Beam Therapeutics

PRECISION GENETIC MEDICINES THROUGH BASE EDITING

NASDAQ: BEAM

Cautionary note regarding forward-looking statements

This presentation contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Such forward-looking statements include statements regarding: the initiation, timing, progress and results of preclinical studies and research and development programs, including the initiation and progress of clinical trials, including our BEACON trial and our BEAM-201 trial; the advancement of our pipeline, including the advancement of BEAM-101, BEAM-201, BEAM-301, BEAM-302, additional CAR-T and liver programs, and Stargardt disease program in multiple preclinical studies; our current expectations and anticipated results of operations, including our expected use of capital; the potential activities and benefits under license and collaboration agreements and the formation of new collaborations; and the therapeutic applications and potential of our technology, including our potential to develop life-long, curative, precision genetic medicines for patients through base editing, including potential safety advantages, all of which are subject to known and unknown important risks, uncertainties and other factors that may cause our actual results, performance or achievements, market trends, or industry results to differ materially from those expressed or implied by such forward-looking statements. Therefore, any statements contained herein that are not statements of historical fact may be forward-looking statements and should be evaluated as such. Without limiting the foregoing, the words “anticipate,” “expect,” “suggest,” “plan,” “vision,” “believe,” “intend,” “project,” “forecast,” “estimates,” “targets,” “projections,” “potential,” “should,” “could,” “would,” “may,” “might,” “will,” and the negative thereof and similar words and expressions are intended to identify forward-looking statements.

Each forward-looking statement is subject to important risks and uncertainties that could cause actual results to differ materially from those expressed or implied in such statement, including, without limitation, risks and uncertainties related to: our ability to develop, obtain regulatory approval for, and commercialize our product candidates, which may take longer or cost more than planned; our ability to raise additional funding, which may not be available; our ability to obtain, maintain and enforce patent and other intellectual property protection for our product candidates; the potential impact of the COVID-19 pandemic; that preclinical testing of our product candidates and preliminary or interim data from preclinical studies and clinical trials may not be predictive of the results or success of ongoing or later clinical trials; that initiation and enrollment of our clinical trials may take longer than expected; that our product candidates may experience manufacturing or supply interruptions or failures; risks related to competitive products; and the other risks and uncertainties identified under the headings “Risk Factors Summary” and “Risk Factors” and elsewhere in our annual report on Form 10-K for the year ended December 31, 2021, our Quarterly Report on Form 10-Q for the quarter ended March 31, 2022, our Quarterly Report on Form 10-Q for the quarter ended June 30, 2022, our Quarterly Report on Form 10-Q for the quarter ended September 30, 2022, and in any subsequent filings with the Securities and Exchange Commission (the “SEC”) which are available on the SEC’s website at www.sec.gov. Additional information will be made available by our annual and quarterly reports and other filings that we make from time to time with the SEC. These forward-looking statements speak only as of the date of this presentation. Factors or events that could cause our actual results to differ may emerge from time to time, and it is not possible for us to predict all of them. We undertake no obligation to update any forward-looking statement, whether as a result of new information, future developments or otherwise, except as may be required by applicable law.

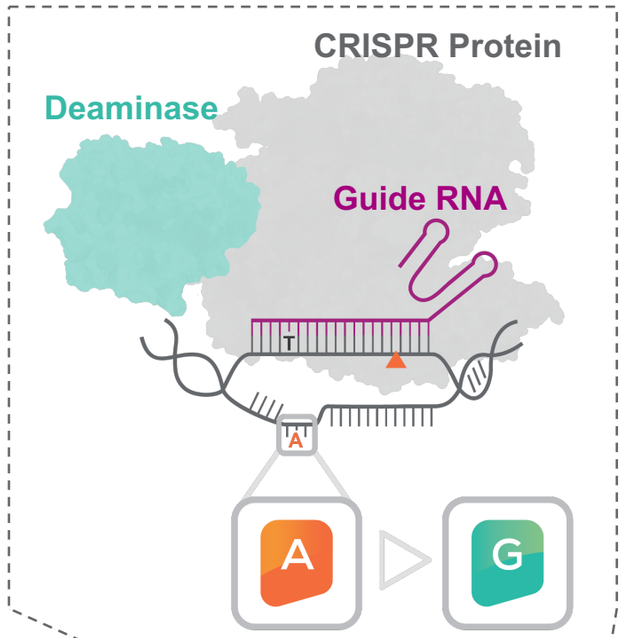
Our vision is to provide life-long cures for patients suffering from serious diseases

- Potential for **one-time, curative therapies**
- Gene editing for **rare and common diseases**
- Platform for **rapidly-programmable precision medicines**

Base editing is a differentiated, potentially best-in-class gene editing technology

Precise targeting?	Yes (guide RNA or ZF/TALE)	Yes (guide RNA)
Durability of edit?	Permanent	Permanent
Double strand breaks?	Yes	No
Applications?	Primarily knockout	Correct, modify, activate, multiplex
Editing predictability	Random insertions and deletions 100s of uncharacterized edits	Single base edits All edits fully characterized
Efficiency of precise edit?	Low – dividing cells only	High – any cell type

A precise gene editing technology with highly versatile applications

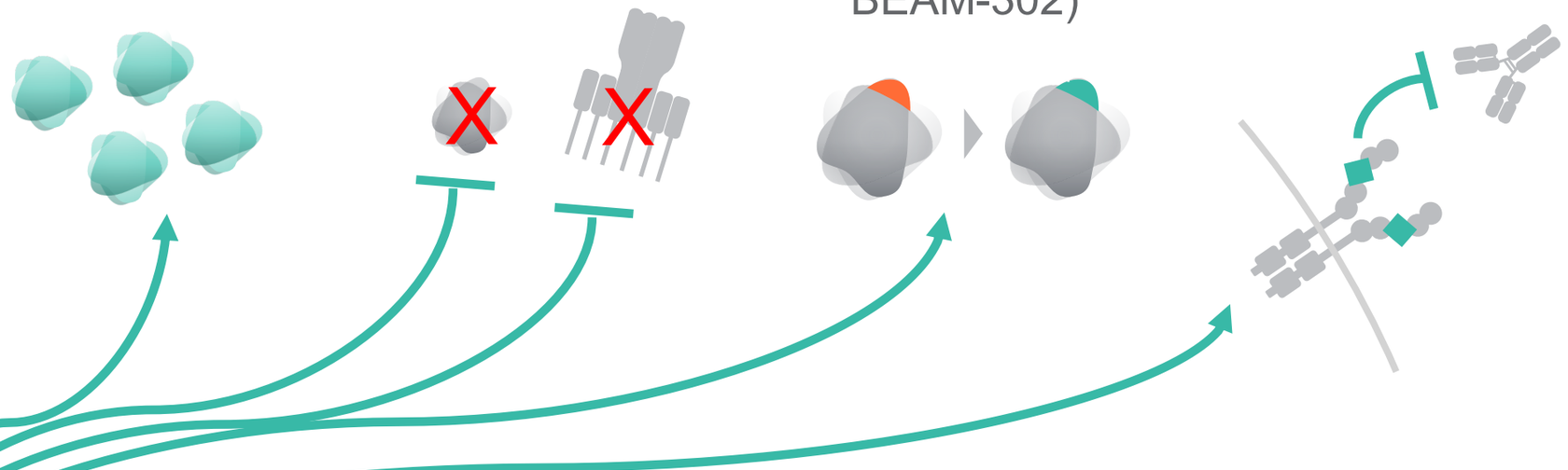


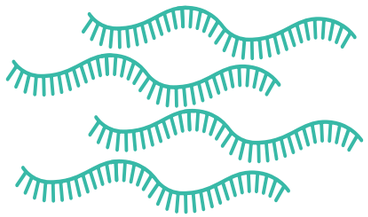
1 Activate expression (eg, BEAM-101)

2 Knock out proteins (eg, BEAM-201)

3 Correct proteins (eg, BEAM-301, BEAM-302)

4 Modify surface proteins (eg, ESCAPE)





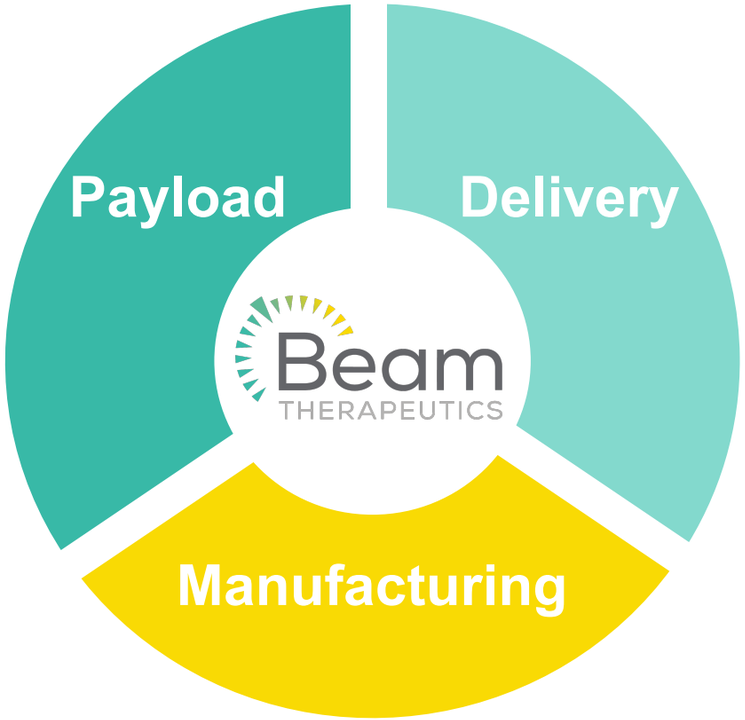
5 Multiplex simultaneous edits (eg, four gRNAs in BEAM-201)

…And many other applications possible

We are establishing a leading platform for precision genetic medicine

Suite of gene editing technologies

- Base editing
  - ABE: A-to-G (or T-to-C) editors
  - CBE: C-to-T (or G-to-A) editors
  - Additional kinds of base editors
- Nuclease editing
- RNA editing
- Prime editing



Suite of delivery technologies

- Autologous cell therapy
- Allogeneic cell therapy
- mRNA
- LNP vectors
- Viral vectors

Internal manufacturing capability

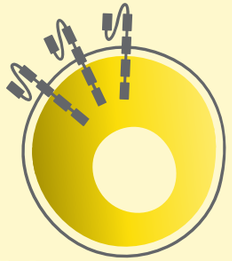
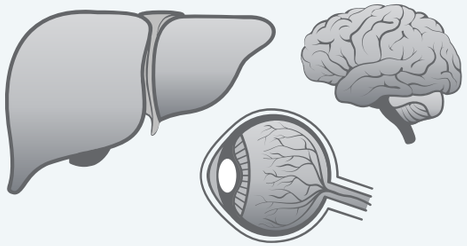
- 100,000 square foot cGMP clinical/commercial facility in NC, phased build, anticipated to be operational in 2023

Advancing a diversified pipeline into the clinic

DELIVERY	PROGRAM / DISEASE	EDITING APPROACH	RESEARCH	LEAD OPTIMIZATION	IND ENABLING	PHASE I/II	PIVOTAL
Ex vivo **HSCs**	BEAM-101 Sickle Cell Disease Beta Thalassemia	Activation of fetal hemoglobin					
	BEAM-102 Sickle Cell Disease	Correction of HbS sickle mutation	Refocusing on ESCAPE or *in vivo* delivery				
	ESCAPE Sickle Cell Disease Beta Thalassemia	Multiplex CD117 edit-antibody pair					
Ex vivo **T cells**	BEAM-201 T-ALL / T-LL CD7+ AML	Multiplex silenced CD7 CAR-T					
In vivo **LNP**	BEAM-301 Glycogen Storage Disease Ia	Correction of R83C mutation					
	BEAM-302 Alpha-1 Antitrypsin Deficiency	Correction of E342K mutation					
	Glycogen Storage Disease Ia	Correction of Q347X mutation					
	Hepatitis B Virus	Multiplex silencing					
	Complement Pathway (Apellis)	Undisclosed					
	3 undisclosed targets (Pfizer)	Undisclosed					
AAV	Stargardt Disease	Correction of G1961E mutation					

LNP = Lipid Nanoparticle; AAV = Adeno Associated Virus; HSC = Hematopoietic Stem Cell; T-ALL / TLL = T-Cell Acute Lymphoblastic Leukemia / T-Cell Lymphoblastic Lymphoma; AML = Acute Myeloid Leukemia; ESCAPE: Engineered Stem Cell Antibody Paired Evasion

Beam is developing medicines across three franchises, each with near- and long-term potential

	HEMATOLOGY	IMMUNOLOGY-ONCOLOGY	GENETIC DISEASES
			
Near term:	**BEAM-101**	**BEAM-201**	**BEAM-301, BEAM-302**
Future platforms:	**ESCAPE for conditioning** **In vivo delivery**	**Next-generation allogeneic platform (4-6+ edits)**	**Multiple new liver targets** **Barcoded LNP beyond liver**

- **Lead Programs:** Potentially de-risk technology (higher probability of technical success, faster path), generate revenue, and benefit patients with high unmet need
- **Future platforms:** Expand addressable patient populations to create highly valuable, differentiated franchises through further innovation in editing and delivery

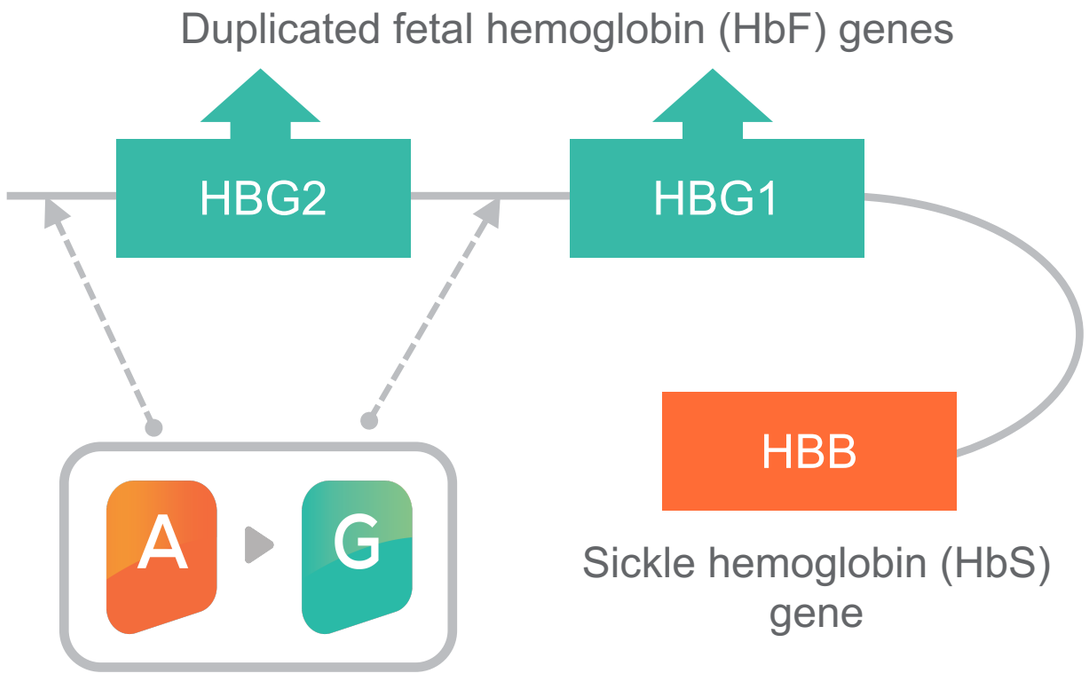
ESCAPE: Engineered Stem Cell Antibody Paired Evasion

Key progress and anticipated milestones

	2022 Achievements	Upcoming Milestones
Hematology	☑ First subject enrolled for **BEAM-101** ☑ Refocused on new technology: ESCAPE & LNP	☐ Complete sentinel cohort enrollment and initiate expansion cohort of **BEACON** in 2023 ☐ Data presentation on multiple patients from **BEACON** in 2024
Immunology - Oncology	☑ Submit IND for **BEAM-201** and respond to hold ☑ Refocused on next gen allogeneic strategies	☐ Dose first **BEAM-201** patient by mid 2023
Genetic disease	☑ Initiate IND-enabling studies for **BEAM-301** ☑ Nominated **BEAM-302** development candidate	☐ Regulatory filing for **BEAM-301** by late 2023 / early 2024 ☐ Regulatory filing for **BEAM-302** in early 2024
Platform	☑ Strategic platform partnerships (Pfizer, Orbital)	

BEAM-101: Designed to treat sickle cell disease with a potentially one-time, direct, non-cutting activation of HbF

Sickle Cell Disease: 100,000 patients in the US; severe pain crises, multi-organ damage, early mortality



A single base editor + gRNA edits regulatory element of both fetal hemoglobin genes, without cutting DNA

Designed for best-in-class profile:

- **One-time therapy with potential for highest** fetal hemoglobin (HbF) induction
- **Direct editing** of HbF genes to turn them on
- **Potential for greatest reduction of disease-causing HbS** due to hemoglobin switching
- **Non-viral:** No detectable random insertion
- **Non-cutting:** Lower risk for genotoxic stress and chromosomal abnormalities

Investment in patient delivery to differentiate:

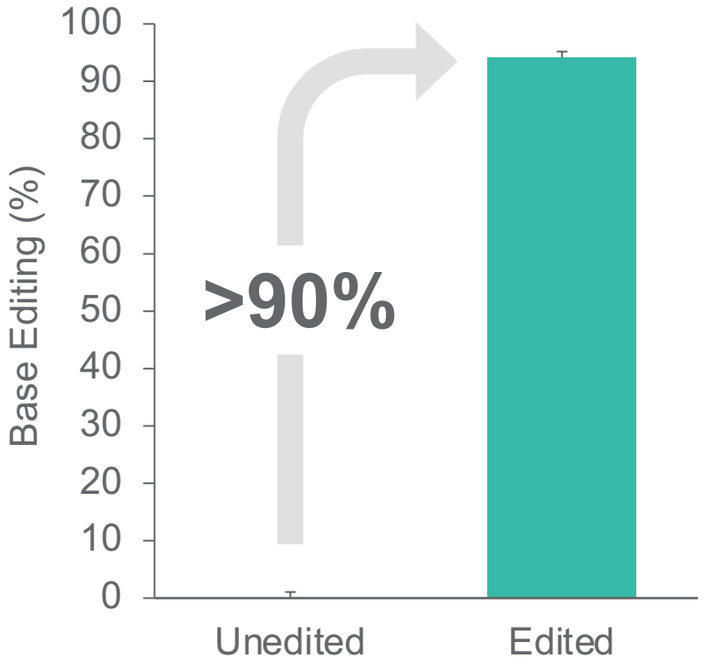
- **Wholly owned manufacturing:** control over quality and connection to patient services
- **Investment in patient services**: optimizing patient experience

HPFH = Hereditary Persistence of Fetal Hemoglobin

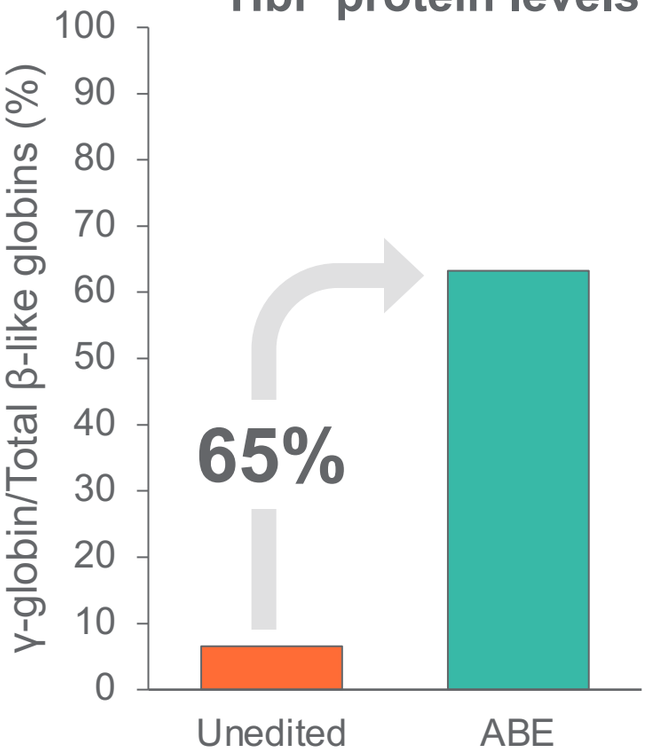
Potentially best-in-class attributes of BEAM-101 product

Edited human CD34+ cells followed by 16 week engraftment in mice

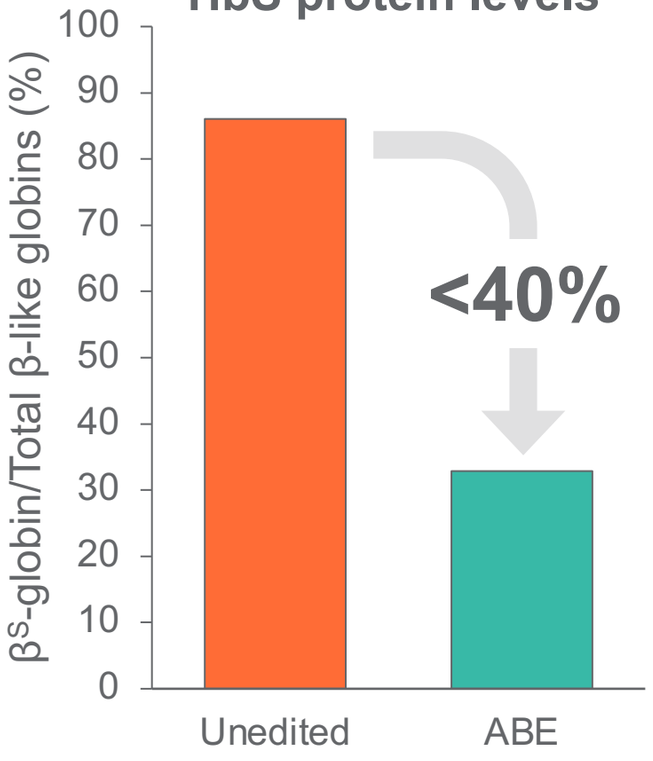
Base editing at *HBG1/2* promoters[1]



HbF protein levels[2]



HbS protein levels[2]

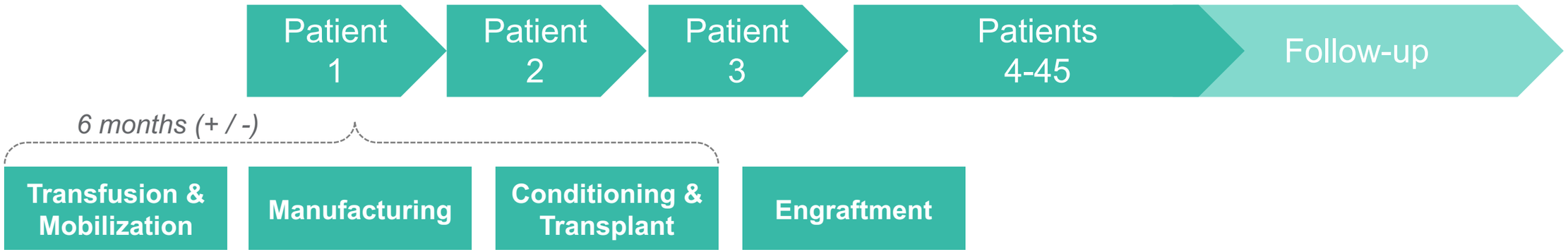


- Potential for highest HbF induction and lowest residual HbS levels versus other approaches in the field
- Building capabilities for potential best-in-class patient delivery including internal manufacturing

Preclinical data presented at ASGCT 2020; Edited human HSPCs analyzed 16 weeks after infusion in NBSGW mice (Mean±SEM, n=4-6); 1. Sorted human Lineage-CD34+ bulk bone marrow; 2. Sorted erythroid cells (GlyA+)

BEAM-101 is the first clinical base editing program in the U.S., accelerating path to patients and the market

BEACON-101 Phase 1/2 Study Design



Select inclusion criteria

- Patients with sickle cell disease (SCD) with severe veno-occlusive crises despite hydroxyurea or other supportive measures
- Age ≥18 to ≤35 years for initial cohort

Select safety endpoints

- Proportion of patients with successful neutrophil engraftment by day 42
- Safety and tolerability assessments

Select efficacy endpoints

- Severe vaso-occlusive crises
- Transfusion requirements
- Hemoglobin F levels
- Quality of life and ability to function
- Markers of red blood cell function and organ damage

Well positioned to deliver potentially best-in-class regimens for SCD patients, now and in the future

Wave 1
Base Editing + HSC Transplant

Precise gene editing (non-cutting, non-viral) Busulfan conditioning

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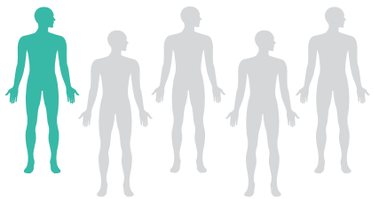
BEAM-101 (HbF)



Wave 2
Improved Conditioning

Less toxic conditioning selects for edited cells – potential to expand to younger and broader patient population

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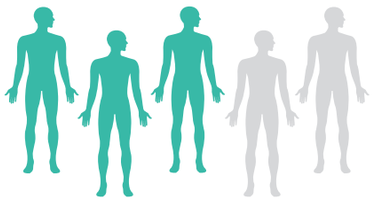
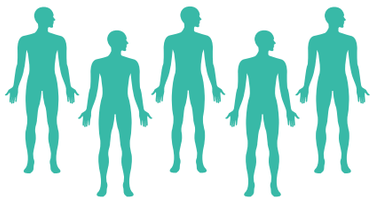
ESCAPE-1 (HbF+CD117)
ESCAPE-2 (Makassar+CD117)



Wave 3
***In vivo* Delivery**

In vivo editing after infusion of HSC-targeted LNPs (no transplant)

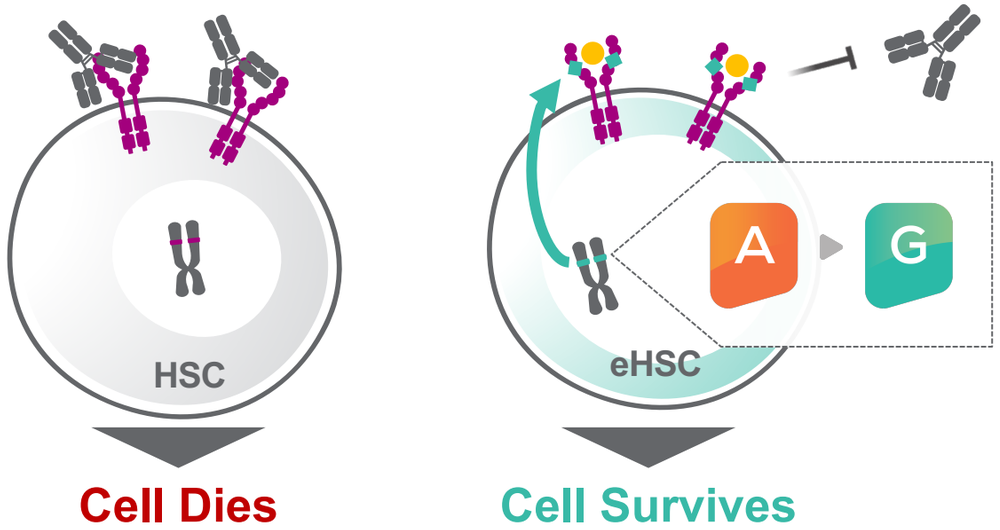
HbF + Makassar available

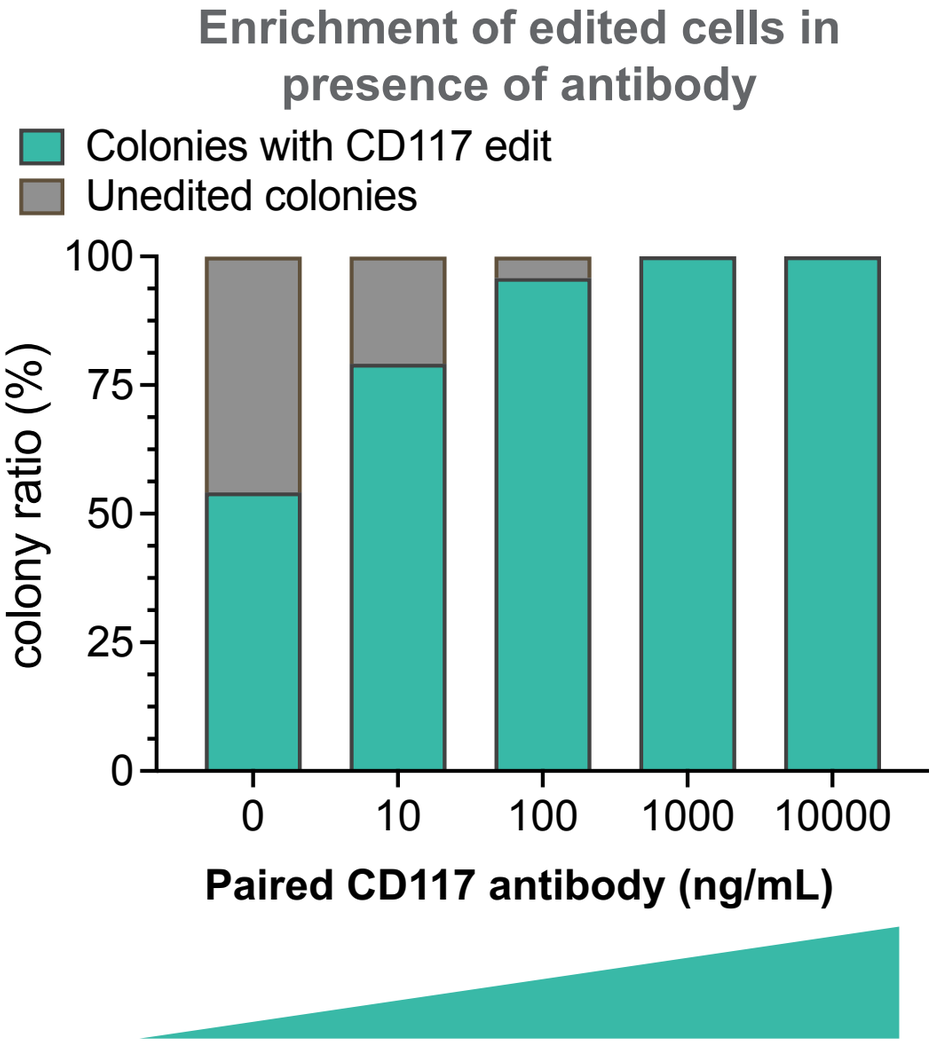


* **ESCAPE:** Engineered Stem Cell Antibody Paired Evasion

ESCAPE* designed for selective depletion of diseased cells, which may enable non-genotoxic conditioning

- Stem cell factor (SCF) signaling via CD117 is required for HSC survival and proliferation
- A single base edit changes an epitope on the CD117 receptor and is designed not to impact HSC biology
- Customized conditioning antibody depletes diseased unedited cells, but enables CD117-edited cells to “ESCAPE” and grow normally

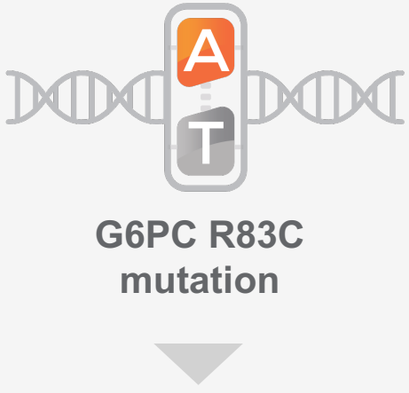


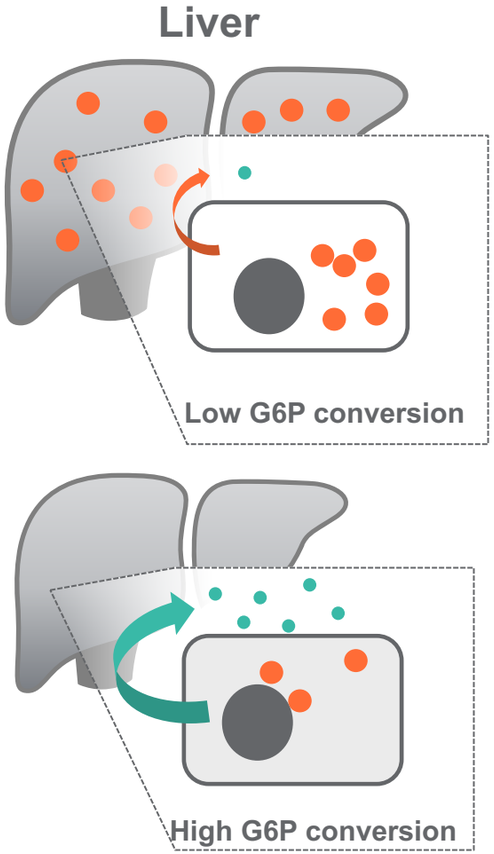


* **ESCAPE:** Engineered Stem Cell Antibody Paired Evasion

BEAM-301 program aims to restore impaired glycogen metabolism which otherwise causes significant morbidity

Glycogen Storage Disease Ia: 900 US R83C patients; severe hypoglycemia, liver & kidney dysfunction





GSD1a unmet need:

- Low G6PC activity can result in severe drop in blood glucose levels within 1-3 hrs
- Hypoglycemia may result in seizures or can be lethal
- Multiple organ dysfunction (e.g. renal and liver)

BEAM-301 potential:

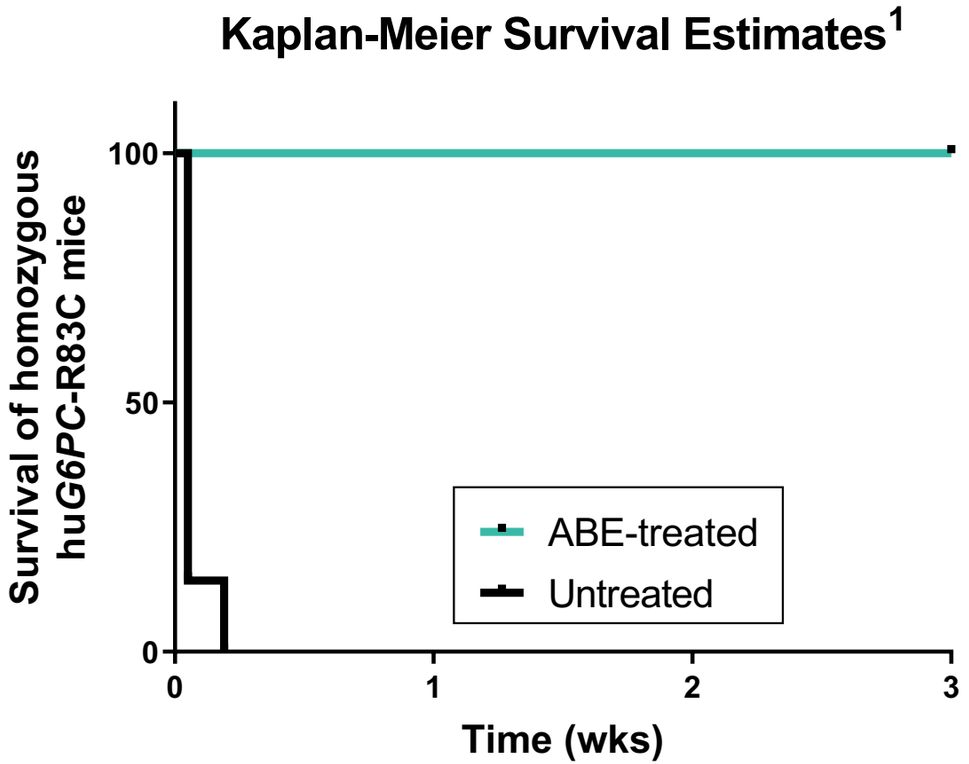
- Near-normal serum metabolites, G6PC activity, hepatic morphology, increased survival in mice
- Animal studies suggest 11% editing sufficient for restoring fasting glucose[1]

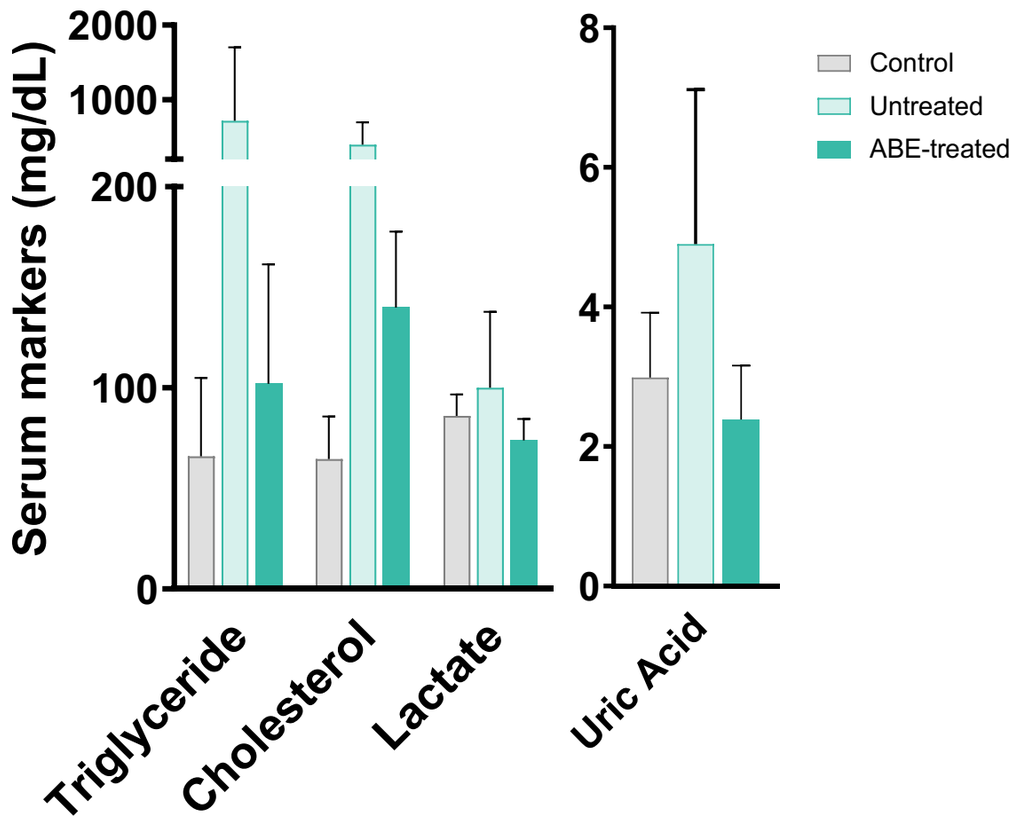
Key points:

- Beam's first *in vivo* DC
- First DC in industry with *in vivo* direct correction gene editing[2]
- Regulatory filing expected by late 2023 / early 2024

1. Chou & Mansfield. 2007. Curr. Gen. Ther.
2. Based on publicly announced development candidates

BEAM-301 program aims to restore impaired glycogen metabolism which otherwise causes significant morbidity



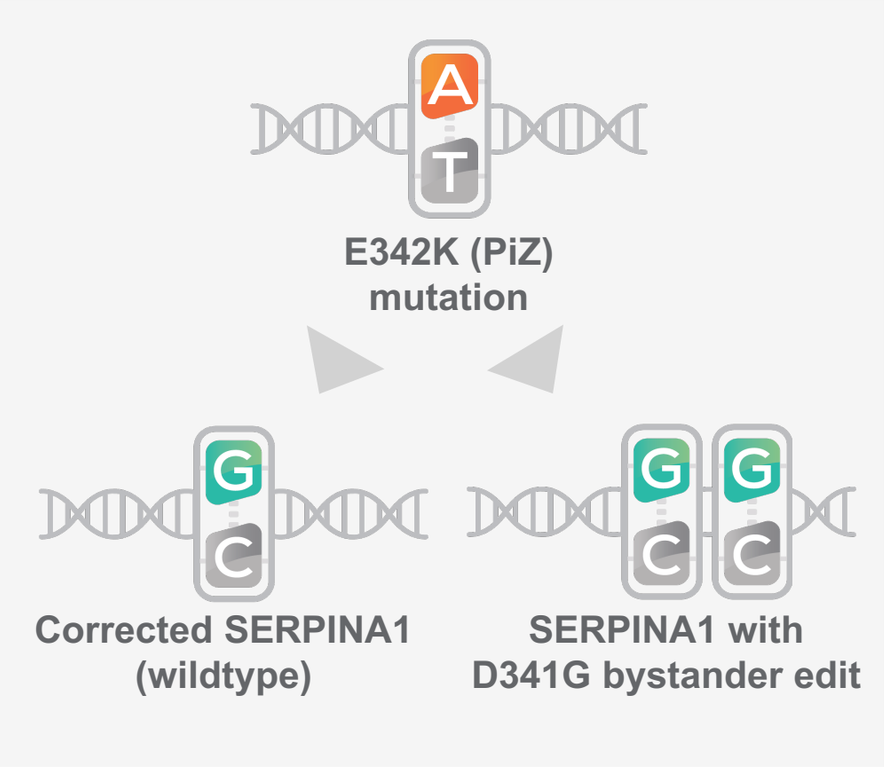


- ABE correction of GSDIa R83C mutation associated with improved survival of R83C mice[1]
- Near-normal serum metabolites, G6PC activity, hepatic morphology and lipid deposition

Preclinical data presented at ESGCT 2021; 1. Homozygous huG6PC-R83C mice untreated or treated with LNP via temporal vein shortly after birth, and untreated mice survived less than 3 days with glucose therapy

BEAM-302: Development candidate nominated for potential one-time treatment of AATD

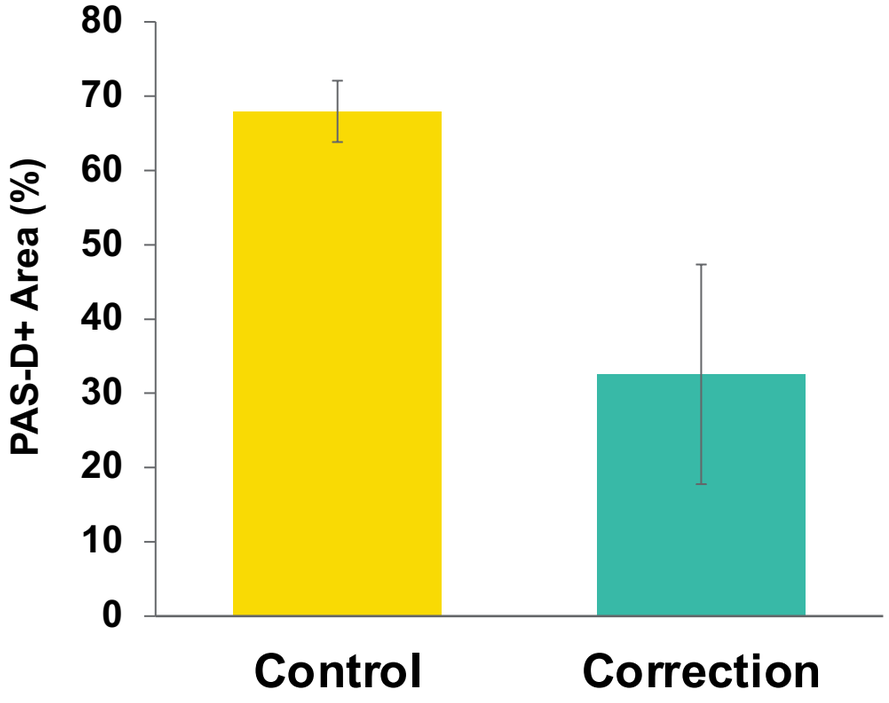
Alpha-1 Anti-trypsin Deficiency (AATD): 60,000 ZZ patients in US; severe progressive lung & liver disease



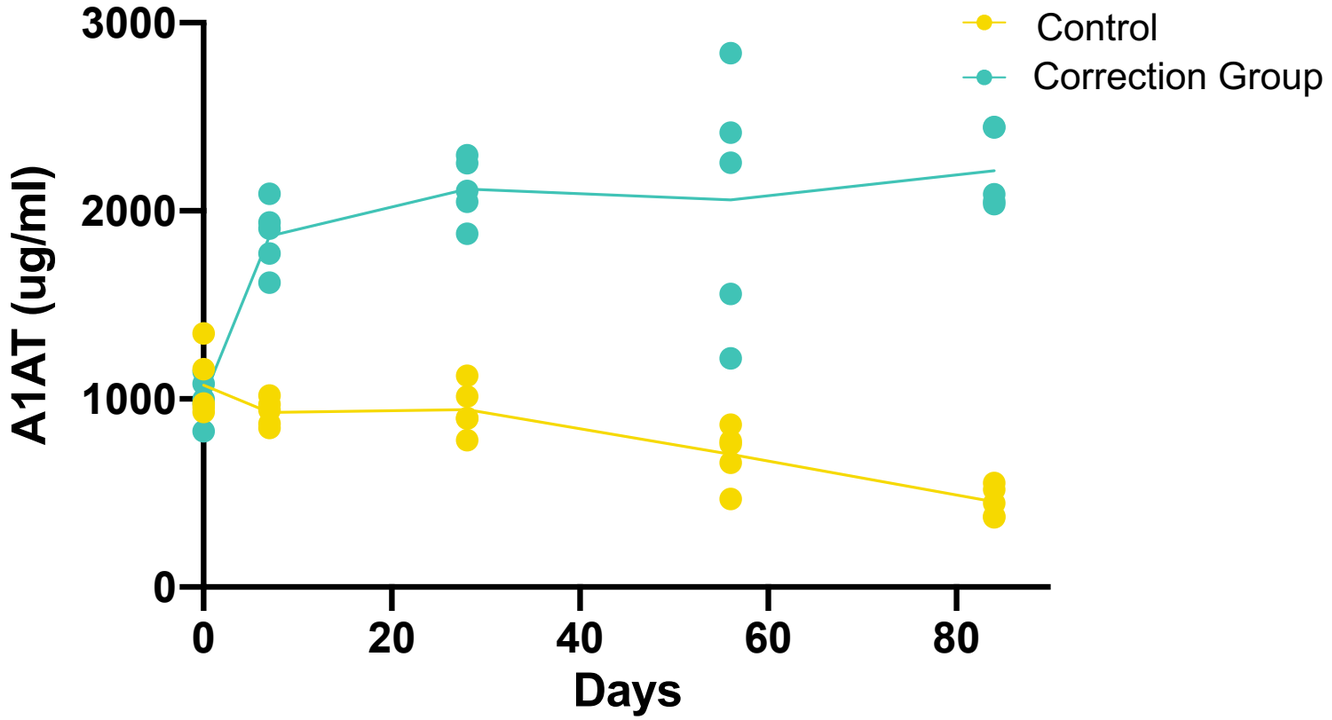
- Potential one time treatment to create permanent correction of E342K and enable normal A1 secretion and gene regulation
- Designed to address disease pathology in both the liver and lung
- In preclinical studies, lead candidate delivered **up to 27% correction editing, that resulted in >3X increase in A1AT protein (> 11 uM protective threshold) at clinically-relevant dose of 0.75mpk**
- In a minority of cells, correction resulted in wildtype allele plus D341G allele (bystander) that was observed to function normally
- **BEAM-302 nominated for development; regulatory filing expected in early 2024**

BEAM-302 program has the potential to address both lung and liver pathology of AATD in one course treatment

Reduction in toxic liver aggregates



4.9-fold increase in functional A1AT secretion



Representative in vivo studies of PiZZ mouse with precursor base editors

Preclinical data presented at ASGCT 2020; Editing in NSG-PiZ mice with either control (PCSK9) or correction (E342K) provided above results

BEAM-201: Base edited allogeneic cell therapy candidate with an opportunity to treat aggressive CD7+ leukemias

T-Cell Acute Leukemia: 15% of ALL, not treated by B-cell CARTs, few options for relapsed/refractory patients

Base editor mRNA

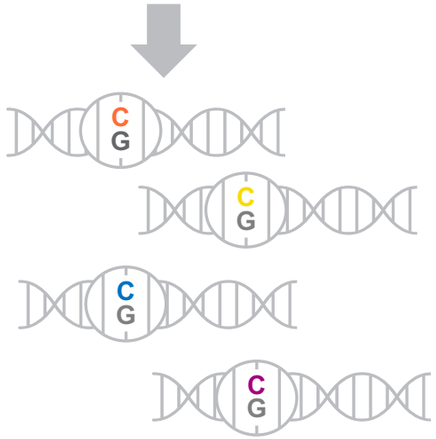
CD7 CAR

TRAC gRNA: Prevent graft-vs-host disease

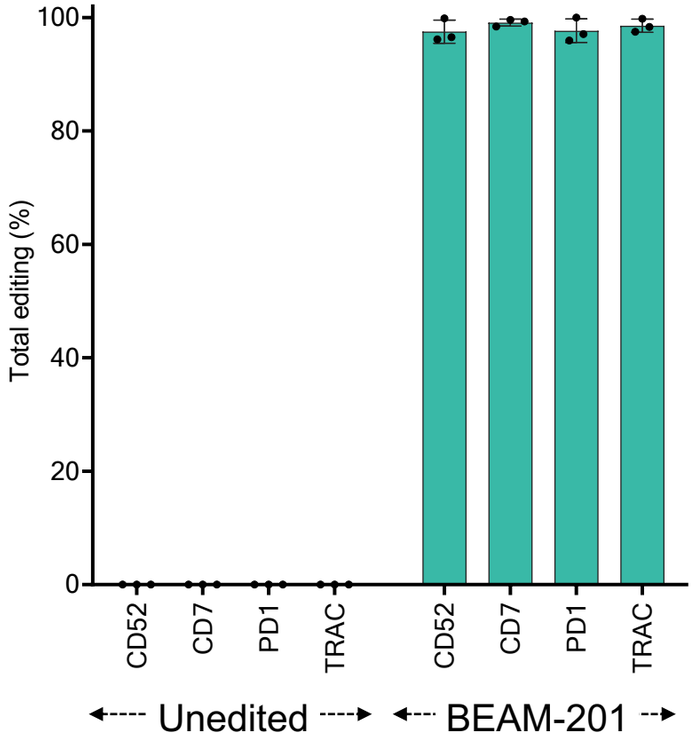
CD52 gRNA: Enable allogeneic cell source

PD1 gRNA: Prolong efficacy

CD7 gRNA: Prevent fratricide from CD7 CAR



Clinical-scale process yielded 96-99% editing, >90% quad edited[1]



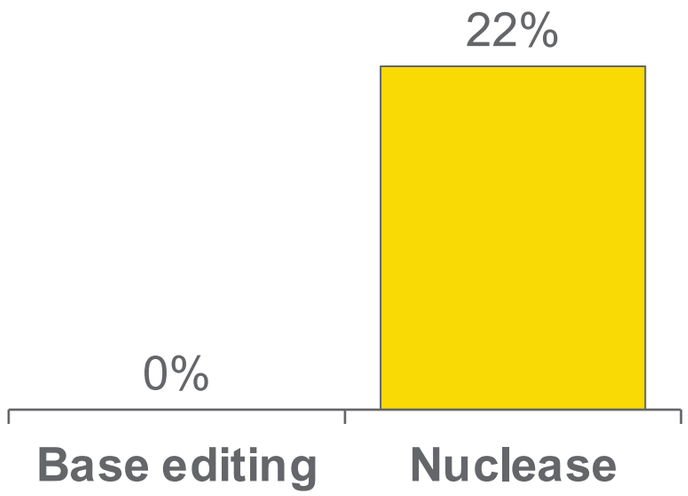
- **Multiplex base editing:** Unlike nuclease editors, no detected chromosomal rearrangements, normal cell expansion, and no detected DNA damage response in preclinical studies
- **Clinical-scale process:** 96-99% editing, >90% quad edited[1]
- **BEAM-201 US IND cleared; first patient dosing expected by mid-2023**

Preclinical data presented at SITC 2020; 1. Simultaneous base editing at four target loci using clinical-scale process as measured by NGS.

BEAM-201: Significant advantages of multiplex base editing without double strand breaks

Chromosomal rearrangements

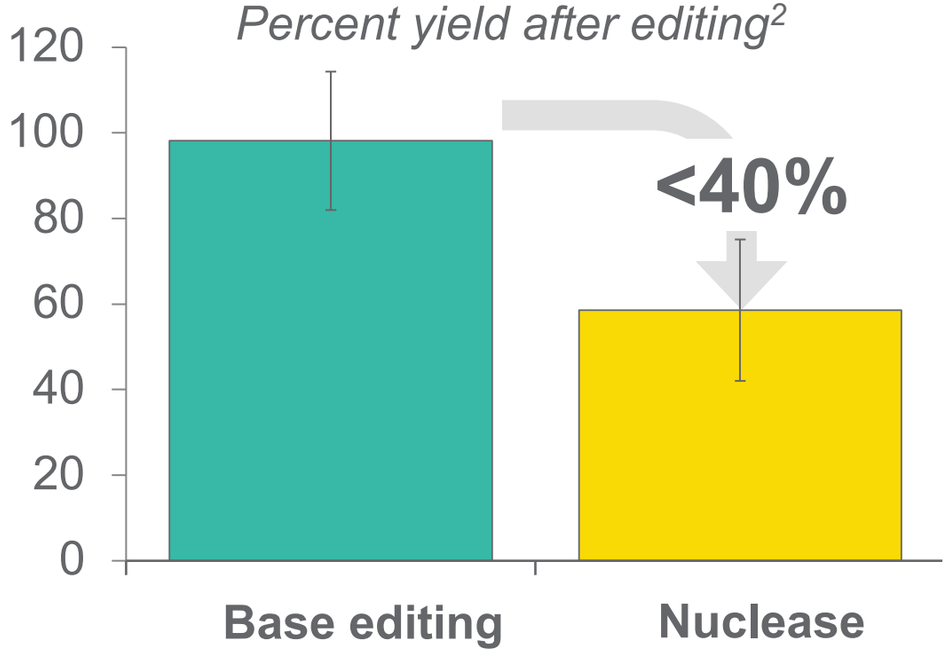
Percent of cells with translocations[1]



4 edits: TRAC, CD52, PD1, CD7

Impact on cell expansion

Percent yield after editing[2]



3 edits: TRAC, B2M, PD1

- Multiplex editing more efficient with base editing which translates to better cell product
- Optimization of platform ongoing with focus on generating next generation “true allogeneic” products

Preclinical data presented at SITC 2020; 1. Base editing versus nuclease editing with the same four guide RNAs measured via G-banded karyotypes from 100 cells; updated analysis shows <0.1% translocations using first generation CBE (data unpublished) 2. Extensive guide screen across three targets, with BE4 and spCas9 sgRNAs selected for high editing efficiency and expansion in single-plex test, final cell yields compared between 3 edits, normalized to electroporation only control

BTX-ALO-001: Multiplex edited BEAM-201 enables evaluation in aggressive T-cell cancers using optimized lymphodepletion (LD)

Beam THERAPEUTICS

Phase 1 dose exploration (≤36 pts)

LD Regimen 1
(Up to 3 CAR-T dose levels)

LD Regimen 2
(Up to 3 CAR-T dose levels)

Phase 1 dose expansion (≤12 pts)

Expansion Cohort 1

Expansion Cohort 2

Pediatric cohort
(gated initiation of enrollment)

Phase 2 (~48 pts)

Recommended phase 2 dose and LD regimen

Select inclusion criteria

- ≥18 to ≤50 yrs for dose exploration
- ≥1 yrs for peds after FDA review
- T-ALL or T-LL with one of following:
  - Relapsed after 2nd CR
  - Relapse after HSCT
  - Primary refractory or R/R
- Eligible for allo HSCT (donor available)

Select safety endpoints

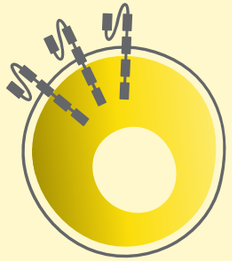
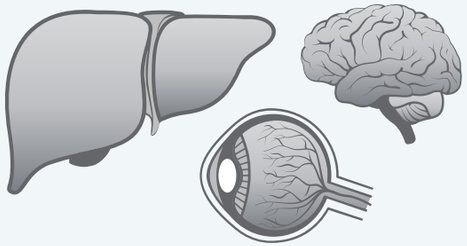
- Incidence and severity of treatment emergent adverse events (TEAE) and treatment-related AEs, including serious AEs (SAEs) and DLTs

Select efficacy endpoints

- Proportion of T-ALL pts with CR or CRi or T-LL pts with CR or PR any time post BEAM-201
- Proportion of pts eligible for HSCT based on response to BEAM-201
- Proportion achieving MRD-negative status
- Duration of response, OS, etc

T-ALL = T cell acute lymphoblastic leukemia; T-LL = T cell lymphoblastic lymphoma; CR = Complete response; CRi = CR with incomplete count recovery; PR = Partial response; OS = Overall survival; HSCT = Hematopoietic stem cell transplant; DLT = Dose limiting toxicity; MRD = Minimal residual disease

Beam is developing medicines across three franchises, each with near- and long-term potential

	HEMATOLOGY	IMMUNOLOGY-ONCOLOGY	GENETIC DISEASES
			
Near term:	**BEAM-101**	**BEAM-201**	**BEAM-301, BEAM-302**
Future platforms:	**ESCAPE for conditioning** **In vivo delivery**	**Next-generation allogeneic platform (4-6+ edits)**	**Multiple new liver targets** **Barcoded LNP beyond liver**

- **Lead Programs:** Potentially de-risk technology (higher probability of technical success, faster path), generate revenue, and benefit patients with high unmet need
- **Future platforms:** Expand addressable patient populations to create highly valuable, differentiated franchises through further innovation in editing and delivery

ESCAPE: Engineered Stem Cell Antibody Paired Evasion

Additional strategic and innovator deals potentially unlock base editing value and broaden therapeutic impact

Strategic deals

Pfizer
- $300M upfront, $1B+ in potential milestones
- 3 gene targets using Beam's editing and delivery to target liver, muscle, CNS
- **Beam option at end of P1/2 for 35% WW cost/net profit split on one program**

Apellis
- $75M in upfront payments for base editing for complement mediated diseases
- **Beam opt-in to 50% of US rights after Phase 1 on one program**

Sana Biotechnology
- $50M upfront for license to Cas12b nuclease for certain engineered cell therapies
- **Non-exclusive license – Beam retains ability to use or repartner Cas12b**

Innovator deals

verve THERAPEUTICS
- License to Beam's base editing technology for the prevention of cardiovascular disease
- 3 targets: VERVE-101 (PCSK9), VERVE-102 (ANGPTL3), Undisclosed #3
- **Beam opt-in after P1: 50% US (VERVE-101, VERVE-102) or 35% of WW (Target 3) cost/profit**

prime medicine
- Prime editing (PE) is a novel gene editing technology, complementary to base editing
- Beam provides delivery and CRISPR technology/know-how
- **Beam has exclusive rights to PE: SCD transversion edit, any transitions (30% of mutations)**

ORBITAL THERAPEUTICS
- Next-gen RNA and delivery; Beam provides interim leadership and RNA/LNP capabilities
- **Beam has meaningful equity stake in Orbital**
- **Beam access to Orbital IP for gene editing (exclusive) and certain fields (non-exclusive)**

Meet the Beam Team

John Evans
Chief Executive Officer

agios
Infinity PHARMACEUTICALS

Giuseppe Ciaramella, PhD
President, Chief Scientific Officer

moderna
Pfizer

Terry-Ann Burrell
Chief Financial Officer

JPMorgan Chase & Co.
citi

Amy Simon, MD
Chief Medical Officer

Alnylam PHARMACEUTICALS
Tufts UNIVERSITY

Courtney Wallace
Chief Business Officer

Celgene

Christine Bellon PhD, JD
Chief Legal Officer

FORMA THERAPEUTICS
RELAY THERAPEUTICS
blueprint MEDICINES

Susan O'Connor
Chief Human Resources Officer

RELAY THERAPEUTICS
blueprint MEDICINES
Johnson & Johnson

Suzanne Fleming
Chief Accounting Officer

Epizyme
FOUNDATION MEDICINE

Brian Riley
Chief Manufacturing Officer

Catalent
AMGEN
Biogen

Manmohan Singh, PhD
Chief Technology Officer

Takeda
NOVARTIS

John Lo, PhD
Chief Commercial Officer

Bristol Myers Squibb
Celgene
AstraZeneca

Significant team track record in discovery, development, approval of first-in-class medicines

Thank you