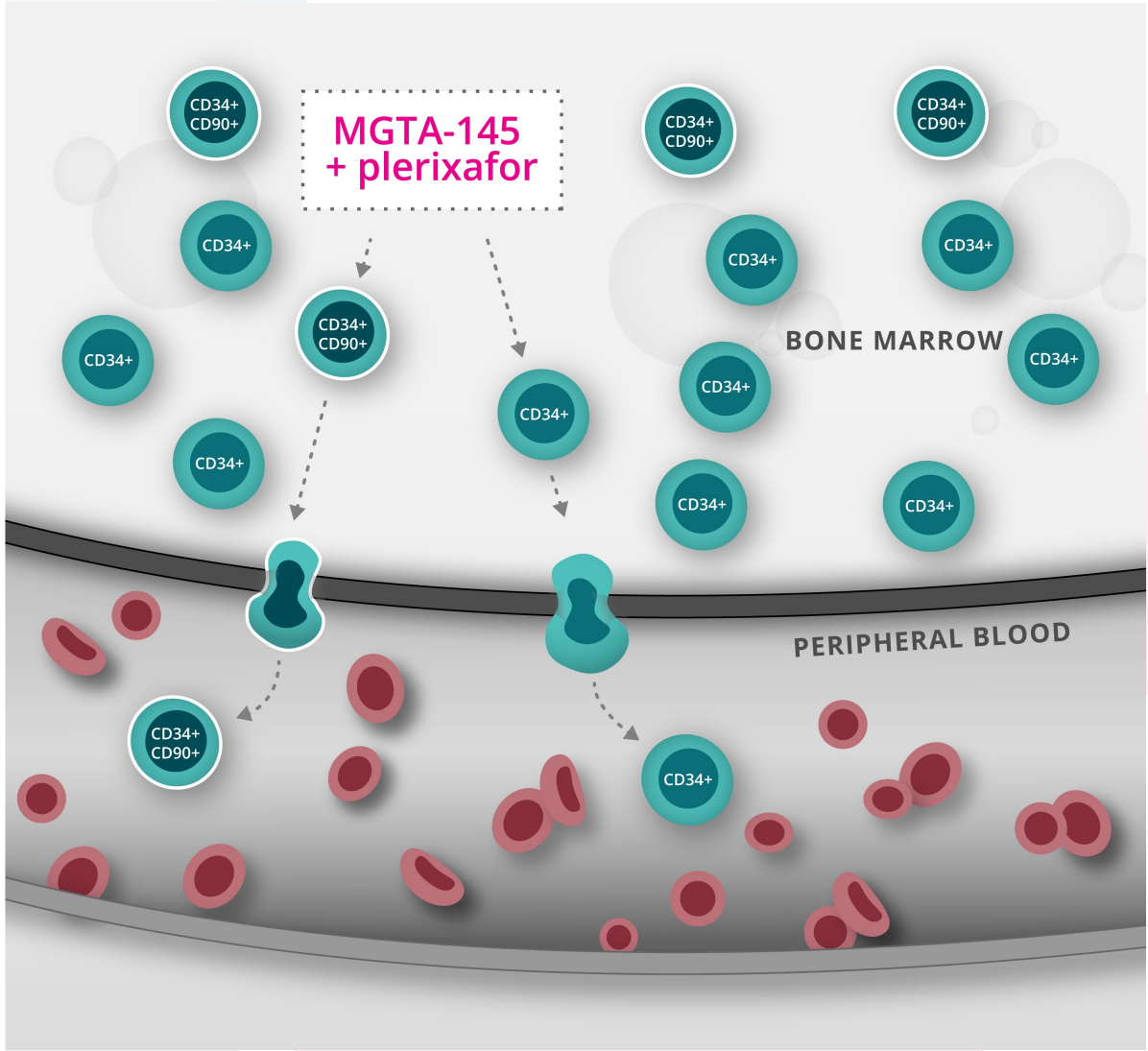
MGTA-145 with Plerixafor: Complementary Mechanisms of Action for Mobilization & Collection of Stem Cells for Transplant

Two agents mobilize hematopoietic stem cells (HSCs) through complementary mechanisms of action

MGTA-145 (GroβT)	+	**plerixafor**
CXCR2 agonist		*CXCR4 antagonist*
Protein		*Small molecule*

- MGTA-145 binds to CXCR2 on neutrophils which triggers release of factors that stimulate HSCs to easily migrate out of their niche in the bone marrow
- Plerixafor disrupts CXCR4, which anchors HSCs to bone marrow stromal cells
- Together, these actions release large numbers of functional HSCs (CD34+CD90+ cells) from the bone marrow niche into circulation, where they can be collected for HSC transplant



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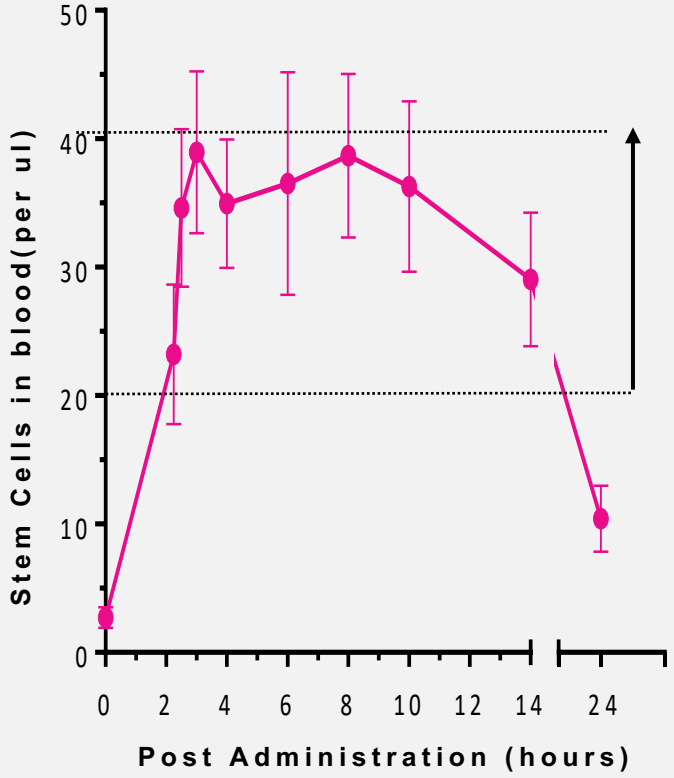
MGTA-145 Phase 1 Clinical Results Demonstrated Rapid, Reliable, Predictable and Well-Tolerated Mobilization of Functional Stem Cells



Double the target number of stem cells mobilized in hours ***(compared to 5 days minimum with G-CSF or G-CSF + plerixafor)***

Mobilized large numbers of stem cells in hours[1]

Grade 2-4 side effects

MGTA-145		G-CSF[2]
1%	vs.	**38%**

Well-tolerated[1]

Speed and predictability

MGTA-145 + plerixafor[1]		G-CSF or G-CSF + plerixafor
88% (7 of 8 patients)	vs.	**0%**

Reliable, same-day dosing, mobilization and collection

Sources: [1]MGTA-145 Phase 1 Clinical Data: Goncalves *et al. Blood.* 2020, 136 (Supplement 1): 31-32; [2]Pulsipher *et al. Blood.* 2009, 113 (15): 3604–3611.

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MGTA-145 Phase 2 Clinical Trials: Ongoing and Planned Proof-of-Concept Across Multiple Disease Areas

2021 Anticipated Milestones

Multiple Myeloma (autologous) — Stanford University

May 2021: Preliminary results

2H 2021: Final clinical data expected

Leukemias (allogeneic – healthy donors) — BE THE MATCH®

Q1 2021: Trial started

2H 2021: Initial data expected

Sickle Cell Disease (gene therapy) — bluebirdbio

2H 2021: Trial initiation

Key Endpoints

Safety & Tolerability	Collection Yield	Engraftment *(Rate and Durability)*	Disease Outcomes
PATIENT			PATIENT *Remission and survival*
DONOR *De-risked from Phase I**	*De-risked from Phase I**		PATIENT *Remission and survival; GvHD*
PATIENT			

*Healthy patients were safely mobilized and collected in the Phase I study

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MGTA-145 Multiple Myeloma Clinical Trial Design

Purpose	Evaluate the safety and efficacy of MGTA-145 in combination with plerixafor, for the mobilization of hematopoietic stem cells for autologous transplantation in patients with multiple myeloma
Design	25 patients, open label, single arm study, Stanford University
Eligibility criteria	Patients aged 18-70 with multiple myeloma (MM), including patients with multiple risk factors, eligible for transplant per institutional guidelines and within one year of start of myeloma therapy
Endpoints	**Primary Endpoint**: Collect ≥2M CD34+ cells/kg in up to two days of apheresis [**threshold number of cells for transplant**]

Key Secondary Endpoints:

(a) Collect ≥4M CD34+ cells/kg in up to two apheresis sessions [**target number of cells for transplant**]
(b) Collect ≥6M CD34+ cells/kg in up to two apheresis sessions
(c) Time to neutrophil and platelet engraftment
(d) Assess engraftment at 30 and 100 days

Note: Protocol requires second day of mobilization for collection of 6M CD34+ cells/kg for potential second transplant (cells beyond 4M CD34+ cells/kg are frozen)

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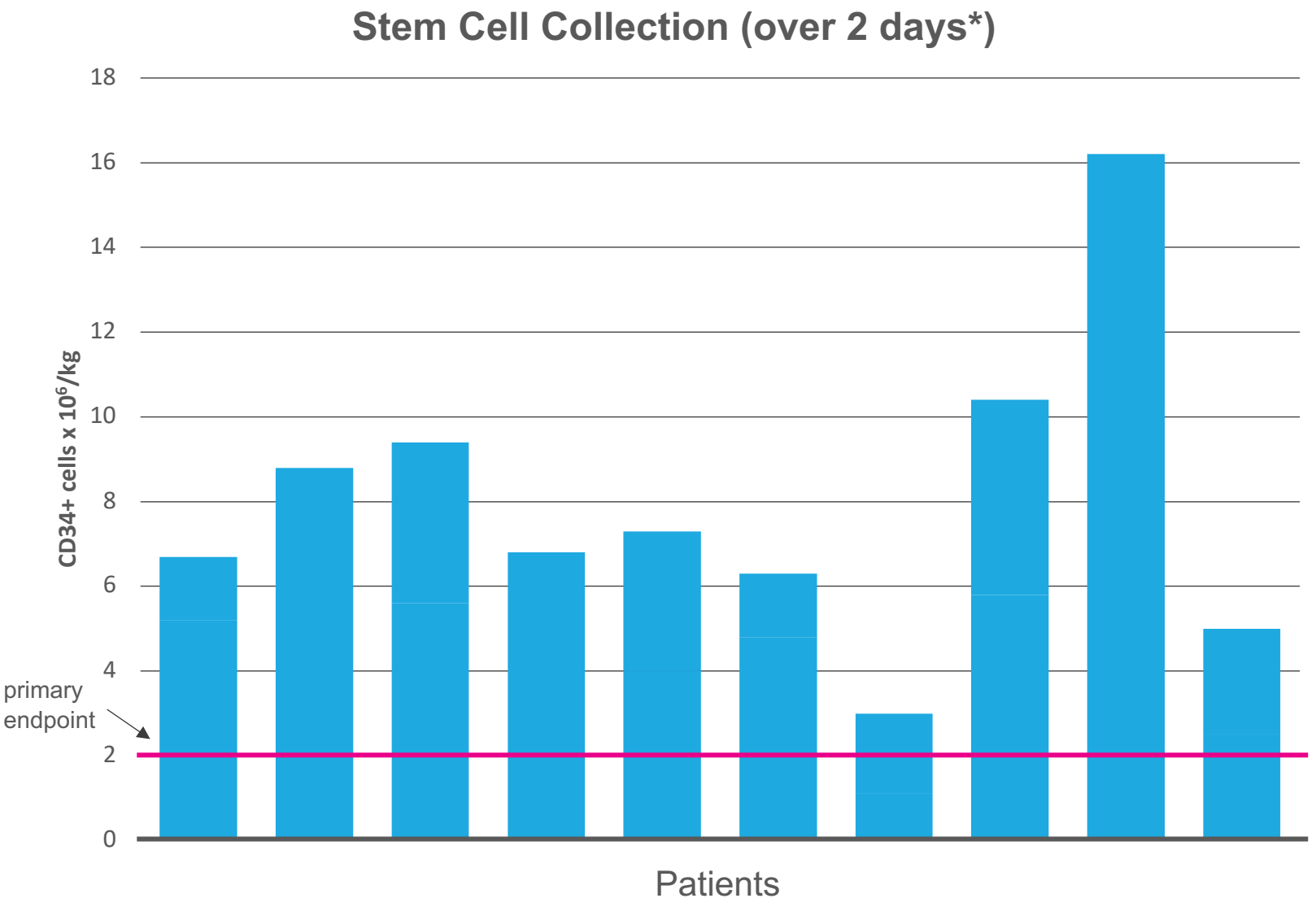
Preliminary Data Show All Patients (10/10) Met the Primary Endpoint of 2M CD34^{+} Stem Cells/kg in Up to Two Days of Mobilization and Collection



- All patients (10/10) met the primary endpoint of collection of 2M CD34+ cells/kg in up to two days of same-day mobilization and apheresis, 90% of patients achieved this endpoint in one day.
- Median number of stem cells collected in one day was 5.4M CD34+ cells/kg. Including patients who had two days of apheresis, the median number of stem cells collected was 7.1M CD34+ cells/kg.
- Study criteria allowed for a broad clinically representative patient population including patients with multiple risk factors for poor mobilization.
- MGTA-145 + plerixafor regimen was well-tolerated, with transient, drug-related Grade 1 bone or musculoskeletal pain observed in 40% of patients.

* Day 2 needed only if day 1 yield < 6 x 10^6 CD34^{+} cells/kg

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All Transplanted Patients Have Successfully Engrafted with Enriched Collection of Long-Term Engrafting Stem Cells and Low Residual Disease

Engraftment Data N=6	
Engraftment, patients	6 (100%)
Neutrophil engraftment, ANC ≥ 500 x 10^6/L, median (range)	12 days (11-13)
Platelet engraftment ≥ 20,000 x 10^6/L, no transfusion in 7 days, median (range)	17 days (16-19)

- 100% successful engraftment.
- Neutrophil and platelet recovery within transplant expectations in multiple myeloma.
- 31% of collected CD34+ stem cells expressed CD90+CD45RA-, a cell phenotype associated with durable engraftment function, three-fold greater than G-CSF mobilized grafts.

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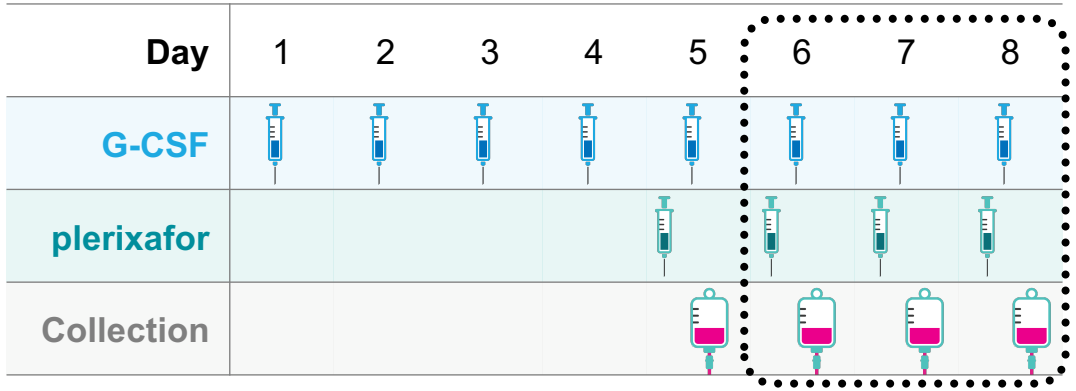
The MGTA-145 Opportunity: Rapid, Reliable, Predictable and Well-Tolerated Mobilization Can Improve Patient, Physician and System Experience

Current Mobilization Regimen: Unpredictable & Inefficient

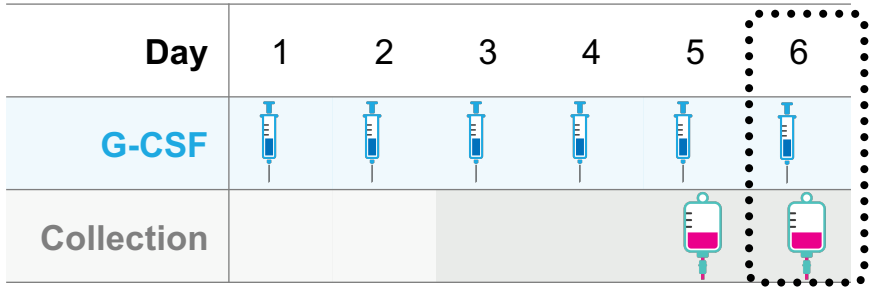
Autologous (Blood Cancers)



***5-8 days** of mobilization & collection*

***~40%** of patients require multiple collections[1]*

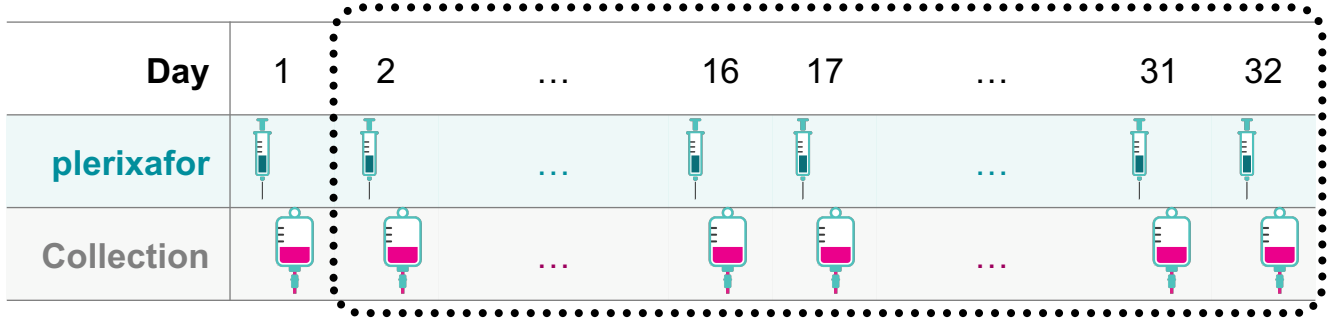
Allogeneic (Healthy Donors)



***5-6 days** of mobilization & collection*

***~15%** of healthy donors require multiple collections[1]*

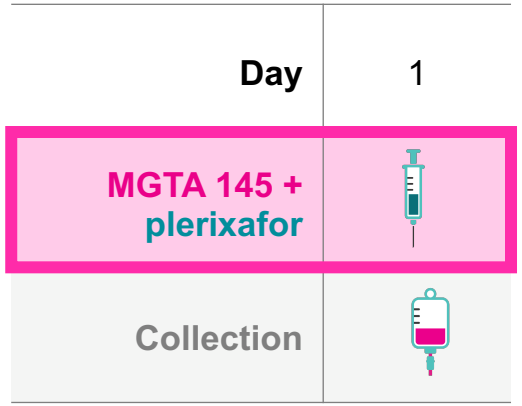
Sickle Cell Disease (Gene Therapy)



***Up to 32 days** to collect sufficient cells for gene therapy*

***~75%** of patients require multiple collections[2]*

MGTA-145 + plerixafor Target Profile*



*Patients with multiple risk factors for poor mobilization may require an additional day of mobilization

Sources: [1]CIBMTR Real-World Data Analysis, Data on File (2020); [2]Tisdale *et al. Am J Hematol.* 2020, 95 (9):E239-242.

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Preliminary Results Show Potential for MGTA-145 + Plerixafor to Become a First-Line Mobilization Regimen with Rapid, Reliable and Predictable Outcomes

Conclusions based on preliminary data

- This is the first study to evaluate MGTA-145 + plerixafor for stem cell mobilization and collection in a broad multiple myeloma patient population, including patients with multiple risk factors for poor mobilization, undergoing autologous stem cell transplant
- Preliminary results show 100% efficacy in collecting HSCs in up to two days of same-day mobilization and apheresis collection
- MGTA-145 was well-tolerated
- MGTA-145 + plerixafor -mobilized HSCs resulted in timely and durable engraftment in all patients who underwent transplant
- Potential for MGTA-145 + plerixafor to become first-line, G-CSF-free standard-of-care regimen for stem cell mobilization

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Phase 2 Clinical Trial of MGTA-145 in Multiple Myeloma Final Clinical Data Expected in the Second Half of 2021

Next steps

- Continue to enroll the MGTA-145 multiple myeloma investigator-initiated trial at Stanford University
- Additional preliminary data to be presented in June at the American Society of Clinical Oncology (ASCO) Annual Meeting and at the European Hematology Association (EHA) Congress
- Final clinical data expected in the second half of 2021
- Driving towards efficient registration path based on final Phase 2 data

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The MGTA-145 Opportunity

Rapid & Efficient

Improved experience for donors & patients, operational efficiencies and overall cost savings to healthcare system

Predictable & Reliable

Same-day mobilization and collection of large numbers of HSCs vs. 5- to 8-day process with current options

Well-Tolerated

Well-tolerated and not dependent on G-CSF, allowing for all patients – including those living with sickle cell disease – to potentially benefit

Clinical and Commercial

Driving towards efficient registration path based on Phase 2 data; positioned to leverage significant existing market opportunity

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Q&A Session

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