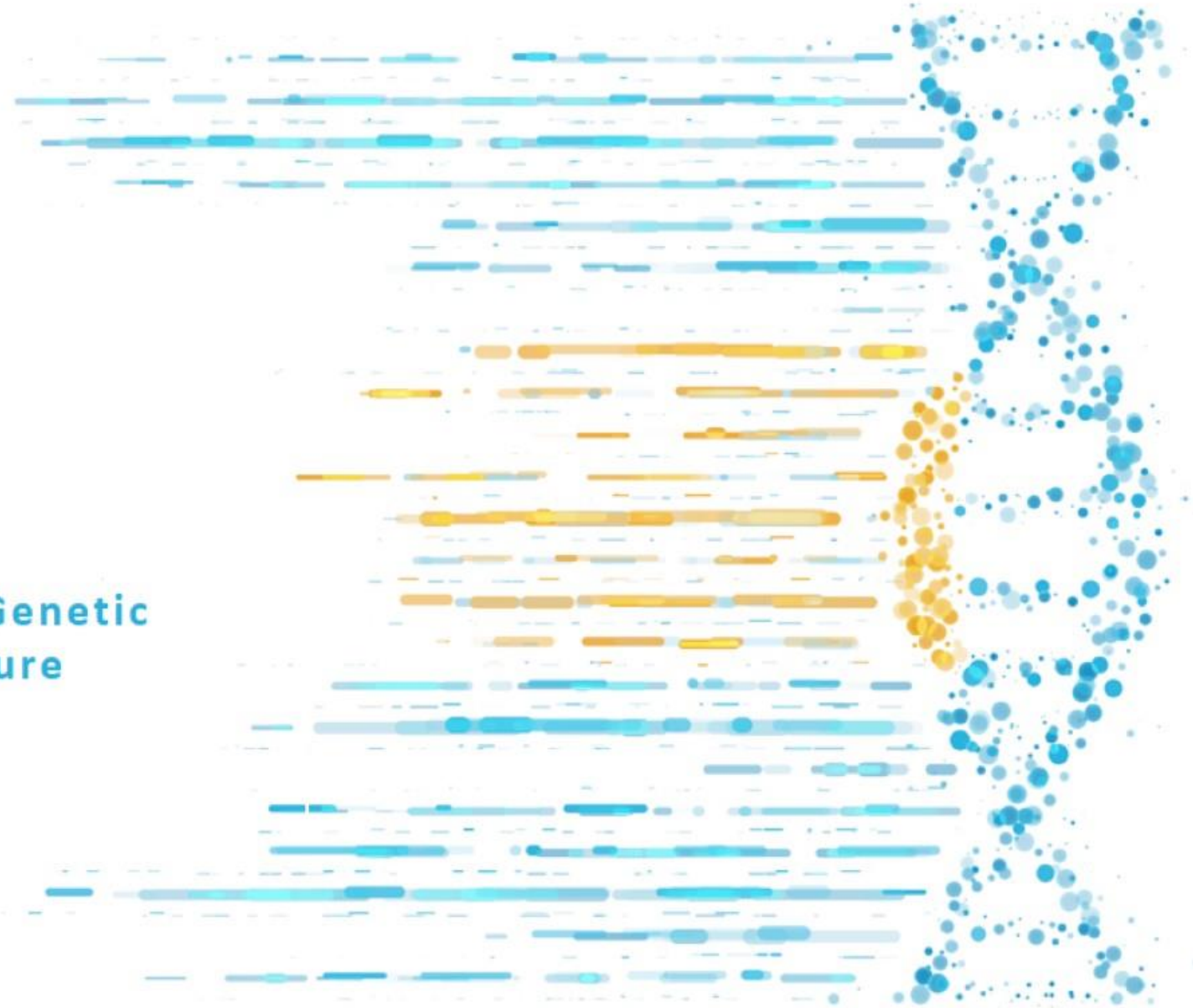
POSEIDA THERAPEUTICS

Corporate Presentation

A New Class of Cell Therapies & Genetic Medicines with the Capacity to Cure



AUGUST 2024

Disclaimer

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On a mission to advance a new class of cell therapies & genetic medicines

ALLOGENEIC CAR-T

The Future of Cell Therapy is Allo

Roche

astellas

GENETIC MEDICINES

Non-viral Delivery for Gene Insertion and Gene Editing to Enable Access for All Patients

GEN Genetic Engineering & Biotechnology News

"Top 10 Public Gene Editing Company"

UNMATCHED PLATFORM

Innovating with powerful, proprietary, and differentiated genetic engineering technologies

Proprietary validated, non-viral platform positions Poseida for leadership in allogeneic cell therapy and genetic medicines

Unique T_{SCM}-based Allo CAR-T Therapies

- ✓ **Proven results** & 3 clinical stage therapies
- ✓ **Differentiated** CAR-T product profiles
- ✓ **In house GMP** manufacturing
- ✓ **Further opportunities** with preclinical pipeline
- ✓ Well-suited for **oncology & beyond**

Differentiated Genetic Medicines

- ✓ **Stable integration** for durability of response
- ✓ Can **re-dose, titrate**
- ✓ Suitable for **patients of all ages**
- ✓ Nonviral approach for **lower cost** and **better safety**
- ✓ **Broad potential** across genetic diseases

Effective Corporate Stewardship

- ✓ Strong, select **partnerships** with Roche and Astellas
  - **Validate** technology
  - **Fund program activities**
  - Provide **non-dilutive financing**
- ✓ **Disciplined and seasoned** management team

Our robust pipeline spans allogeneic CAR-T and non-viral genetic medicines

*Solid tumor targets identified in conjunction with the research collaboration and license agreement with Astellas are yet to be disclosed

Allogeneic CAR-T

The Future of Cell Therapy is Allo

Poseida is emerging as an industry leader in allogeneic CAR-T

POSEIDA'S VISION:

Our T_{SCM}-rich allogeneic CAR-T will enable all patients who can benefit from transformational cell therapy to do so

"Built in" product differentiation through **unique T_{SCM}-rich CAR-T approach**

Fully proprietary genetic engineering toolkit designed for T_{SCM}-rich allo CAR-T

Clinical proof-of-concept delivered through lead P-BCMA-ALLO1 program

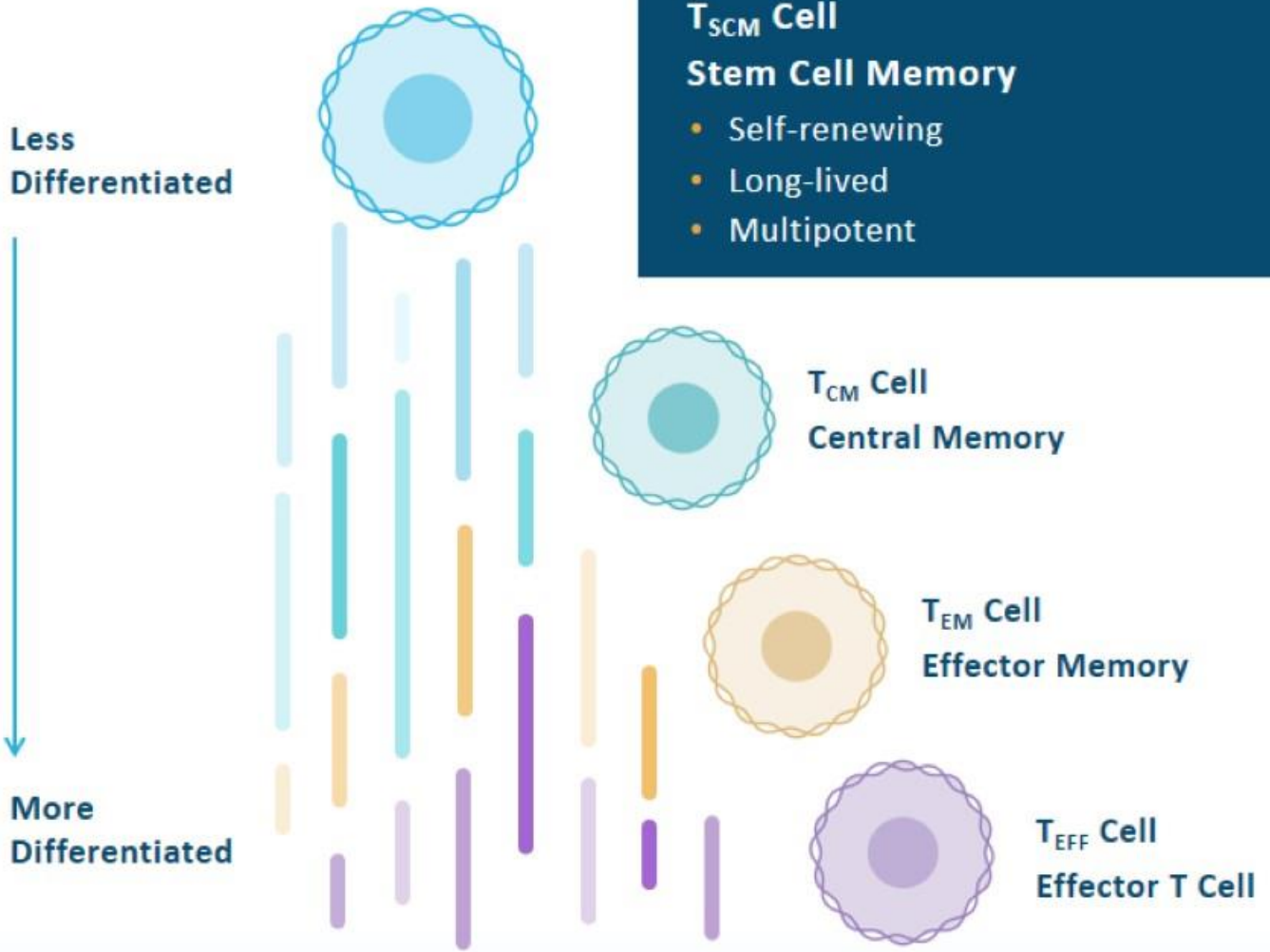
Manufacturing platform advancing in lockstep with clinical development

Robust and growing **multi-asset pipeline**

Allo CAR-T company of choice for top pharma (Roche, Astellas)

Holistic systems engineering approach to allogeneic cell therapy

Stem cell memory T cells (T_{SCM}) are the ideal cell type for CAR-T and have always been our focus and key source of differentiation



STEMNESS MATTERS

Products with high % of T_{SCM} cells:

- Strong correlation with best responses in the clinic
- More gradual tumor killing with less toxicity
- Better duration of response and potential for re-response – T_{SCM} engrafts and persists in tissue

piggyBac preferentially transposes naïve and T_{SCM} cells

The Poseida difference: Our proprietary tools uniquely provide the capabilities required to produce T_{SCM}-rich allogeneic CAR-T

Fully Non-Viral Approach

piggyBac

Gene Insertion

- ✓ **Preferentially insert into T_{SCM}**
- ✓ Single-step multi-gene insertion
- ✓ Non-viral
- ✓ Efficient and cost effective

Cas-CLOVER

Gene Editing

- ✓ **Preserve T_{SCM} cell type**
- ✓ Low/no off-target effects
- ✓ Efficient

Booster Molecule

Quality Manufacturing at Scale

- ✓ **Preserve T_{SCM} cell type**
- ✓ High yield at low cost
- ✓ Pure CAR-T cell product

Poseida tools designed to work together as a system

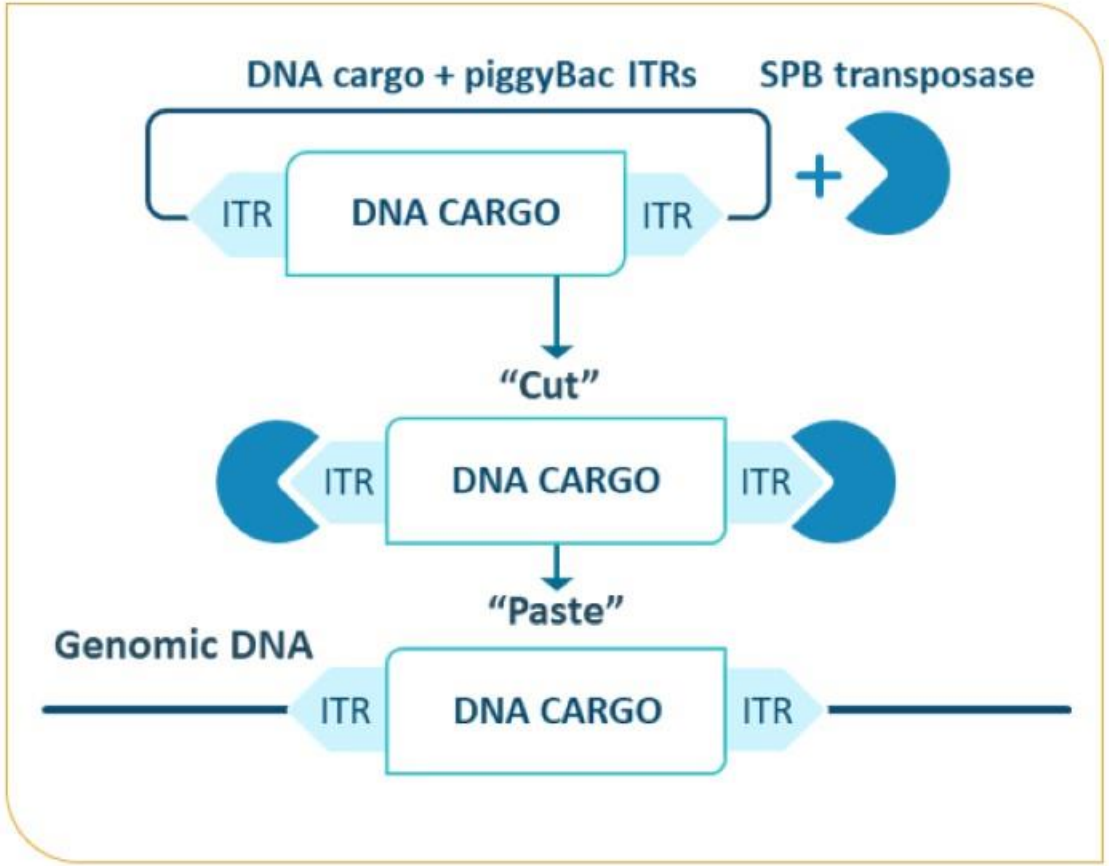
T_{SCM} correlates with depth and durability of response

POSEIDA THERAPEUTICS

PiggyBac is an effective, non-viral system that inserts one or more genes in a single step to deliver a T_{SCM}-rich cell therapy product

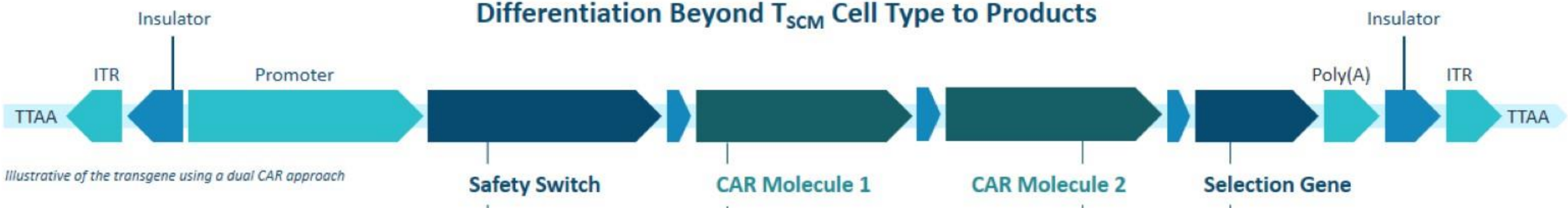
PIGGYBAC FOR CAR-T DRUG DEVELOPMENT

- Non-viral, transposon-based system that avoids viral vector issues such as cost, quality/safety, and limited cargo capacity
- Preferentially transposes naïve and stem cell memory T cells resulting in T_{SCM} rich product
- Works well in resting T cells so T_{SCM} phenotype can be preserved
- Large cargo capacity can deliver one or more CARs, inducible safety switch, and selectable marker in single step
- Achieves stable DNA integration and works in a wide variety of cell types



PiggyBac enables Poseida to build tremendous functionality into its allogeneic CAR-T cell therapies

Transposon "Cartridge" Designed to Include Elements that Add Further Differentiation Beyond T_{SCM} Cell Type to Products



Illustrative of the transgene using a dual CAR approach

INCORPORATES PROPRIETARY SAFETY SWITCH

- Rapid, dose-dependent elimination of engineered T-cells as needed
- Potential management of Cytokine Release Syndrome (CRS) or other AEs

DIFFERENTIATED BINDING CAR-T MOLECULE

- VH or next generation molecules with high-specificity binding
- VH binders are fully human with no tonic signaling observed to date

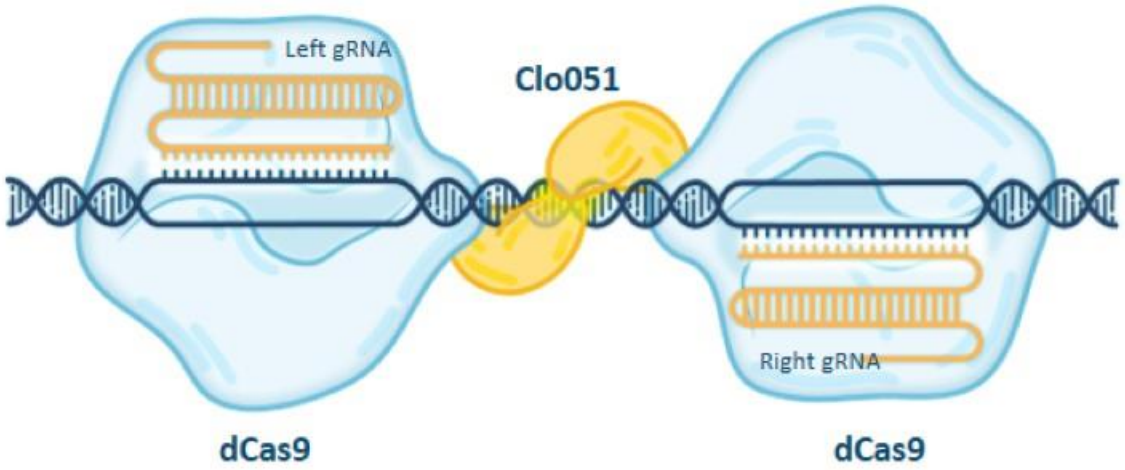
DUAL TARGETING TO IMPROVE EFFICACY

- Large cargo capacity of piggyBac allows dual delivery of CAR molecules or CAR-TCR
- Dual CAR/CAR-TCR molecules enable targeting of heterogeneous tumors

DRUG RESISTANCE GENE PERMITS POSITIVE SELECTION

- ~100% of T-cells in final product express the CAR molecule
- Predicted to result in greater therapeutic index

Poseida's Cas-CLOVER gene editing system addresses graft vs. host and host vs. graft alloreactivity in allogeneic CAR-T while preserving product stemness



HIGH-FIDELITY, DESIGNED FOR LITTLE TO NO OFF-TARGET CUTTING

- Utilizes deactivated Cas9 (dCas9) as a binding protein with gRNA
- dCas9 guides a fused nuclease domain from the Clo051 enzyme, which only cuts DNA when bound to its matching pair
- Edits in current clinical-stage CAR-T include TCR and B2M (MHC I) knockouts

ADVANTAGES OF CAS-CLOVER[1-15]

- Unlike many other approaches to gene editing, effective in resting T cells
- Fidelity possibly up to 25-fold greater than CRISPR-Cas9
- High editing efficiency in resting T cells results in high levels (50–70%) of T_{SCM}
- Preserves stemness because T cell activation, which stimulates differentiation, is avoided
- Multiplexing potential for multiple edits in a single efficient step

1. Madison et al., *Mol Ther Nucleic Acids*. 2022; 2. Alvarez et al., *Mol Ther.* 31(4), Supp. 1, S1-794. 2023. 3. Data on file, Manuscript in preparation (Poseida Therapeutics) 4. Gilmore et al., *NEJM* 2021; 5. Longhurst et al., *NEJM* 2024; 6. Ren et al., *Clin Cancer Res.*, 2017; 7. Antoniani et al., *Blood*. 2018; 8. Georgiadis et al., *Mol Ther.* 2018; 9. Webber et al., *Nature Comm.*, 2019; 10. Fix et al., *J Immunother Cancer.* 2022; 11. Ottaviano et al. *Sci. Trans. Med.*, 2022; 12. Zhang et al., *Nature.*, 2022; 13. Cancellieri et al., *Nature Genetics* 2023; 14. Poseida R&D Day, April 17, 2024; 15. Alvarez et al., *Mol Ther.* 2023.

P-BCMA-ALLO1 represents a new category of allogeneic CAR-T with a compelling value proposition for patients with multiple myeloma

P-BCMA-ALLO1

- Lead program in heme malignancies partnered with Roche
- Targeting B cell maturation antigen (BCMA)
- Early data (ASH 2023) is pace-setting for allo CAR-T in MM

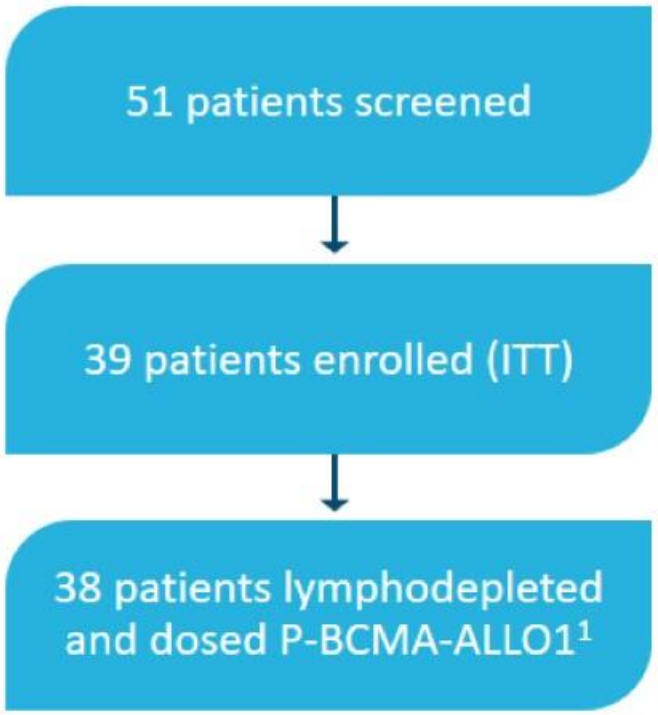
Ongoing clinical development with additional data updates in 2H2024

Target product value proposition	P-BCMA-ALLO1 early product profile
☆ **Effective myeloma control** – High response rates – Deep responses including in hard to treat patients	✓ 82% ORR[1] ✓ 100% ORR in BCMA bispecific-naïve pts ✓ sCR, MRD$^-$ responses ✓ Prior CAR-T, high-risk patient responses
☆ **Favorable emerging safety profile and well-tolerated**	✓ No GvHD, DLT ✓ Low rates, CRS, neurotox all Gr ≤2 ✓ Non-viral approach with built in safety switch
☆ **Avoid unnecessary burden**	✓ No invasive patient apheresis ✓ No anti-myeloma bridging therapy ✓ Low CRS, neurotox limits adjunctive therapy use for side effects
☆ **Reliable quality**	✓ Treatment of all enrolled patients, with in-spec product
☆ **Convenient, rapid, and accessible for patients**	✓ Shipping from inventory ✓ Outpatient usage ✓ Treatment in 1 week ✓ Low manufacturing cost

1. In P1/P2 cohorts

ORR = overall response rate; sCR = stringent complete response; MRD = minimal residual disease; GvHD = graft vs. host disease; DLT = dose limiting toxicities; CRS = cytokine release syndrome

ASH 2023: Rapid and convenient CAR-T administration for entire intent-to-treat (ITT) population without need for apheresis

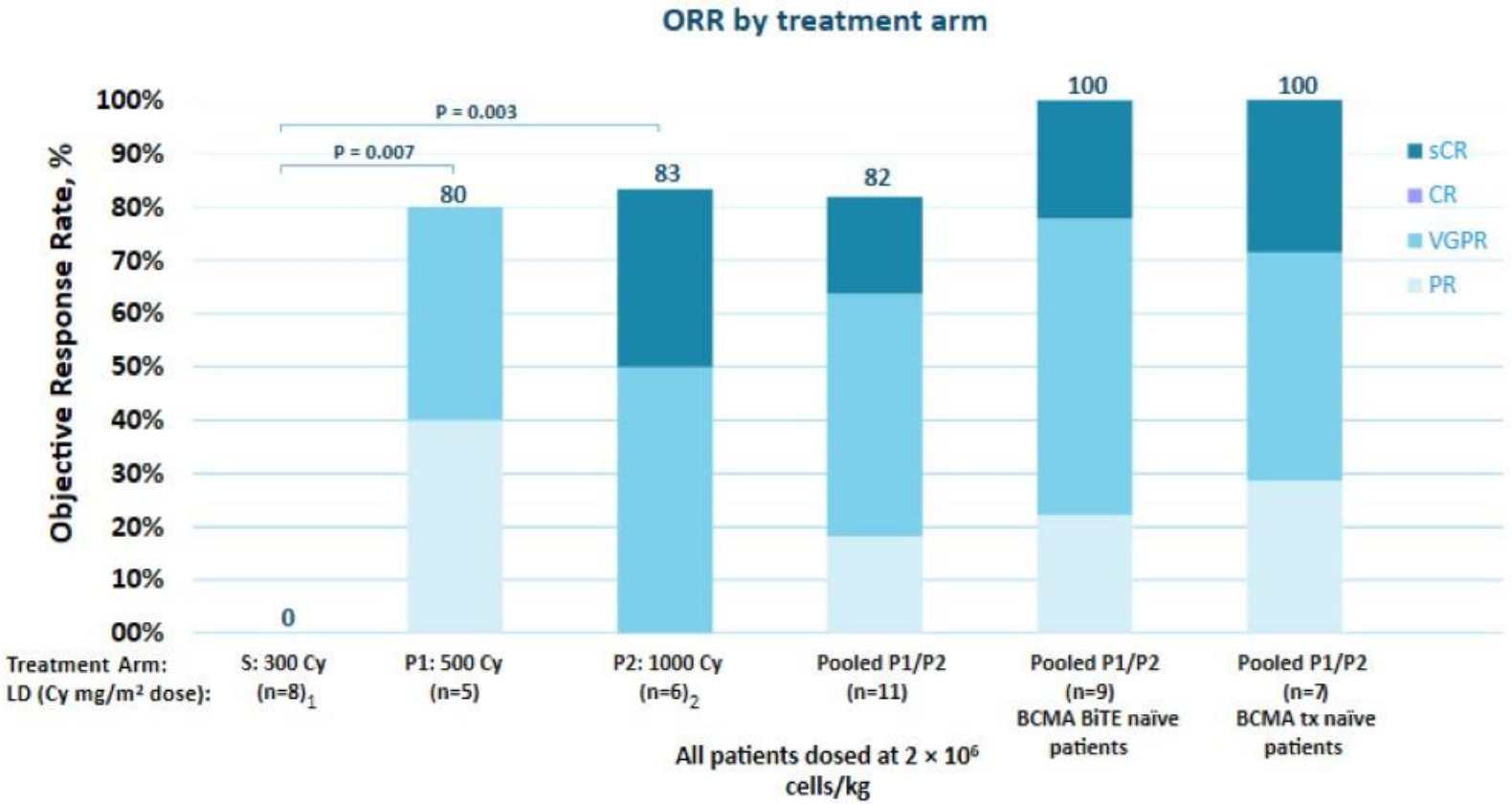


- 100% of ITT population underwent LD and received P-BCMA-ALLO1
  (1 patient had not begun LD by data cutoff date)
- No patient required bridging therapy
- Median time from enrollment to:
  - Start of LD was 1 day[2]
  - P-BCMA-ALLO1 infusion was 7 days[2]
- Patients were heavily pretreated with median 7 lines of therapy; ~40% previous BCMA therapy and 30% high-risk cytogenetics

1. Interim safety analysis on patients (n = 33) given an infusion of P-BCMA-ALLO1 (including cyclic arm patient) and with a minimum of 4 weeks follow-up. Data cutoff for safety and efficacy analysis was Oct. 23rd, 2023
2. N=33, analysis excludes patient retreated with P-BCMA-ALLO1

ITT = intent-to-treat defined at enrollment; LD = lymphodepletion

ASH 2023: Deep responses and a high response rate in BCMA naïve and prior BCMA therapy exposed RRMM patients receiving adequate lymphodepletion



- 82% overall ORR in pooled P1/P2 cohorts
- 100% ORR in all P1/P2 patients who had received any prior anti-myeloma treatment, including auto BCMA CAR-T, other than teclistamab
- sCR rate 40% (2/5 pts) in P2 cohort responders
- Some P1, P2 patients achieving MRD$^-$ status, including patients those with high-risk cytogenetics, extra medullary disease
- At data cut off, 8 of 9 responders in P1 & P2 arms still in response

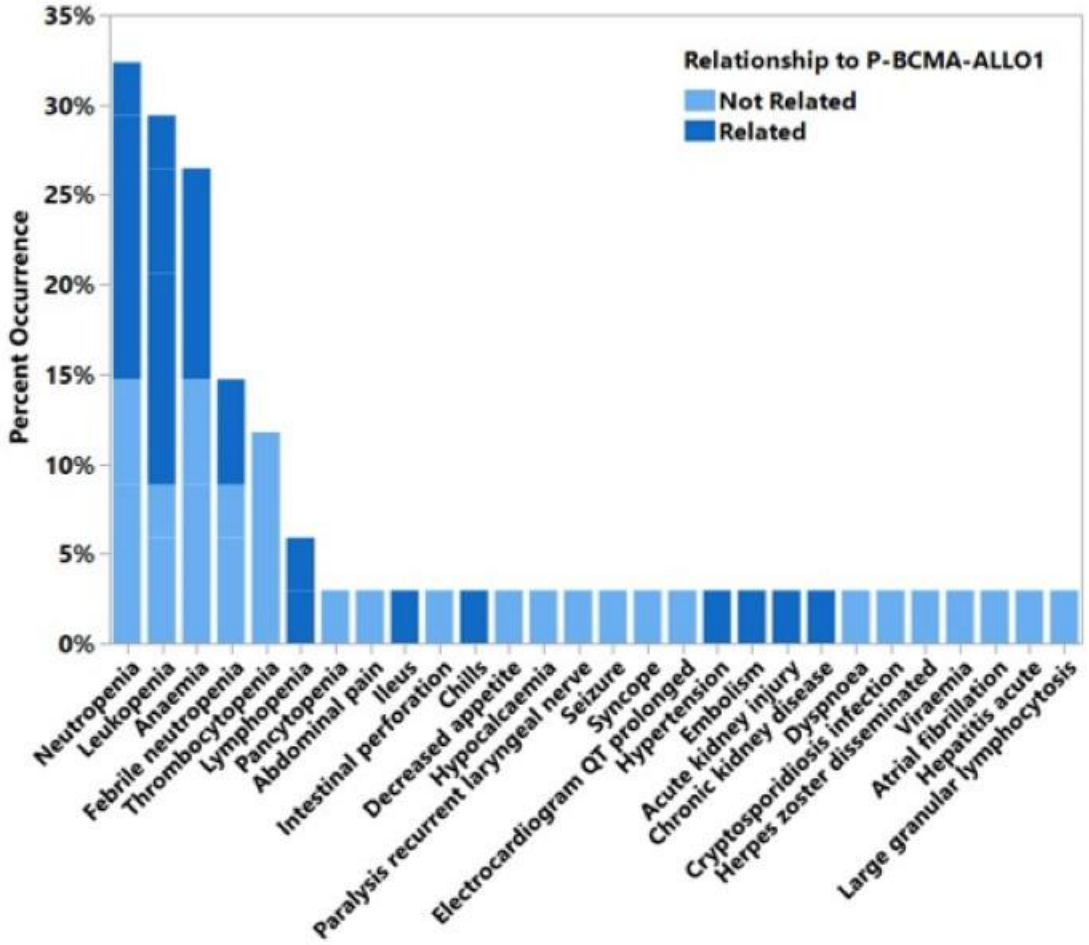
1. Not included in total: one Arm S patient non-evaluable for response assessment and one Arm S patient that was retreated.
2. Two P2 patients who had received prior BCMA auto CAR-T (idecabtagene vicleucel and P-BCMA-101), both achieved VGPR.
ORR = overall response rate; sCR = stringent complete response; MRD = minimal residual disease

ASH 2023: P-BCMA-ALLO1 is well tolerated in RRMM patients

SAFETY SUMMARY

- Dose-levels through 6 × 10^6 cells/kg cleared with no DLTs
- No GvHD observed at any dose
- Low CRS incidence (21%), Grade ≤ 2 in severity
- Neurotoxicity (Grade ≤ 2) observed in 2 patients (6%)
  - No Parkinson's-like symptoms
- Serious infections were uncommon even in the higher LD arms
- Grade ≥ 3 TEAEs were associated mainly with LD and myeloma

All treatment-emergent adverse events grade ≥ 3

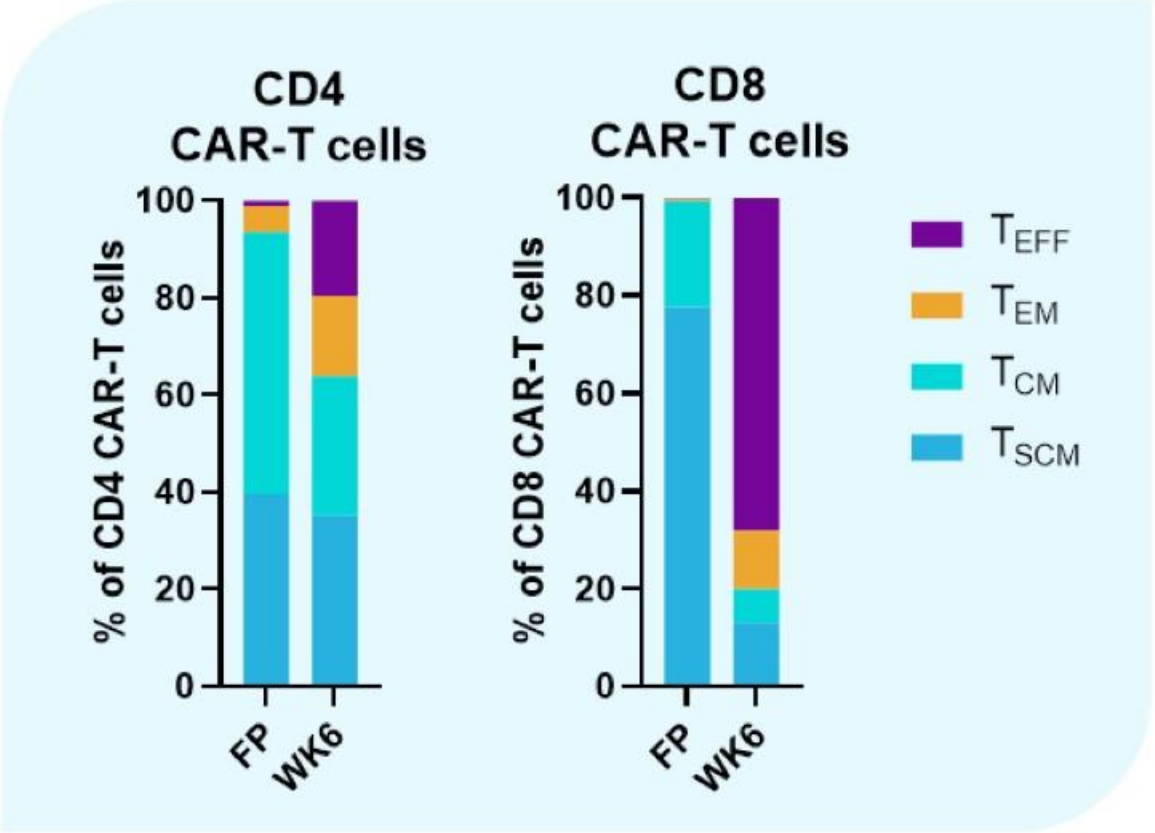


DLT = dose limiting toxicities; GvHD = graft vs. host disease; CRS = cytokine release syndrome; LD = lymphodepletion; TEAE = treatment emergent adverse event

ASH 2023: T_{SCM}-rich P-BCMA-ALLO1 cells traffic to tumor site, differentiate to an active oncolytic cell type, and persist

DATA FROM A PATIENT ACHIEVING AN MRD- NEGATIVE, STRINGENT COMPLETE RESPONSE

- T_{SCM}-rich CAR-T can be thought of as prodrugs, meaning they can expand and differentiate into T effector cells after infusion into a patient
- Patient data obtained >6 weeks after treatment supports this premise
  - CAR-T drug product infused was rich in T_{SCM} and central memory (T_{SCM}) T cells carrying the CAR
  - In bone marrow, where myeloma is found, a tissue sample collected >6 weeks after infusion showed cells, especially CD8+ "killer" T cells became oncolytic effector (T_{EFF}) CAR-T cells
  - CAR-T cells were plentiful in the bone marrow, making up ~14% of all marrow lymphocytes at this timepoint, and ~70-fold more concentrated than in peripheral blood
- First known clinical evidence supporting T_{SCM}-rich CAR-T hypothesis for an allogeneic CAR-T



Final drug product (FP) phenotype for patient #23 in comparison to CAR-T phenotype by % T_{SCM}, T_{CM}, T_{EM} and T_{EFF} of CD4 and CD8 CAR-T cells

Summary: P-BCMA-ALLO1 is a promising "off-the-shelf" T_{SCM}-rich allogeneic CAR-T therapy based upon preliminary phase 1 results

- **Rapid, accessible treatment to meet urgent patient needs**
  - 100% treatment of the ITT population with in-spec product and no bridging therapy
  - Median "brain-to-vein" time (enrollment to infusion) of 7 days, including lymphodepletion
- **Favorable emerging safety profile**
  - No GvHD or DLT and low rates of CRS, neurotoxicity all Gr ≤ 2
- **Deep clinical responses in very heavily pretreated patients receiving adequate lymphodepletion**
  - 82% overall ORR in pooled P1/P2 cohorts
  - 100% ORR in all P1/P2 patients who had received any prior anti-myeloma treatment, including auto BCMA CAR-T, other than teclistamab
  - sCR rate 40% (2/5 pts) in P2 cohort responders
  - Some P1, P2 patients achieving MRD- status, including patients with high-risk cytogenetics, extra-medullary disease
- **Prodrug-like P-BCMA-ALLO1 cells demonstrate expansion, trafficking to site of malignancy, differentiation, and persistence**
- **Further clinical development of P-BCMA-ALLO1 is ongoing, with data updates in 2024 (coordinated with Roche)**

POSEIDA THERAPEUTICS

Poseida's manufacturing platform, used across all products, delivers T_{SCM}-rich product with high purity

P-BCMA-ALLO1 example

Allogeneic manufacturing process enhanced with Booster Molecule technology to deliver high yields

ONE HEALTHY DONOR

ONE LEUKOPAK

Manufacturing

T Cell Isolation

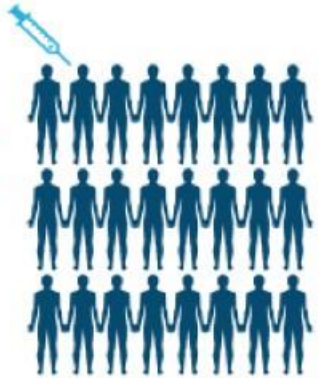
Non-viral Gene Editing

CAR-T Cell Selection and Expansion

Purification

Fill/finish

Storage in Inventory



~100 DOSES

- Production process preserves T_{SCM} phenotype
- Nearly all CAR-carrying cells
- "On demand" delivery to site of care

P-BCMA-ALLO1 Phase I study data presented at ASH 2023 illustrates our manufacturing capability, using product from 6 manufacturing lots and 6 different qualified donors

POSEIDA THERAPEUTICS

P-CD19CD20-ALLO1 – Poseida's first dual CAR-T is partnered with Roche

Motivation

- Post CAR-T relapse remains a common problem in B-cell malignancies
- Early autologous CD19/CD20 CAR-T data suggests dual targeting can be effective
- Allogeneic approach would be commercially attractive

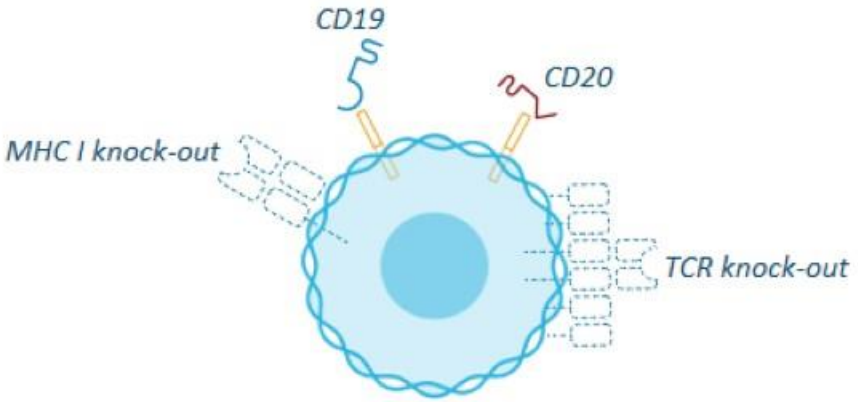
Clinical Trial

- Phase 1 study enrolling B-cell malignancies (NCT04960579)
- 3x3 design, with flexibility for expansion
- Poseida produced GMP product

Status

- Lymphodepletion learnings from other programs incorporated
- Initiated Phase 1 clinical trial

P-CD19CD20-ALLO1



- **Differentiated, carrying 2 full length CARs and other Poseida platform elements[1]**
- **First known allogeneic dual CD19+CD20 targeting CAR-T**

Data update planned for 2H24*

*Subject to coordination with Roche

1. Safety switch, selectable marker, TCR KO, β2M KO

P-MUC1C-ALLO1 is Poseida's lead solid tumor allogeneic CAR-T program

Motivation

- High unmet medical need in many epithelial cell-derived tumors
- Poseida's autologous PSMA program showed clinical effect of T_{SCM}-rich CAR-T in a solid tumor

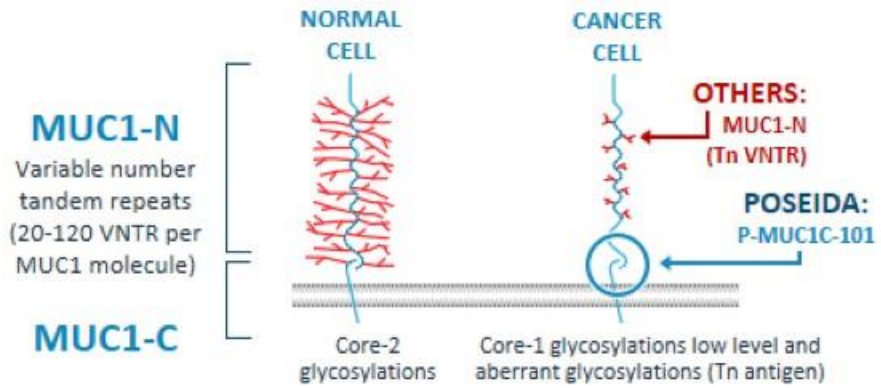
Clinical Trial

- Phase 1 basket study enrolling treatment resistant breast, ovarian, pancreatic and other tumors (NCT05239143)
- Flexible 3x3 design; Poseida produced GMP product

Status

- Favorable early data (ESMO-IO 2022)
  - No DLT, CRS, GvHD or neurotoxicity
  - PR in breast cancer
- Ongoing exploration of dosing regimen
  - Cell dose, increasing lymphodepletion, dose administration

P-MUC1C-ALLO1



- **Unique approach to targeting MUC1C protein at tumor specific moiety**
- **Also carries Poseida's platform[1] elements**

Data update planned for 2H24

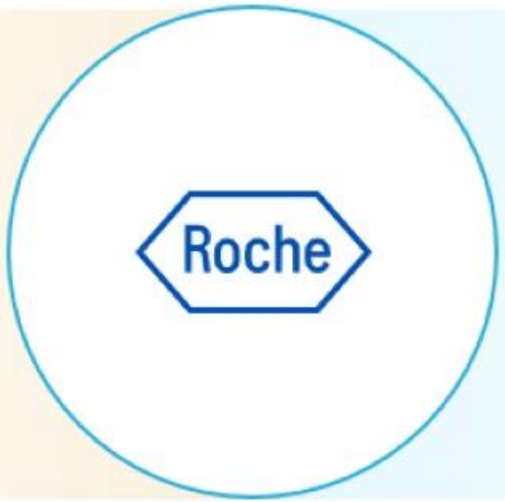
1. Safety switch, selectable marker, TCR KO, β2M KO
DLT=dose limiting toxicities; CRS= cytokine release syndrome; GvHD= graft vs. host disease

The power of partnerships: Roche collaboration validates allogeneic platform

Meaningful clinical progress for partnered programs and ongoing milestone achievement

OVERVIEW

- P-BCMA-ALLO1 – *licensed*
- P-CD19CD20-ALLO1 – *licensed*
- P-BCMACD19-ALLO1 – *option program*
- P-CD70-ALLO1 – *option program*
- Research collaboration with 6 additional Heme Targets



ECONOMIC SUPPORT

- $110 million in upfront payments (August 2022)
- Based on progress made, recent milestone acceleration extended cash runway by ~6 months, runway now into the second half of 2025
- Research, development, launch, and net sales milestones and other payments potentially up to $6 billion in aggregate value, plus royalties
- Significant direct and indirect support from Roche and additional upside

Excitement Around Heme CAR-T | Continued Validation of Platform | Supporting Financial Position

In April 2024, Poseida entered into research collaboration and licensing agreement with Astellas to develop novel allogeneic cell therapies targeting solid tumors

- Astellas to leverage Poseida's allogeneic CAR-T platform to develop innovative programs targeting solid tumors in combination with Astellas' *convertible*CAR technology
- Research collaboration and license agreement for two solid tumor product candidates based on one Poseida-developed CAR-T construct with first target identified
- Astellas to reimburse Poseida for research costs and will be responsible for development and commercialization of collaboration products
- Poseida received $50 million upfront plus potential developmental and sales milestones and contingency payments of up to $550 million, in addition to low double digit tiered royalties as a percentage of net sales

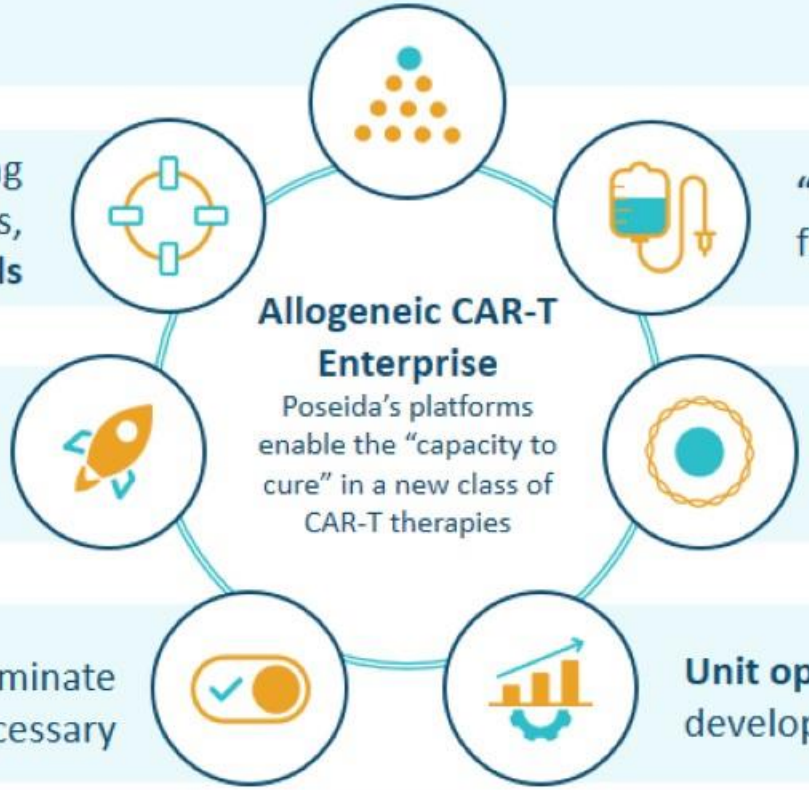
Collaboration enables development in areas beyond Poseida's core pipeline focus and expands strategic investment Astellas announced in August 2023 to support the advancement of Poseida's breakthrough research

Poseida's consistent platform reflects a holistic systems engineering approach to CAR-T set to deliver product after product

Robust healthy **donor screening system**

Non-viral gene insertion and gene editing approaches the same across all programs, and **customized for T_{SCM} cells**

"On-demand" delivery of therapy from inventory through supply chain



Proprietary **Booster Molecule** improves manufacturing yield

Selectable marker supports purification so that nearly all cells are CAR-carrying, with the potential for optimal therapeutic index

Safety "switch" to selectively eliminate CAR-T cells in the patient, if necessary

Unit operations optimization across process development and quality, applied to all programs

Poseida has taken a deliberate platform approach to develop a pipeline of allogeneic CAR-T programs that use the same proprietary technologies, the same manufacturing platform and reflect similar production methods

Platform enables delivery of a continuous pipeline of products

Versatile Application

- Platform gives us roadmap to endless product possibilities
- Extendable to CAR-TCR, further functionality via more added genes
- Hematology, solid tumors, and other diseases

Ideal cell type (allo T_{SCM})

- Demonstrated, powerful efficacy
- Prodrug approach for safety and tolerability
- Persistence in target tissue
- Redosing opportunities

Scalable to meet market demand

- Reproducible, higher yield processes scalable to supply demand in high-prevalence diseases
- Technology to potentially deliver 100+ doses from single leukopak[1], dramatically lowering cost

Optimal experience for patient and provider

- On-demand ordering from inventory
- Reliable quality
- Avoid invasive, costly and complex apheresis and bridging therapies
- Treatment within days
- Outpatient usage

1. *Assumes observed therapeutic dose range of 50 – 300 million cells*

POSEIDA THERAPEUTICS

Genetic Medicines

Non-viral Delivery for Gene Insertion and Gene Editing to Enable Access for All Patients

Poseida's vision for genetic medicine

Effective – capacity to cure*

Safe – non-viral, low immunogenicity lipid nanoparticles

Durable – stable genome editing/insertion

Patient-friendly – single or short course of treatment

Scalable – can be produced at scale and cost-effectively

Broad applicability – treat patients of all types & ages

Versatile – insert genes of any size, remove genes or signals, across cell types

*By inserting, deleting or modifying genes

POSEIDA THERAPEUTICS

Our non-viral delivery technology is poised to unlock the field of genetic medicine

Why non-viral?

Delivery of gene-size DNA

- Nanoparticle cargo capacity enables delivery of full genes to address all patient mutations

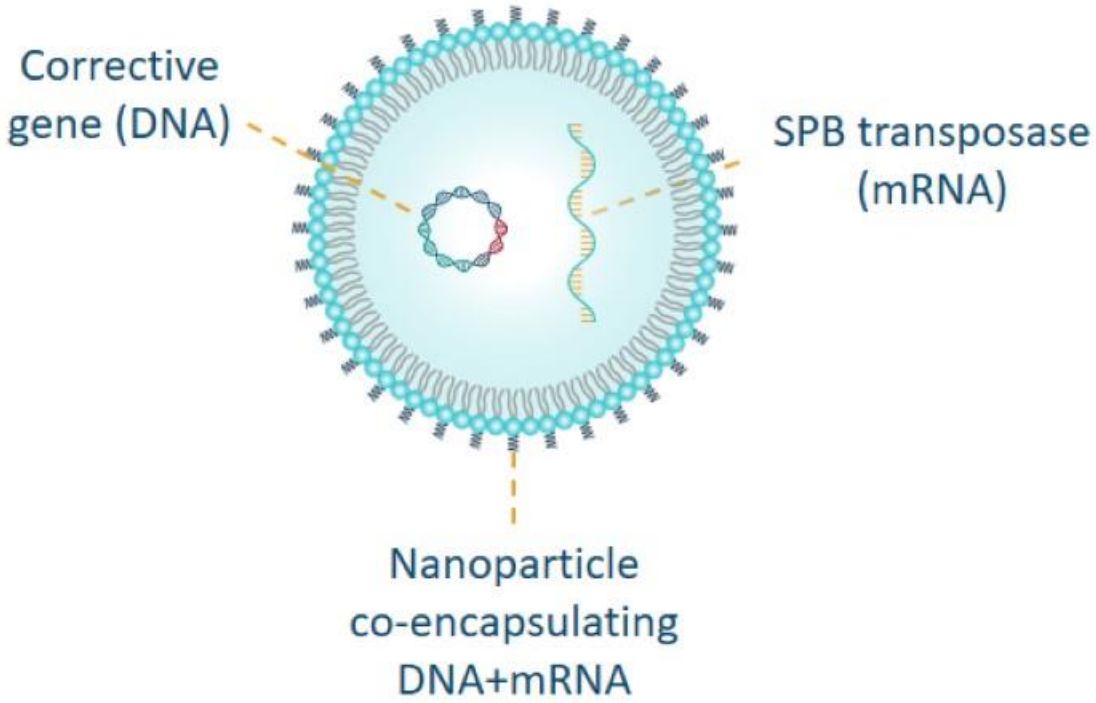
Safety / Efficacy

- Non-immunogenic nanoparticle enables repeated titrate-to-efficacy dosing

Manufacturability

- Nanoparticle platform built on chemistry, rather than biology, offers CMC advantages

Nanoparticle drug product



This product vision requires an entirely new suite of technologies

Whole gene insertion

DNA transposon

- ✓ Integrated, stable expression
- ✓ Large cargo capacity for whole genes
- ✓ Safe harbor insertion, including in non-dividing cells
- ✓ Re-dosable, reversible and scarless

High fidelity gene editing

RNA-guided DNA nuclease

- ✓ Exceptional fidelity
- ✓ Efficient
- ✓ Applicable to different cell types
- ✓ Multiplexing potential

Manufacture and delivery

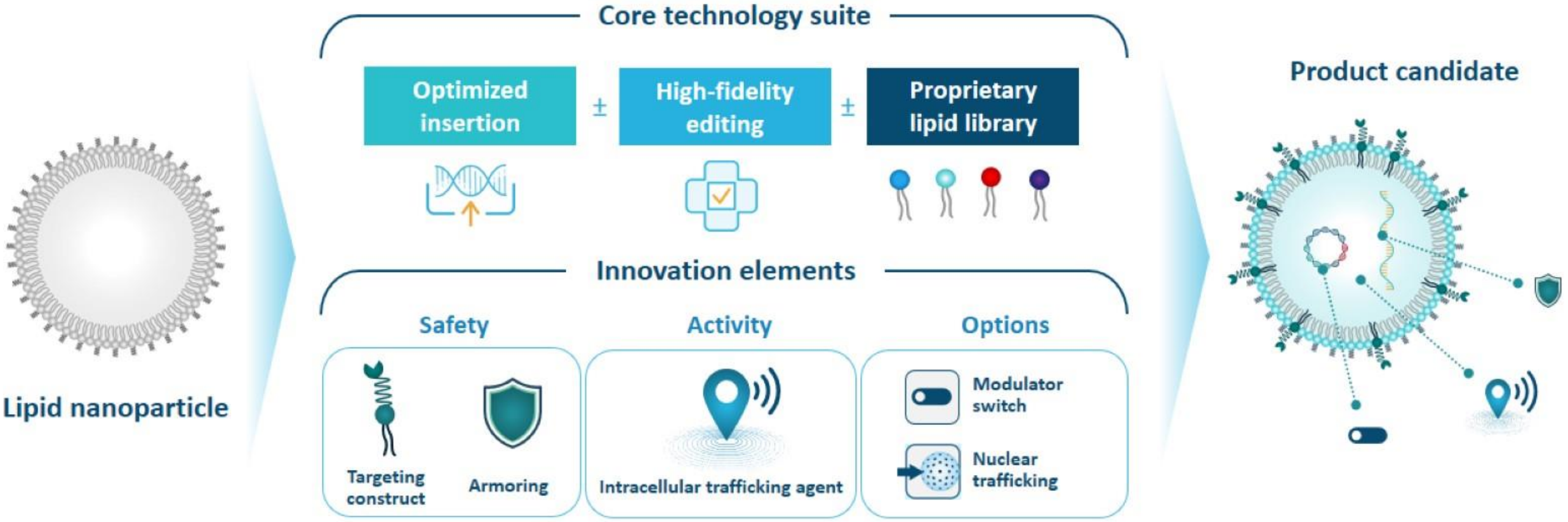
LNP

- ✓ Low immunogenicity
- ✓ Titrate-to-efficacy dosing
- ✓ Scalable
- ✓ Favorable cost of goods

Our technologies could be used individually or together to deliver transformational therapies

Versatility in developing products tailored to therapeutic need

Potential to add proprietary innovation elements onto core technology components

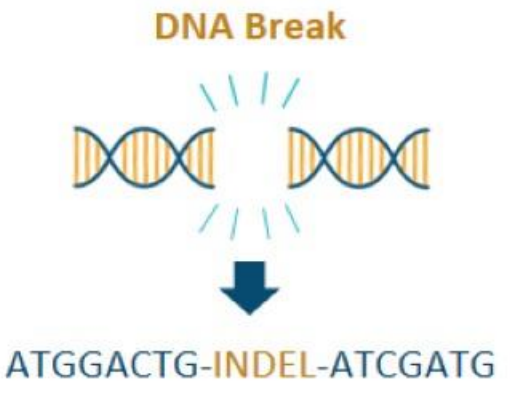


DNA insertion technology enables whole gene functional correction

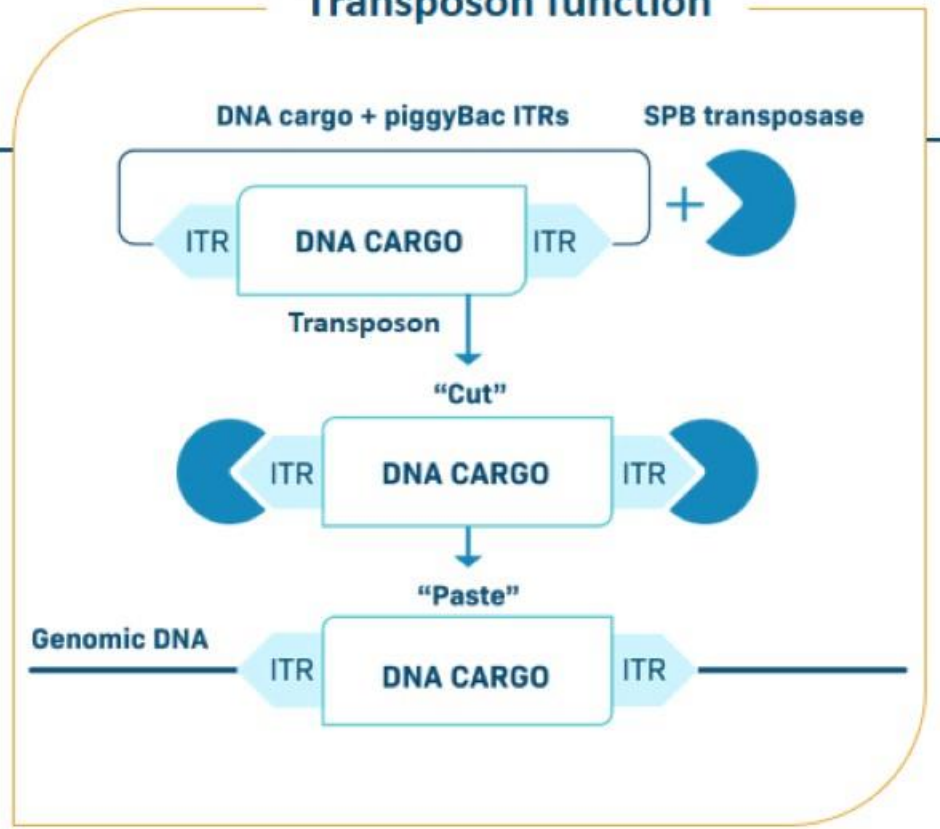
Key advantages of our gene insertion approach over Cas9 knock-ins and episomal strategies

Cas9 knock-in challenges

- Double-strand breaks[1]
- DNA repair needed[2]
- Irreversible (one shot)[1-3]



Transposon function



Transposon advantages

- Stability & durability (vs. episome)
- No double-strand breaks[4]
- Large cargo capacity
- Active in non-dividing cells
- Simple 2-component system
- Re-dosable and reversible[5]

Poseida is progressing ***Site-Specific Super piggyBac (ssSPG),*** our next generation gene editing/insertion technology with the potential for unprecedented on-target efficiency

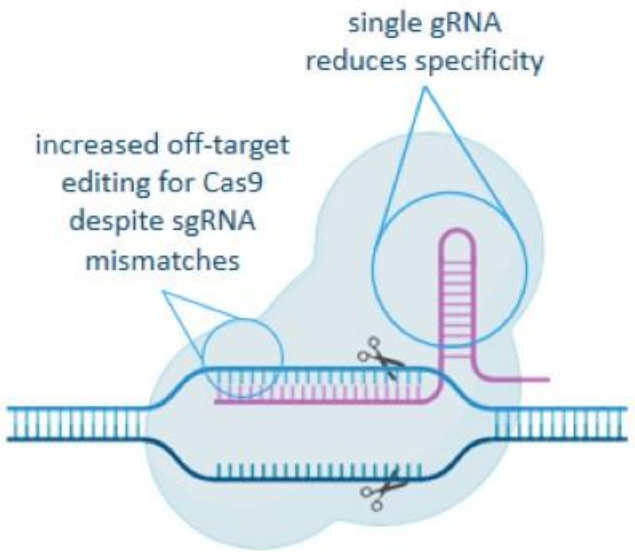
1. Jinek et al., *Elife*. 2013; 2. Cong et al., *Science*. 2013; 3. Ran et al., *Cell*. 2013; 4. Saha et al., *Nucleic Acids Res*. 2015; 5. Yusa et al. *Proc Natl Acad Sci U S A*. 2011
ITR = inverted terminal repeat

POSEIDA THERAPEUTICS

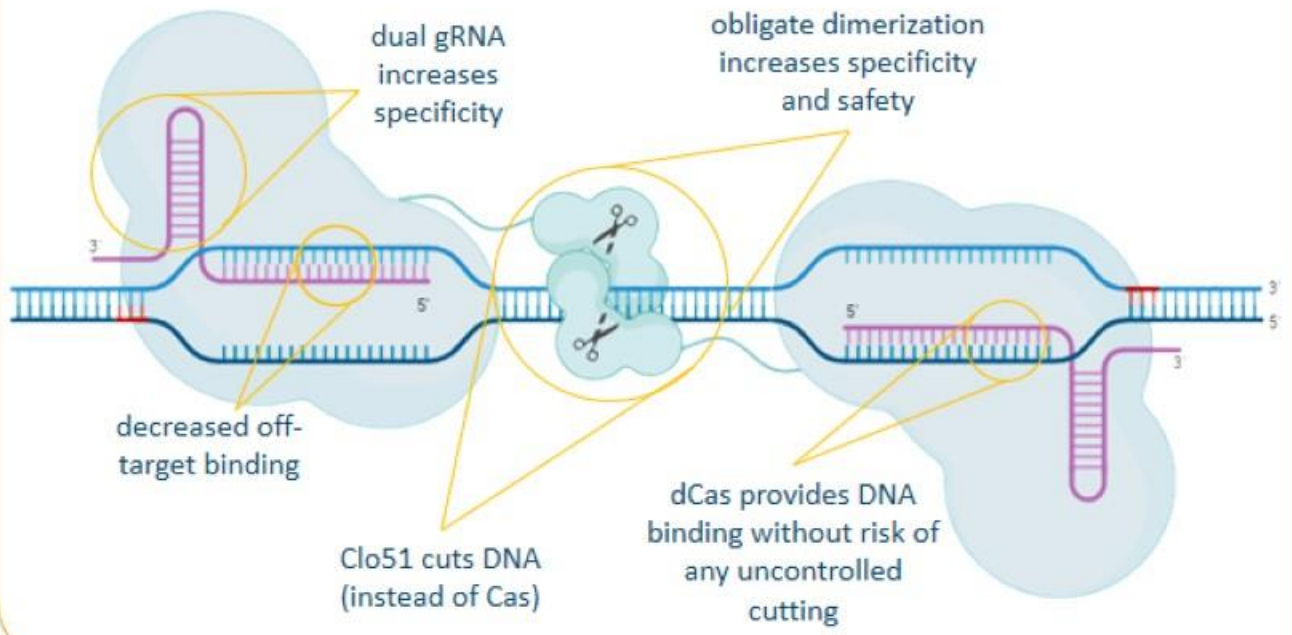
Cas-CLOVER: Potentially the cleanest gene editing

High-fidelity system offers potential as highly differentiated system with low to no off-target editing

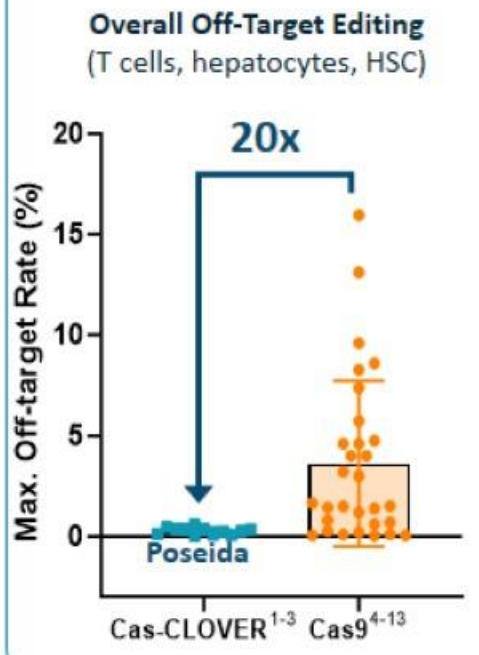
Traditional CRISPR Products



Cas-CLOVER Dimerized Editor



The Difference:



Cas-CLOVER gene editing system yields **20-40x higher fidelity** than Cas9

High on-target performance

Differentiated system with **low to no off-target editing** across multiple cells/targets

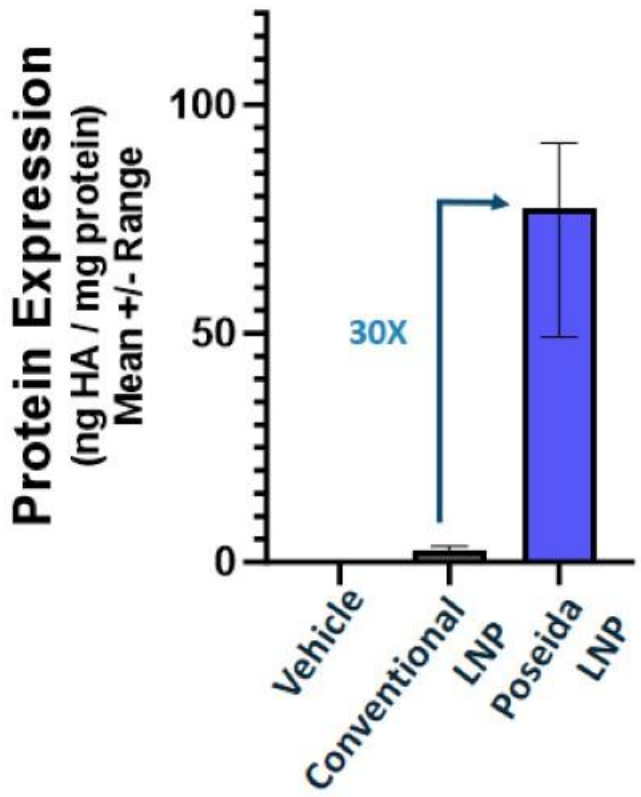
1. Madison et al., *Mol Ther Nucleic Acids*. 2022; 2. Alvarez et al., *Mol Ther*. 31(4), Supp. 1, S1-794. 2023. 3. Data on file, *Manuscript in preparation (Poseida Therapeutics)* 4. Gilmore et al., *NEJM* 2021; 5. Longhurst et al., *NEJM* 2024; 6. Ren et al., *Clin Cancer Res*., 2017; 7. Antoniani et al., *Blood*. 2018; 8. Georgiadis et al., *Mol Ther*. 2018; 9. Webber et al., *Nature Comm*., 2019; 10. Fix et al., *J Immunother Cancer*. 2022; 11. Ottaviano et al. *Sci. Trans. Med*., 2022; 12. Zhang et al., *Nature*., 2022; 13. Cancellieri et al., *Nature Genetics* 2023.

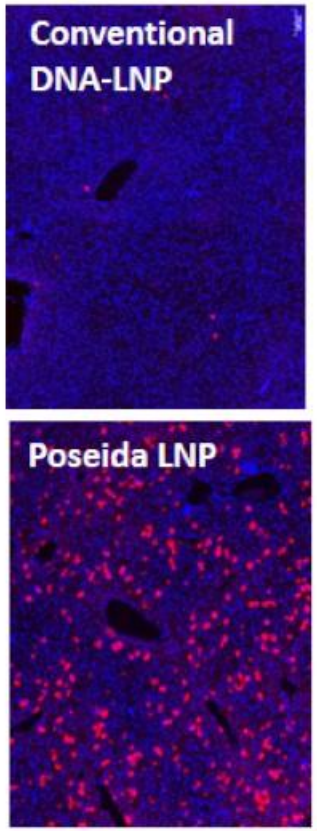
POSEIDA THERAPEUTICS

Delivery: Non-viral LNP technology enables broad hepatocyte DNA delivery

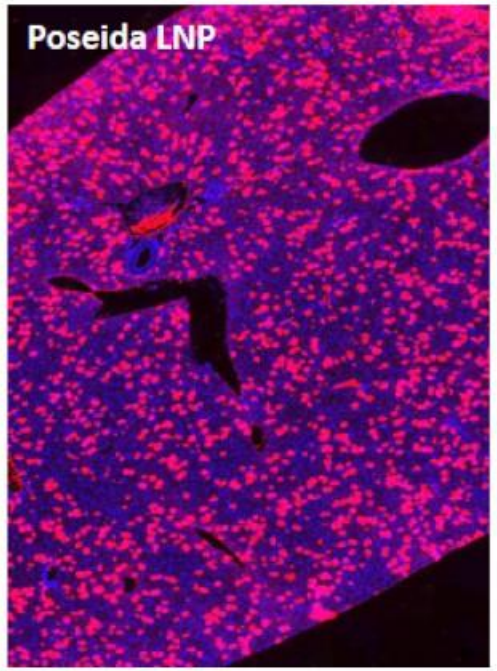
Technology advancements enabling Poseida as a leader in non-viral gene delivery

PCCA (propionic acidemia)

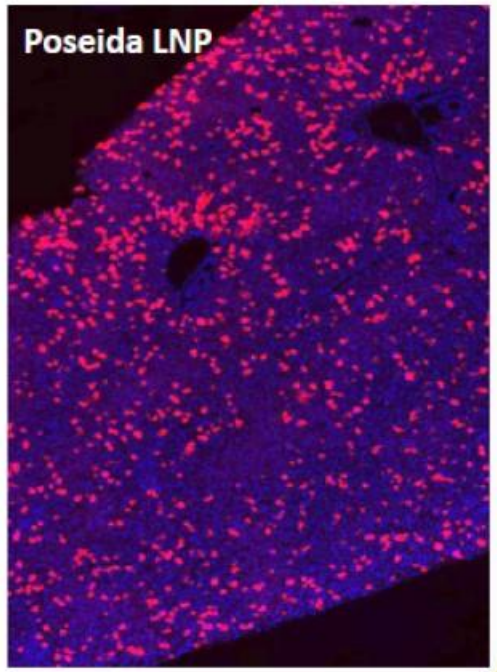




Arginase Deficiency (ARG1)



Phenylketonuria (PAH)

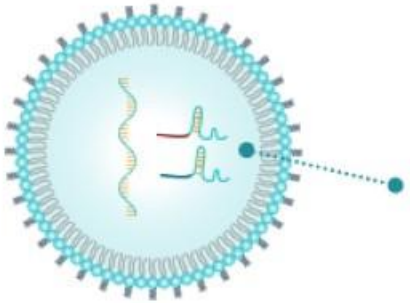


Juvenile immunocompetent mice single dose of LNP intravenously; immunostaining for transgene protein (pink).

Poseida LNP can deliver both DNA and RNA

Focused development of key programs within areas of significant opportunity

P-KLKB1-101: Hereditary Angioedema

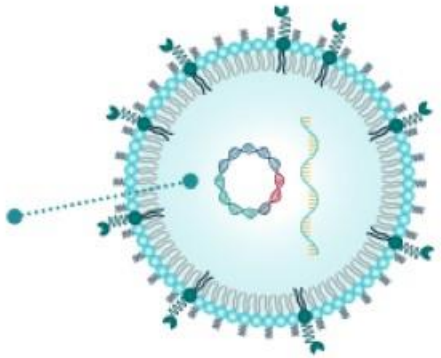


Non-viral Cas-CLOVER editing of disease-relevant gene

- Rare, inherited disorder resulting in swelling in limbs, face, intestinal tract and airways
- ~6,000[1] people with HAE in the U.S., with estimated $2.6B and growing[2] market

P-FVIII-101: Hemophilia A

Non-viral whole gene insertion for functional correction



- Hereditary disorder resulting in excessive bleeding either spontaneously or due to trauma
- ~30,000[3] people with hemophilia in the U.S., with estimated $7.6B and growing[4] market

1. NIH HAE Epidemiology https://pubmed.ncbi.nlm.nih.gov/21549036/ 2. Evaluate Pharma, 2022 estimate
3. hemophilia.org 4. Clarivate, 2024 estimate.

POSEIDA THERAPEUTICS

P-KLKB1-101: HAE patients have an unmet need for a safe therapy with durable efficacy

P-KLKB1-101: Potential technology advantages

Safety

- ✓ High fidelity editing of *KLKB1* gene using Cas-CLOVER
- ✓ ~20x higher fidelity than Cas9, across multiple tissues/targets[1-12]
- ✓ Greatly minimized unintended edits
- ✓ Potential titration to individual patient needs

Durability

- ✓ Sustained efficacy via *KLKB1*/kallikrein inactivation for long-term relief
- ✓ Relief from treatment burden and anxiety of chronic prophylaxis
- ✓ Non-viral approach enables follow-up treatment if ever needed

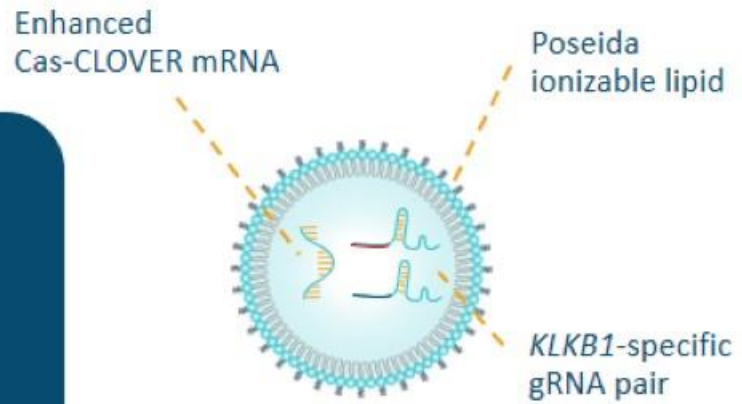
Holistic approach to addressing unmet patient need

1. Ren et al., *Clin Cancer Res.*, 2017; 2. Antoniani et al., *Blood*. 2018; 3. Georgiadis et al., *Mol Ther*. 2018; 4. Webber et al., *Nature Comm.*, 2019; 5. Gilmore et al., *NEJM* 2021; 6. Fix et al., *J Immunother Cancer*. 2022; 7. Ottaviano et al. *Sci. Trans. Med.*, 2022; 8. Zhang et al., *Nature.*, 2022; 9. Cancellieri et al., *Nature Genetics* 2023; 10. Longhurst et al., *NEJM* 2024. 11. Madison et al., *Mol Ther Nucleic Acids*. 2022; 12. Data on file, *Manuscript in preparation (Poseida Therapeutics)*

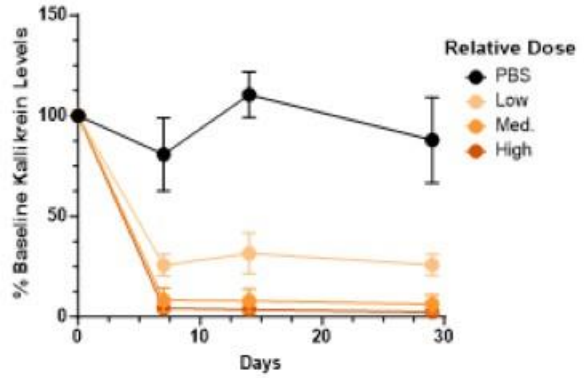
POSEIDA THERAPEUTICS

Stable targeted reduction of HAE biomarker with KLKB1 gene editing

Dose-responsive reduction with candidate LNP exceeds performance target in mice



Plasma kallikrein reduction

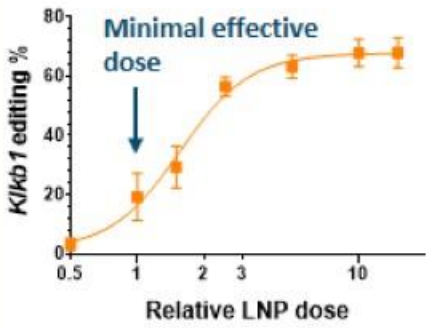


Lead LNP candidate yields target reduction:

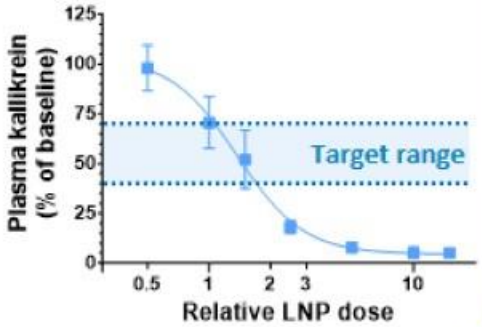
- Target kallikrein reduction of 30-60%
- Maintenance of plasma kallikrein depletion

- Wide effective dose range provides opportunity for titrating doses
- Candidate yields controlled dose-dependent reduction in targeted kallikrein protein

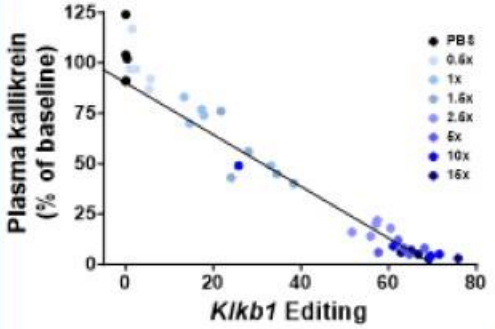
Liver *KLKB1* editing



Plasma kallikrein levels



Editing vs. kallikrein levels



Interim non-human primate (NHP) data demonstrate favorable tolerability & liver editing approaching desired therapeutic range

Poseida's non-viral system has potential to address unmet needs for Hemophilia A patients

- Non-viral lipid nanoparticle (LNP) delivery less immunogenic
- Greater access without concerns of prior viral exposure
- Titrate-to efficacy, or re-dosing, for a personalized therapy

- Transposition in hepatocytes for potential long-term durability
- 13 months of FVIII expression with potential for longer
- Key advantages in adolescents, for early intervention

- Large transposon cargo capacity enables whole gene restoration
- Optimally suited for both FVIII gene along with key *cis*-regulatory elements

- Flexibility: modulate through an inducible off-switch
- Titrate down, switch off, or swap out therapies

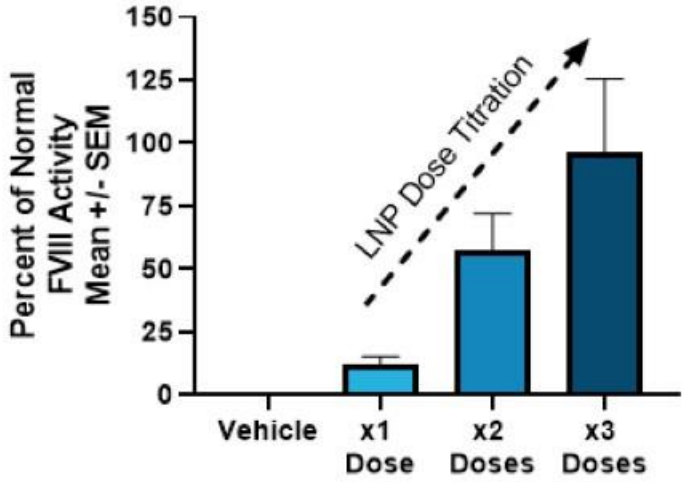
Durability, pediatric ineligibility, non-viral, and personalized dosing are significant limitations associated with gene therapies available to Hemophilia A patients today

P-FVIII-101: Non-viral delivery of Factor VIII via piggyBac for Hemophilia A

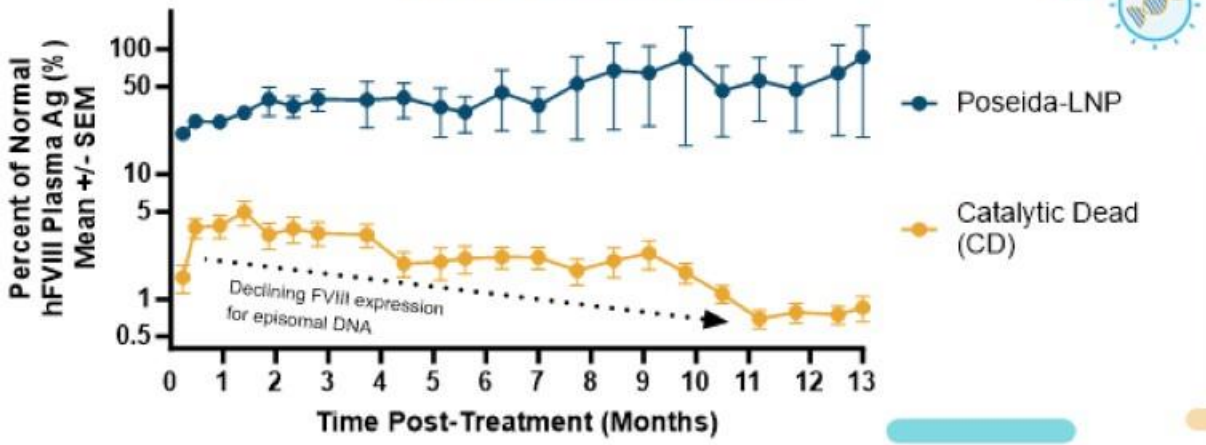
Hemophilia A opportunity remains wide-open for a better, more durable gene therapy approach

- Caused by deficiency in functional coagulation Factor VIII
- ~1 in 5,000 male births with ~60% of patients suffering from severe form[1]
- Disease managed with lifelong, repeated IV or subcutaneous administrations

Repeat Dosing of Non-Viral LNP Enables Titration of hFVIII Expression



FVIII Unlocks Durable hFVIII Expression via Transgene Integration



Nanoparticle delivery of piggyBac enables:

- Permanent disease correction: DNA is stably integrated into liver hepatocytes, durability observed for 13 months
- Large size of F8 easily accommodated with all key regulatory elements; favorable genotoxicity profile
- Biodegradable Lipid Nanoparticle avoids AAV toxicity and enables redosing and treatment all ages

1. Centers for Disease Control and Prevention, Data & Statistics on Hemophilia – https://www.cdc.gov/ncbddd/hemophilia/data.html

POSEIDA THERAPEUTICS

Poseida has a strong track record for execution with multiple potential milestones on the horizon

CAR-T CLINICAL AND MANUFACTURING PROGRESS

- ✓ **P-BCMA-ALLO1 Phase 1 data** (AACR '24, ASH '23, ESMO IO '22)
- ✓ **P-MUC1C-ALLO1 cell expansion** improvement
- ✓ Internal **GMP manufacturing**, with improvements

ADVANCING GENETIC MEDICINES TOWARDS CLINIC

- ✓ Genetic medicines **R&D day** (Apr '24)
- ✓ Preclinical **data and technologies** (ASGCT '24, ISTH '23, ASGCT '23, ASH '22)
- ✓ **Upcoming INTERACT** for FVIII; **one or more INDs** anticipated in '25

NON-DILUTIVE FINANCING THROUGH PARTNERSHIPS

- ✓ Astellas **strategic investment** (Aug '23)
- ✓ Astellas **solid tumor research collaboration** (May '24)
- ✓ Highly productive **Roche collaboration** (initiated Aug '22) with acceleration and increased probability of payments

UPCOMING 2024 MILESTONES

- **P-BCMA-ALLO1 in relapsed/refractory multiple myeloma (RRMM):**
  - New data anticipated for presentation at the International Myeloma Society 21st Annual Meeting, being held September 25-28, 2024, in Rio de Janeiro
  - Additional clinical updates are planned for the second half of 2024, subject to coordination with Roche
- **P-MUC1C-ALLO1 in solid tumors:**
  - Clinical update planned for the second half of 2024
- **P-CD19CD20-ALLO1 in B-cell malignancies:**
  - Interim data update anticipated in the second half of 2024, subject to coordination with Roche
- **P-KLKB1-101 for HAE & P-FVIII-101 for Hemophilia A:**
  - Data updates anticipated in the fourth quarter 2024
- **Poseida Cell Therapy R&D Day – November 14**

POSEIDA THERAPEUTICS

Strong financial position bolstered by strategic investments

Well capitalized into the second half of 2025, enabling time to key inflection points with upcoming data readouts (P-BCMA-ALLO1, P-MUC1C-ALLO1 and P-CD19CD20-ALLO1)

Cash Runway Into Second Half 2025

- **$238M** in cash, cash equivalents and short-term investments as of June 30, 2024
- **Well capitalized into the second half of 2025** based on existing cash and expected baseline near-term payments from Roche

Key Relationships Validate Long-term Vision

- **Roche collaboration:** Accelerated and increased certainty of achieving upcoming milestones and payments in November 2023
- **Astellas research collaboration and license agreement** to develop novel allogeneic solid tumor targeted cell therapies for $50M upfront plus potential developmental and sales milestones of up to $550M in total

Potential for Additional Value Creation

- **Significant upside potential** through achievement of additional milestones and other payments under the Roche collaboration, not already included in current cash runway
- **Business development opportunities** have potential to further extend cash runway with non-dilutive capital

Passionate and experienced leadership team driven to unleash value

Kristin Yarema, Ph.D.
President and CEO

AMGEN · NOVARTIS · ATARA BIO · McKinsey & Company

Syed Rizvi, M.D.
Chief Medical Officer

CARIBOU BIOSCIENCES · LEGEND BIOTECH · Celgene · NOVARTIS · MERCK

Johanna Mylet
Chief Financial Officer

HUYABIO INTERNATIONAL · Grant Thornton

Loren Wagner
Chief Operations Officer

Bristol Myers Squibb · Celgene · Allergan · Baxter

Devon J. Shedlock, Ph.D.
CSO, Cell Therapy

Perelman School of Medicine · Penn Medicine Center for Cellular Immunotherapies

Blair Madison, Ph.D.
CSO, Gene Therapy

Washington University in St. Louis School of Medicine · Penn

Mark Gergen
Executive Chairman

MIRATI THERAPEUTICS · AMYLYX · Halozyme

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Thank You

A New Class of Cell Therapies & Genetic Medicines with the Capacity to Cure