POSEIDA THERAPEUTICS

The Next Wave of Cell and Gene Therapies with the Capacity to Cure

Corporate Overview Presentation

July 2021

Disclaimer

This presentation and any accompanying oral commentary contain "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, as amended. Forward-looking statements are statements that are not historical facts and include, without limitation, statements related to future events; our future financial performance or condition; business strategy; expected timing and plans with respect to development milestones, clinical trials, and regulatory activities; estimated market opportunities for product candidates; and future results of anticipated development efforts. Words such as "expect(s)," "feel(s)," "believe(s)," "will," "may," "anticipate(s)", “potentially” or negative of these terms or similar expressions are intended to identify forward-looking statements. These forward-looking statements are based on management's current expectations of future events only as of the date of this presentation and are subject to a number of important risks and uncertainties that could cause actual results to differ materially and adversely from those set forth in or implied by such forward-looking statements. These risks and uncertainties include, but are not limited to: risks associated with conducting clinical trials; whether any of our product candidates will be shown to be safe and effective; our ability to finance continued operations; our reliance on third parties for various aspects of our business; competition in our target markets; our ability to protect our intellectual property; our ability to retain key scientific or management personnel; and other risks and uncertainties described in our filings with the Securities and Exchange Commission, including under the heading “Risk Factors”. Except as required by law, we assume no obligation to update these forward-looking statements, or to update the reasons why actual results could differ materially from those anticipated in the forward-looking statements, even if new information becomes available in the future.

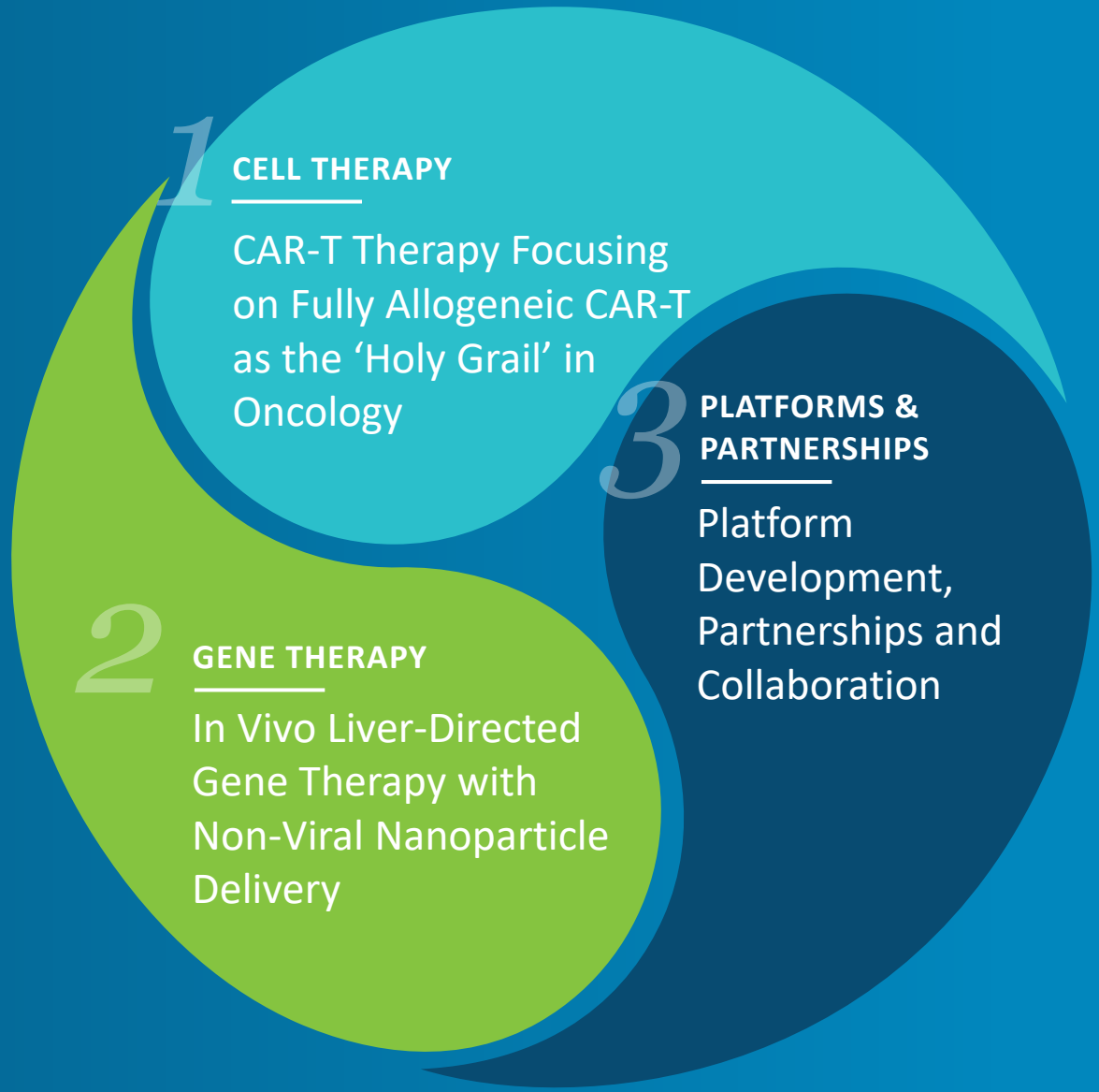
On a Mission to Redefine Cell and Gene Therapy

NASDAQ: **PSTX**

200+ Employees

Headquartered in **San Diego, CA**

Strong and **Broad IP** Portfolio



POSEIDA THERAPEUTICS

Who We Are

Unconventional.
Innovative.
Disruptive.
Unapologetic.

We Are a True Platform Technology Company

Our Approach is Unique and Unparalleled

Our Pipeline is Deep and Growing

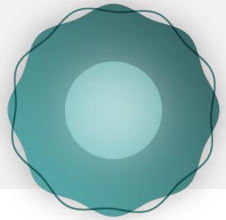
Strategic Collaboration Will Drive Value

Innovation in CAR-T

Allogeneic CAR-T Therapy for Oncology

Cell Type Matters

T_{SCM} Cell



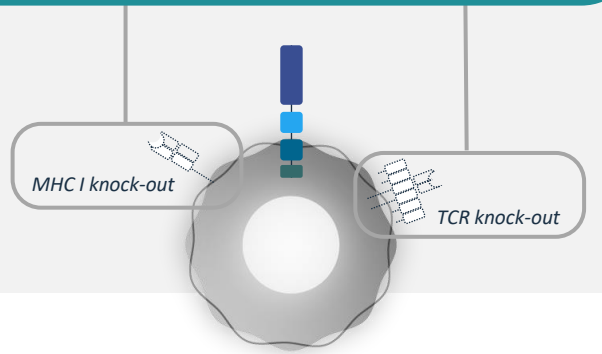
Stem Cell Memory

- Self renewing
- Long lived
- Multipotent

T_{SCM} is the ideal cell type for CAR-T due to greater safety and durability

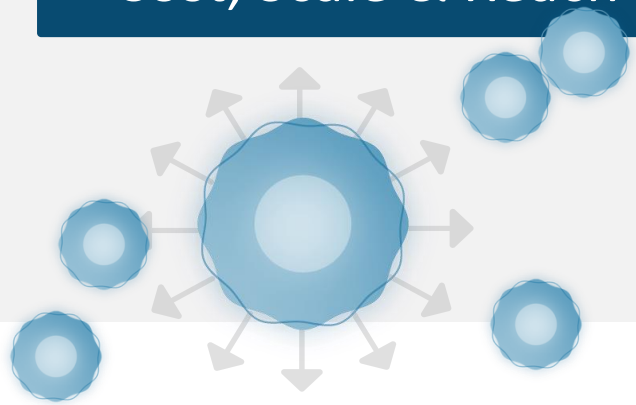
piggyBac® is the ideal non-viral gene insertion technology

Fully Allogeneic CAR-T



Addressing both Graft v Host and Host v Graft alloreactivity with **Cas-CLOVER Gene Editing**

Cost, Scale & Reach



Booster Molecule technology delivers 100's of doses at low cost

Enables outpatient dosing and expanded patient reach

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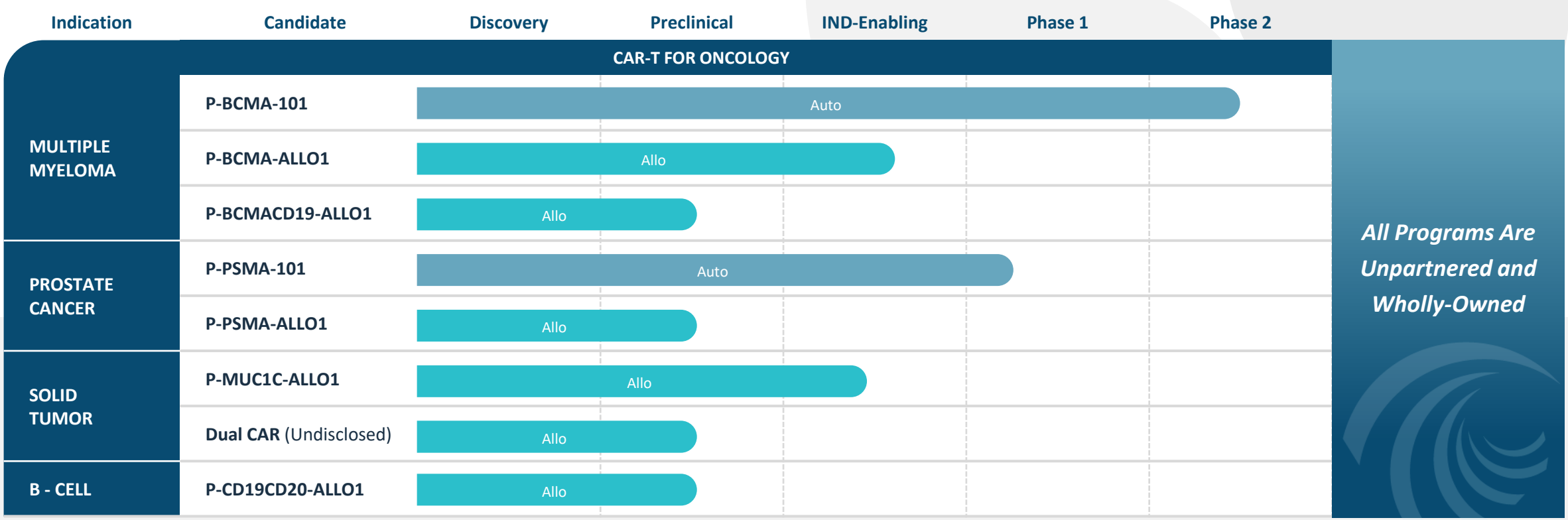
Cell Therapy Pipeline

CAR-T for Oncology and Beyond



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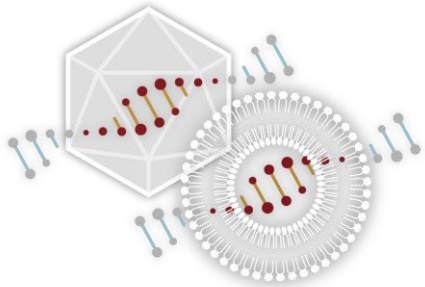
Disruption in Gene Therapy

In Vivo Gene Therapy for Rare Diseases

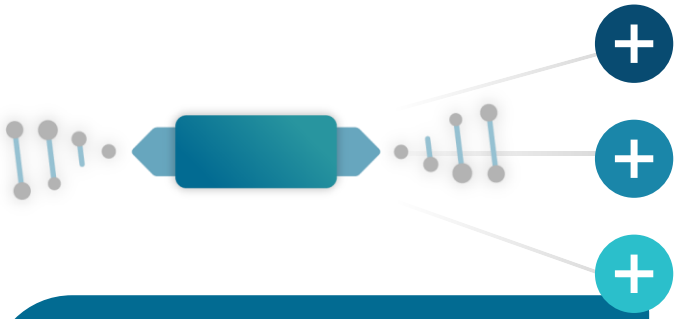
Fully Integrating

piggyBac integrates into DNA enabling the potential for single treatment cures



Addressing Challenges of Viral Delivery

piggyBac and **Nanoparticle** technology can address limitations of AAV



Broad Application

piggyBac cargo capacity addresses more indications and piggyBac can treat juvenile populations

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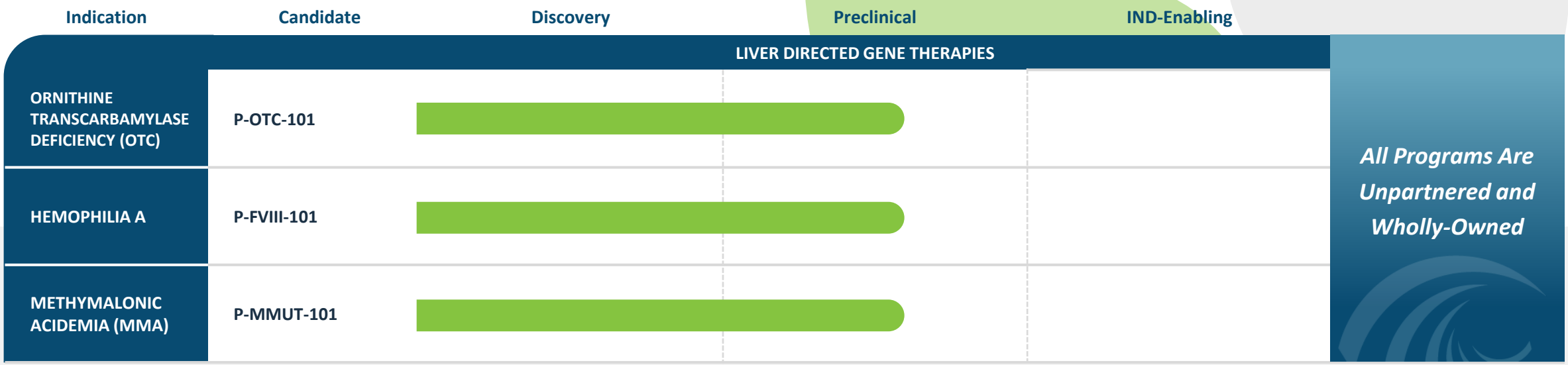
Gene Therapy Pipeline

In Vivo Liver-Directed GT and Other Applications



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The Power of Platform Technologies

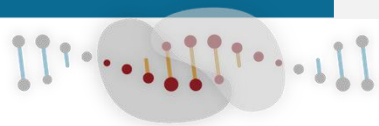
Super piggyBac

- Non-viral system
- Highly efficient technology to add DNA to genome
- Large genetic cargo capacity
- Broad range of cells
- Advantages in tolerability, potency, speed to clinic and costs

GENE INSERTION

Cas-CLOVER

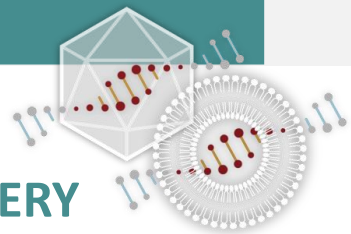
- Highly precise site-specific nucleases
- Ability to edit resting T cells while maintaining desirable T_{SCM} characteristics
- Major advantages:
  - tolerability
  - ease of design
  - low cost
  - multiplexing ability



GENE EDITING

Nanoparticles AAV Vectors

- Delivers long-term stable gene expression
- Non-viral and viral delivery of DNA and proteins both ex vivo and in vivo
- Ability to deliver to multiple cell types and target specific tissues



GENE DELIVERY

Individually or in combination, our core technologies enable us to engineer a portfolio of product candidates designed to overcome the limitations of current cell and gene therapeutics

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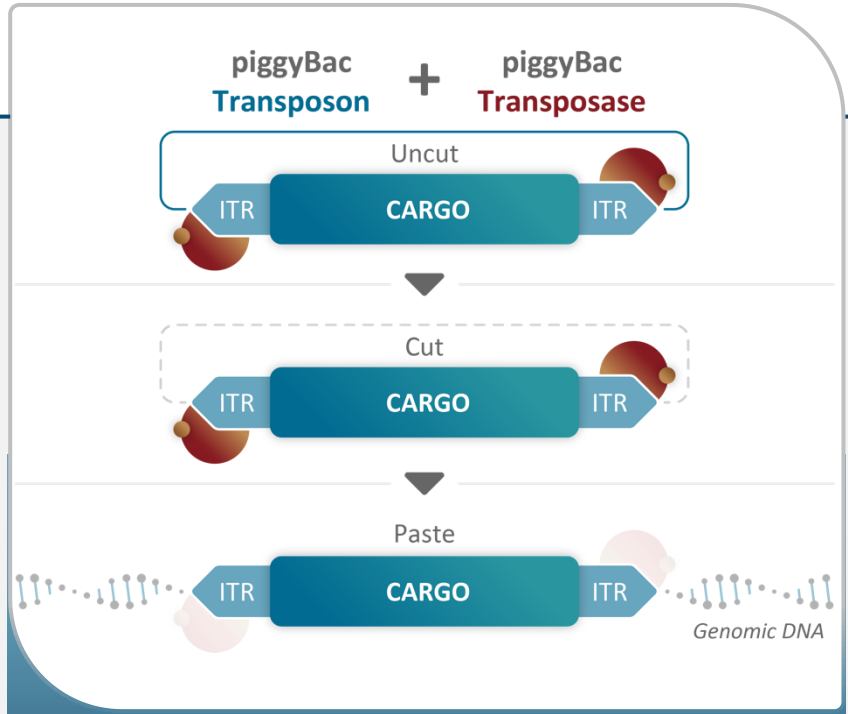
piggyBac: Versatility in DNA Delivery

BENEFITS IN
CELL THERAPY

Generating CAR-T Products with Desirable High Percentage of T_{SCM} Cells

- Preferentially favors **stem cell memory T cells (T_{SCM})** and works well in **resting T cells** for potentially improved tolerability and more durable responses
- **Large cargo capacity** enables multi-CAR products, addition of safety switch and selection gene



- Enables DNA integration
- Non-viral gene insertion technology
- Works in a wide variety of cell types
- Multiple safety and cost benefits

BENEFITS IN
GENE THERAPY

Integrates Into DNA Delivering Stable Long-Term Expression

- Ideal for use in **dividing tissues** like those in juvenile liver
- **Highly efficient** integration may allow **reduced dosing and single treatment cures**
- **Large cargo** for delivering larger genes
- **Delivered using AAV + nanoparticle** or *in vivo* EP

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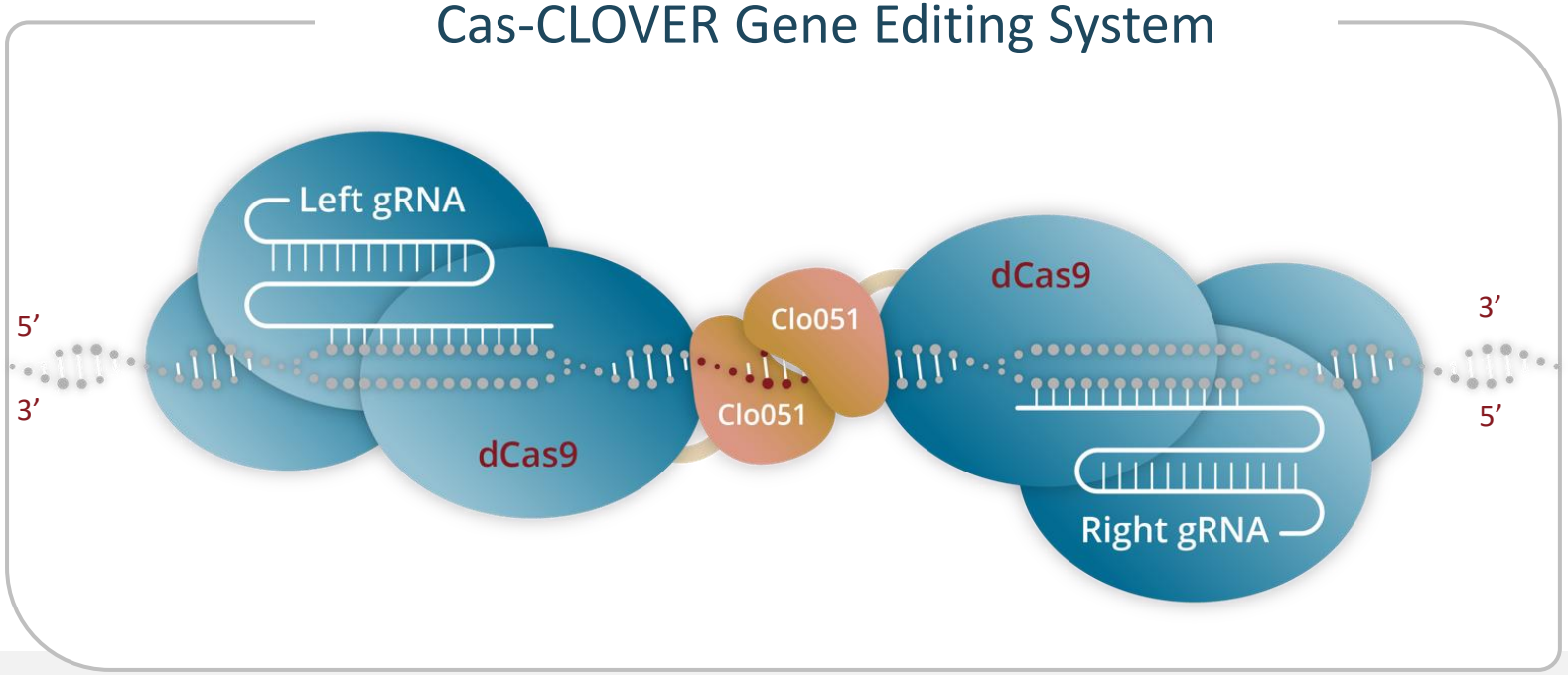
Cas-CLOVER: Clean Gene Editing

Cas-CLOVER Gene Editing System



- **Low-to-no off-target cutting**
- **High Editing Efficiency** in resting T-cells resulting in high % of T_{SCM} cells
- Ease of use/design
- Multiplexing ability
- High specificity
- Lower cost

Clean, efficient and versatile gene editing platform
enables fully **Allogeneic CAR-T** products and **Gene Therapy** development

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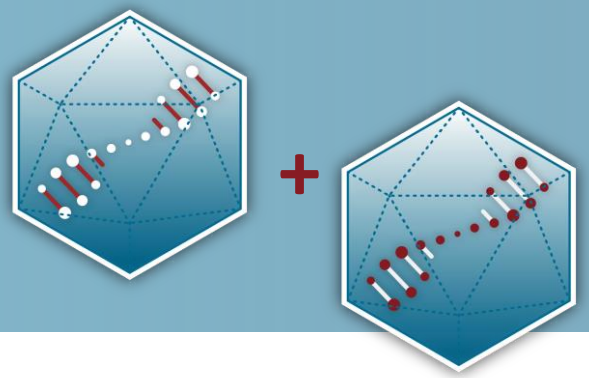
Delivery: AAV and Non-Viral Nanoparticle Delivery

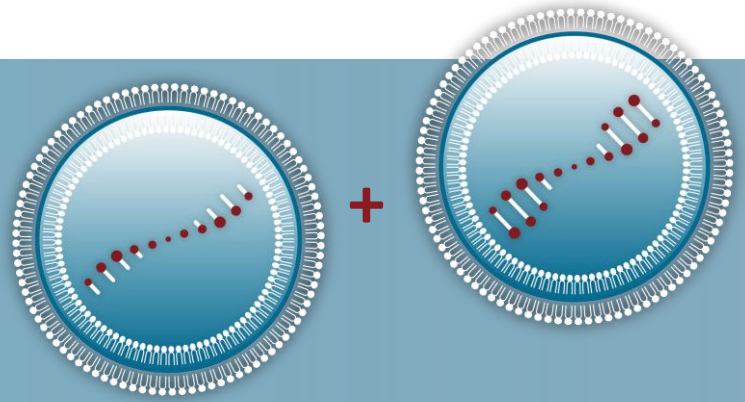
OUR GOAL:

Develop Single Treatment Cures Utilizing Our In Vivo Gene Therapy Technologies

VIRAL

AAV (SPB-DNA)
AAV (PB-DNA)





NON-VIRAL

Nanoparticle (SPB – RNA)
Nanoparticle (PB – DNA)

Potential for Single-Treatment Cures

In pre-clinical studies piggyBac+AAV enabled **permanent and stable DNA integration** and **long-term expression**

Ability to effectively **work in dividing tissues** including the juvenile liver

Ability to **deliver larger genes** with nanoparticle+piggyBac than AAV

Significant Future Value Creation

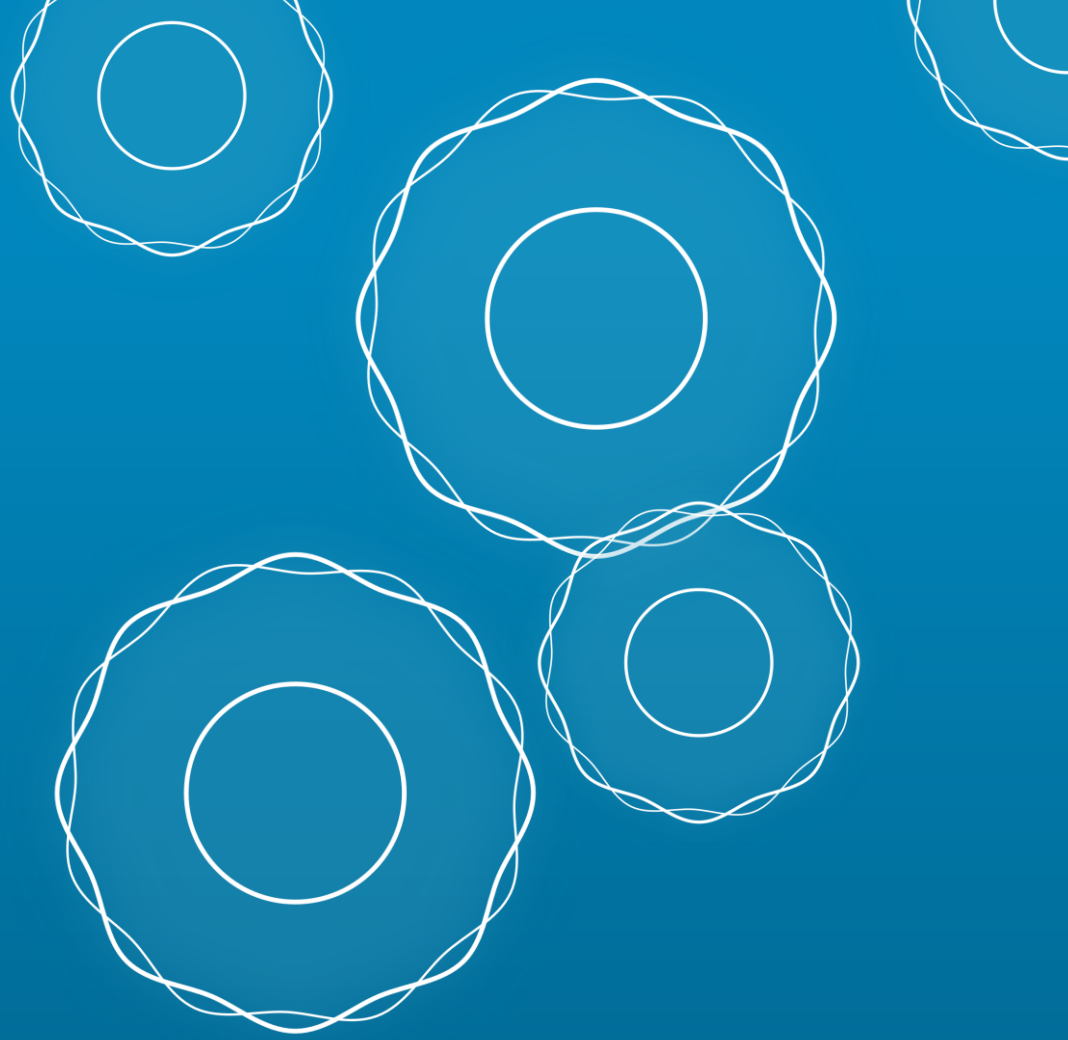
Our Platform Technologies Have Broad Applicability Across the Therapeutic Landscape

LANDSCAPE

	CELL THERAPIES	GENE THERAPIES
CAR-T/TCR-T/NK-T/Treg **ONCOLOGY**	Allogene THERAPEUTICS, JUNO THERAPEUTICS, Kite A GILEAD Company	
CAR-T/TCR-T/NK-T/Treg **NON-ONCOLOGY**	Quell tx, TregTherapeutics	
iPSC **CELL THERAPY**	BlueRock Therapeutics, Fate THERAPEUTICS	
HSC **CELL THERAPY**	bluebirdbio	
Regenerative Med **LIVER, SKIN, ETC.**	Ambys MEDICINES	
AAV-PG & Nano-PB **LIVER, LUNG, CNS, ETC.**		AUDENTES, avexis, PassageBio, Spark
In Vivo EP **SKELETAL MUSCLE, SKIN, EYE, ETC.**		inovio
Cas-CLOVER **GENE EDITING – ALL TISSUES**		GENE EDITING: Beam THERAPEUTICS, CRISPR THERAPEUTICS, editas MEDICINE, Intellia THERAPEUTICS
Nano mRNA **NON-ONCOLOGY**		OTHER: Alnylam PHARMACEUTICALS, moderna

**Poseida has listed companies it believes are representative of those active in cell and gene therapy.*

Immuno Oncology
CAR-T Program



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THERAPEUTICS

Not All T Cells are Created Equally

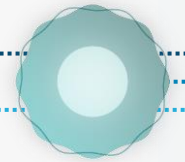
The Importance of Stem Cell Memory T Cells (T_{SCM})

LESS DIFFERENTIATED

T_{SCM} Cell

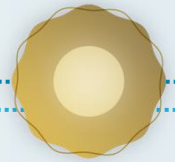
Stem Cell Memory

- Self renewing
- Long lived
- Multipotent



T_{CM} Cell

Central Memory



T_{EM} Cell

Effector Memory

MORE DIFFERENTIATED

T_{EFF} Cell

Effector T-Cell

piggyBac
Designed to Preferentially Transpose T_{SCM} Cells

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 in bone marrow – key to CAR-T success in solid tumors

Paving the Way to Allogeneic BCMA CAR-T

OUR APPROACH TO CAR-T IN MULTIPLE MYELOMA

Multiple Product Candidates	Capacity to Cure	Importance of T_{SCM}	Focus on Tolerability	Addressing the Cost Barrier

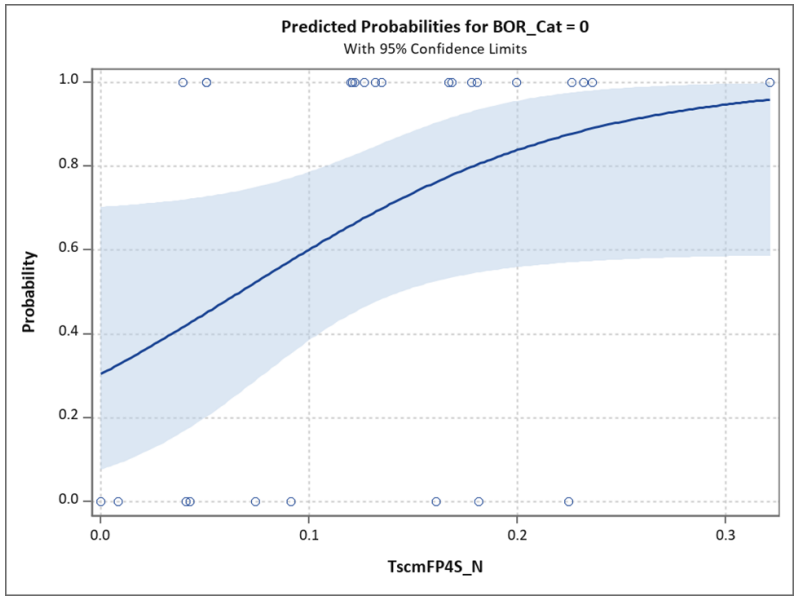
P-BCMA-101 ····· **P-BCMA-ALLO1** ····· **DUAL (BCMA/CD19) ALLO**

- T_{SCM} matters – the key to improved safety and tolerability with lower reported CRS and neurotox
- Product safety profile allows for fully outpatient dosing
- Binder selection is important – utilizing VH binders for Allo and Dual CAR programs
- Booster molecule enables 100s of doses per Allo manufacturing run
- Optimized manufacturing process with use of nanoplasmid allows for greater transposition efficiency and increased T_{SCM}
- Safety, off-the-shelf availability and low cost is an industry game changer

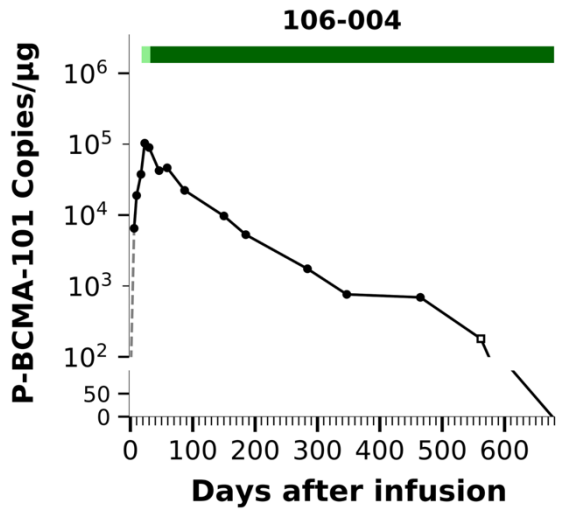
P-BCMA-101 Sets the Stage for Allogeneic CAR-T

No Other CAR-T Product Has Shown Similar Persistence or Safety

T_{SCM} Correlates with Best Responses



Can Persist In Vivo



And Offers A Superior Safety Profile

- 16 patients dosed **fully outpatient**
- All CRS was Grade 1/2
- No to v**ery low neurotoxicity**
- **No patient admitted to the ICU**
- **No patient death due to P-BCMA-101**

- T_{SCM} in P-BCMA-101 is directly **correlated with best responses in the clinic**
- **Long-term persistence of T_{SCM} cells** in some patients (e.g, **detectable product and sCR at 22 months post-infusion**)
- Potentially best-in-class safety profile allows for **fully outpatient dosing**

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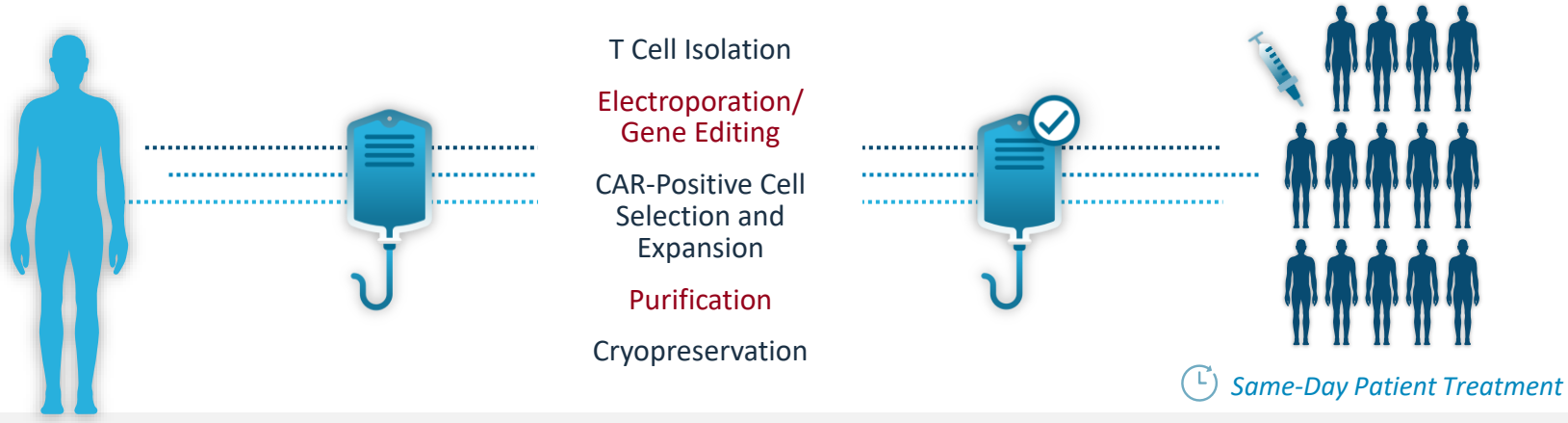
Allogeneic CAR-T Platform Offers Many Unique Benefits

Incorporating Learnings From Autologous Experience

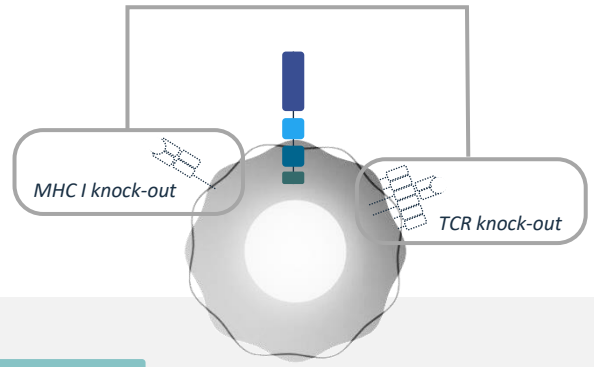
HEALTHY DONOR | LEUKAPHERESIS | MANUFACTURING OF ALLOGENEIC CAR-T PRODUCT | PRODUCT TESTING & RELEASE | ADMINISTRATION OF ALLOGENEIC CAR-T PRODUCT



Same-Day Patient Treatment

FULLY ALLOGENEIC

Multiplex gene editing to address graft vs host (safety) and host vs graft (persistence)



Unique Allogeneic Platform

- Preserve/improve **high T_{SCM}**
- **Optimized dosing** regimens
- **Healthy donor** material
- **Robust manufacturing**
- Dramatic **cost reductions**
  - Up to **100s of doses**

Booster Molecule

- Our patented technology is designed to overcome the "Allo Tax" and **significantly increase production yield** while **preserving desirable T_{SCM} attributes** of P-BCMA-ALLO1

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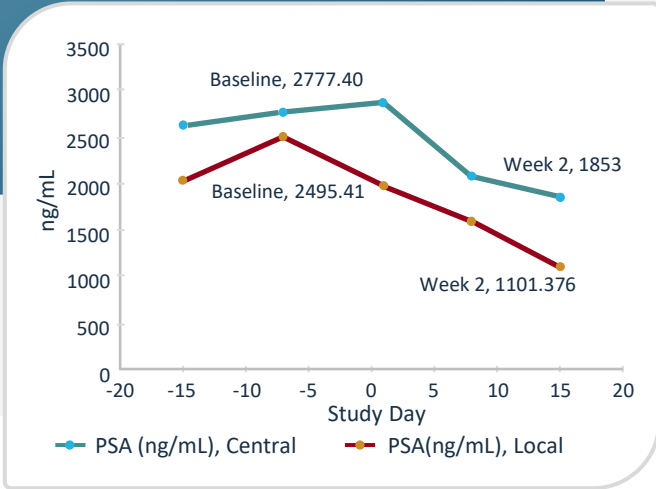
P-PSMA-101 Phase 1 Initial Patient Data Indicates Strong Response in Fighting Solid Tumors

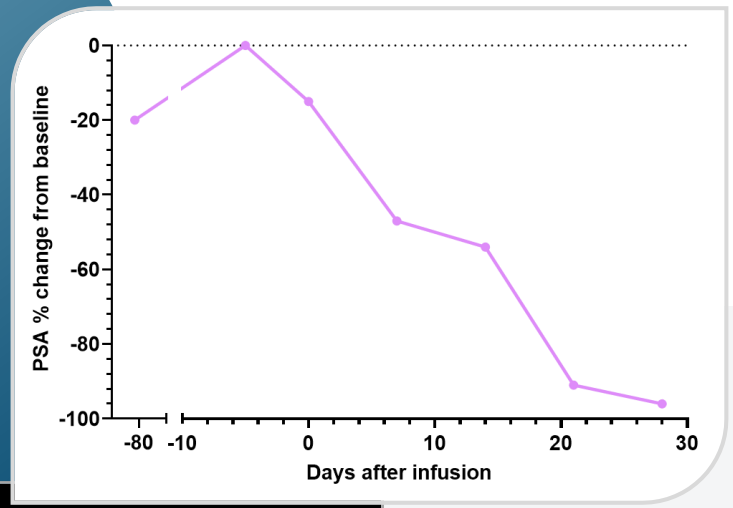
P-PSMA-101 Patient Case Study #1

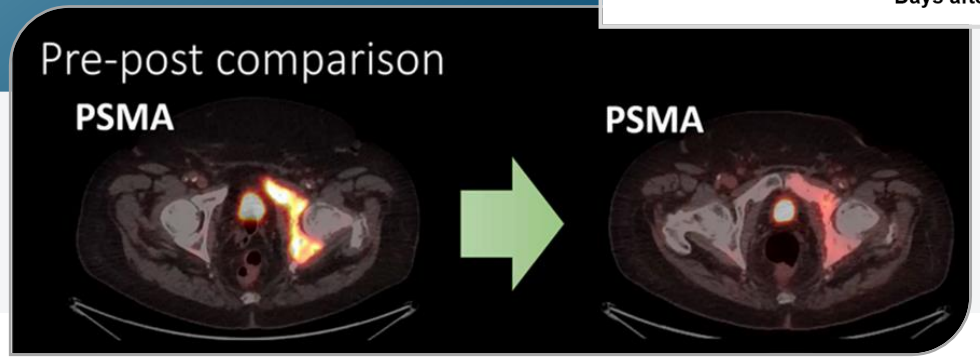
- PSA rapidly decreased >50%
- Dosing at 0.25 x 10e6 cells/kg; 20 x 10e6 total cells
- Grade 1 CRS, treated to resolution



P-PSMA-101 Patient Case Study #2

- 70% reduction in standard uptake value (SUV) in PSMA PET imaging
- PSA rapidly decreased >96%
- Dosing at 0.25 x 10e6 cells/kg; 22 x 10e6 total cells





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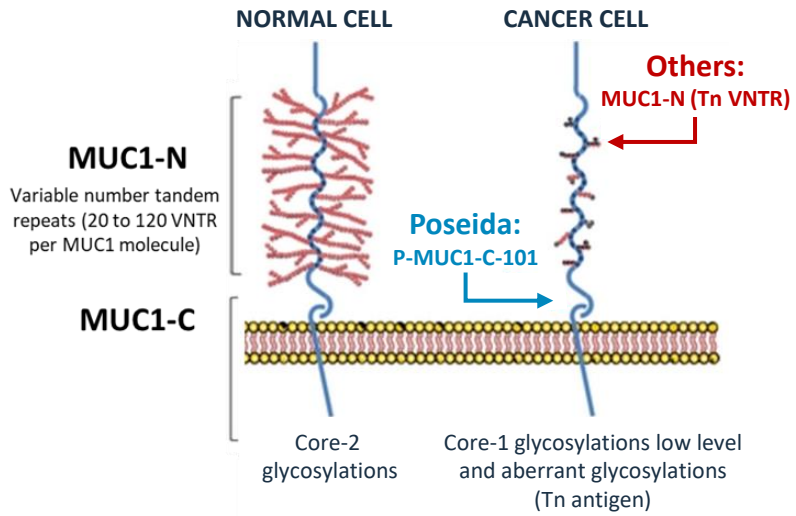
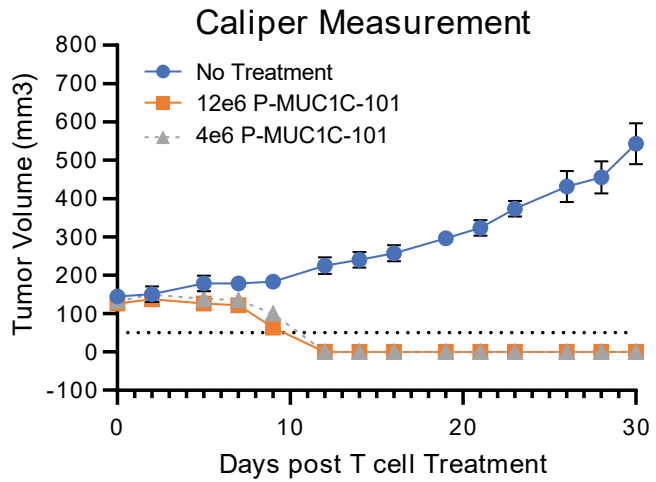
MUC1C Allogeneic Solid Tumor Program with Broad Potential

Our Approach vs Others

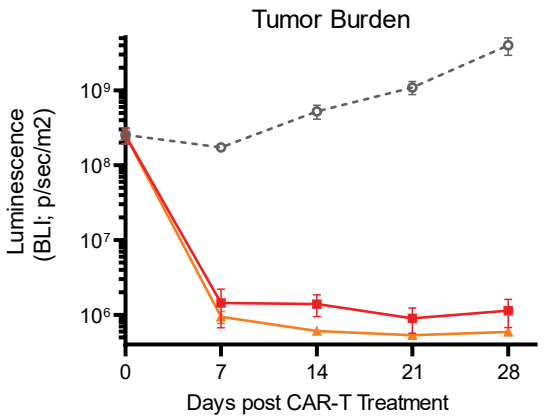


Triple-Negative Breast Cancer Model



Tumor Elimination in 100% of Animals at Standard and Low Doses After ~2 Weeks

Ovarian Cancer Model



- **P-MUC1C-ALLO1** potentially addresses patient populations in **multiple solid tumor indications**
- MUC1 expressed at high levels on many endothelial-derived cancers
  - **Breast, Ovarian, NSCLC, Colorectal, Pancreatic and others**

(2017) (American Cancer Society)

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The Advantages of Mulitple Antigen Targeting with Dual CAR-T

1. Overcome single antigen loss (heme)

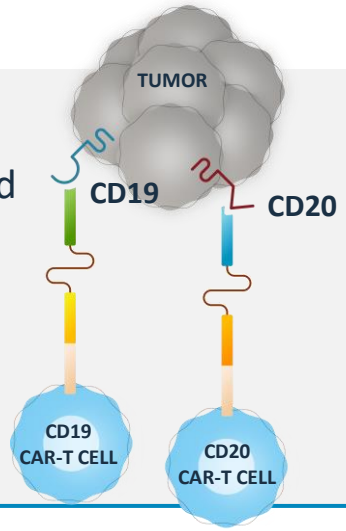
CD19 CAR T clinical trials: 7-39% of relapse is caused by loss of CD19 antigen

2. Target heterogeneous tumors (solid)

Highly heterogeneous antigen expression may contribute to modest CAR-T clinical responses against solid tumor

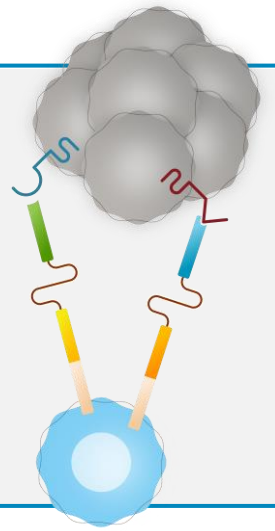
Single CAR

Co-administered



Dual CAR

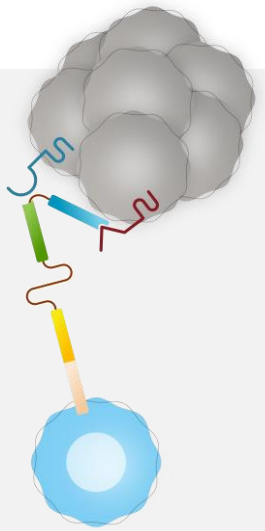
Co-localized dual engagement



Competitive Advantage

Tandem CAR

Conformation challenges?



Shah et al., Front Oncol. 2019; 9: 146

Poseida's piggyBac transposon system has large cargo capacity and can effectively deliver two individual CARs, with capacity for safety switch, selection gene (and/or others)

1. **ALLO CD19/CD20**
   B cell Leukemia and Lymphoma
2. **ALLO CD19/BCMA**
   Multiple Myeloma
3. **Dual ALLO (Undisclosed)**
   Solid Tumors

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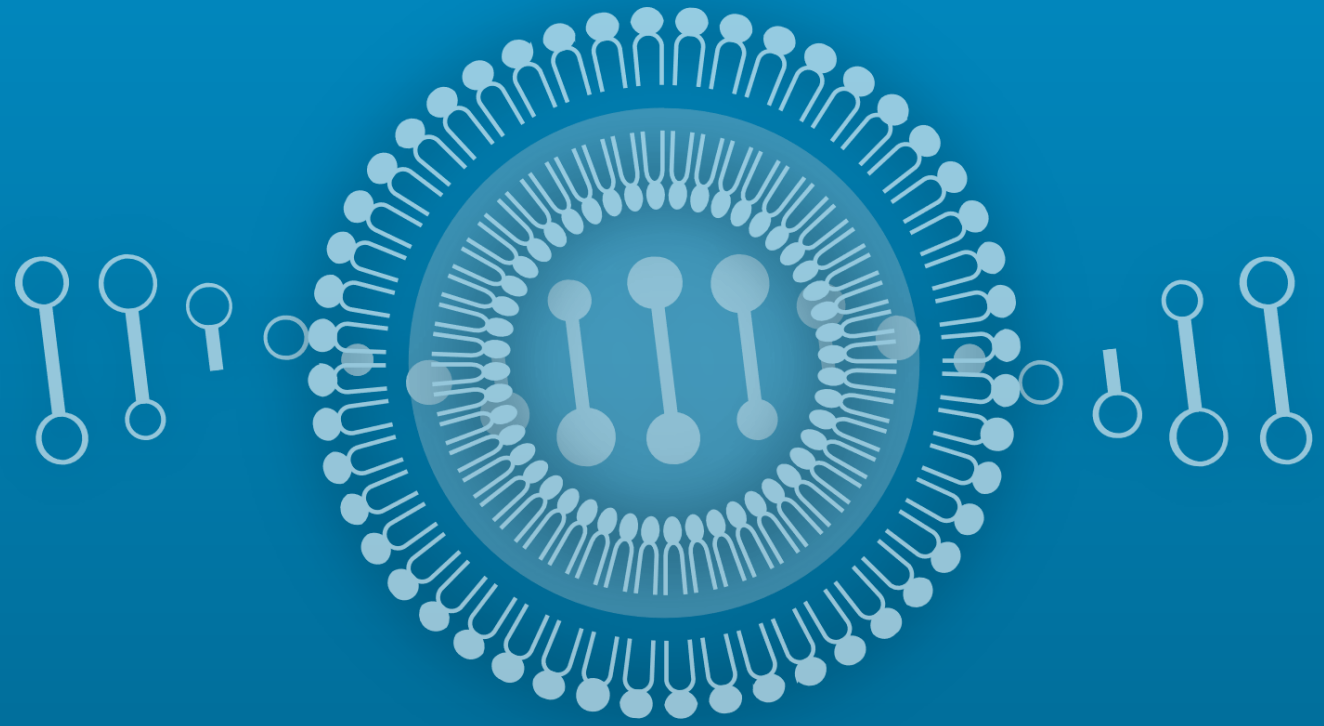
Gene Therapy Program



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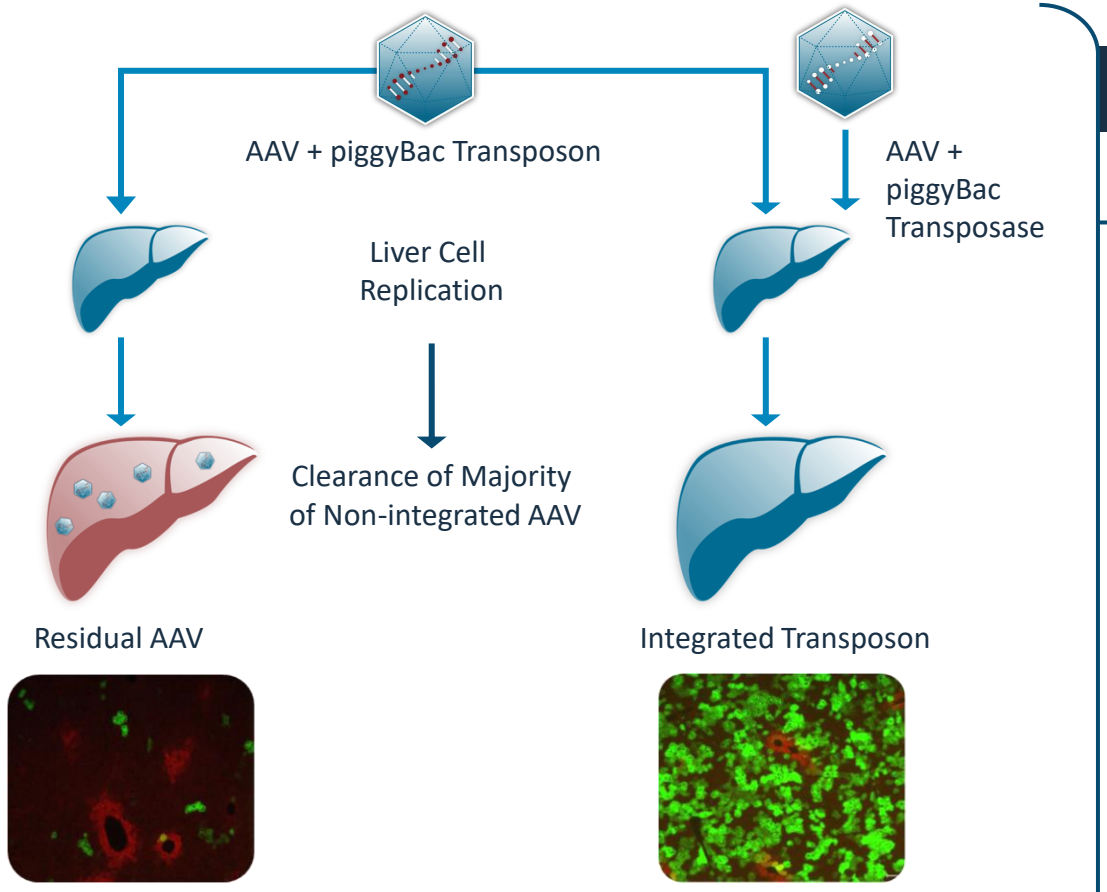
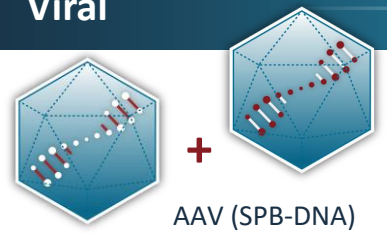
Changing the Game in Liver-Directed Gene Therapy

piggyBac+AAV followed by piggyBac+Nanoparticle

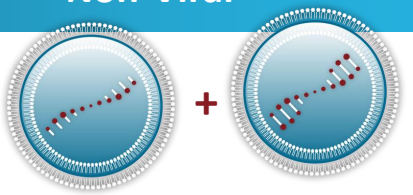


Single-treatment cure in mouse models of OTC, ASS1, PFIC3

Viral → **Non-Viral**



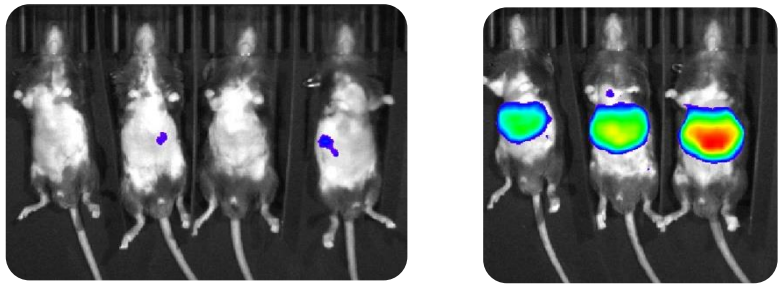
AAV (SPB-DNA)
AAV (PB-DNA)



Nanoparticle (SPB – RNA)
Nanoparticle (PB – DNA)

Luc Transposon Alone	Transposase + Luc Transposon	
PB DNA LNP	**SPB mRNA** LNP	**PB DNA** LNP

Juvenile Mice at *7 months* post injection
(Injected at 4 Weeks)
CMV Promoter
0.25mg/kg DNA-LNP
0.25mg/kg RNA-LNP



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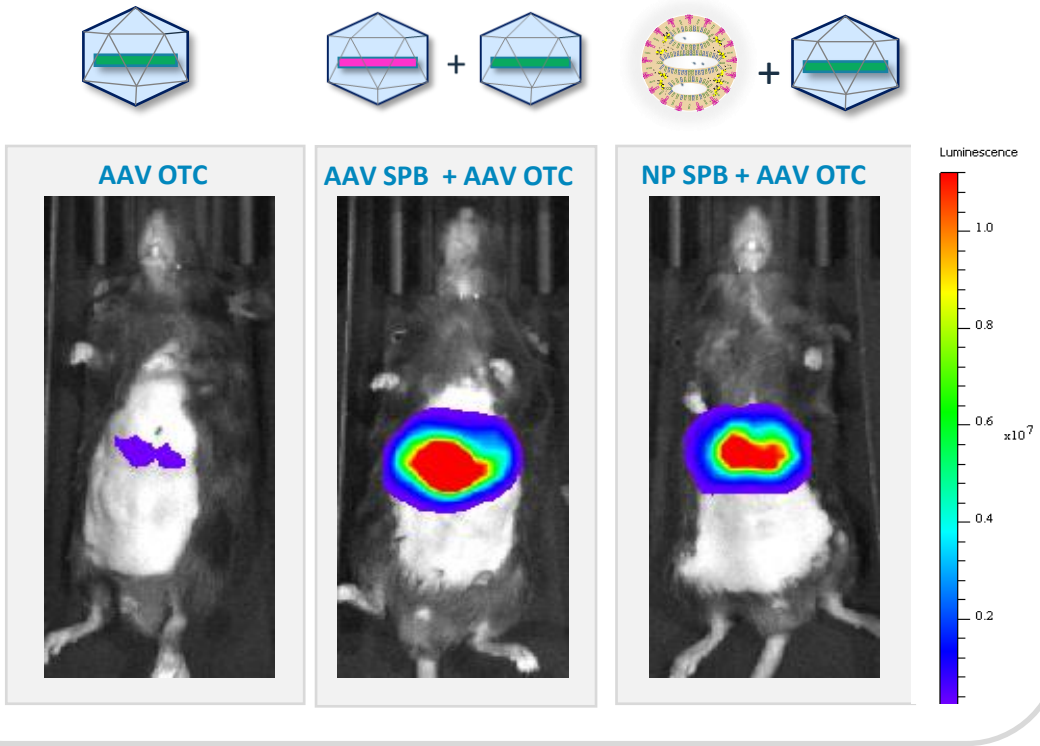
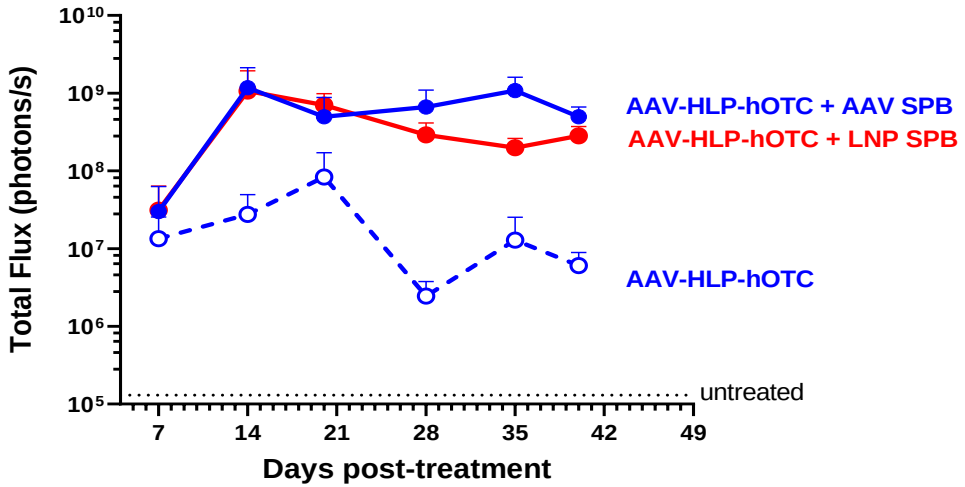
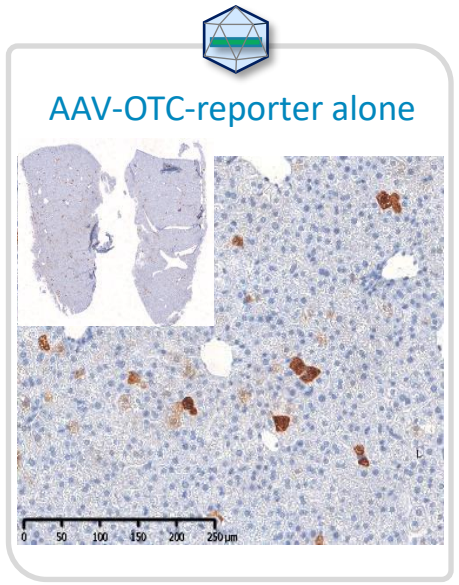
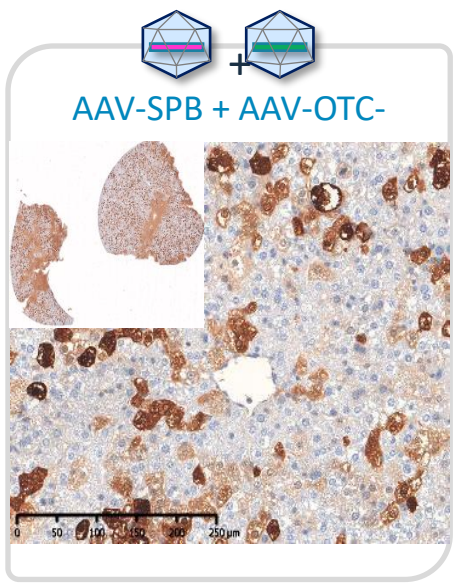
P-OTC-101 Moving Toward the Clinic

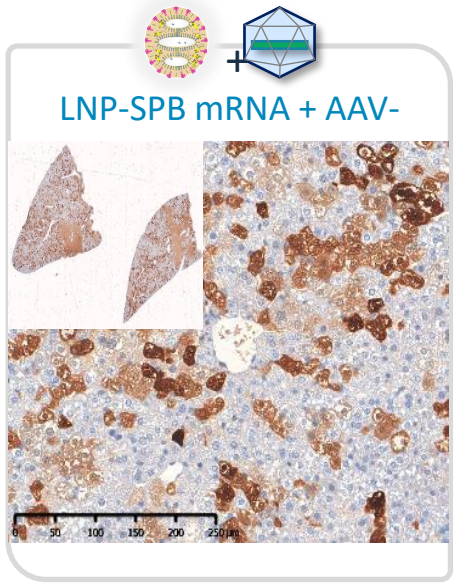
Liver Bioluminescence











Mouse: C57BL/6 dosed as neonates

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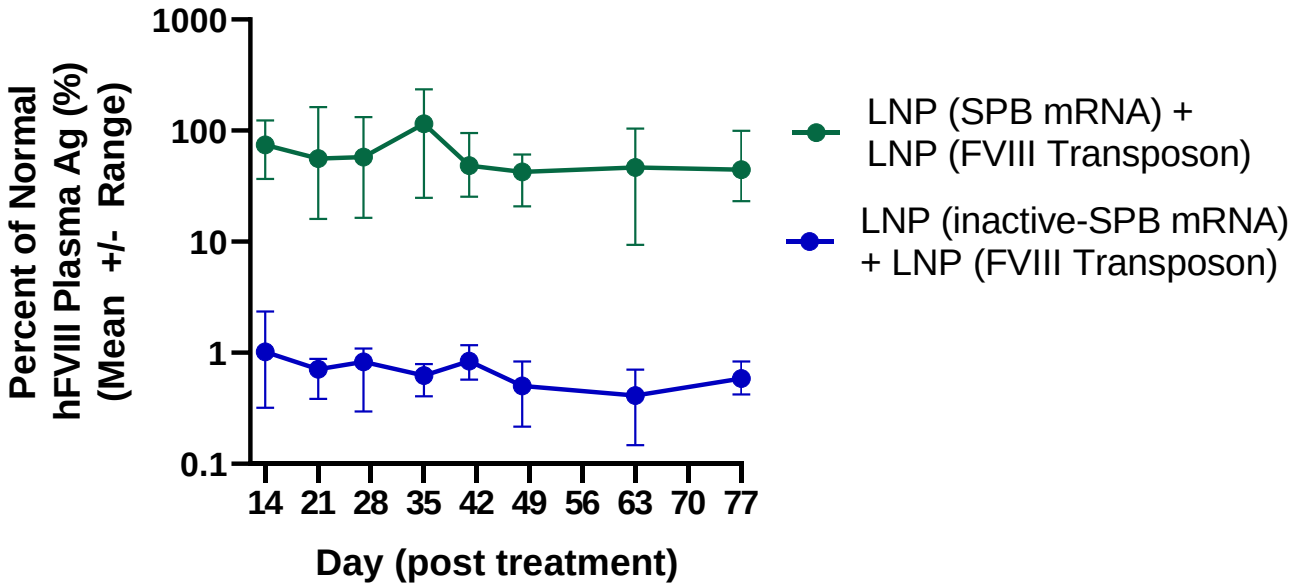
Up Next: Nanoparticle + piggyBac for Factor VIII Delivery

Addressing Hemophilia with Single Treatment Liver Directed Gene Therapy

Hemophilia A

- Caused by deficiency in functional coagulation factor VIII (FVIII)
- ~1 in 5,000 male births with ~60% of patients suffering from severe form
- Disease managed through recombinant FVIII infusions
- Large transgene not amenable to AAV delivery
- Nanoparticle eliminates AAV toxicity and allows dose escalation and redosing



Research ongoing internally and in collaboration with KOL: Denise Sabatino, PhD

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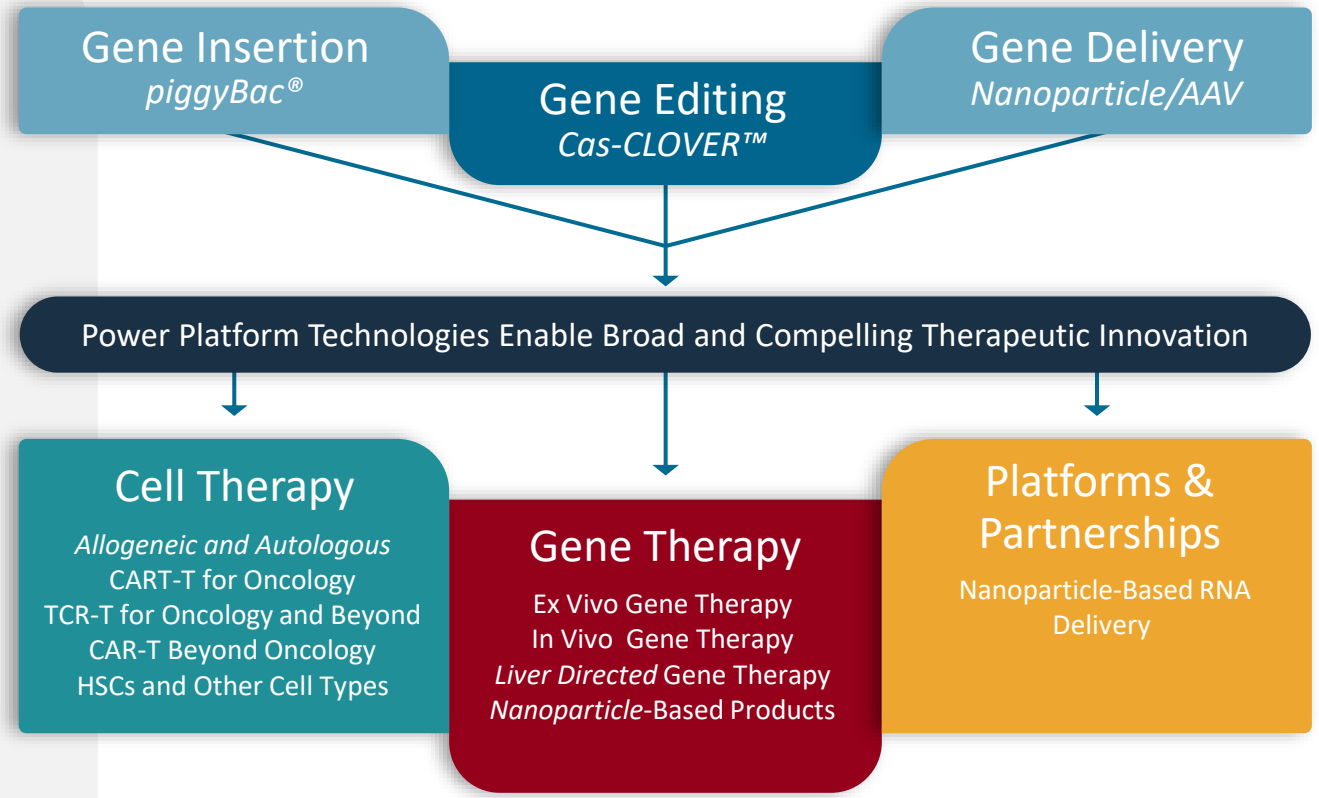
Multiple Avenues to Significant Value Creation

Working to Engineer Single-Treatment Cures for Cancer & Genetic Diseases

- **Innovative and disruptive technology platforms** enable broad **cell and gene therapy** pipeline
- **Overcoming limitations** of current cell and gene therapy with next generation technologies
- Multiple approaches to differentiating **autologous and allogeneic CAR-T** programs
- Novel **gene therapy** programs address shortcomings of AAV and enable single treatment cures
- Significant opportunities for **partnership, collaboration and platform expansion** beyond current pipeline



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Thank You

The Next Wave of Cell & Gene Therapies with the Capacity to Cure