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H.C. Wainwright Cell Therapy Virtual Conference

February 2023

Forward-Looking Statements

This presentation contains forward-looking statements, as may any related presentations, within the meaning of the Private Securities Litigation Reform Act of 1995. All statements contained in this herein and in any related presentation that do not relate to matters of historical fact should be considered forward-looking statements, including, without limitation, statements regarding our growth strategy, research advancement, clinical development and regulatory review of our product candidates, the expected timing of updates regarding our CAR T and in vivo gene editing programs and research, the expected timing of our communications with regulators, the expected advancement toward and timing of IND and CTA filings, expected efficacy and benefit of our platform, programs, product candidates, and manufacturing improvements and optimizations, the progress and success of collaborations with Lilly, Novartis, and other partners, including the receipt of any milestone, royalty, or other payments pursuant to and satisfaction of obligations under collaboration agreements, the goal of displacing autologous CAR T therapy, the goal of providing a one time, potentially curative treatment for genetic diseases, the goal of complex edits of the genome, the potential of "safe harbor" gene insertion, the ability of AAV and LNP delivery capabilities, the ability of our product candidates, if approved, to become best-in-class or first-in-class, expectations about our operational initiatives and business strategy, achieving key milestones and additional collaborations, and expectations regarding our liquidity and ability to fund operating expenses and capital expenditures requirements. In some cases, you can identify forward-looking statements by terms such as "aim," "anticipate," "approach," "believe," "contemplate," "could," "estimate," "expect," "goal," "intend," "look," "may," "mission," "plan," "possible," "potential," "predict," "project," "should," "target," "will," "would," or the negative thereof and similar words and expressions.

Forward-looking statements are based on management's current expectations, beliefs and assumptions and on information currently available to us. Such statements are subject to a number of known and unknown risks, uncertainties and assumptions, and actual results may differ materially from those expressed or implied in the forward-looking statements due to various important factors, including, but not limited to: our ability to become profitable; our ability to procure sufficient funding and requirements under our current debt instruments and effects of restrictions thereunder; risks associated with raising additional capital; our operating expenses and our ability to predict what those expenses will be; our limited operating history; the success of our programs and product candidates in which we expend our resources; our limited ability or inability to assess the safety and efficacy of our product candidates; our dependence on our ARCUS technology; the initiation, cost, timing, progress, achievement of milestones and results of research and development activities, preclinical studies and clinical trials; public perception about genome editing technology and its applications; competition in the genome editing, biopharmaceutical, and biotechnology fields; our or our collaborators' ability to identify, develop and commercialize product candidates; pending and potential liability lawsuits and penalties against us or our collaborators related to our technology and our product candidates; the U.S. and foreign regulatory landscape applicable to our and our collaborators' development of product candidates; our or our collaborators' ability to obtain and maintain regulatory approval of our product candidates, and any related restrictions, limitations and/or warnings in the label of an approved product candidate; our or our collaborators' ability to advance product candidates into, and successfully design, implement and complete, clinical or field trials; potential manufacturing problems associated with the development or commercialization of any of our product candidates; our ability to obtain an adequate supply of T cells from qualified donors; our ability to achieve our anticipated operating efficiencies at our manufacturing facility; delays or difficulties in our and our collaborators' ability to enroll patients; changes in interim "top-line" and initial data that we announce or publish; if our product candidates do not work as intended or cause undesirable side effects; risks associated with applicable healthcare, data protection, privacy and security regulations and our compliance therewith; the rate and degree of market acceptance of any of our product candidates; the success of our existing collaboration agreements, and our ability to enter into new collaboration arrangements; our current and future relationships with and reliance on third parties including suppliers and manufacturers; our ability to obtain and maintain intellectual property protection for our technology and any of our product candidates; potential litigation relating to infringement or misappropriation of intellectual property rights; our ability to effectively manage the growth of our operations; our ability to attract, retain, and motivate key executives and personnel; market and economic conditions; effects of system failures and security breaches; effects of natural and manmade disasters, public health emergencies and other natural catastrophic events; effects of COVID-19 pandemic and variants thereof, or any pandemic, epidemic or outbreak of an infectious disease; insurance expenses and exposure to uninsured liabilities; effects of tax rules; risks related to ownership of our common stock and other important factors discussed under the caption "Risk Factors" in our Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2022, as any such factors may be updated from time to time in our other filings with the SEC, which are accessible on the SEC's website at www.sec.gov and the Investors page of our website under SEC Filings at investor.precisionbiosciences.com.

The 2022 financial results included in presentation are unaudited and preliminary, and this presentation does not present all information necessary for an understanding of the Company's financial condition as of December 31, 2022 and its results of operations for the three months and year ended December 31, 2022. The Company's actual results may differ from the preliminary estimates above due to the completion of the Company's year-end accounting procedures, including execution of the Company's internal control over financial reporting, and audit of the Company's financial statements for the year ended December 31, 2022 by the Company's independent registered public accounting firm, which are ongoing.

Allogeneic CAR T Programs

Potential First-in-Class and Best-in-Class Approaches

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Precision BioSciences: Allogeneic CAR T Program Executive Summary

Ex Vivo

1. **In autologous CAR T relapsed patients, azer-cel has shown high response rates[1],** with **evidence of durability** extending greater than 18 months; **including peak CAR T levels in the same range as autologous CAR T durable responders**
2. **Manufacturing optimization resulted in improved product attributes** supporting reduced lymphodepletion dose in combination with azer-cel
3. **Favorable Type C feedback from FDA** on chemistry, manufacturing, and controls strategies support ongoing late-stage development for azer-cel
4. **Will proceed with request for FDA clinical meeting** pending read-out from next azer-cel cohort
5. **Recruiting additional patients for PBCAR19B** in earlier line R/R DLBCL to complete Phase 1

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[1] Results announced on June 8, 2022 (n=12) were as of May 31, 2022

Azer-cel: Target Product Profile (TPP) for CAR T Relapsed Patient Population

	CAR T relapse	3rd line NHL
Progression Free Survival (mPFS)	**> 3 months**	> 6-7 months
Duration of Response (DoR)	**> 50% @ 3 months**	~35% CR at 6 months; ~32% CR at 1 year plus
Overall Response Rate (ORR)	**> 50%**	> 70% at 28 days
Overall Survival (mOS)	**> 6 months**	26 months[3]
Safety	**Highest risk salvage population**	Same or better than auto CAR T
Potential Regulatory Path	**Single-arm study with historical control** *(to be discussed with FDA)*	Head-to-head vs. auto CAR T/auto transplant

[1] https://ashpublications.org/blood/article/137/13/1832/474111/Outcomes-of-patients-with-large-B-cell-lymphoma
[2] https://onlinelibrary.wiley.com/doi/10.1002/ajh.25505 University of Washington N=61 patients
[3] Long term overall survival in ZUMA-1 https://ash.confex.com/ash/2021/webprogram/Paper148078.html

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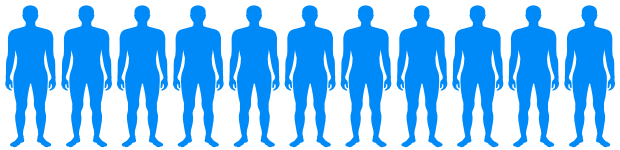
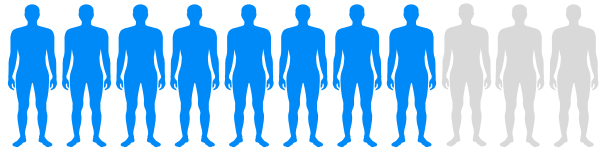
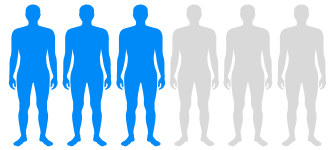
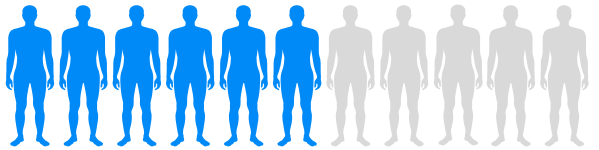
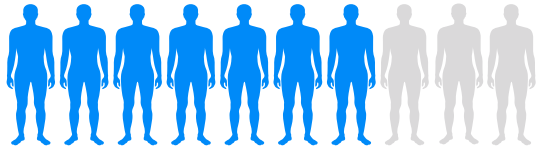
Azer-cel: Efficacy Results[1]:

100% ORR, 73% CR with 50% durable responses at > 6 months

CAR T relapsed median 5+ prior lines (n = 11 evaluable)[2,3]

ORR ≥ Day 28 n (%)		**11 (100%)**
CR ≥ Day 28 n (%)		**8 (73%)**
≥ 6 mo. DoR n (%)[3]		**3 (50%)** *of evaluable*
Ongoing responders n (%)		**6 (55%)**
PFS > 2 months n (%)		**7 (70%)**

Clinicaltrials.gov identifier: NCT03666000

Potential Regulatory Hurdle

[1] Interim efficacy results as of May 31, 2022. Data presented at American Society of Clinical Oncology 2022 Annual Meeting
[2] One subject non-evaluable for efficacy at Day 28 assessment due to death from suspected fludarabine associated neurotoxicity at Day 23; patient had complete resolution on PET/CT scan at Day 21
[3] 4 of 6 (67%) evaluable patients have achieved remission inversions when comparing against prior therapy received

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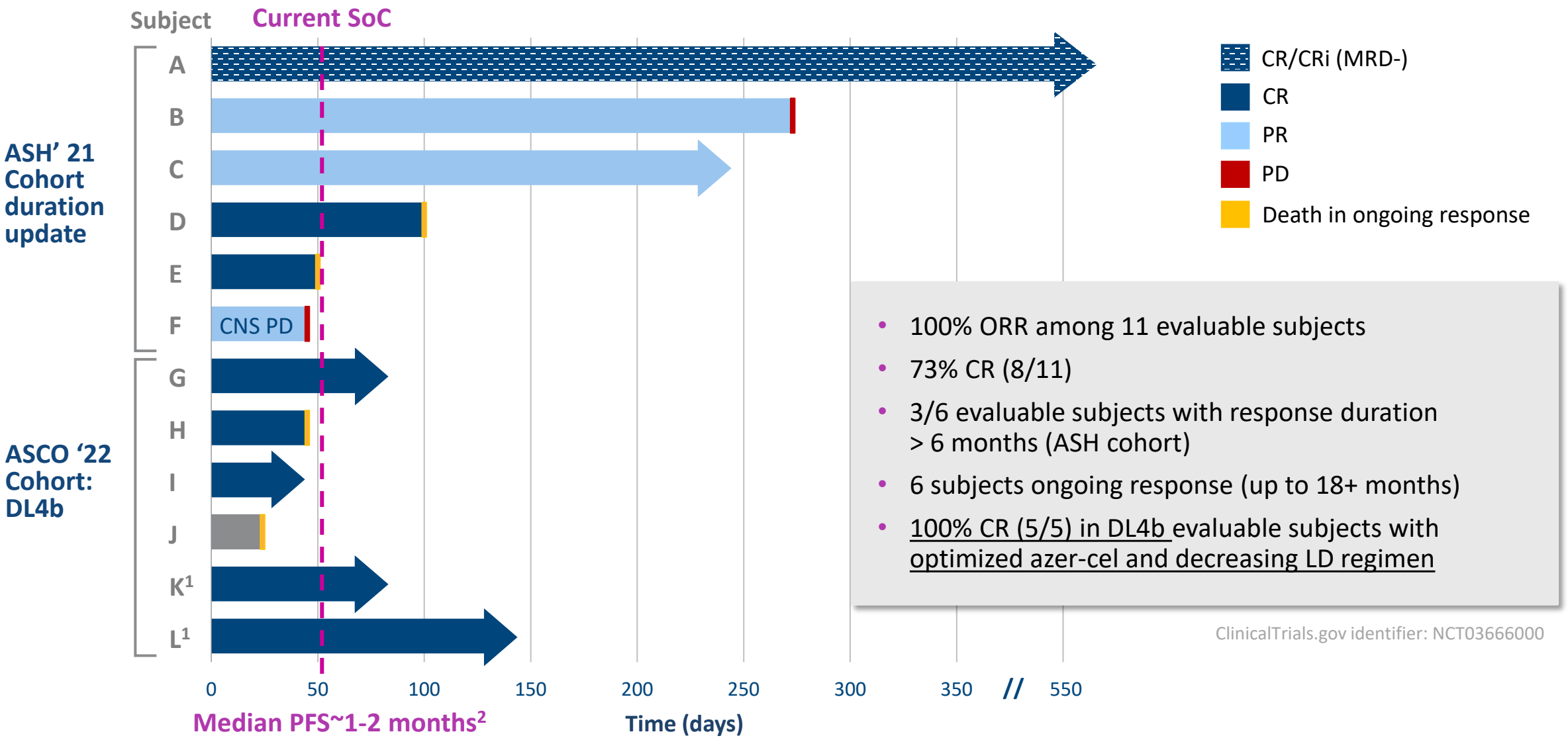
Azer-cel: Response Rates and Durability Exceed Current Standard-of-Care (SoC) for CAR T Relapsed Subjects



- 100% ORR among 11 evaluable subjects
- 73% CR (8/11)
- 3/6 evaluable subjects with response duration > 6 months (ASH cohort)
- 6 subjects ongoing response (up to 18+ months)
- 100% CR (5/5) in DL4b evaluable subjects with optimized azer-cel and decreasing LD regimen

ClinicalTrials.gov identifier: NCT03666000

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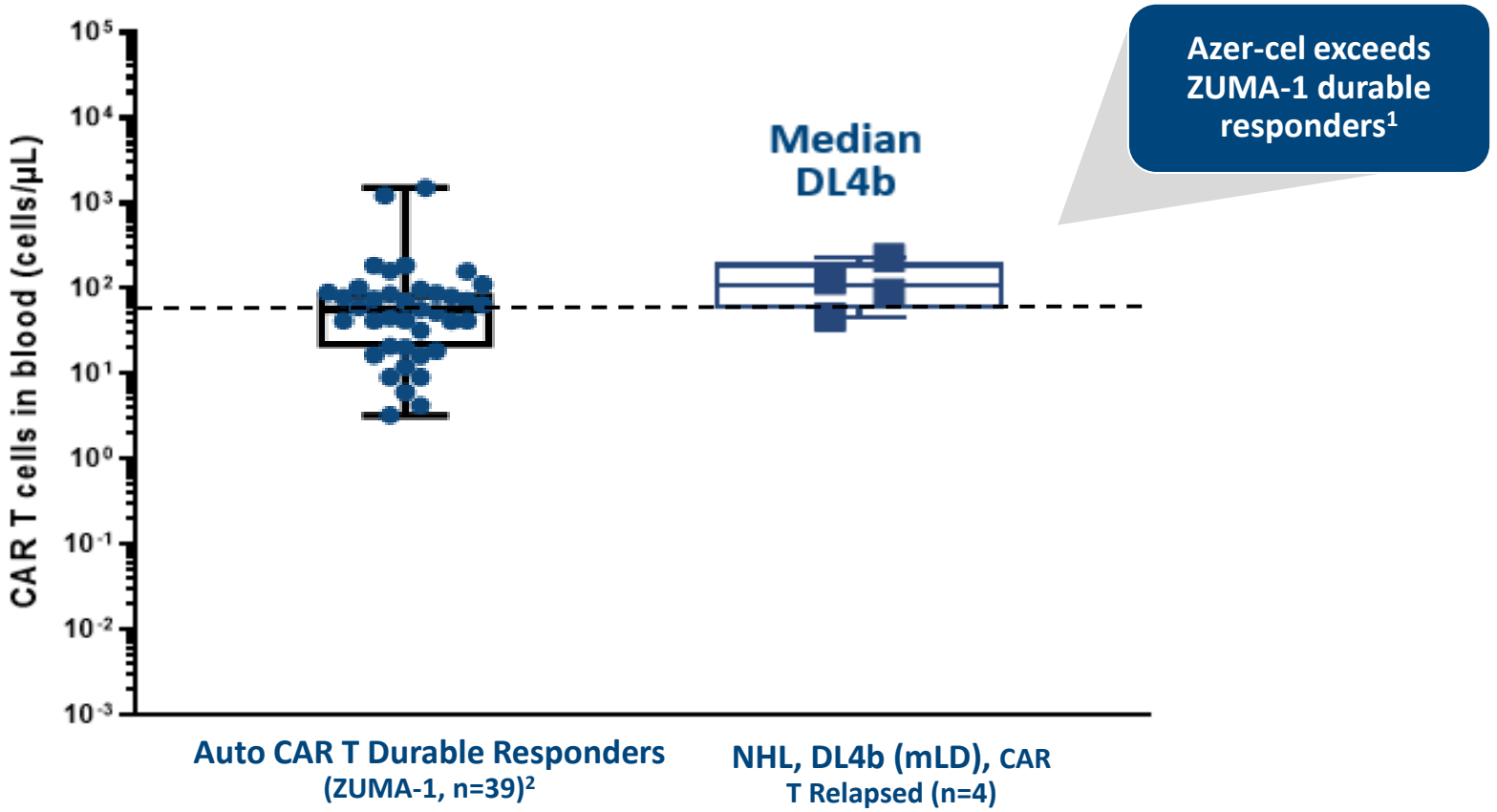
1 Subject K and subject L relapsed after allo CAR T, initially dosed at dose level 3. Original response: K – CR for 178 days before PD; L – PR for 28 days before PD
2. US CAR T Consortium Study - https://pubmed.ncbi.nlm.nih.gov/33156925/

Azer-cel: Peak Expansion Equivalent to Auto CAR T Levels in Long Term Durable Responders from ZUMA-1



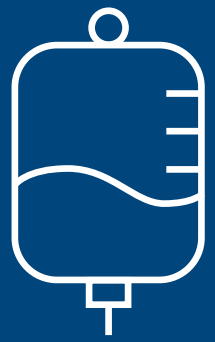
★ Azer-cel program is first allogeneic CAR T to show peak expansion equivalent to auto CAR T with single dose

[1] For illustrative purposes only - not a head-to-head comparison. Differences exist between trial designs and subject characteristics, and caution should be exercised when comparing data across studies. Both ZUMA-1 and PBCAR01091 clinical study analyzed utilizing flow cytometry.
[2] Locke, et al. 2020

Optimize Therapeutic Index: Maximize Safety While Maintaining Efficacy Profile Remains Key Next Step

Ex Vivo

Azer-cel



Reduce total fludarabine exposure during lymphodepletion

4 days

3 days

Fludarabine dose of **30 mg/m^2 per day**

★ **Given CAR T relapsed patient population is extremely fragile and already have received lymphodepletion, we have reduced the total fludarabine exposure**

What to Expect in Q1 2023 Program Update

Azer-cel

- Additional long-term follow up from ASH 2021 and ASCO 2022 cohorts
- New subjects treated with optimized cells at DL4 (500M cells) and less intense LD
  - Peak expansion data (pharmacokinetics) & ctDNA clearance
  - Safety
  - Response rates in evaluable subjects
- If data is supportive, proceed with request for FDA clinical meeting

PBCAR19B

- Subjects treated with optimized cells at DL2 (540M cells)
  - Peak expansion data (pharmacokinetics)
  - Safety
  - Response rates in evaluable subjects
- Recruiting additional patients for PBCAR19B program in R/R DLBCL to complete Phase 1

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Investor Deck

January 2023

Precision's Growth Strategy:

Leverage the ARCUS gene editing platform in oncology and genetic diseases

1 Advance a first-in-class and a best-in-class allogeneic CAR T treatment for hematologic cancer

- Lead anti-CD19 allogeneic candidate, azercabtagene zapreleucel (azer-cel) potential first-in-class for R/R NHL* patients who relapsed post auto CAR T
- Next-generation anti-CD19 candidate, PBCAR19B with the goal of displacing auto CAR T in 2nd /3rd line R/R NHL* patients

2 Unlock full potential of ARCUS *in vivo* gene editing platform

- **Differentiate ARCUS** on safety, gene insertion and complex edits
- **Advance first *in vivo* gene editing programs to the clinic** to address serious genetic diseases and chronic hepatitis B

3 Secure selective premium *in vivo* gene editing collaborations

- Unlock additional development opportunities, reach more patients and provide capital for advancing wholly owned programs

Building an end-to-end gene editing company, spanning research through commercialization

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* relapsed/refractory non-Hodgkin lymphoma

Precision BioSciences: A Clinical Stage Gene Editing Company Built on Wholly Owned ARCUS Genome Editing Platform

ARCUS® Platform
for therapeutic drug development

Diversified Pipeline

Ex Vivo:
Allogeneic CAR T immunotherapies
- Single-gene edit, donor-derived, single-dose

In Vivo:
Gene editing for complex genetic diseases
- Potentially curative, one-time treatment

- Pioneers in genome editing technology development
- Scalable in-house manufacturing capabilities
- ARCUS platform and nucleases are unencumbered by third-party IP; control of over 100 issued patents related to ARCUS and its applications
- Strong balance sheet provides 2+ years of runway[1]

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[1] Based on cash and cash equivalents of approximately $190 million as of December 31, 2022, expected operational receipts and available credit.

Differentiating the ARCUS platform

Highly Differentiated Genome Editing Platform for High Unmet Needs in Genetic Diseases

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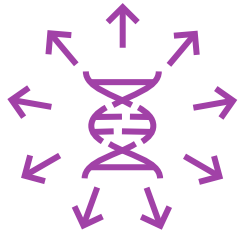
Three Distinct Advantages of ARCUS Genome Editing Platform

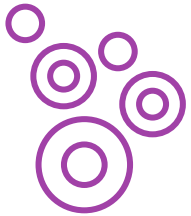
Precision
(Safety & Specificity)

- ARCUS is inactive until it binds to target DNA
- Off-target editing easier to detect and eliminate
- Iterative nuclease optimization process to customize safety and efficacy profile



Versatility

- Gene insertion, deletion or repair/complex edit
- DNA cuts are preferentially repaired by homology-directed repair (HDR)

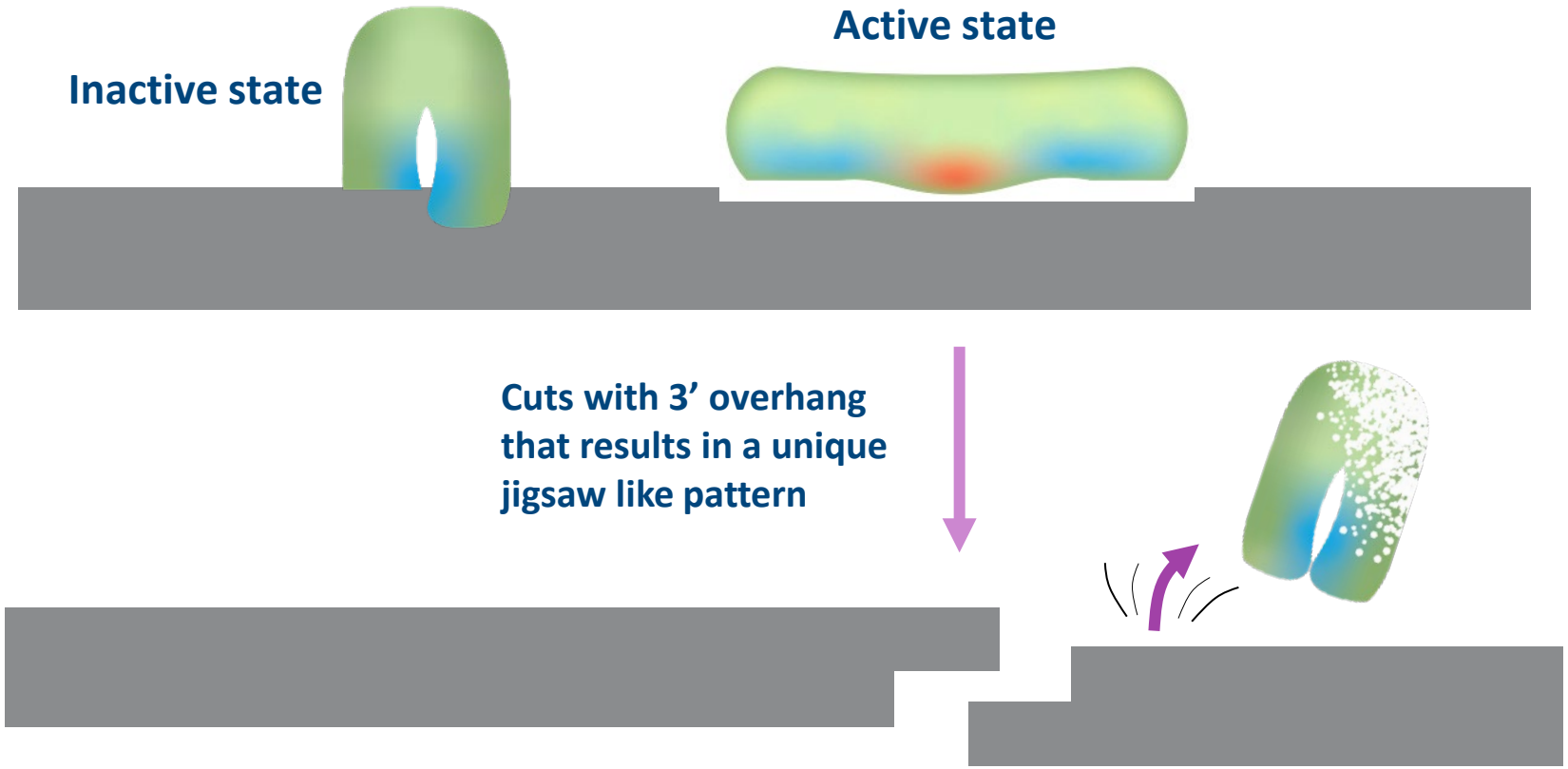


Delivery

- ARCUS nucleases are small (364 amino acids)
- Delivery to broad array of tissues and cells using adeno-associated virus (AAV) and/or lipid nanoparticle (LNP)

ARCUS: Engineering Nucleases that Mimic Nature's Genome Editing System

The ARCUS nuclease is the only gene editor derived from a natural homing endonuclease



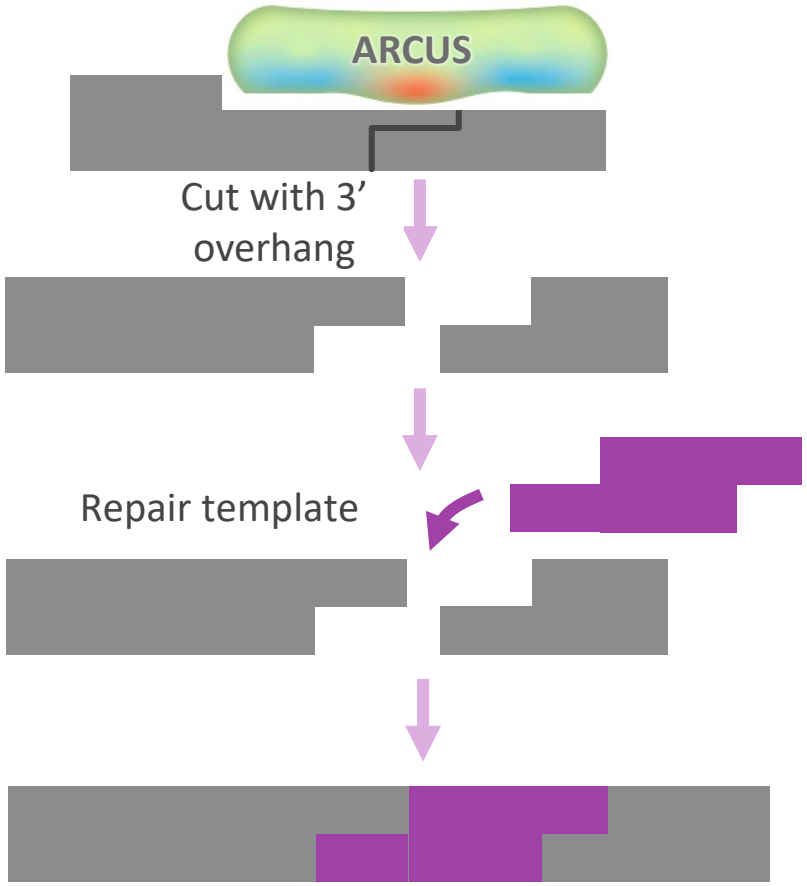
The ARCUS nuclease cuts DNA at a specified site – can result in ***simple and complex edits***

ARCUS is Capable of Simple Edits and Optimally Suited for Complex Edits

Simple Edit		**Deletion**	A deletion (also known as knock-out) is when **a gene is made inoperative** through a permanent change in the DNA; therefore, the gene **no longer expresses a functional protein**
Complex Edits		**Insertion**	An insertion (also known as knock-in) is when **a healthy copy of a gene is inserted into the genome** through a permanent change in the DNA
		**Excision**	An excision is when **a gene is altered** through permanent removal of a portion of the genome, **requiring multiple cuts** in the DNA
		**Replacement**	A replacement is when **a healthy copy of a gene is inserted into the genome at the same time as the defective gene is removed** from the genome

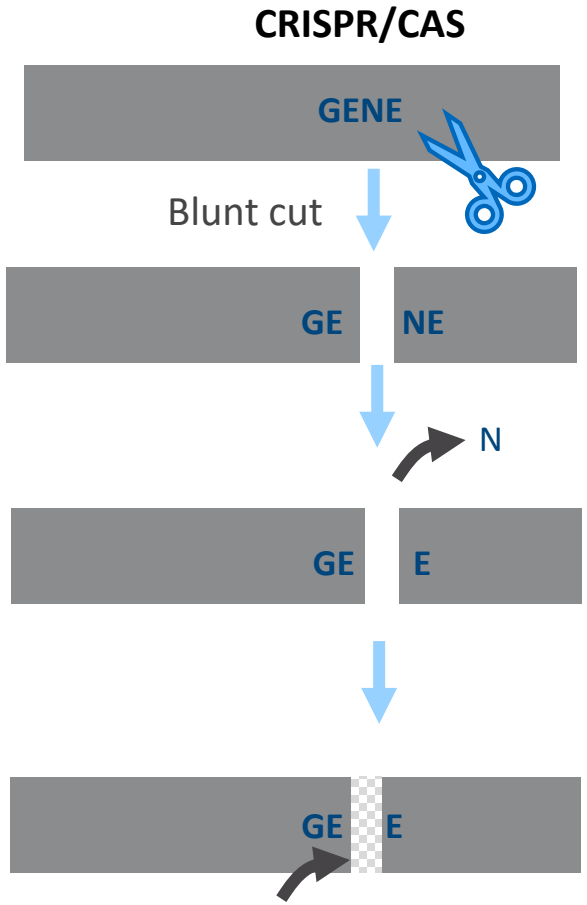
Precise 3’ Overhang Cuts are Unique - Designed to Enable Gene Insertion and Complex Edits and Provide Identifiable Signature for On-Target Editing

Complex/Homology-directed Repair (HDR)



Incorporation of template sequence into genome

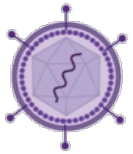
Simple/Non-Homologous End Joining (NHEJ)



“indel” mutation

Effective Gene Editing Requires Both AAV and LNP Delivery Capabilities

ARCUS can be effectively delivered with both AAV and LNP



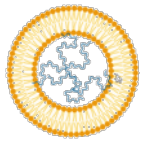
AAV

PROS

- Sustained nuclease expression may provide increased efficacy
- **Gene insertion requires AAV to deliver DNA repair template**
- **AAV has been well-tolerated** in NHP studies to date
- **Tissue specificity:** target expression in target tissue only (via promoters)
- **Can deliver to broad tissue** (CNS, muscle, stem cells, etc.)

CONS

- **Pre-existing neutralizing antibodies** and prior **AAV based therapies** may limit patient access
- **Safety risk:** AAV integrations, risk of long-term immune response to long expression of the nuclease
- **Size limitations** on cargo capacity is a challenge for most gene editing technologies; **ARCUS is small and fits in AAV**



LNP-mRNA

PROS

- **Potential to repeat dose** to maximize therapeutic impact
- **Scalability** for manufacturing
- **Transient (~48 hours)** nuclease expression **may have better safety profile**
- **No risk of insertion of the payload into the genome** since mRNA delivered by LNP cannot integrate into the genome

CONS

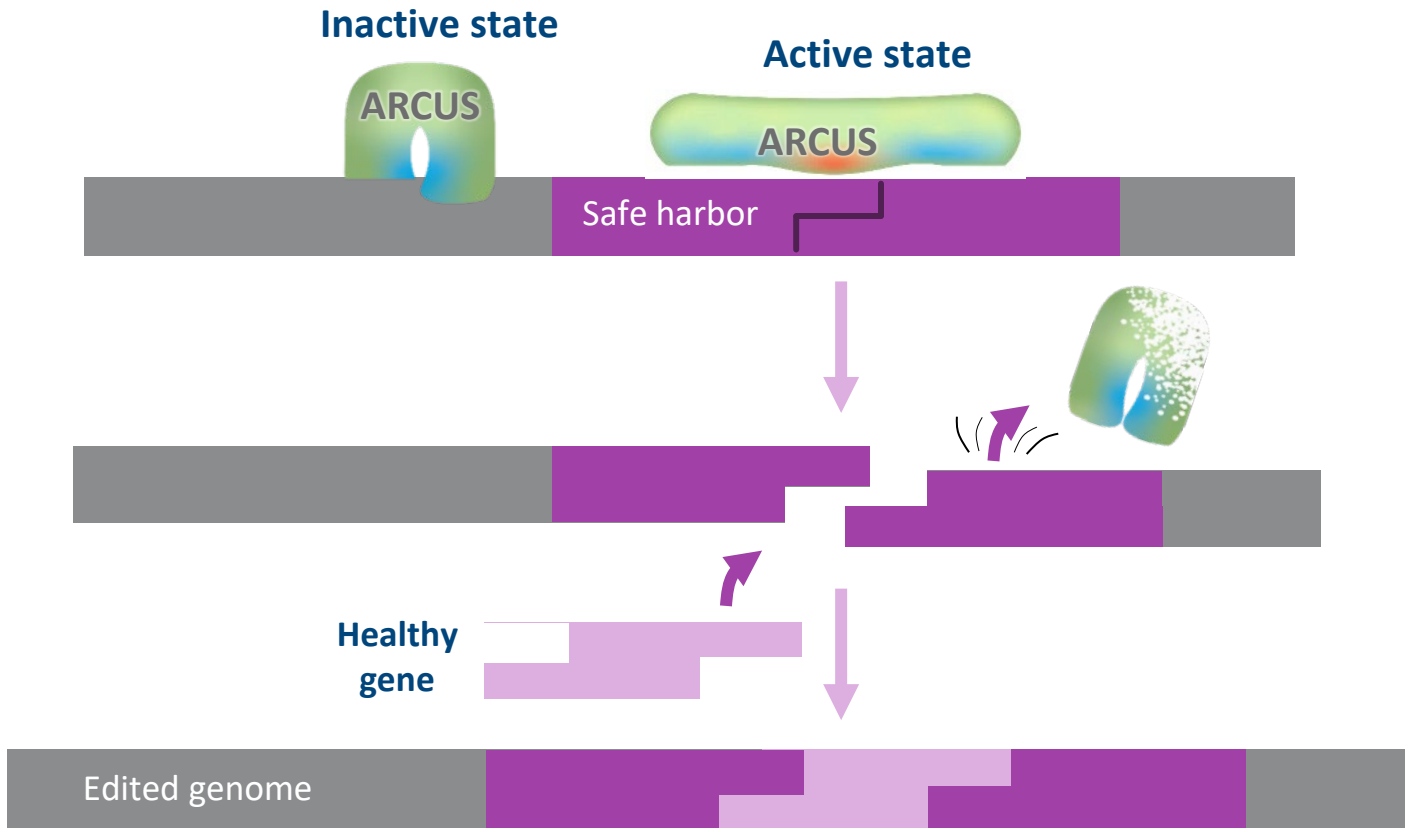
- **Transient (~48 hours)** nuclease expression **may limit efficacy**
- **Tolerability/Immunogenicity** of mRNA is a concern and high doses increase risk of complement activation
- **LNPs are largely restricted to use for liver** delivery today (novel approaches may permit LNPs beyond liver in future)
- **Payload (insertion) can not directly deliver DNA into the nucleus;** requires additional delivery system (e.g., AAV)

Unlocking Greater *In Vivo* Editing Potential via Safe Harbor, ARCUS Gene Insertion

A “safe harbor” ARCUS nuclease may be used to **develop multiple products to insert a different gene for each disease**

Complex Edit

Insertion



In Vivo Gene Editing Programs

Precision *In Vivo G*ene Insertion and Complex Gene Editing Programs Highlight Unique ARCUS Attributes

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Broad and Deep *In Vivo* Pipeline Showcases ARCUS for Gene Insertion and Complex Edits

PROGRAM	INDICATION	TISSUE	TARGET	COMPLEX EDIT TYPE / DELIVERY	RESEARCH	CANDIDATE SELECTION	IND-ENABLING	PARTNER
PBGENE-HBV	Chronic hepatitis B	Liver	*HBV*	Deletion/LNP				
PBGENE-HbE	Sickle cell disease/ beta thalassemia	HSCs	—	Insertion/—				NOVARTIS
PBGENE-DMD	Duchenne muscular dystrophy	Muscle	*DMD*	Excision/AAV				Lilly
PBGENE-LLY2	Undisclosed	Liver	—	—				Lilly
PBGENE-LLY3	Undisclosed	CNS	—	—				Lilly
iECURE-OTC	Ornithine transcarbamylase deficiency	Liver	*OTC*	Insertion/AAV				ECURE
iECURE-PKU	Phenylketonuria	Liver	*PAH*	Insertion/AAV				ECURE

ARCUS Safety Supported by Long-term Non-Human Primate Data

Differentiated Ability to Track and Minimize Off-target Editing

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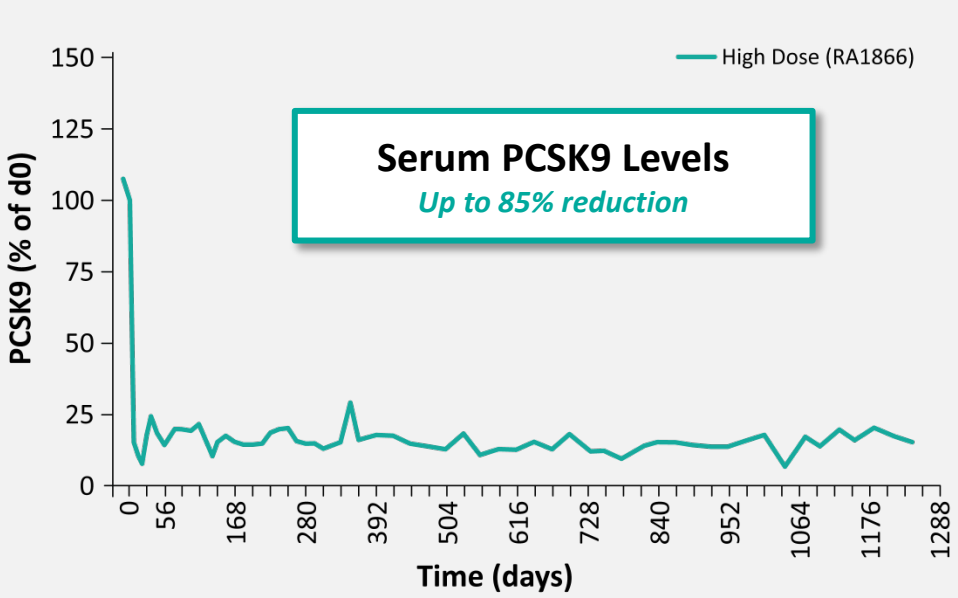
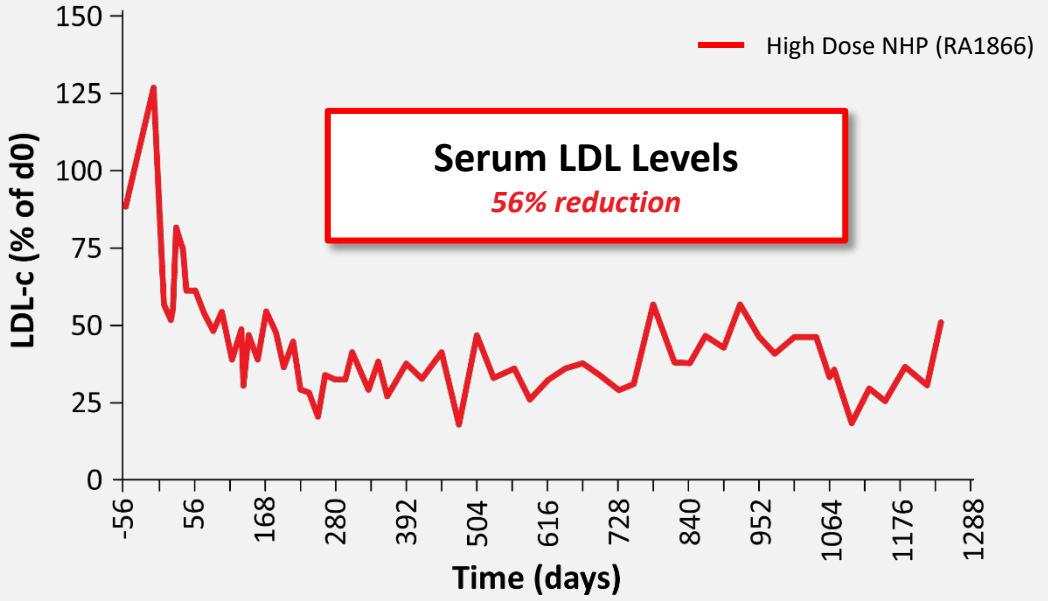
Five Years of Follow-up for ARCUS in NHP; Longest, Publicly Known Gene Editing Data

Non-Human Primate Animal Model

One-time delivery of an **AAV-ARCUS** vector into PCSK9 safe harbor for deletion resulted in long-term reductions of serum PCSK9 and LDL[1] (5-year timepoint approaching) with no additional safety concerns





★ ARCUS delivered by AAV has been studied in the most extensive large animal data set of any gene editing tool showing sustained, safe deletion in long term NHP studies

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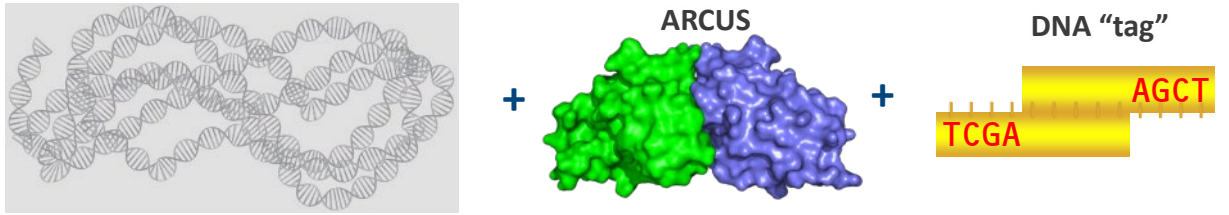
[1] Wang et al, *Molecular Therapy*, February 2021.

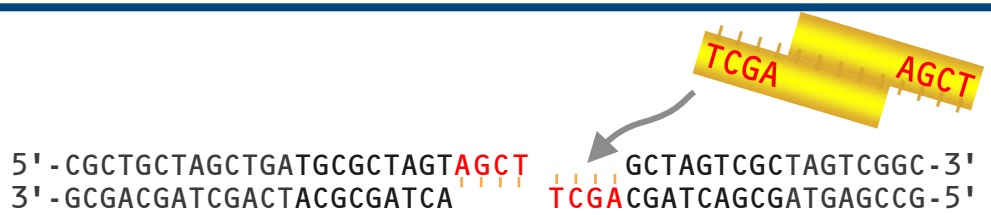
ARCUS Safety and Specificity for Tracking Off-Target Editing

Oligo Capture: A genome-wide assay for ARCUS off-target editing

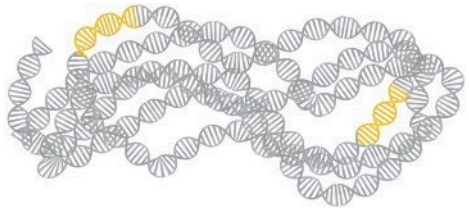
Step 1: Transfect cells with ARCUS and a DNA “tag”



Step 2: The “tag” is captured at DNA breaks resulting from ARCUS cleavage



Step 3: Genomic DNA is isolated from cells and evaluated on a next-gen sequencer to identify all sites where the “tag” was captured



Step 4: Sites of on- and off-target capture of the DNA “tag” are identified and deep sequenced to confirm editing

ATGCTAGCTAGCTAGCTGATCGATGCTAGCTAGCTAGCTA
GTAGCTAGTAAGCTGATCGTAGCTGCCGCTGCTAGCTGA
TGCGCTAGTAGCTGCTAGTCGCTAGTCGGCAGTCGATGC
TGCTAGCTAGTAGCTGCATGCTAGCTAGTGTGTCGATGT

ARCUS for Gene Insertion

Wholly Owned and Partnered Programs, Including Those for Large Gene Insertions

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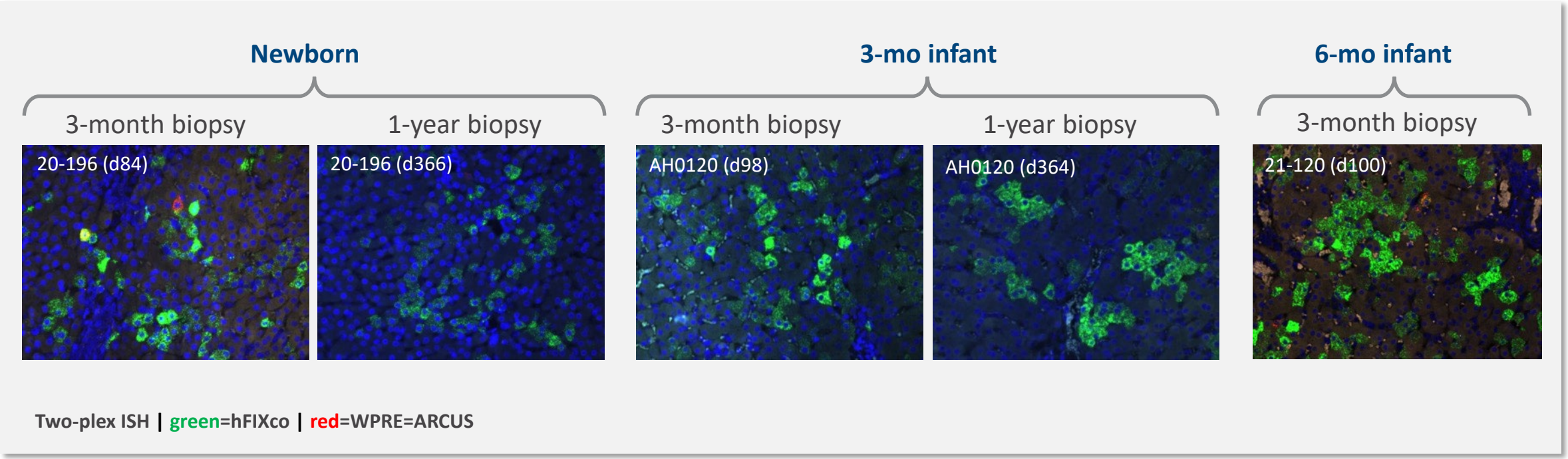
Hemophilia B Gene Insertion: Stable Transduction of Factor IX in Newborn and Infant Macaque Liver (Non-Human Primates)[1]



Green cells show that the Factor 9 (FIX) gene has been inserted and stable over 1 year

★ Factor 9 (FIX) gene insertion demonstrated in both newborn and infant NHPs to address Hemophilia B

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[1] Data Source: University of Pennsylvania's Gene Therapy Program

Ornithine Transcarbamylase Deficiency (OTC) Clinical Candidate Shows Stable Gene Insertion at Year 1[1]

Delivery of twin AAV-based vectors carrying ARCUS nuclease vector (GTP-506A) and therapeutic donor vector (GTP-506D) via PCSK9 "safe harbor" site

Long-term stability of the edited genome in NHPs was demonstrated in newborn and infant macaques

- Efficient targeted insertion was achieved in NHPs up to three months of age, and studies of older infants are ongoing
- 12-month follow-up biopsies continued to demonstrate durability, with gene insertion efficiency up to 28.2%[2], well above the expected threshold for clinical benefit
- AAV delivery well tolerated; no evidence of liver histopathology in any ARCUS-treated animals

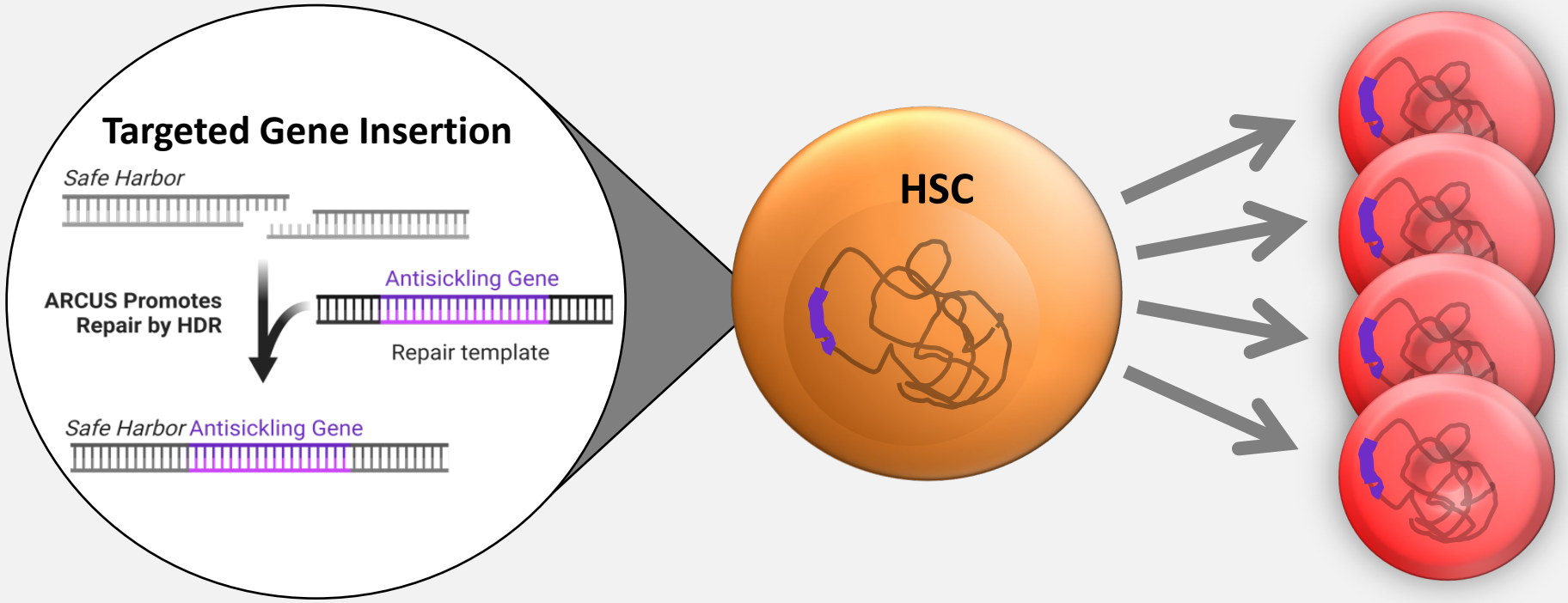
★ Durable gene editing efficiency continues to be demonstrated in NHP studies using ARCUS

[1] Data currently unpublished were presented at the International Conference on Ureagenesis Defects and Allied Conditions 2022 by researchers from the University of Pennsylvania's Gene Therapy Program in collaboration with iECURE. iECURE has a license to use of ARCUS for gene insertion for OTC. https://iecure.com/news/preclinical-data-from-iecures-gtp-506-demonstrates-potential-for-the-treatment-of-ornithine-transcarbamylase-otc-deficiency/
[2] Measured by in-situ hybridization (ISH)

Gene Insertion to a “Safe Harbor” Locus in Hematopoietic Stem Cells

ARCUS will be used to add an antisickling gene to hematopoietic stem cells (HSCs)

Permanent integration of an antisickling gene into a “safe harbor” locus in HSCs is expected to prevent the sickle cell phenotype in mature erythrocytes.



ARCUS for Complex Edits

- HBV approach edits DNA at two locations
- DMD approach makes a 500,000 base pair edit

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Precision Approach in HBV: Excision in Two Locations in the Liver

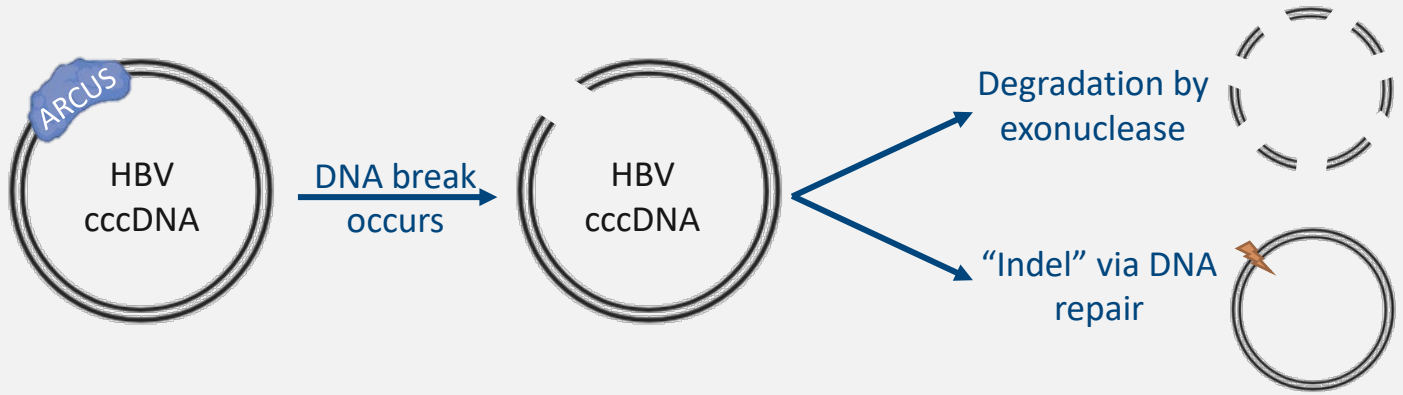
Curing HBV requires targeting two key viral components – cccDNA and integrated HBV DNA

In Vivo

Gene Excision for Chronic HepB >

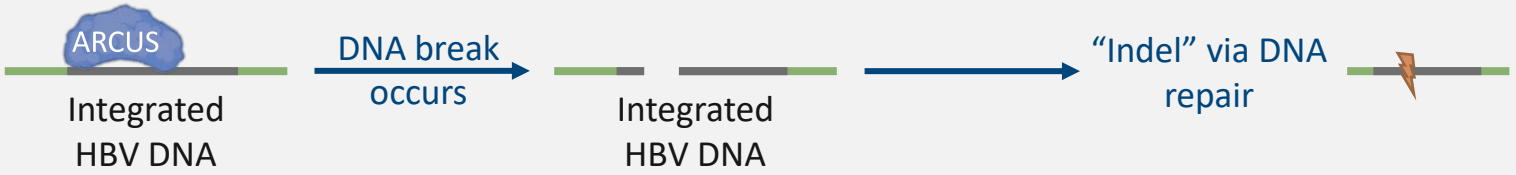
1. cccDNA

cccDNA is a pool of minichromosomes that hangs out in nuclease of liver cells and can re-establish infection



2. Integrated HBV DNA

Integrated HBV DNA attaches into the DNA and genome of liver cells



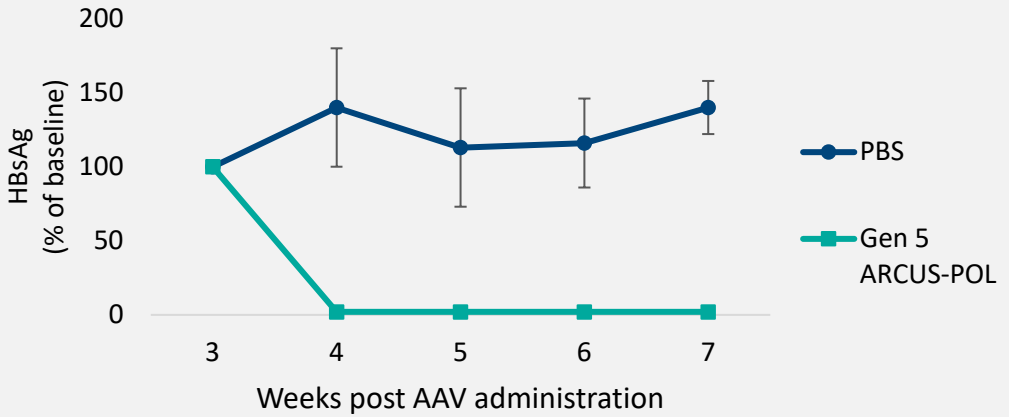
★ Precision's therapeutic approach targets both HBV viral components enabling a path towards a potential cure

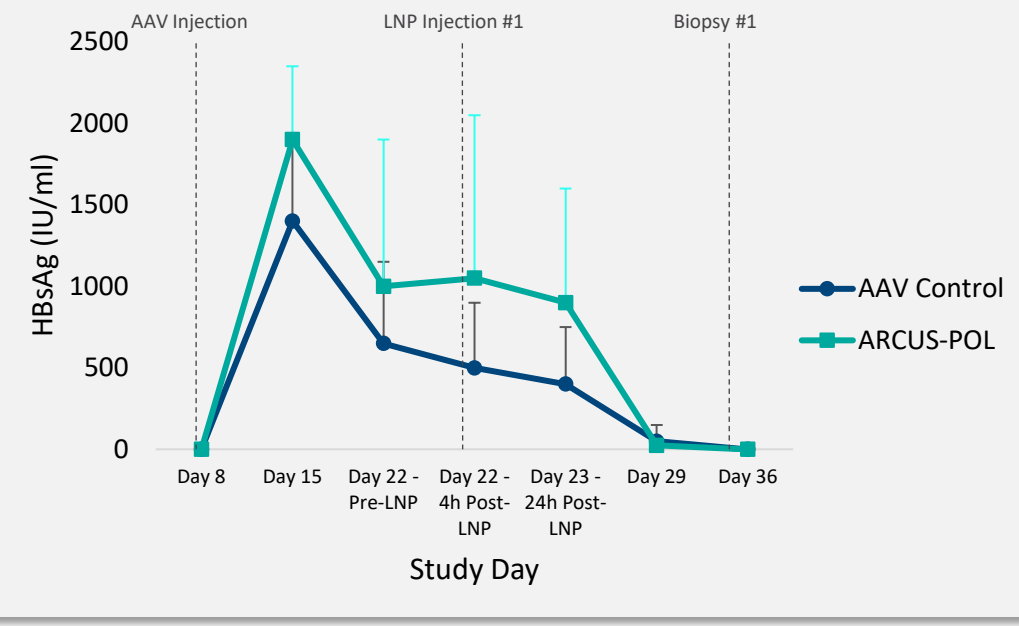
ARCUS HBV Program has Shown Exciting Efficacy Data During *In Vivo* POC Studies Demonstrating Ability to Reduce Both HBV S-Antigen and HBV cccDNA

Data from *in vivo* models[1] treated **with ARCUS-HBV nuclease via LNP showed potential for delivering cures**

★ **96% reduction** in serum **HBsAg levels** and substantial reduction in the liver

★ **83% reduction** in HBV **cccDNA**





[1] *In vivo* models: episomal mouse model and episomal NHP model

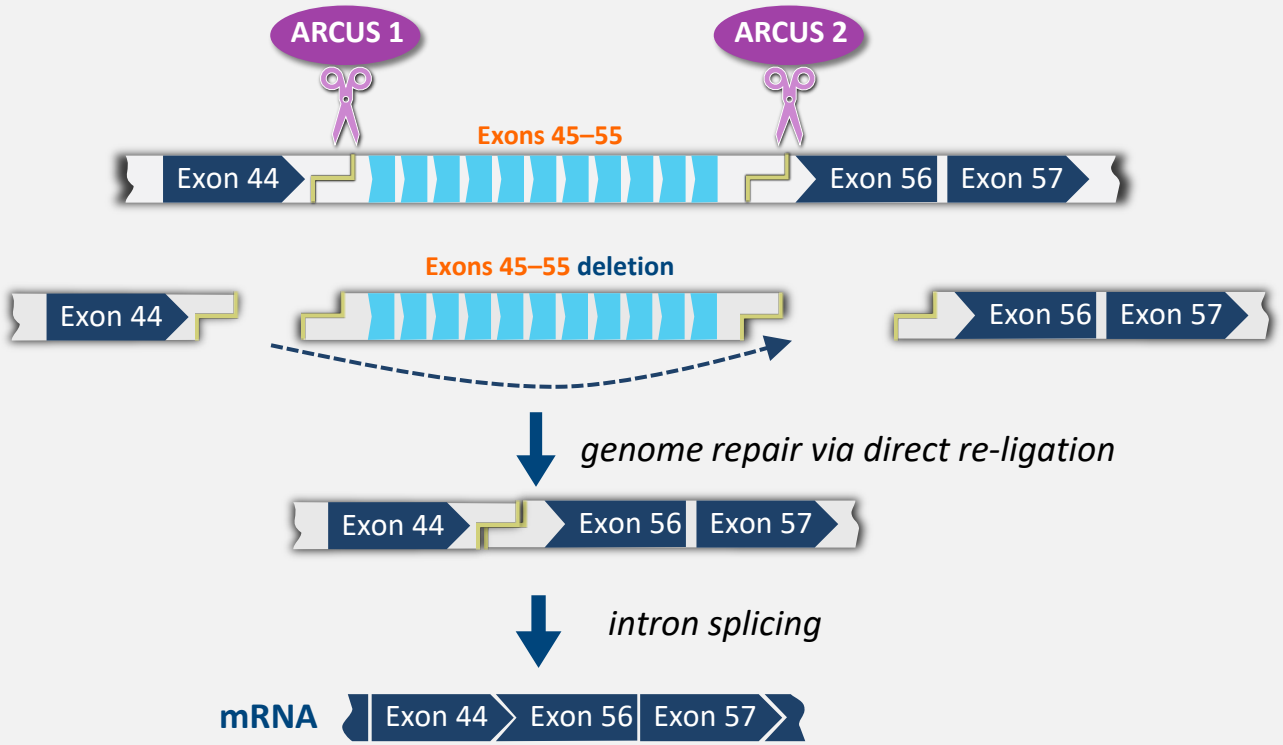
ARCUS to Restore Dystrophin Expression for Duchenne Muscular Dystrophy

Restore dystrophin expression

Deleting exons 45-55 using a pair of ARCUS nucleases intended to remove a mutation hotspot responsible for >50% of DMD

GOAL

ARCUS nucleases to make complex edit of the genome and make a variant of the dystrophin protein that is functionally competent



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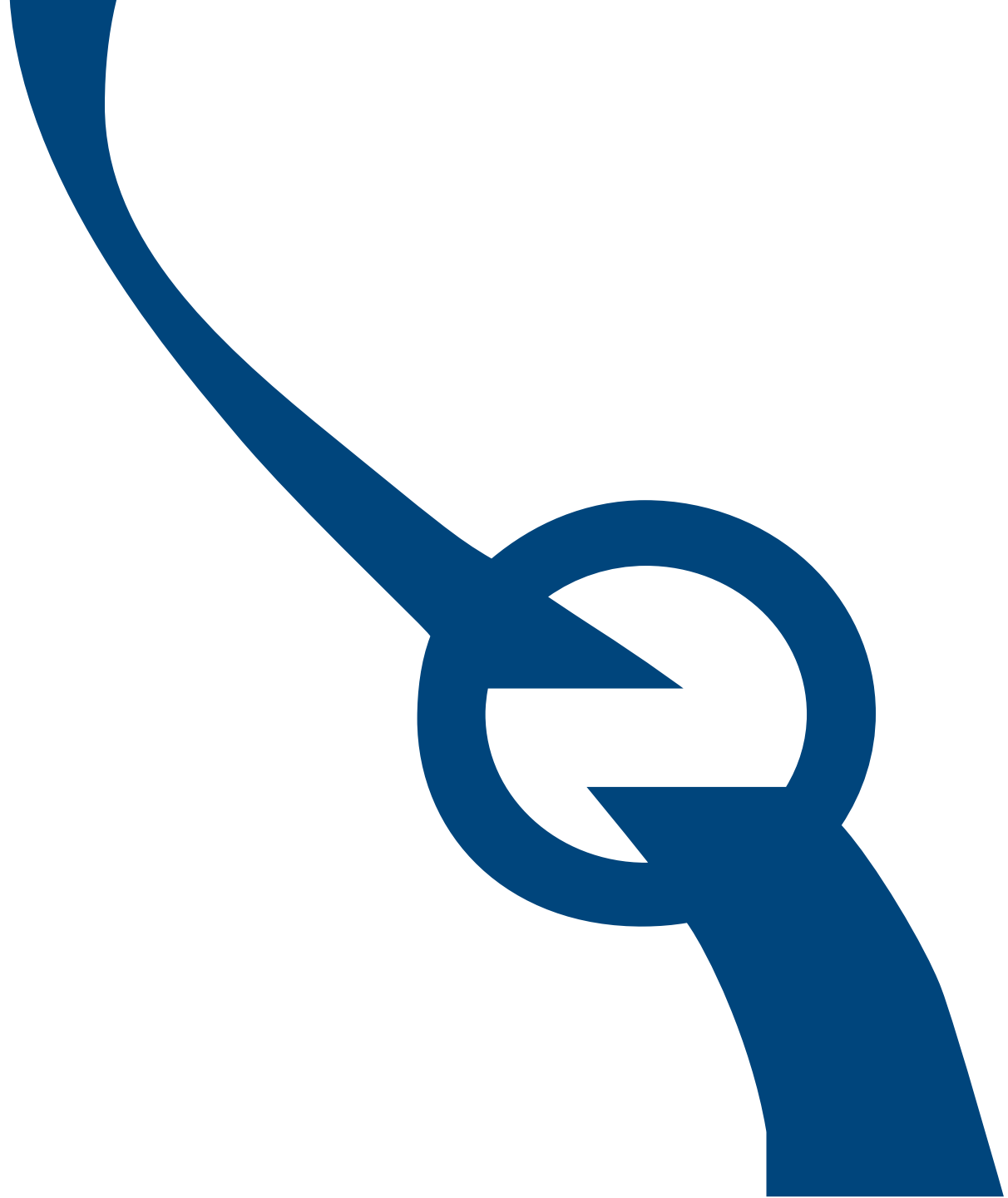
2023 Priorities



2023 Priorities and Milestones

- Complete Phase 1b for azer-cel to support decision point for Phase 2
- Complete Phase 1 dosing trial for PBCAR19B
- Host CAR T update in first quarter of 2023
- Nominate the final drug candidate for HBV *in vivo* program
- Advance the first ARCUS *in vivo* nuclease to CTA through a partner
- Publish new preclinical data to further support *in vivo* gene editing programs
- Host *in vivo* gene editing R&D Day around mid-2023
- Further extend the cash runway

Building the leading therapeutic gene editing company focused on high unmet needs in oncology and genetic diseases

Technology: ARCUS, a premier genome editing platform

People: Fortified Senior Leadership Team with 15+ years perfecting ARCUS protein engineering

Focus & Discipline: Fiscal resources support 2+ years runway

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Precision BioSciences: Senior Leadership Team

Michael Amoroso
Since Sep 2021
President &
Chief Executive Officer

Abeona THERAPEUTICS · Celgene · Kite

Derek Jantz, Ph.D.
Since Mar 2006
**Chief Science Advisor,
Co-Founder

JOHNS HOPKINS UNIVERSITY & MEDICINE · Duke UNIVERSITY

Jeff Smith, Ph.D.
Since Mar 2006
Chief Research Officer,
Co-Founder

JOHNS HOPKINS UNIVERSITY & MEDICINE · Duke UNIVERSITY

Alex Kelly
Since Oct 2020
Chief Financial Officer

Allergan · MERCK · PHARMACIA

Cindy Atwell
Since Apr 2019
Chief Business Officer

Halozyme · abbvie · AMYLIN

Alan List, M.D.
Since Apr 2021
Chief Medical Officer

MOFFITT CANCER CENTER

Juli Blanche
Since May 2022
Chief People Officer

Bristol Myers Squibb · Celgene · MERCK

Dario Scimeca
Since Jun 2019
General Counsel

Genentech · élan

Neil Leatherbury
Since Mar 2017
SVP, CMC

miRNA THERAPEUTICS · AZAYA THERAPEUTICS

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- Trademarks are the property of their respective owners
- **On March 1, 2023 Derek Jantz will transition to Chief Science Advisor

Precision BioSciences: Board of Directors

Kevin Buehler
Since Jul 2019
Board Chair

Michael Amoroso
Since Oct 2021

Melinda Brown
Since May 2022
Audit Chair

Stanley Frankel, M.D.
Since Apr 2021
Science & Technology Chair

Geno Germano
Since Mar 2020
Compensation Chair

Shari Lisa Piré, J.D.
Since Nov 2021

Sam Wadsworth, Ph.D.
Since Nov 2021

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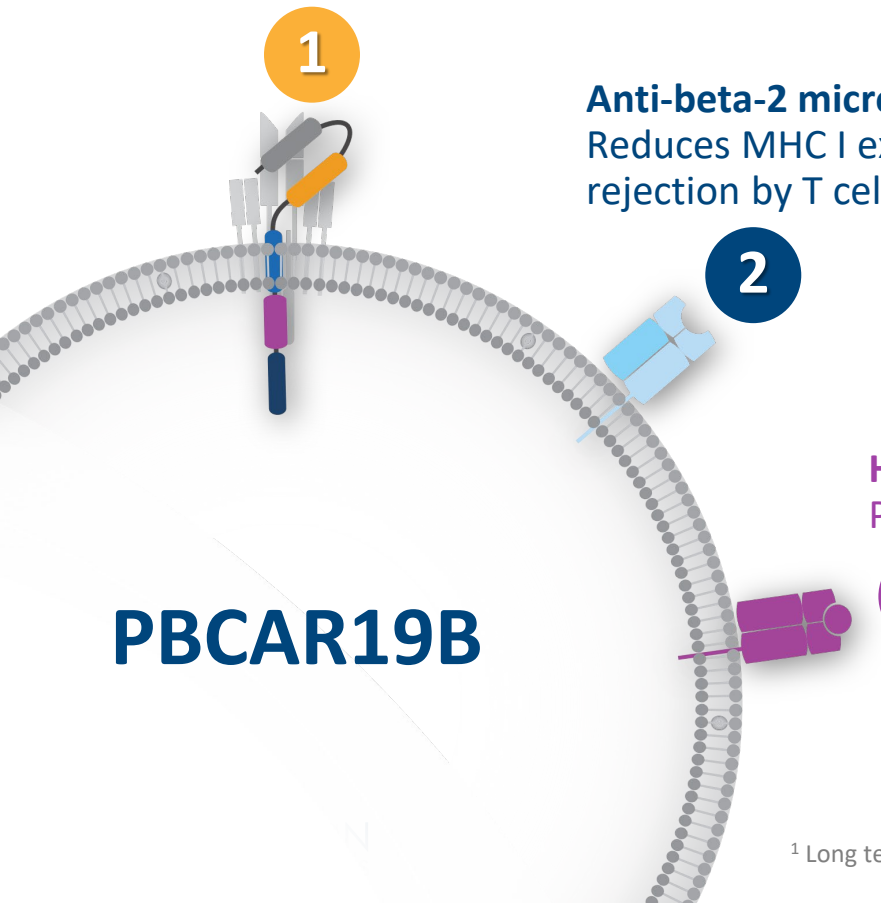
Appendix

PBCAR19B: Anti-CD19 Allogeneic CAR T Designed to Evade Immune Rejection and Displace 2nd/3rd Line Auto CAR T

Anti-CD19 CAR
TCR is knocked-out to prevent GvHD

Anti-beta-2 microglobulin (β2m) shRNA
Reduces MHC I expression to prevent rejection by T cells

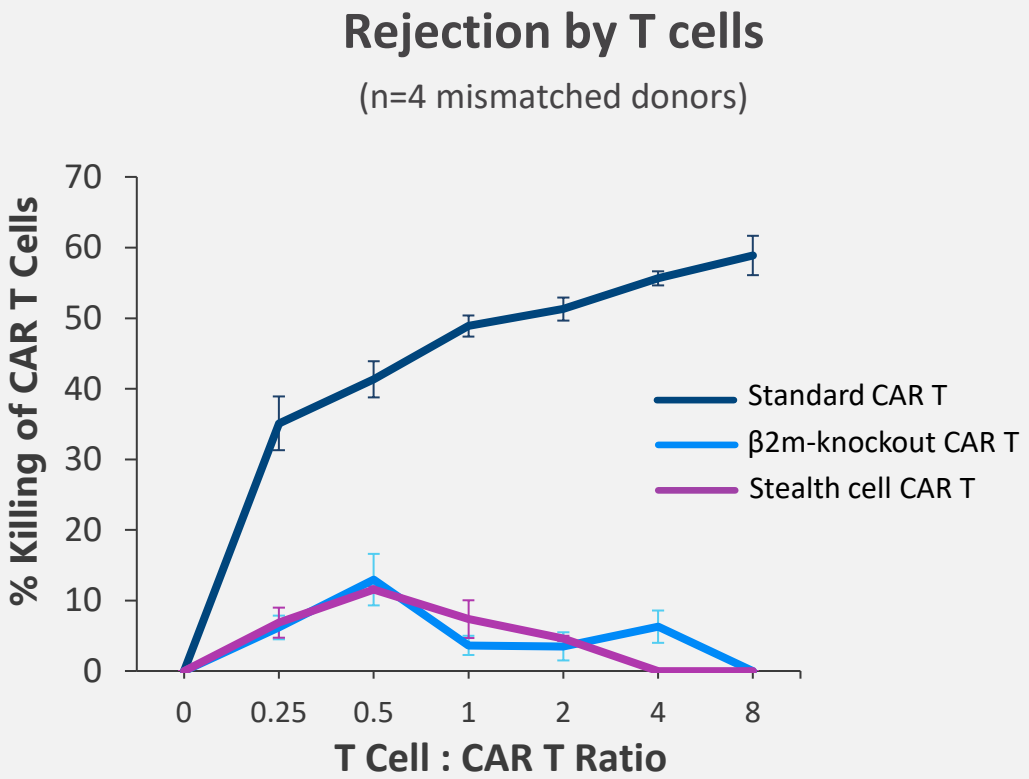
HLA-E transgene
Prevents rejection by NK cells

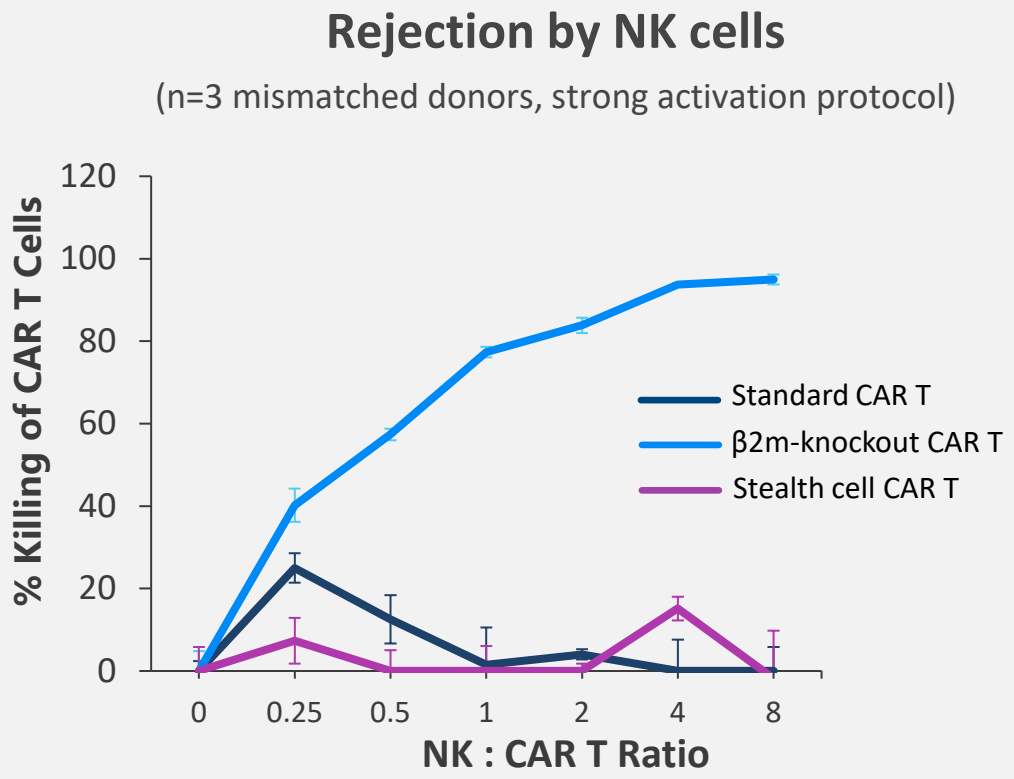


3rd line+ NHL Target Product Profile to Replace Auto CAR T	
Median Overall Survival (mOS)	~26 months[1]
Overall Response Rate (ORR)	> 70% at 28 days
Duration of Response (DoR)	~35% at 6 months to 1 year+
Safety	Same or better than auto CAR T
Expected Regulatory Hurdle	Head-to-head vs. auto CAR T/transplant

[1] Long term overall survival in ZUMA-1 https://ash.confex.com/ash/2021/webprogram/Paper148078.html

PBCAR19B: Designed to Overcome Rejection by T Cells and NK Cells in Mixed Lymphocyte Reactions





ARCUS for Chronic Hepatitis B Virus (cHBV) Targeting cccDNA

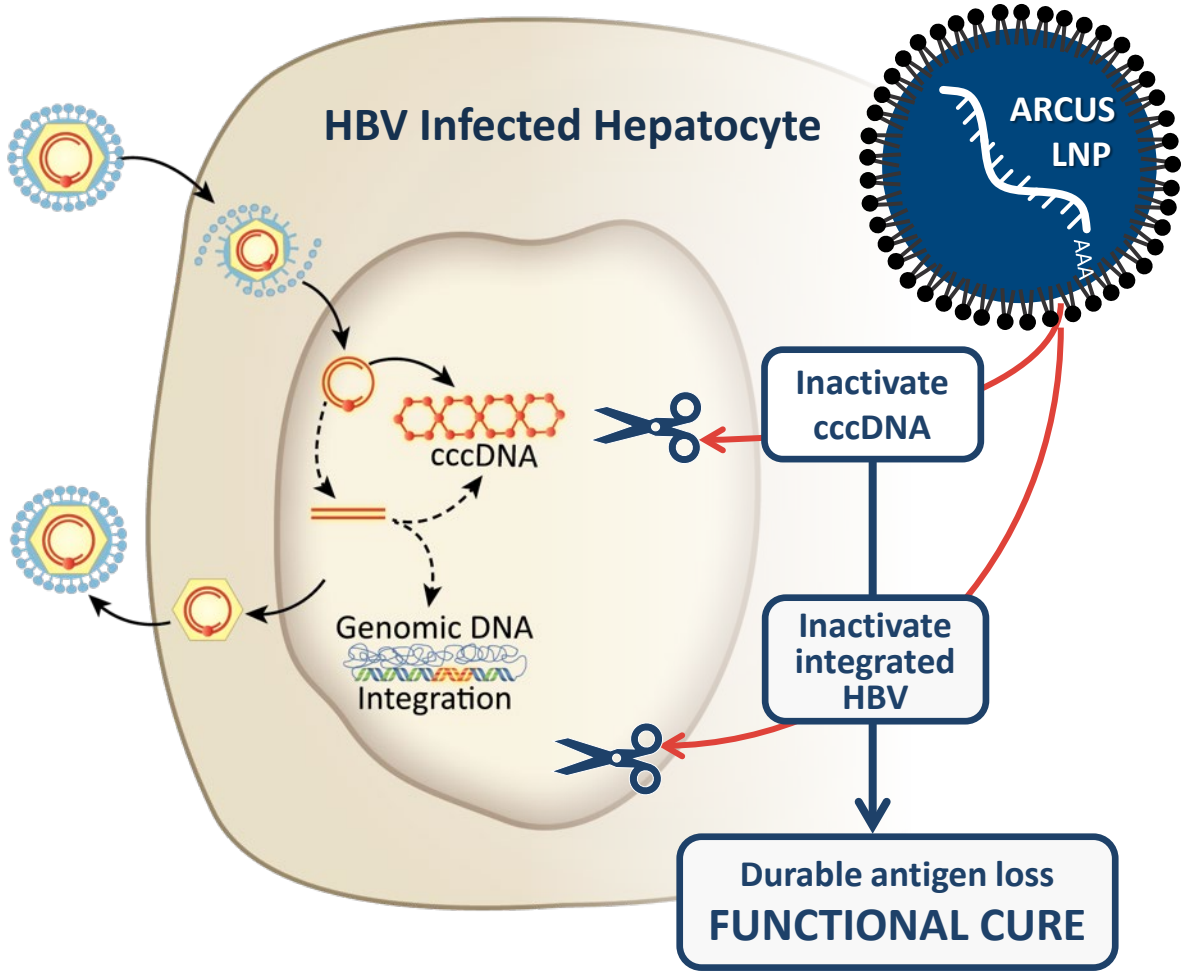
ARCUS-mediated **inactivation of cccDNA and integrated HBV** could result in a functional cure

Chronic HBV is one of greatest racial health disparities in the U.S.

> 860,000
cHBV infections in the US

> 290 million
cHBV infections globally

- > 90% of infected infants develop cHBV
- ≤ 50% of infected children 1-5 years develop cHBV
- 5-10% of infected healthy adults develop chive



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https://www.hhs.gov/hepatitis/learn-about-viral-hepatitis/hepatitis-b-basics/index.html#:~:text=Risk%20for%20chronic%20infection%20is,liver%20failure%2C%20and%20premature%20death

Novartis Collaboration Complementary to Precision's Existing *In Vivo* Gene Editing Partnership with Lilly

Research collaboration and license agreement aimed at treating challenging genetic diseases

3 Initial collaboration for **three targets**, including Duchenne muscular dystrophy and **two other undisclosed programs targeting the liver and CNS**

+

3 Lilly retains right to select up to **three additional gene targets**

- Upfront payment of $135M including $35M equity
- Up to $420M per target in development and commercialization milestones
- Mid-single digit to low tweens tiered royalties

Duchenne Muscular Dystrophy Currently Lacks a Curative Treatment

Mutation on the X chromosome interferes with dystrophin protein production, which is needed to form and maintain healthy muscle

Affects approximately

1 in 3,500

live male births

In Vivo Gene Insertion Collaboration with Novartis for Hemoglobinopathies

Builds on the unique gene insertion capabilities of ARCUS® and further validates ARCUS as a premium genome editing platform

Collaboration with Novartis, a global gene therapy leader

Precision to develop a single ARCUS nuclease for certain hemoglobinopathies such as sickle cell disease and beta thalassemia

Goal to design ARCUS nuclease for safe and efficient *in vivo* gene insertion

- Precision receives $75M upfront for a single target/single nuclease
- Eligible to receive up to an additional $1.4B in milestones and tiered royalties on sales of licensed products
- Collaboration adds hematopoietic stem cells (HSCs) to existing *in vivo* gene editing programs targeting the liver, muscle and central nervous system
- One-time, treatment for hard-to-treat genetic blood disorders such as sickle cell disease (SCD) and beta thalassemia

Hemoglobinopathies are a Major World Health Problem

Sickle Cell Disease (SCD)

Affects the structure/function of hemoglobin, reducing the ability of red blood cells to transport oxygen

- Acute sicklecell pain crises and life-threatening complications

Beta Thalassemia

One of the most common genetic diseases caused by a disruption of normal hemoglobin production

- Complications: Overproduction of red blood cells inside and outside of the bone marrow, heart disease, chronic liver hepatitis, defects of the reproductive system, diabetes, and rare skin disorders

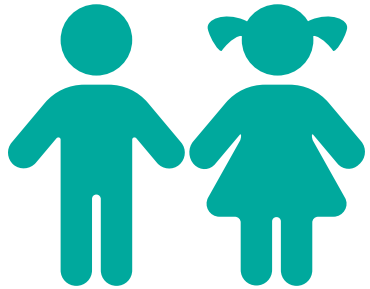
Sickle Cell Disease Affects

>300,000

newborns annually

~1,000 children

in Africa are born with SCD **every day** and > 50% will not reach their 5th birthday



~68,000

children born with thalassemia each year

Sedrak A, Kondamudi NP. Sickle Cell Disease. [Updated 2021 Nov 7]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-.
Needs T, Gonzalez-Mosquera LF, Lynch DT. Beta Thalassemia. [Updated 2022 May 8]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-.

OTC is a Severe, Ultra Rare Genetic Condition With Extremely High Unmet Medical Needs Across Phenotypes

Ornithine Transcarbamylase (OTC) Deficiency

- OTC deficiency is the most common **urea cycle disorder**
- Disease prevalence is between **1 in 60,000 and 1 in 72,000**
- Neonatal onset has been associated with **mortality rates as high as 74%**[1]
- A **liver transplant** is typically required by six months of age and is the only known curative treatment
- OTC deficiency is also associated with numerous **neuropsychological complications**
- **High ammonia levels** can lead to development delays, learning and intellectual disabilities, ADHD and executive function deficits, seizures, coma and death

~ 4,200 People with OTC in the US[2]

Neonatal-onset *(<30 days since birth)*	**Late-onset Symptomatic** *(>30days to 16yo)*	**Late-onset Asymptomatic Adult** *(>16yo)*
Majority male X-linked / No enzymatic activity	Majority females w/skewed X-inactivation / Limited enzymatic activity	Majority female, asymptomatic
Catastrophic disease managed by liver transplants & aggressive medical mgt. / Significant neurocognitive problems and lower life expectancy	Severe disease managed by medical mgt. High risk for neurocognitive problems Liver transplant / mortality risks exist	Usually manifest during stress situation (surgery, post-childbirth) Rare but high mortality at initial event

[1] Complete removal of OTC activity results in severe neonatal disease, while decreased OTC results in late-onset.
[2] Onset may occur at any age though is more common in infancy. HAC: Hyperammonemic Crisis, defined as plasma ammonia levels ≥ 150 µmol/L together with clinical symptoms probably related to hyperammonemia. OTC: Ornithine Transcarbamylase. Source: UpToDate; Orphanet; Hasegawa et. Al. J Pediatr Surg. 1995. Ah et. Al. GeneReviews. 2017. NORD; Lamb et. Al. BJM. 2016. Brassier et. Al. Orphanet Journal of Rare Disease 2015.; Unsinn et. Al. Orphanet Journal of Rare Diseases. 2016; Summar et al. NIH. 2008; Buerger et. Al. J. Inherit. Metab. Dis. 2013; ClearView Analysis.