Beam THERAPEUTICS

PRECISION GENETIC MEDICINES THROUGH BASE EDITING

JUNE 2024 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, and additional liver programs in multiple preclinical studies; our current expectations and anticipated results of operations, including our expected use of capital; the sufficiency of our capital resources to fund operating expenses and capital expenditure requirements and the period in which such resources are expected to be available; 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 pandemics and other health emergencies, including their impact on the global supply chain; 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, 2023, 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.

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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**

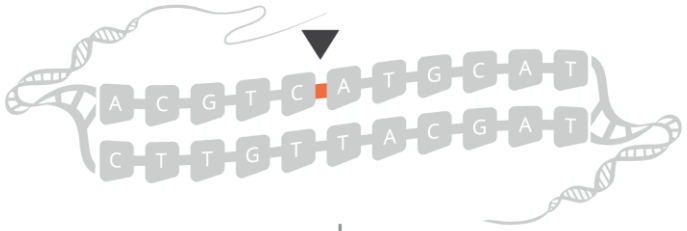
PLATFORM FOR **rapidly-programmable precision medicines**

Beam THERAPEUTICS

Base editing is an efficient, predictable and potentially best-in-class gene editing technology

NUCLEASE CRISPR, ZFN, TALENs

Precision targeting with CRISPR



Double-stranded breaks

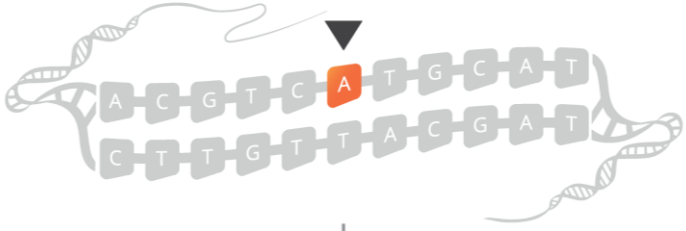
Lack of control of gene sequence outcomes

…A C G - - - - G C A T…
…A C G T C **G C T T** A T G C A T…
…A - - - - - T G C A T…
…A C G T C **T** A T G C A T…
…A C - - - - - - - A T…
…A C G T C **A A C** - - G C A T…
etc

- - - - - Deletions
A G C T Insertions

BASE EDITING BEAM THERAPEUTICS

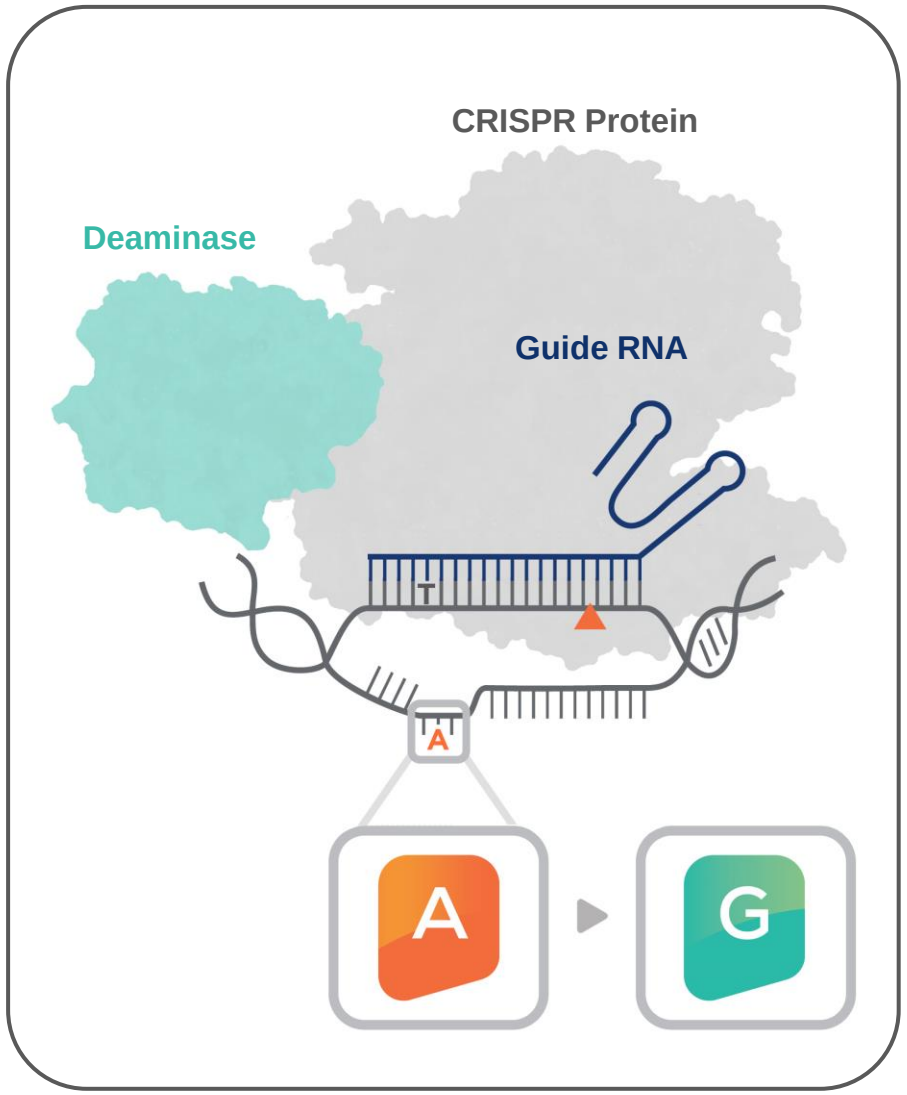
Precision targeting with CRISPR



Enzymatic base conversion

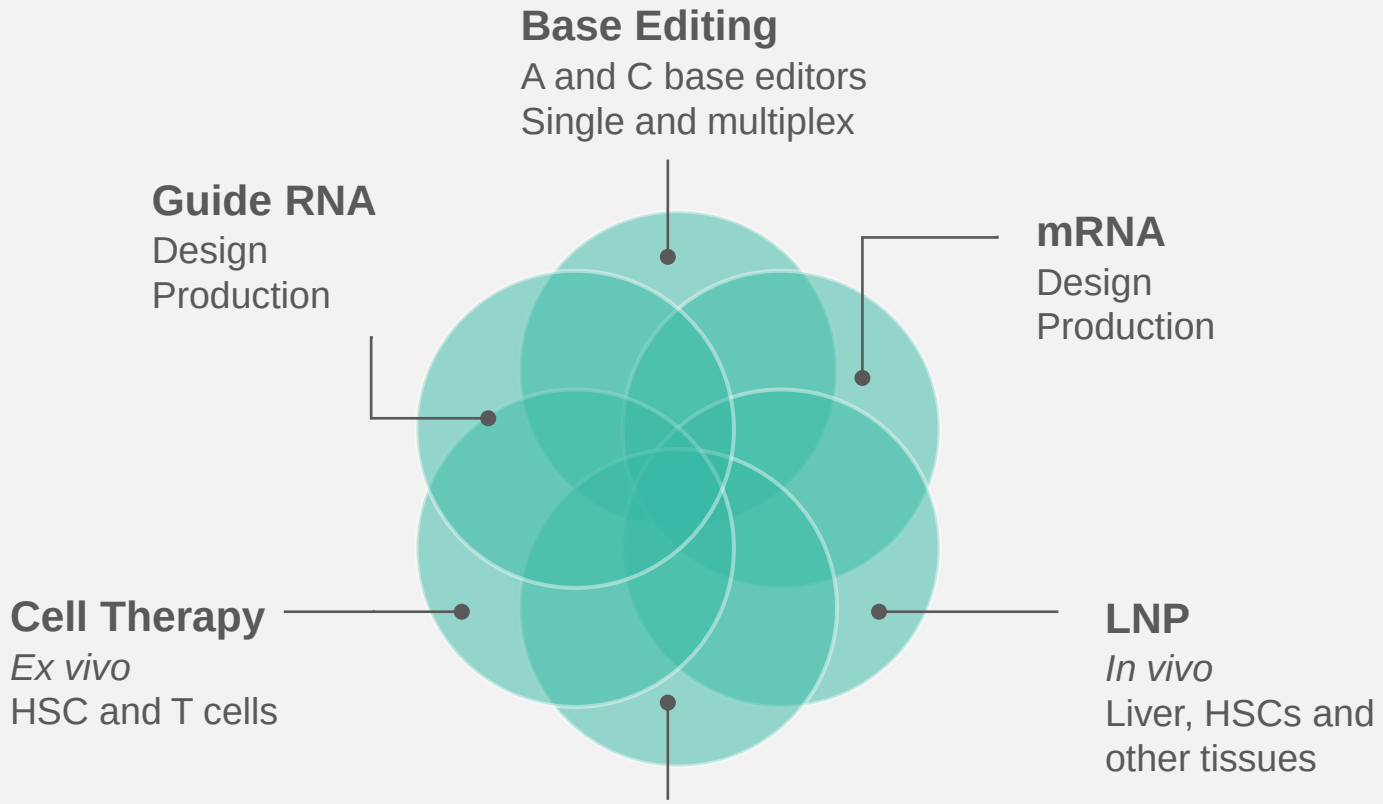
Highly efficient with predictable gene sequence outcomes

Base editing technology has multiple, highly versatile applications



		PROGRAMS
Correct mutations	Repairs the most common type of gene mutation, single base changes	BEAM-302, BEAM-301
Silence proteins	Turns off any gene with disease-causing activity	Multiple at Beam and partners
Activate expression	Turns on genes to restore or increase function	BEAM-101
Modify proteins	Changes how proteins bind or signal without disrupting their function	ESCAPE
Multiplex edits	Targets multiple pathways simultaneously with high efficiency	BEAM-201

We have built a comprehensive, fully-integrated platform for precision genetic medicines



FULLY INTEGRATED TECHNOLOGY AND CAPABILITIES

MODULAR PLATFORM FOR RAPID DEVELOPMENT OF NEW BASE EDITING PROGRAMS

Advancing a diversified pipeline into the clinic

PROGRAM / DISEASE		DELIVERY	EDITING APPROACH	RESEARCH	LEAD OPTIMIZATION	IND ENABLING	PHASE I/II	PIVOTAL
BEAM-101	Sickle Cell Disease (SCD)	*Ex vivo* HSC	Activation of fetal hemoglobin (HbF)					
ESCAPE	Sickle Cell Disease Beta Thalassemia	*Ex vivo* HSC	Multiplex HbF edit + CD117 edit-antibody pair					
BEAM-302	Alpha-1 Antitrypsin Deficiency (AATD)	*In vivo* LNP	Correction of E342K mutation					
BEAM-301	Glycogen Storage Disease 1a (GSD1a)	*In vivo* LNP	Correction of R83C mutation					
BEAM-201	T-cell Leukemia/Lymphoma (T-ALL / T-LL) and CD7+ AML	*Ex vivo* T cells	Multiplex silenced CD7 CAR-T					
Pfizer collaboration target		*In vivo* LNP	Undisclosed					
Apellis collaboration target		*In vivo* LNP	Undisclosed					

LNP = Lipid Nanoparticle; 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

Highly differentiated priority programs with significant value creation potential

Sickle Cell Disease

HEMATOLOGY

- Best-in-class potential for BEAM-101 with multi-wave therapeutic strategy
- Increased probability of technical success for *ex vivo* gene editing and HbF upregulation
- Validated FDA regulatory pathway
- ESCAPE has potential to eliminate chemotherapy from transplant, expanding reach of base editing to more patients
- Platform for future hematology pipeline

Alpha-1 Antitrypsin Deficiency

LIVER GENETIC DISEASE

- Best-in-class potential for BEAM-302
- Increased probability of technical success for *in vivo* LNP gene editing in liver
- Potential for rapid clinical proof of concept (change in functional AAT and PiZ AAT levels)
- Clinical-stage AATD program with potential to be a one-time treatment that benefits both lung and liver disease
- Platform for future liver pipeline

AAT = Alpha-1 Antitrypsin protein

2023 was a transformative year for CRISPR gene editing, for base editing, and for Beam

2023 Highlights

GENE EDITING

First *in vivo* gene editing INDs cleared by FDA

First *in vivo* liver base editing clinical data

First CRISPR-based product approved for SCD

BEAM

First patients dosed with base edited therapies in U.S. in multiple trials

- ✓ BEAM-201 dosed Q3
- ✓ BEAM-101 dosed and engrafted Q4

Lilly acquisition of Beam's rights to Verve programs

Prioritized portfolio to focus on core value drivers in SCD and AATD

Expected cash runway into 2027

2024 is expected to be a year of significant catalysts for Beam

2024 Anticipated Catalysts

BEAM-101
SCD

Complete sentinel dosing and initiate expansion

Present clinical data on multiple patients in second half of 2024

ESCAPE
SCD

Initiate Phase 1-enabling preclinical studies in 2024

BEAM-302
AATD

CTA cleared in the UK

Initiate Phase 1/2 clinical trial

BEAM-301
GSD1a

Submit U.S. IND application in first half of 2024

BEAM-201
T-ALL / T-LL

Present clinical data in second half of 2024

What if we could develop better one-time therapies for patients with SCD?

SICKLE CELL DISEASE

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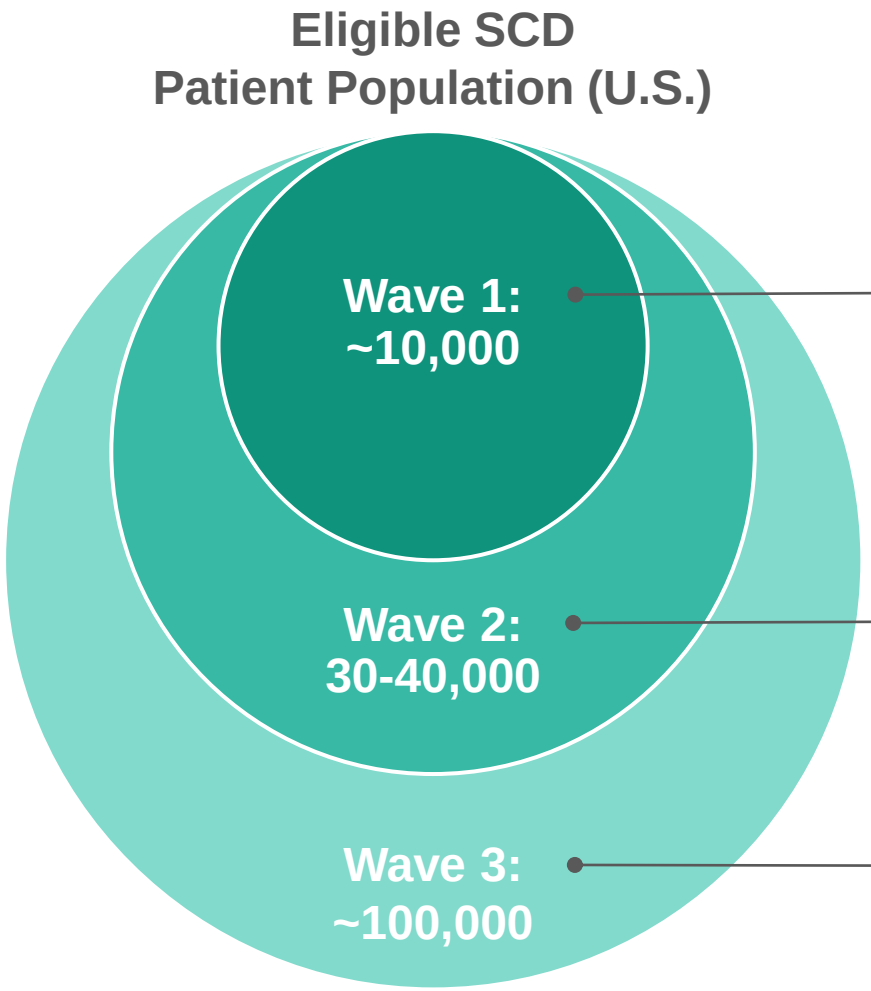
Beam's multi-wave strategy is focused on developing safer, more effective, and more accessible treatments for patients with SCD



Wave 1 BEAM-101: Precise HbF upregulation

Potentially best-in-class gene editing
Non-cutting, non-viral therapy with busulfan conditioning to address severe SCD with high vaso-occlusive crisis (VOC) burden

Wave 2 ESCAPE: Multiplex HbF edit + CD117 selection edit

Non-genotoxic conditioning eliminates chemotherapy and broadens patient population for *ex vivo* gene therapy

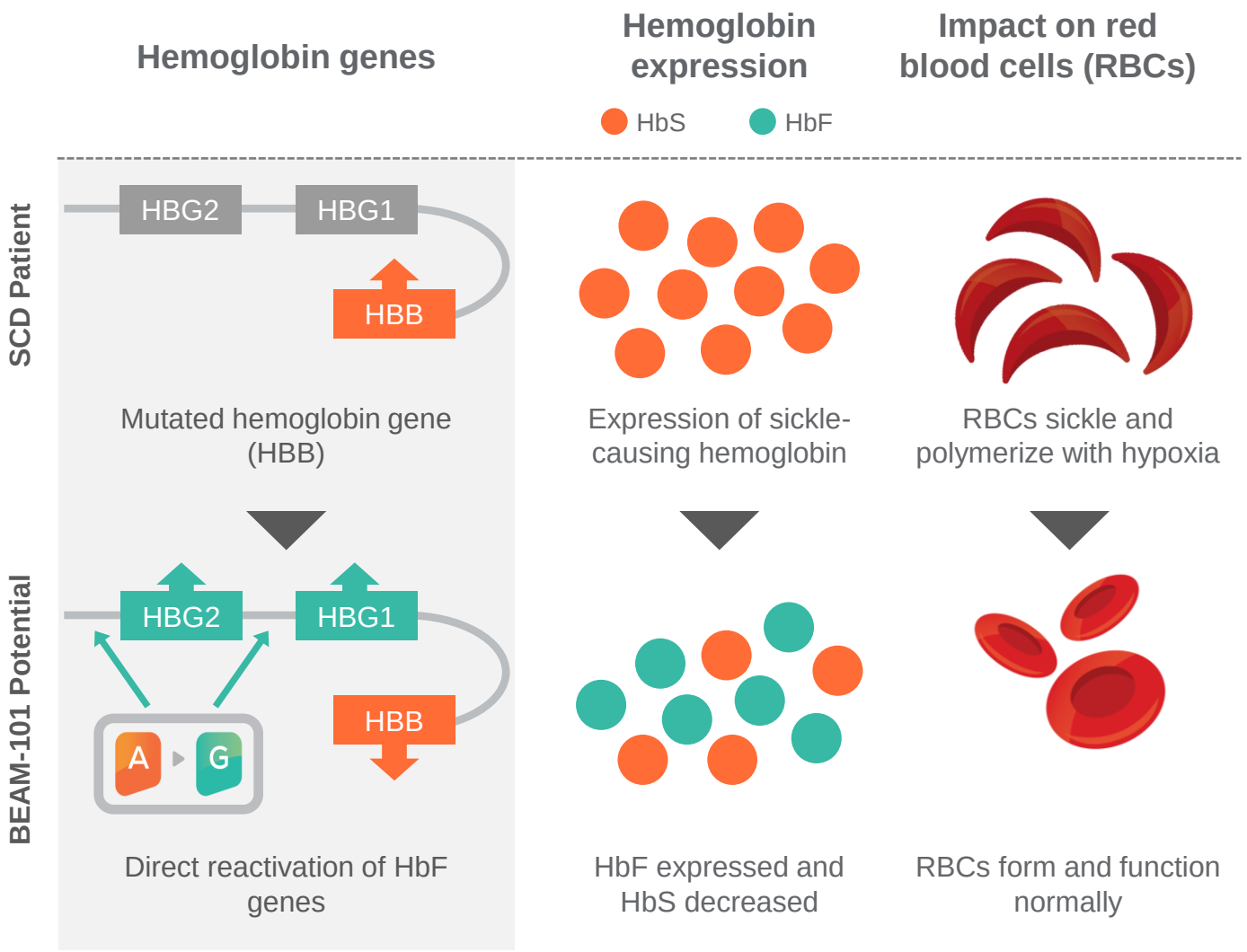
- Broader range of disease severity
- Increased willingness-to-treat
- Wider age range

Wave 3 *In vivo*: Base editing with HSC-targeted LNPs

***In vivo* delivery** would overcome need for transplantation, lower infrastructure requirements and unlock wider patient access and geographies

Source: Internal Beam estimates

BEAM-101: Designed to be best-in-class genetic medicine for SCD



SCD Unmet Need

- Sickle cell hemoglobin (HbS) polymerization is root cause of sickle cell pathophysiology
- Affects millions of people worldwide and ~100K in U.S.
- Median survival in the U.S. is ≥20 years shorter

Current Available Treatments

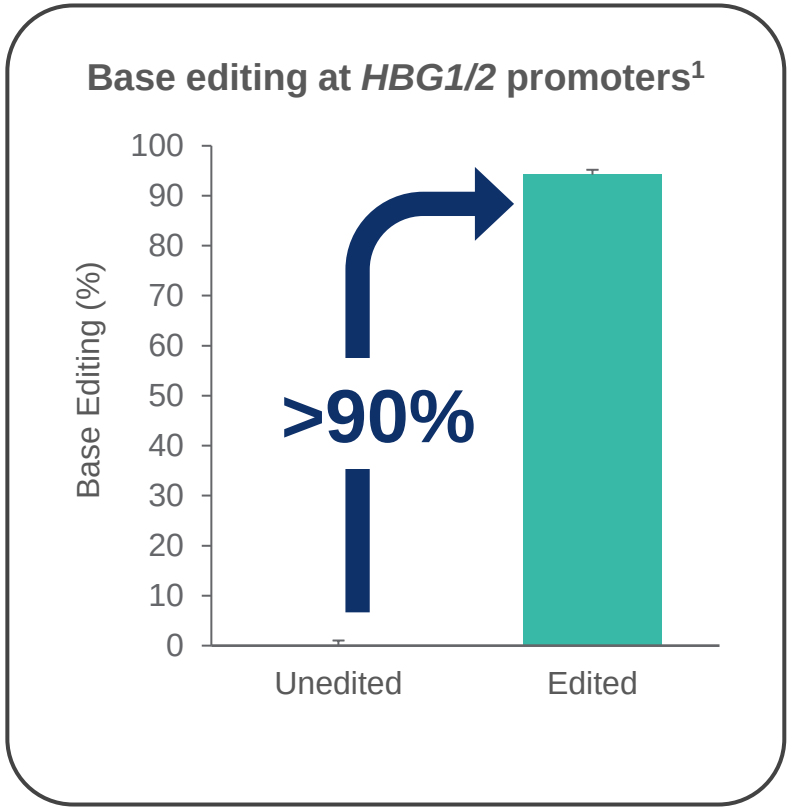
- Disease-modifying therapies require ongoing treatment and do not prevent organ dysfunction
- Recently approved gene therapies reduce VOCs but residual HbS >50% suggests room for improvement

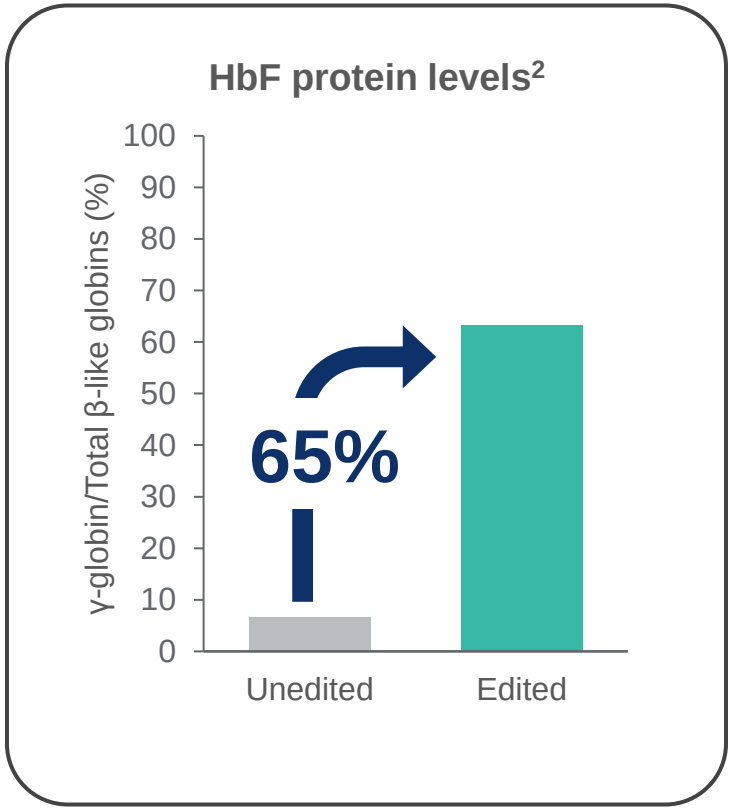
BEAM-101 Potential

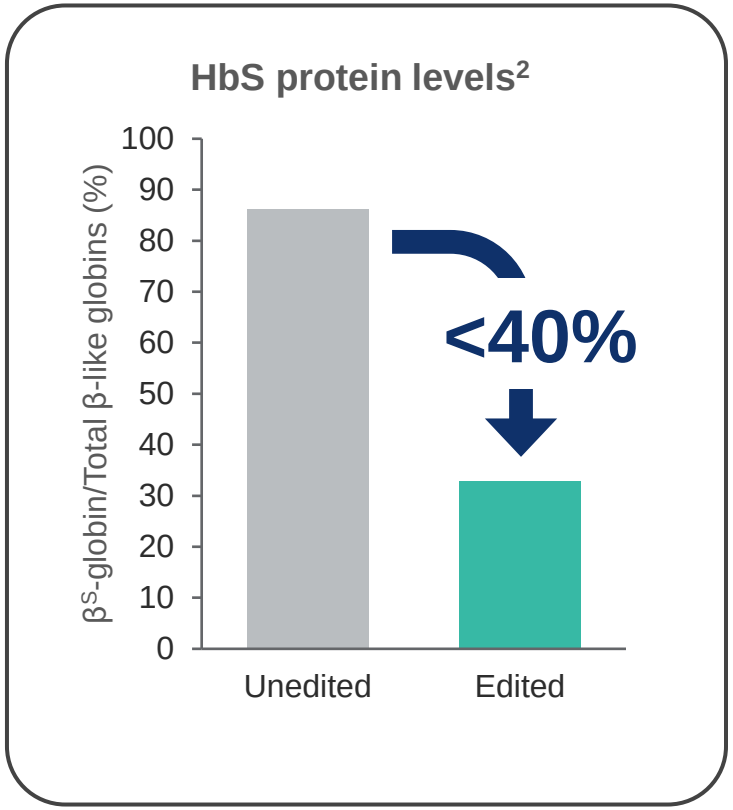
- Precision editing without requirement of double-stranded DNA breaks or viral insertion
- More efficient editing leading to greater and more uniform induction of HbF and reduction of HbS and normalization of hemoglobin
- Investment in wholly owned manufacturing and improved process and patient experience

CDC Data & Statistics; Lancet Haematol 2023; 10: e585–99; DeBaun et al. Blood. 2019 Feb 7; 133(6):615-617

BEAM-101: Potential for highest HbF induction and lowest residual HbS levels versus other approaches in the field





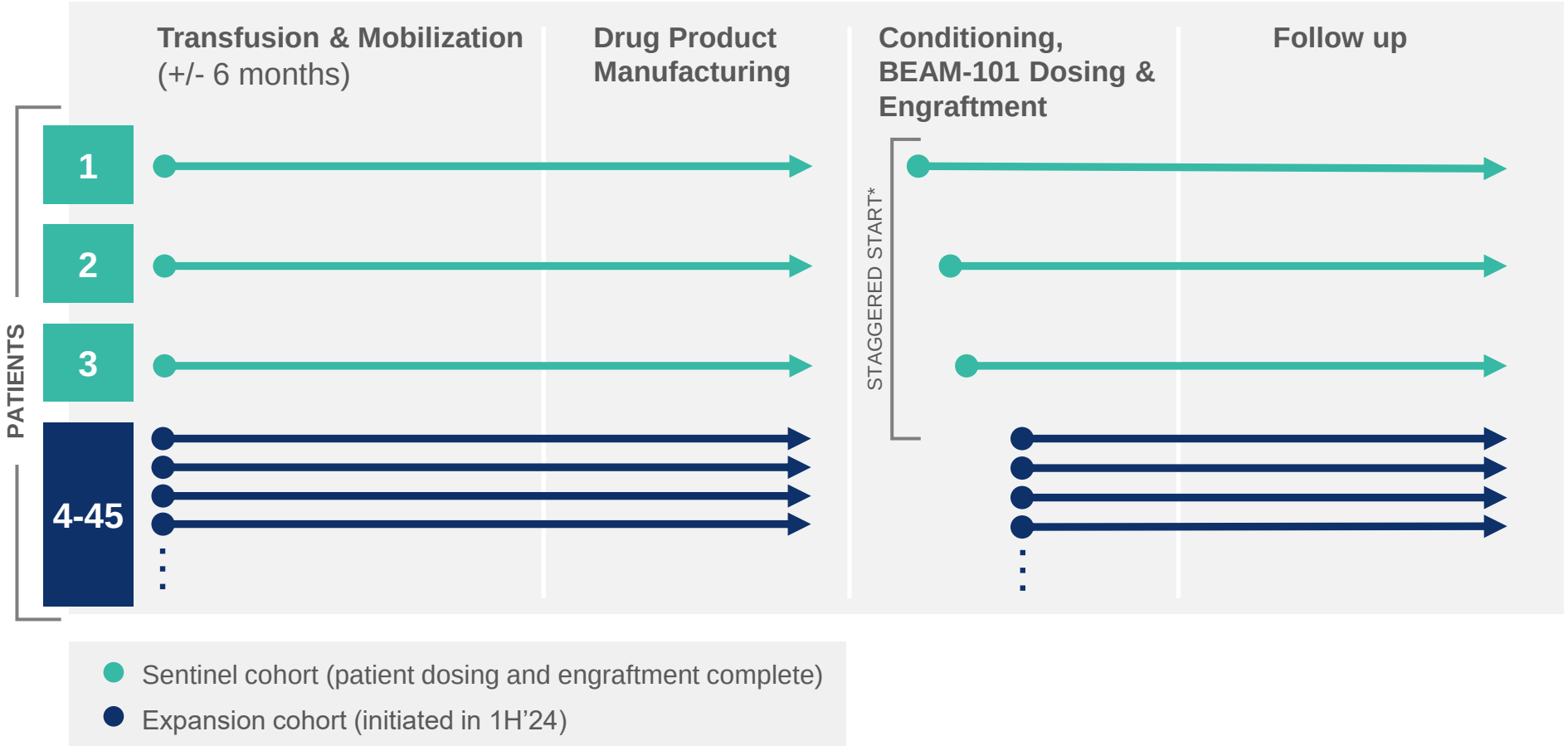


Preclinical data presented at ASGCT 2020; Edited human HSPCs analyzed 16 weeks after infusion in NBSGW mice (Mean±SEM, n=4-6); 1. Sorted human Lineage-CD34+ bulk bone marrow; 2. Sorted erythroid cells (GlyA+)

Precise, single base editing without need for double-stranded breaks or viral insertion results in highest editing efficiency in pre-clinical models

BEAM-101: First clinical base editing program in the U.S., accelerating path to SCD patients and the market

BEACON Phase 1/2 Study Design



Select safety endpoints

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

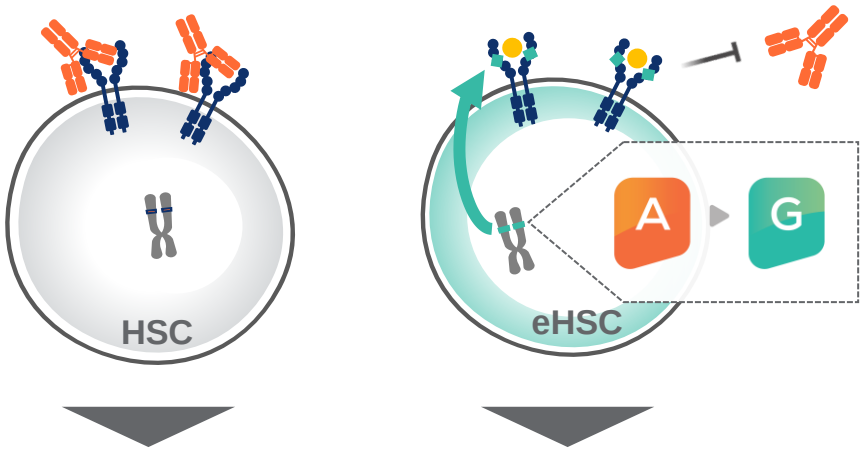
Select efficacy endpoints

- Severe VOCs
- Total Hb and hemolysis
- HbF levels
- Patient reported outcomes
- RBC function and organ damage
- Time to engraftment

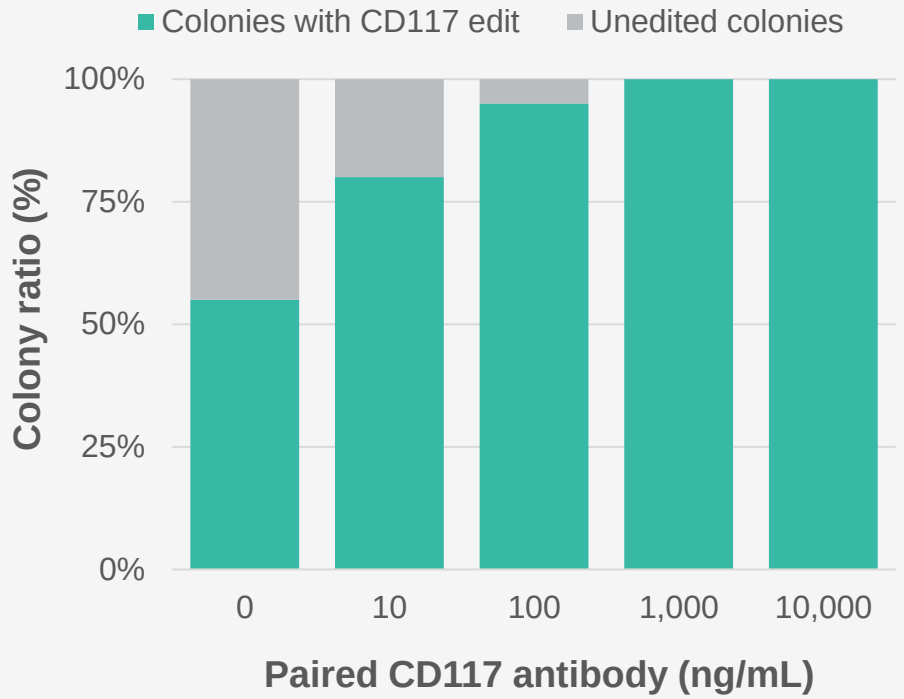
Anticipate presenting clinical data on multiple patients in the second half of 2024

Wave 2 ESCAPE: Designed for selective depletion of diseased cells to enable non-genotoxic conditioning for SCD

- Stem cell factor (SCF) signaling via CD117 required for HSC survival and proliferation
- Single base edit changes the epitope on CD117 receptor without observed impact on HSC biology
- Customized conditioning antibody depletes diseased unedited cells, but enables CD117-edited, non-diseased cells to “ESCAPE” and grow normally



Enrichment of edited cells in presence of antibody



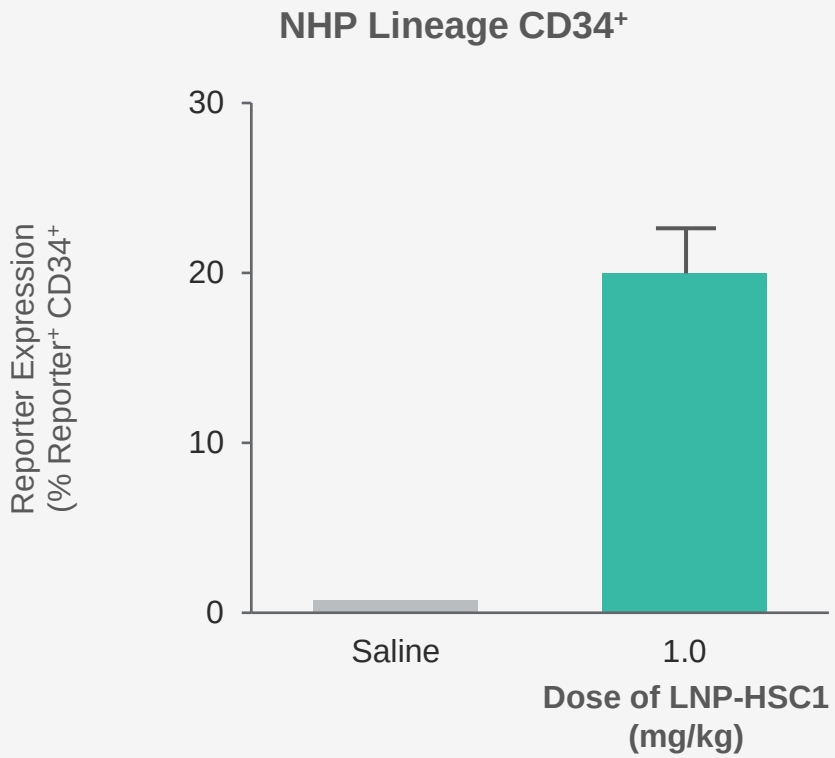
ESCAPE: Engineered Stem Cell Antibody Paired Evasion

Plan to initiate Phase 1-enabling studies in 2024

Wave 3 *in vivo*: Developing LNPs for delivery of base editors to blood stem cells

- In preclinical studies, Beam LNP technology allowed targeting of blood stem cells for delivery of mRNA payloads at clinically relevant doses
- Research to adapt system to base editing payloads is ongoing
- Ultimate goal: deliver curative base editing machinery directly to HSCs with an intravenous transfusion

Expression of mRNA payload in NHP HSCs at clinically relevant doses



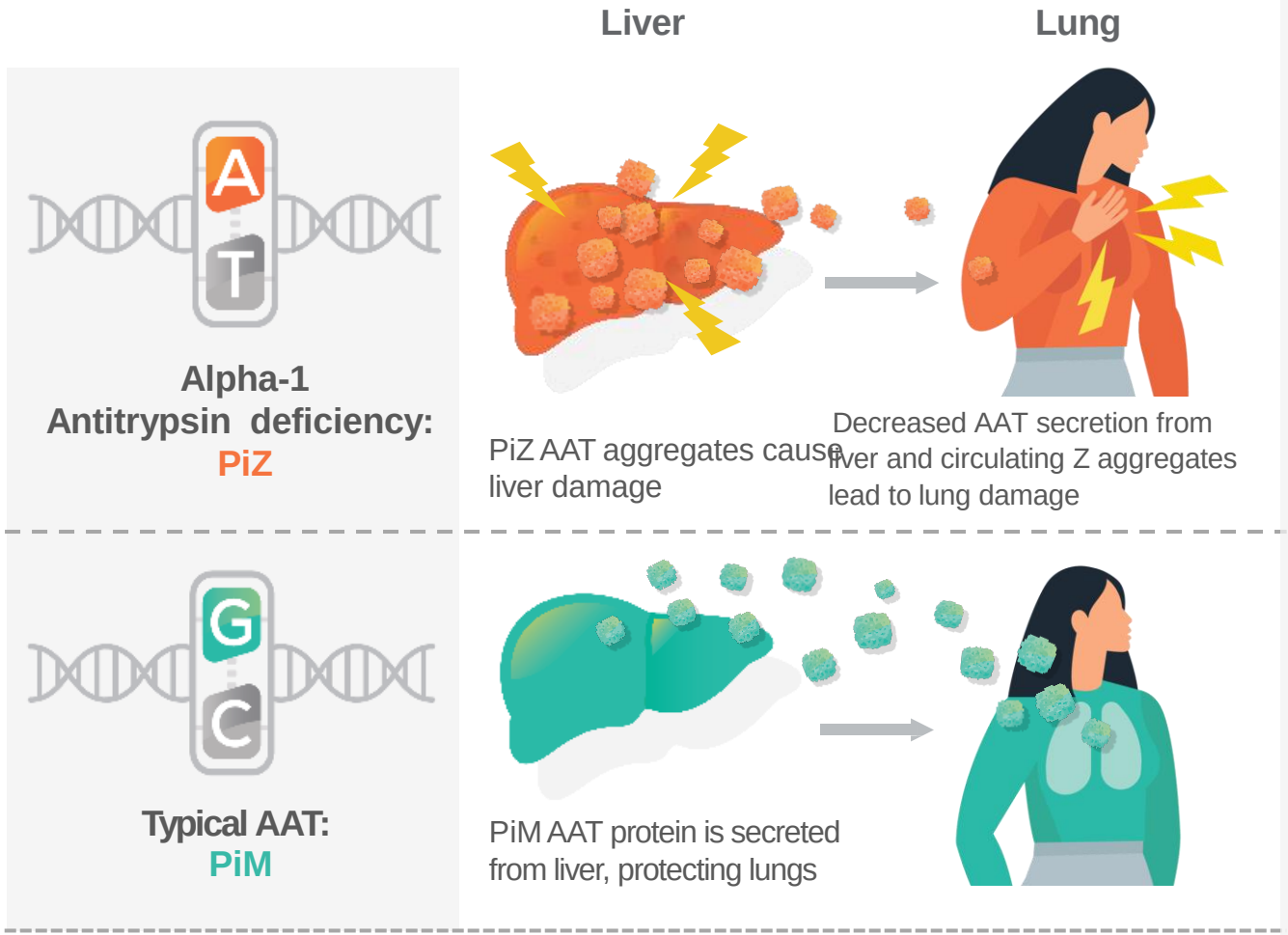
Presented at ASH 2021

What if we could use base editing to correct disease-causing mutations *in vivo?*

GENETIC DISEASES

Beam THERAPEUTICS

BEAM-302: Aims to restore expression of functional AAT to address Alpha-1-related lung and liver disease



Alpha-1 Cause

- PiZ is caused by a single G > A point mutation in the *SERPINA1* gene
- PiZ AAT is poorly secreted by the liver into circulation and has decreased function

Alpha-1 Unmet Need

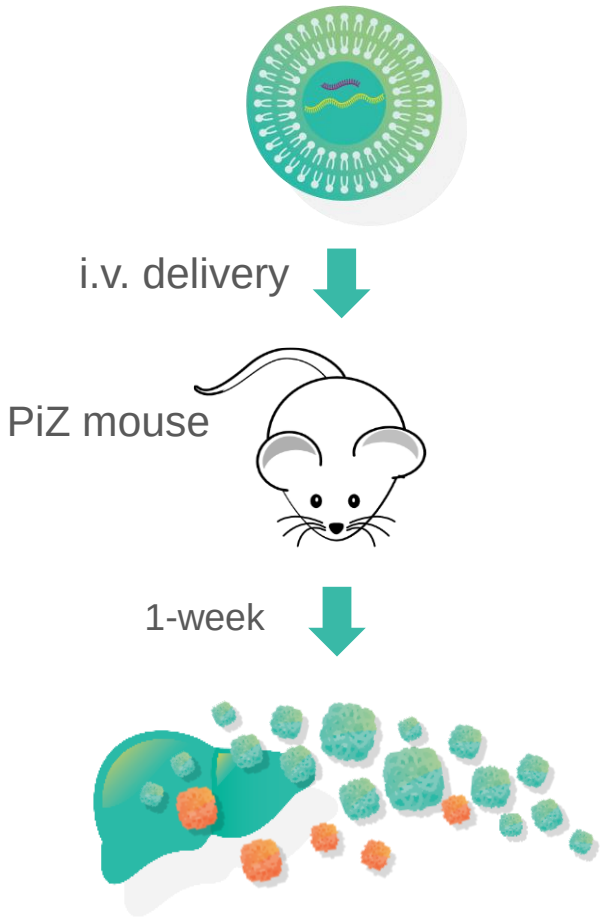
- PiZZ genotype is >95% of severe AATD population that typically develop progressive lung and/or liver disease
- 100,000 PiZZ individuals in U.S.; ~10% diagnosed

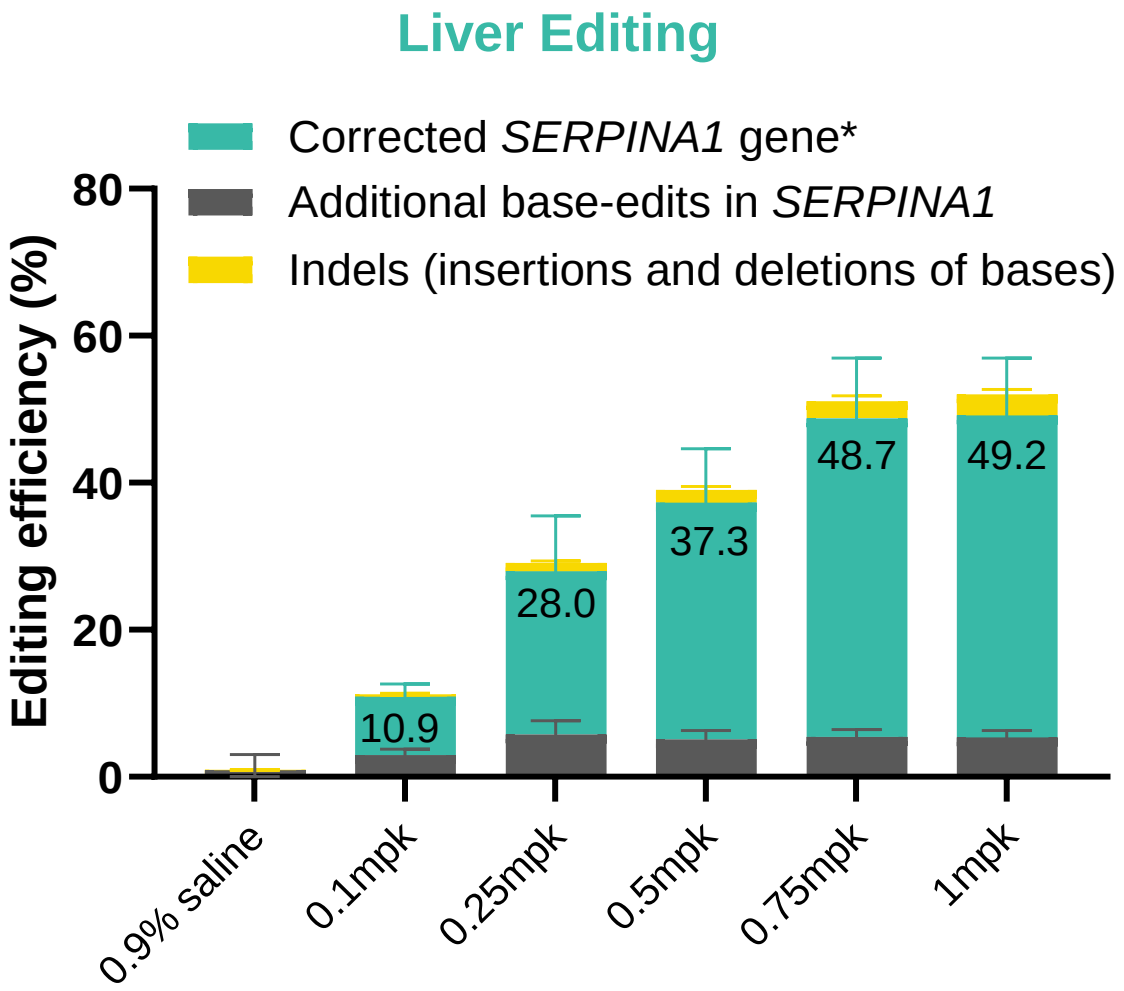
BEAM-302 Potential

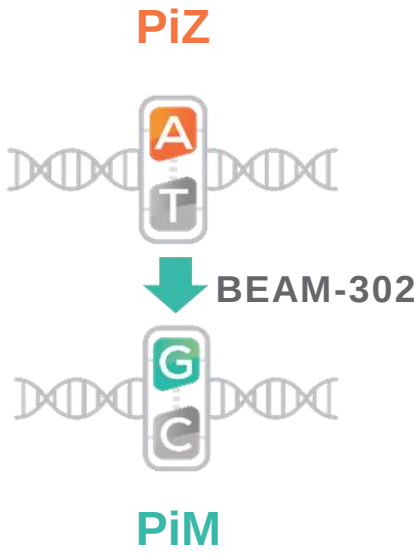
- One-time therapy that addresses both lung and liver disease, with corrected gene under normal regulation
- Reduction of PiZ AAT in liver and bloodstream, and restored circulating functional AAT

American Thoracic Society/European Respiratory Society statement: standards for the diagnosis and management of individuals with alpha-1 antitrypsin deficiency Am J Respir Crit Care Med, 2003

BEAM-302: BEAM-302 corrects the PiZ variant to PiM in a dose dependent manner in an Alpha-1 mouse model

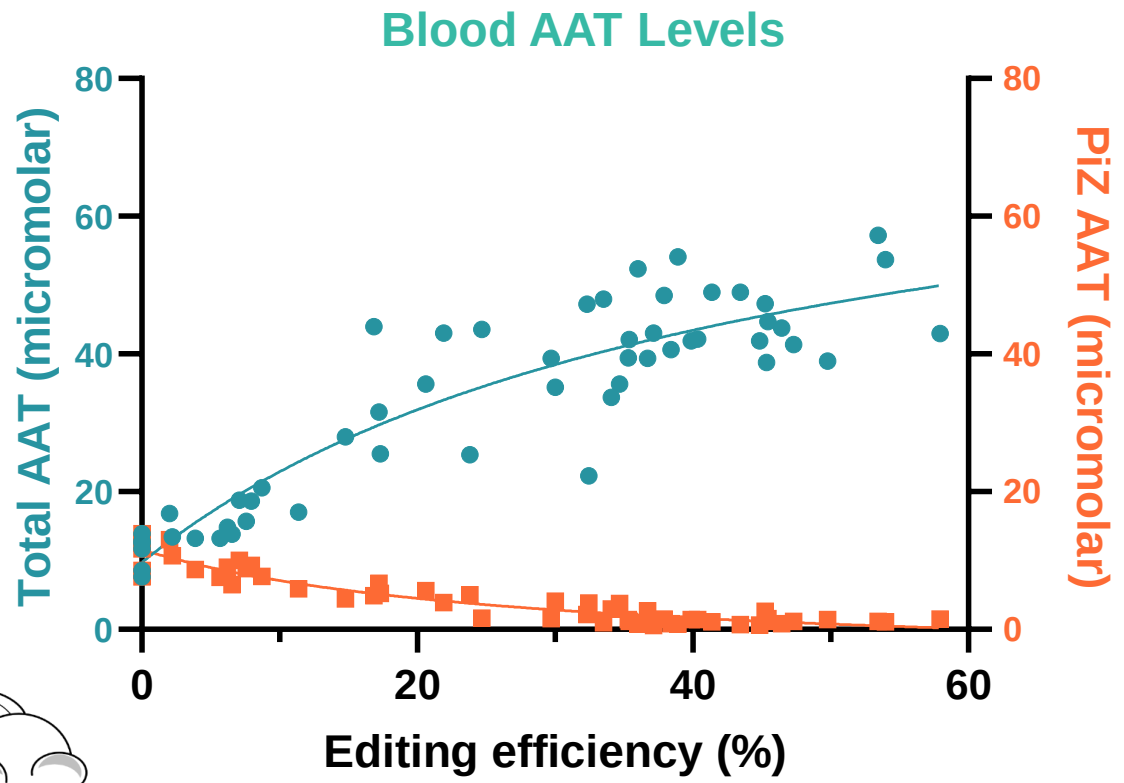


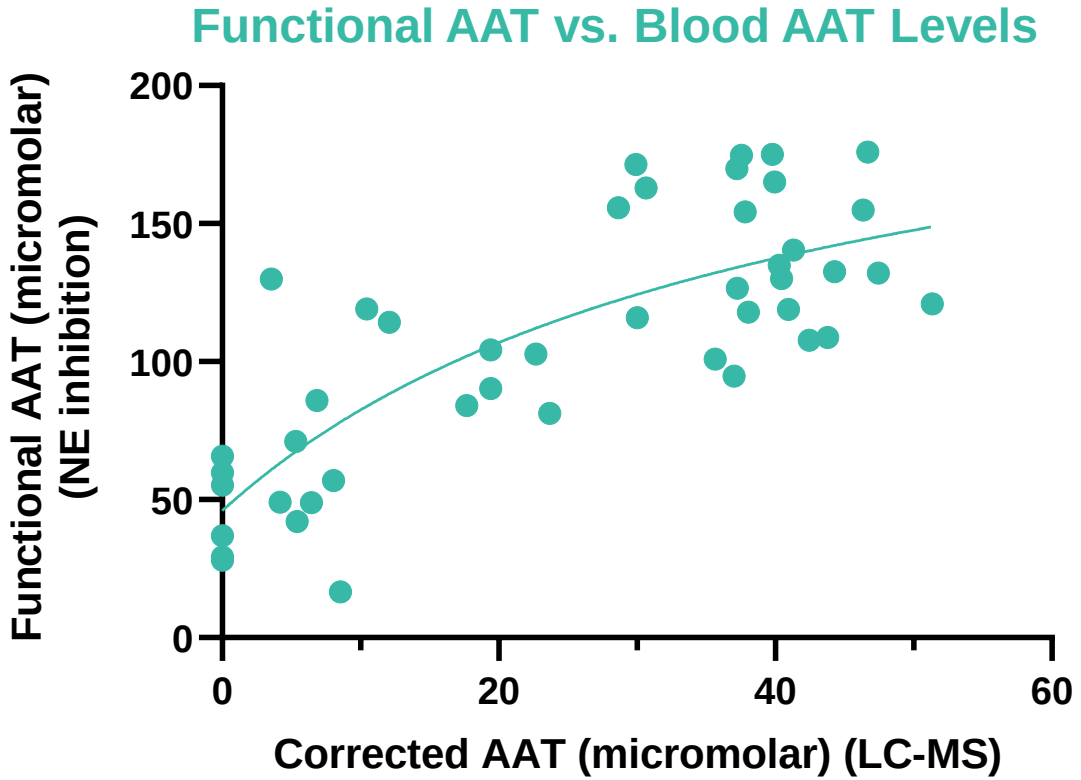




*Corrected *SERPINA1* gene is comprised of edits resulting in functional PiM AAT

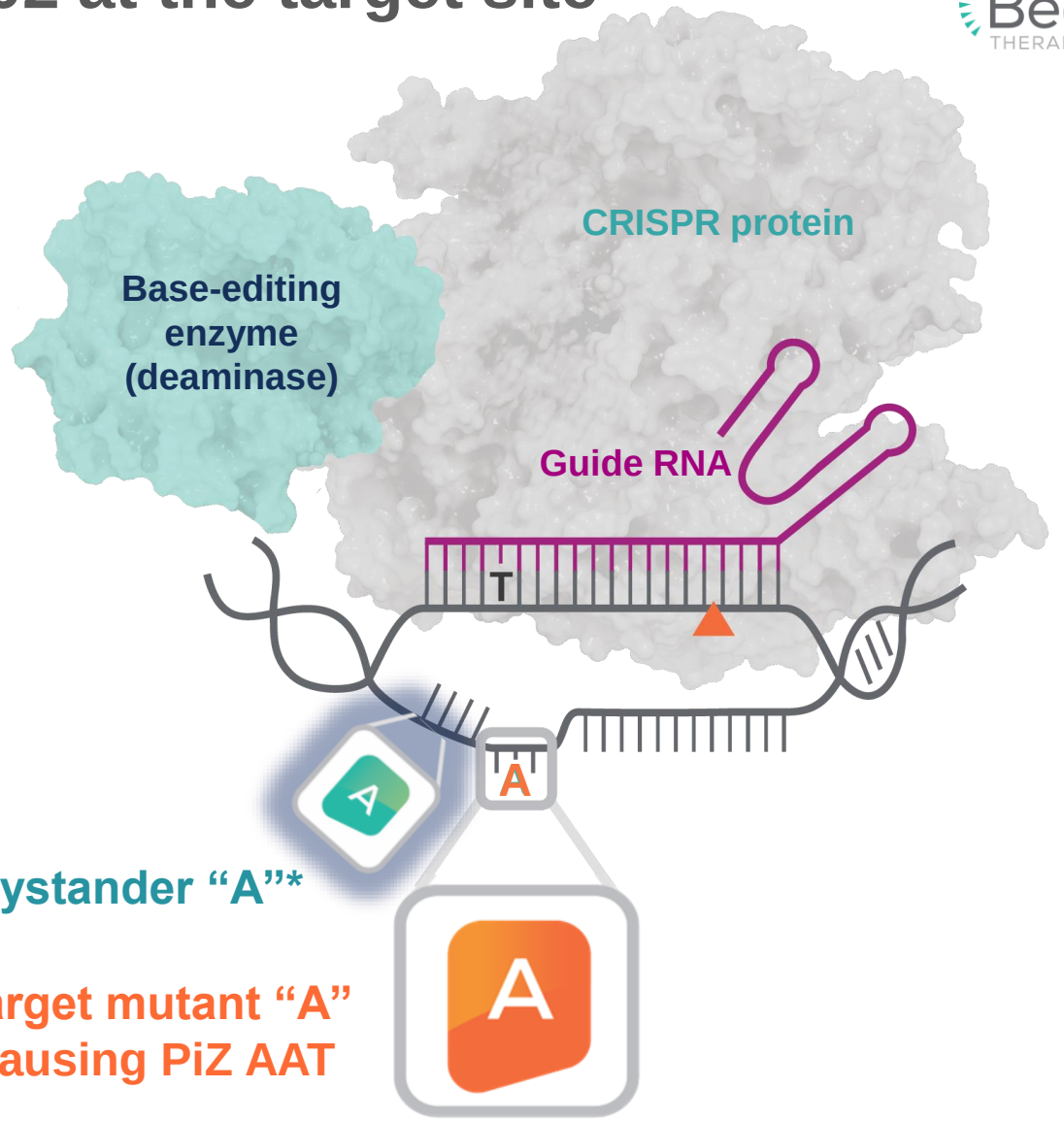
BEAM-302: Editing decreases Z-AAT and increases total blood AAT protein, which correlates to increased functional AAT





BEAM-302: Base editing by BEAM-302 at the target site

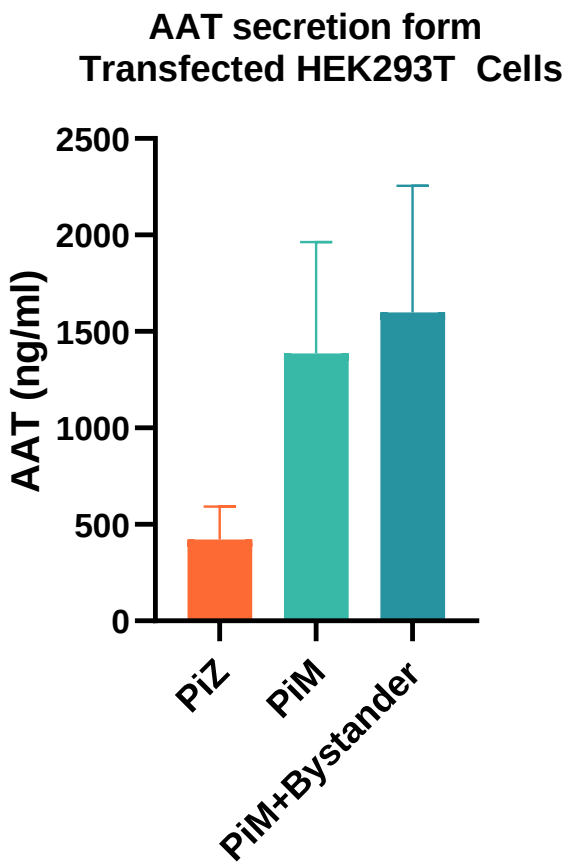
- BEAM-302 is designed to correct the mutation that causes **PiZ AAT**
- The corrected functional AAT protein produced is either **PiM** or **PiM** with an additional, naturally occurring, bystander edit at a neighboring site (**PiM + bystander**)
- **PiM** and **PiM + bystander** are structurally similar** and equally functional



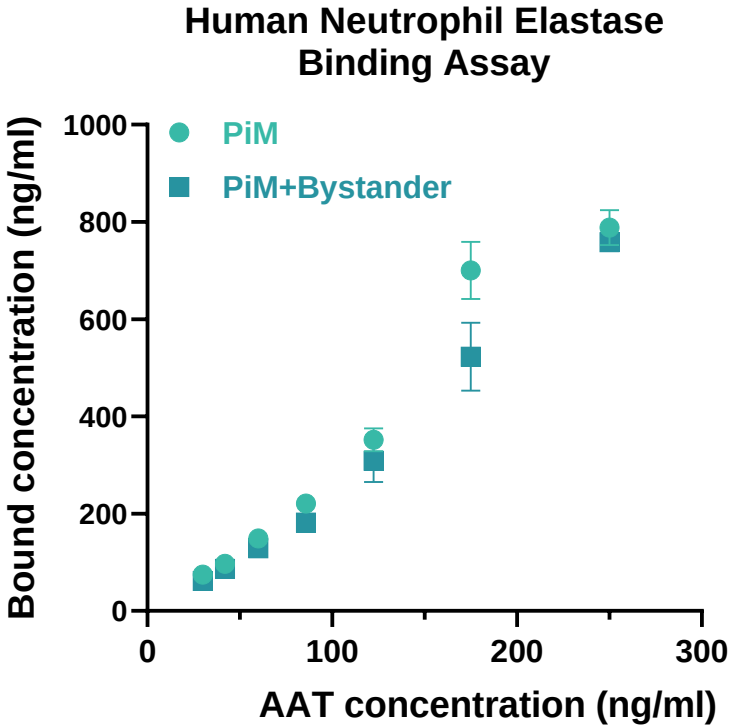
*This variant has been found to naturally occur with no reported disease association (NHLBI – TOPMed project and Regeneron Genetic Center – Million Exome Variant project)
** AlphaFold models comparing the PiM + bystander AAT and PiM AAT protein structures do not suggest any significant structural variation caused by the bystander mutation in regions of the structure that are high-confidence predictions.

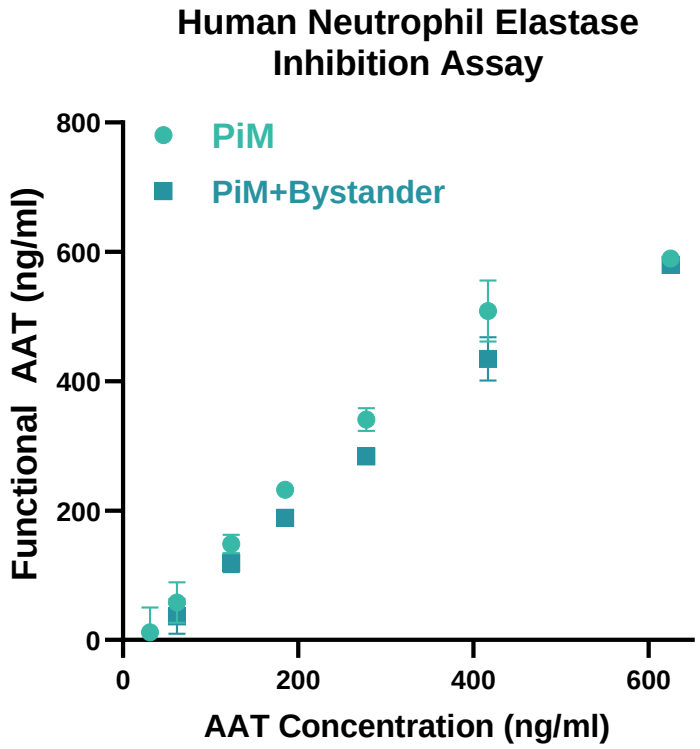
BEAM-302: The PiM + bystander AAT protein is functionally comparable to PiM AAT protein

Equivalent AAT secretion in cell culture*



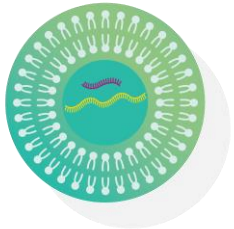
Equivalent AAT function by binding and inhibition of neutrophil elastase *in vitro*





* Packer et al. Molecular Therapy (2022) https://doi.org/10.1016/j.ymthe.2022.01.040.

BEAM-302: BEAM-302 correction of the PiZ variant also addresses liver disease in an Alpha-1 mouse model



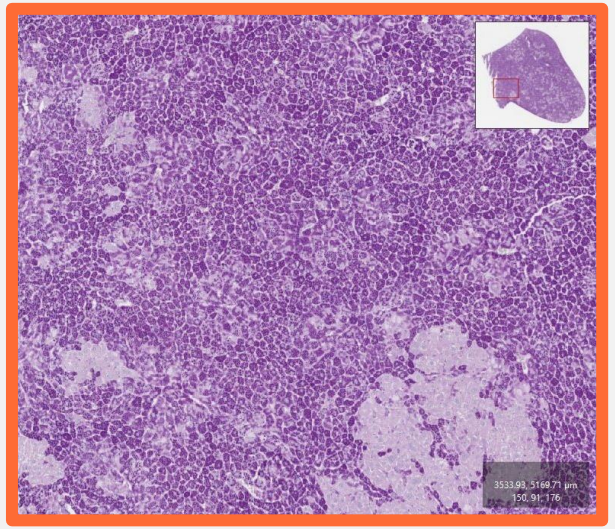
i.v. delivery

PiZ Mouse

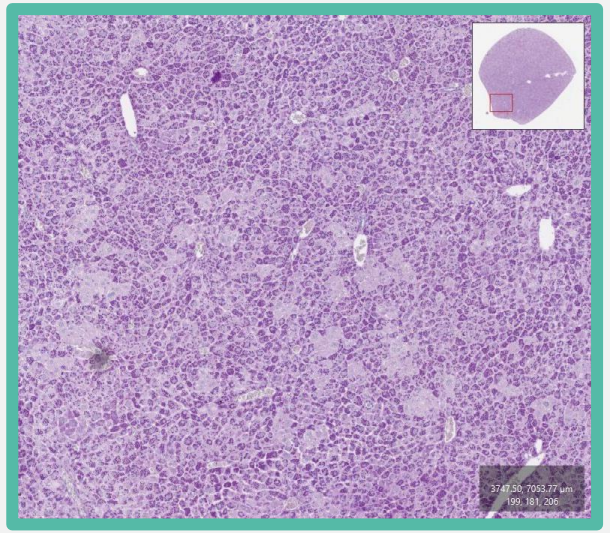
1-week

Stain for abnormal Z aggregates

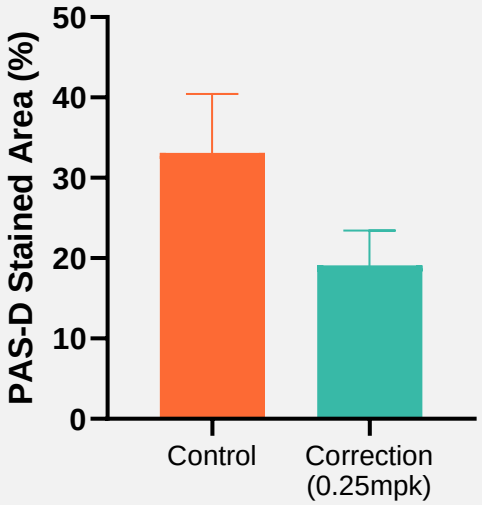
Day 7
No Beam-302
("Control")



Day 7
BEAM-302
("Correction")

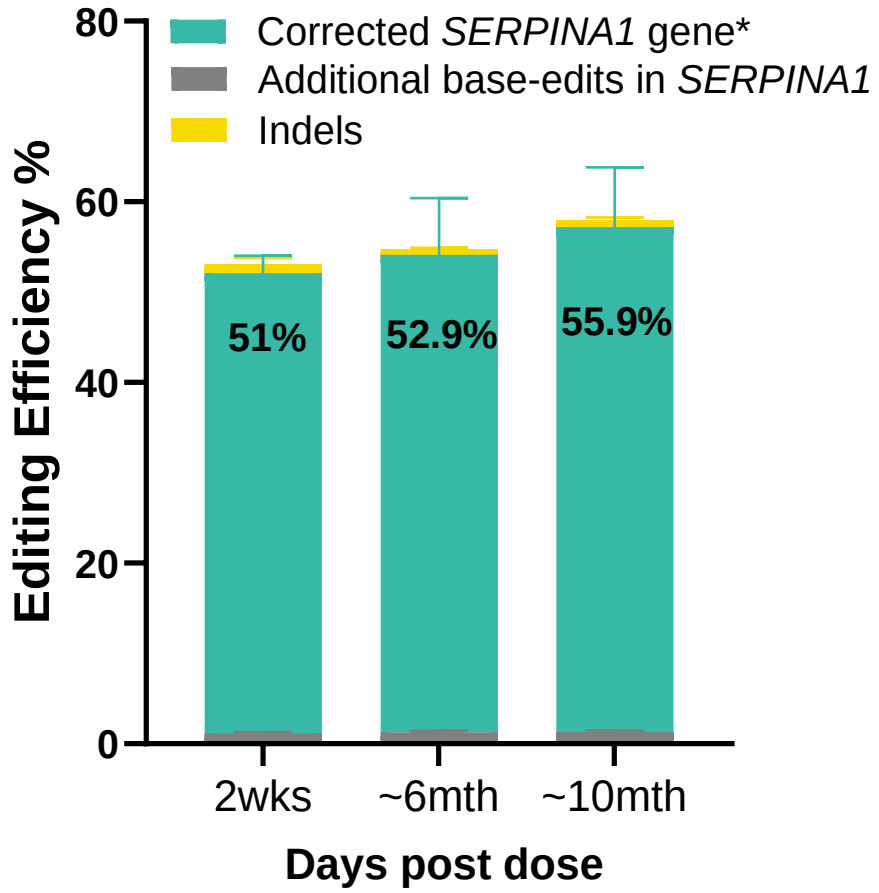


Reduction in toxic liver aggregates



BEAM-302: Single dose of BEAM-302 leads to durable correction of the PiZ variant

Liver editing



To date, *SERPINA1* gene editing and AAT levels are either stable or increasing after a single dose

- **Gene editing and AAT levels remain stable** in rats as of 10 months
- **Gene editing remains stable** in mice as of 8 months
- **Gene editing is increasing** in mice as of 3 months, suggesting potential improved survival of corrected liver cells

*Corrected *SERPINA1* gene is comprised of edits resulting in functional PiM AAT

Long term studies were performed with precursor research grade reagents (1.5mpk)

BEAM-302: Phase 1/2 trial designed to achieve clinical proof-of-concept in patients across the spectrum of AATD

Part A: AATD-associated Lung Disease

Dose Exploration → Dose Expansion

- Up to 4 dose cohorts
- Patients excluded with liver disease

Part B: AATD-associated Lung and/or Liver Disease

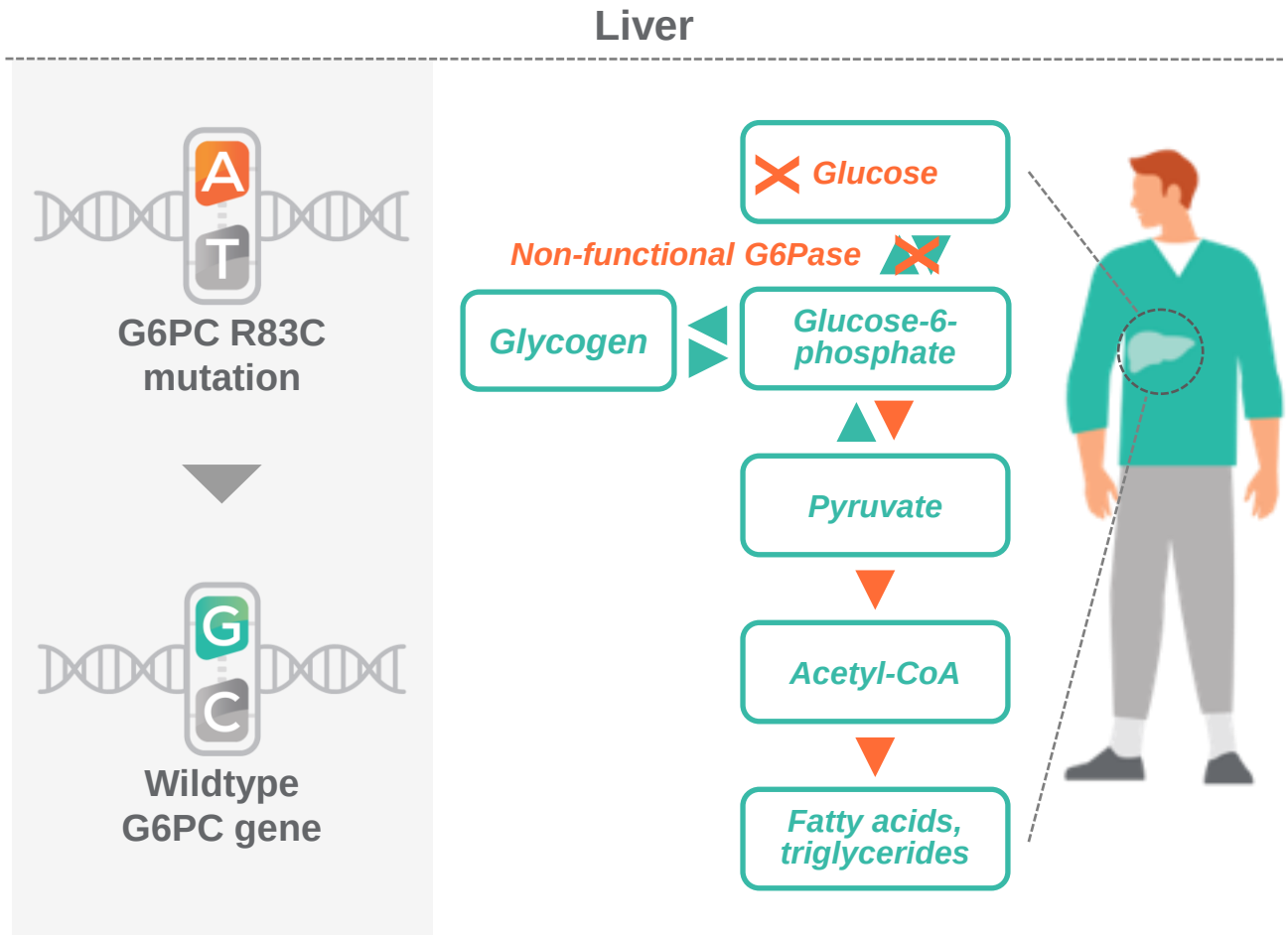
Dose Exploration → Dose Expansion

- Up to 4 dose cohorts
- Patients included with mild to moderate liver disease

Assess early safety and efficacy and identify optimal dose for pivotal study

- Opportunity to achieve first ever clinical proof-of-concept of *in vivo* base editing leading to correction of a disease-causal mutation
- CTA cleared in the UK; first patient dosed in the Phase 1/2 study in June 2024

BEAM-301: Aims to normalize glycogen metabolism in patients with GSD1a to prevent hypoglycemia and other disease manifestations



Unmet Need in GSD1a Patients with Severe R83C Mutation:

- Inability to convert glycogen back to glucose to sustain blood sugar while fasting
- Patients at constant risk of hypoglycemia that can result in seizures, coma or death
- Estimated ~300 R83C patients in U.S. based on updated epidemiology

Current Standard of Care:

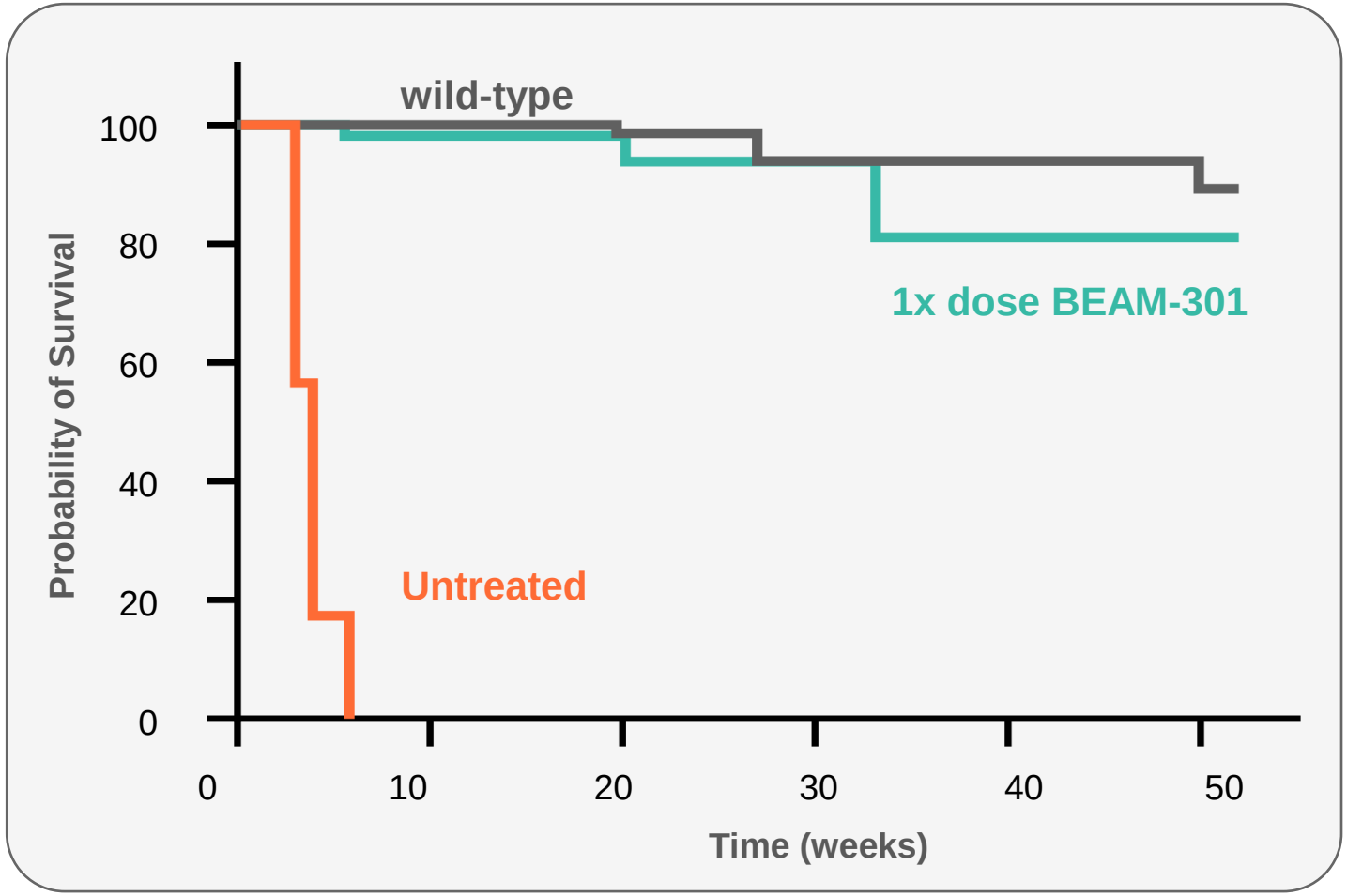
- Liquid cornstarch supplementation every 2-4 hours, even throughout the night

BEAM-301 Potential:

- Correct liver G6PC mutation to restore enzyme activity and enable normal glucose homeostasis, as well as eliminate chronic cornstarch supplementation
- Animal studies suggest ~11% editing sufficient for restoring fasting glucose and metabolic profile

Chou & Mansfield. 2007. Curr. Gen. Ther.; Internal Beam estimates

BEAM-301: Treatment with a single dose significantly improved long-term survival in GSD1a mouse model



- Preclinical studies of BEAM-301 demonstrated a single dose **significantly improved long-term survival out to a year** in humanized R83C homozygous mice
  - Untreated homozygous R83C mice die within weeks of birth
- Given its rare nature and geographic distribution of patients, Beam will initially focus development of BEAM-301 in the U.S.

U.S. IND filing expected in first half 2024

Creative pipeline and platform partnerships unlock additional value and broaden therapeutic impact

Strategic Deals

resulting in $675M upfront and more than $1B in potential milestones

Pfizer

- $300M upfront for 3 base editing targets
- Beam option at end of Phase 1/2 for 35% WW cost/profit split on 1 program

Verve Therapeutics / Lilly

- $250M in upfront/equity plus up to $350M in potential development-stage payments to acquire Beam's cost/profit split options in 3 Verve cardiovascular programs

Apellis

- $75M upfront for base editing for complement-mediated diseases
- Beam option at end of Phase 1 for 50% of U.S. rights on one program

Sana Biotechnology

- $50M upfront for non-exclusive license to Cas12b nuclease for certain engineered cell therapies

Innovator Deals

gaining rights to innovative and complementary technologies

prime medicine

- Prime editing (PE) technology is complementary to base editing
- Beam exclusive PE rights for all A-G and C-T edits plus any edit for SCD

Orbital Therapeutics

- Next-gen RNA and delivery technologies
- Beam equity stake in Orbital plus IP access in gene editing and other fields

2024 is expected to be a year of significant catalysts for Beam

2024 Anticipated Catalysts

BEAM-101
SCD

Complete sentinel dosing and initiate expansion

Present clinical data on multiple patients in second half of 2024

ESCAPE
SCD

Initiate Phase 1-enabling preclinical studies in 2024

BEAM-302
AATD

CTA cleared in the UK

Initiate Phase 1/2 clinical trial

BEAM-301
GSD1a

Submit U.S. IND application in first half of 2024

BEAM-201
T-ALL / T-LL

Present clinical data in second half of 2024

Beam THERAPEUTICS

THANK YOU