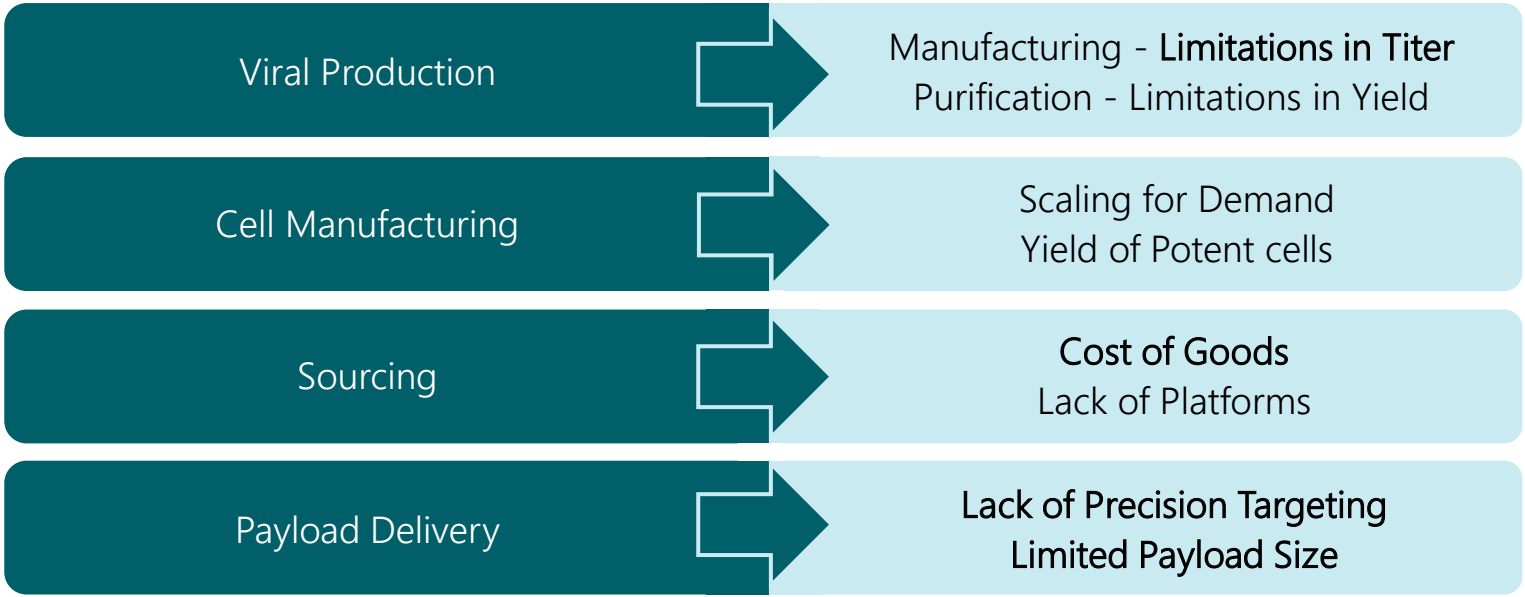
Carrigent

Redefining targeted payload delivery in cell & gene therapy

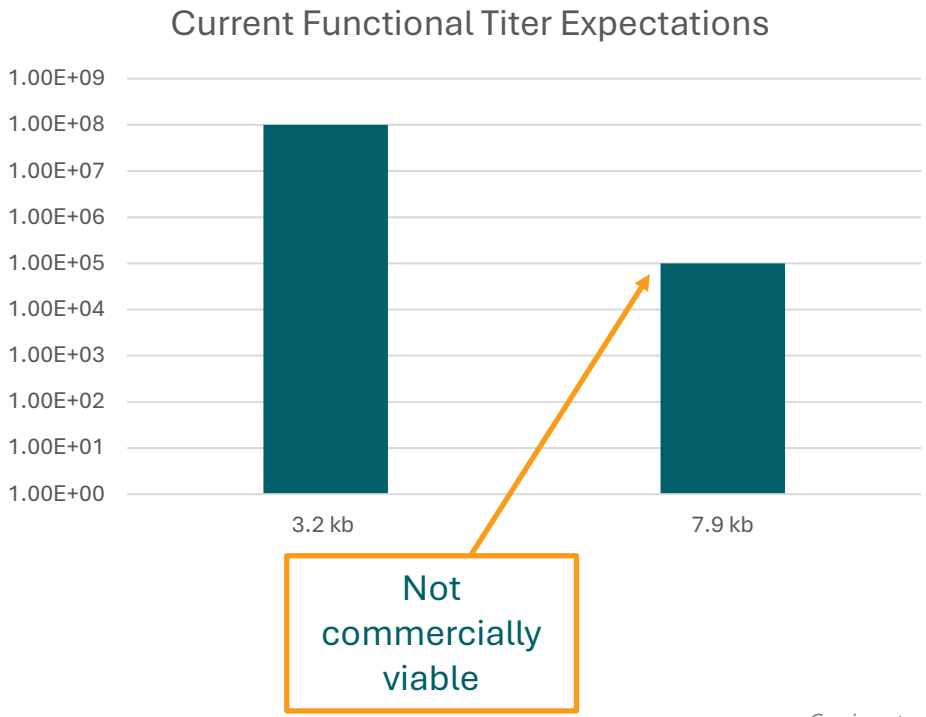
Brian Newsom, MBA

CEO

CGT: Full of Limitations and Inefficiencies



Limitations in Viral Titer (especially for large inserts)



Current Systems

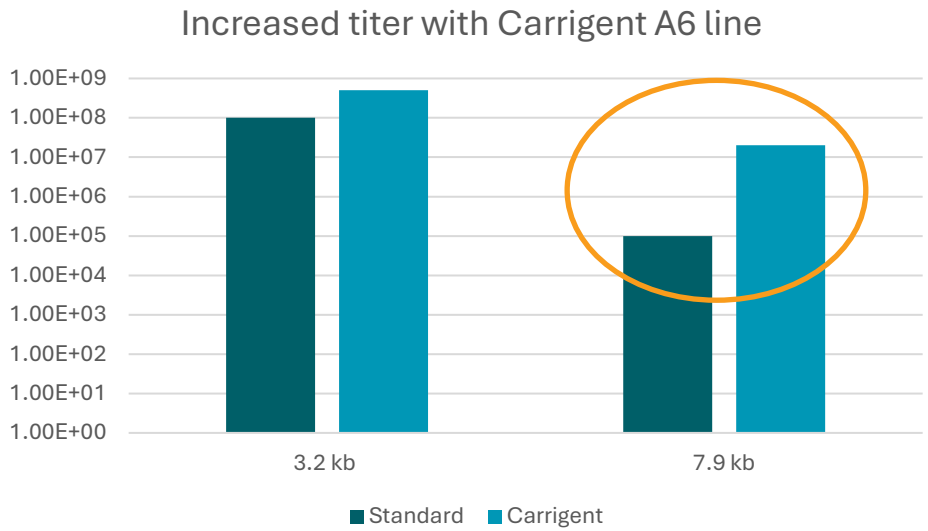
- 1E7 to 1E8 titer for 3.2kb insert in LVV
- <1E5 titer for 7.9kb insert in LVV
- Many reasons for increasing GOI insert size that exceed 5 kb
  - Dual or tandem antigen-binding domains
  - Multiple co-stimulatory domains
  - Safety switches or regulatory elements
  - Chimeric switch receptors

Carrigent Solution
The A6 line (adherent & suspension)

HEK line optimized for virus

Carrigent System

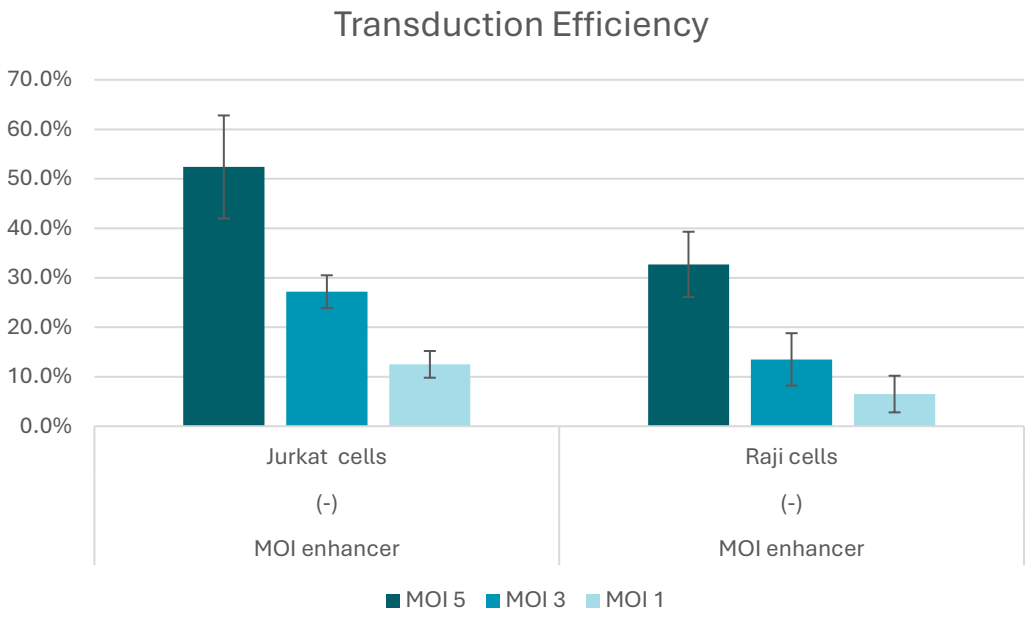
- >3E8 titer for 3.2kb insert in LVV
- >1E7 titer for 7.9kb insert in LVV
- Uses up to 40% less DNA
- Increased genetic stability



Limitations in Viral Transduction for Gene Modification

Current systems

- MOI 3-5
- Transduction efficiency 30-60%
- Higher MOI does not guarantee better transduction
- Some cells types have sub-par transduction potential

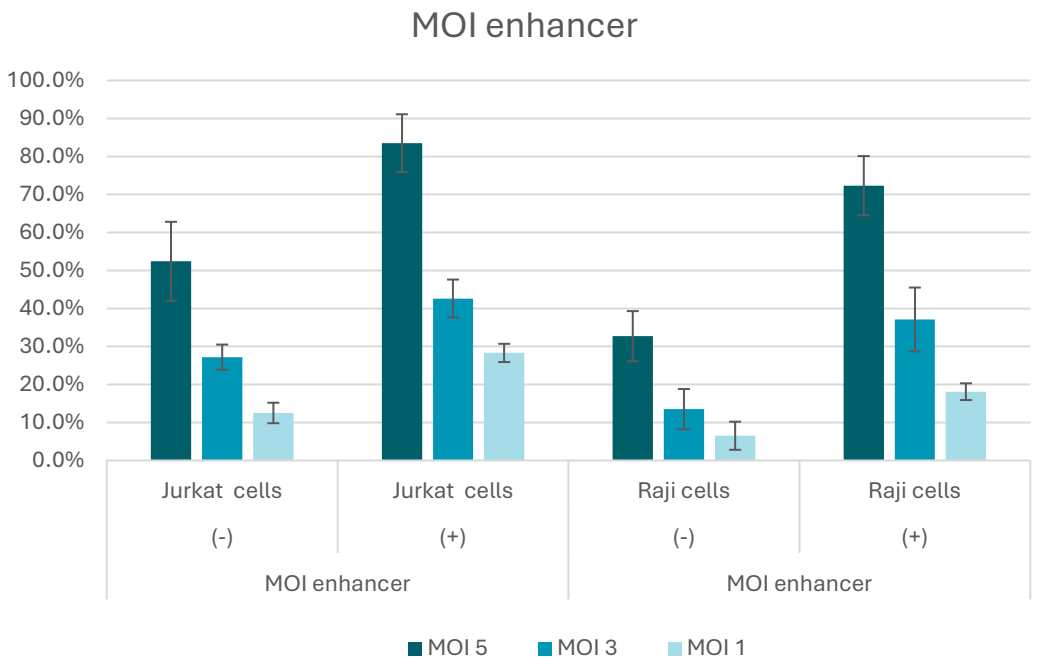


Carrigent Solution
Transduction Enhancer

Higher Transduction. Better ROI

Carrigent system

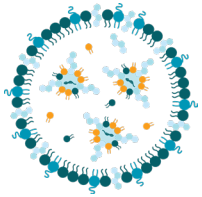
- Use 2-4X less virus for standard cells
- Increase transduction in hard to transfect cells



Limitations in Advanced Therapy Payload Delivery

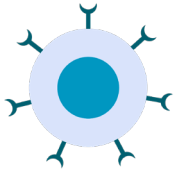
AAV Limitations

- No cell specificity
- Limited cargo capacity
- Toxicity concerns due to high dosing



LNP Limitations

- Payload limited to nucleic acids
- No cell specificity
- Transient expression



CAR-T Limitations

- Can target/kill but not deliver payload*
- Current versions limited by construct size

*Some exceptions for cytokines

CARGO: Cells Delivering Payload to Cells

- Overcoming the delivery shortcomings of AAV and LNP
- Leveraging the targeting capabilities of CAR-T

What is CARGO?

CARGO is a novel cellular delivery vehicle that binds directly and specifically to an antigen on the target cell of interest.

Once bound, CARGO delivers payload directly to the target cell through translocation signal triggers.

Not a virus and not a nanoparticle, CARGO is a cell with CAR-T-like targeting for direct payload delivery to ONLY the cell type of interest.

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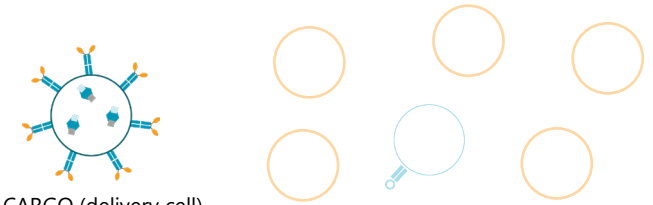
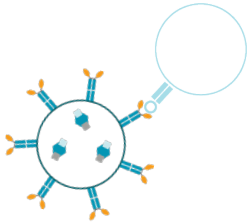
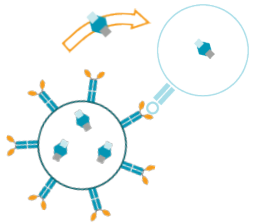


2 CARGO binds only to target cell of interest



3 CARGO delivers payload to bound cell of interest



CARGO is a Platform, not just a product

Whatever you are doing in CGT	We can improve your therapy
Gene Therapy?	We can carry more diverse and larger size payload with cell specific delivery
CAR-T/CAR-NK/CAR-M Therapy?	We can add a second mechanism of action
MSC Therapy?	We can open doors to multiple new indications
Vaccines?	We can provide broader coverage for longer

The Market Options

- Monogenic Disease
- Oncology
- Autoimmunity
- Infectious Disease
- Degenerative Disease
- Neurologic Disorders
- Metabolic Disorders
- Cardiovascular Disease

We still need to assess where we make the most impact

Monogenic Diseases

- $10B+ market size, largely unmet
- CGT is creating a larger pie
- Low hanging fruit for gene replacement

Oncology

- $200B+ total market size
- ~40% of cancer patient succumb to disease
- >20% of cancers rely on chemo or palliative care only

Neurologic Disorders

- $100B+ total market size
- No chronic neurologic disorder has a ‘cure’ and symptoms typically can’t be reversed
- ~7 million in the US with ALZ alone, a $10B+ opportunity

Timeline

- Where we have been
  - Company Founded in April 2024
  - 21 ongoing or completed collaborations/services with 16 different groups
  - Patents file in January 2025 on 3 technologies (1 still pending)

- Where we are going
  - Conducting POC and CARGO platform optimization through Q3 2025
  - Start Pre-clinical development on first asset in Q3 2025
  - Partner for FIH study in 2026/2027

Ask

Seed Round

$2.0M SAFE

20% Discount/No Cap

Use of Proceeds

- Build-out the team
- Capital equipment
- Working capital

Milestones

- Complete CARGO POC development by early Q4
- Prioritize clinical targets; start preclinical development Q3
- Collect VOC insights and build strategic partnerships
- Pursue collaborations to explore platform applications

Thank You

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Appendix

Our Team

Carrigent's team brings together a rare blend of deep scientific expertise, proven operational leadership, and translational experience across CGT and biomanufacturing.

Brian Newsom MBA

CEO

33 years in the cell and gene therapy industry with a track record of building and scaling cell therapy programs in both startup and global biopharma environments. Prior roles at Aastrom, Baylor College of Medicine, Opexa, ThermoFisher Scientific and KBI Biopharma.

Soo-Mi Kweon PhD

Senior Scientist

City of Hope, USC

Cu Nguyen

Scientist

City of Hope, UW, USC

Atousa Khalatbari MD

Sr. Research Associate

SACF, USC

Robert Lou PhD

CTO

25 years in the molecular biology and viral vector space and a leading translational immunologist, anchors the scientific vision behind CARGO with hands-on experience in cellular engineering and payload biology. Prior roles at City of Hope, University of California San Diego and Theragent.

CARGO Compared to Other Conventional Vehicles

	Adenovirus	Lentivirus	AAV	LNP	VLP	CARGO
Material	DNA	RNA	DNA	RNA	DNA or RNA	**DNA, RNA, Protein, Gene Editing, ?**
Cargo Capacity	~36kb	~8-10kb	~4.4kb	Unrestricted	~7-10 kb	**Unrestricted**
Transgene Expression	Long term if low cell turnover	Long term	Long term if low cell turnover	Transient	Transient	**Tunable**
Integration Efficiency	Low	High	Low	NA	Low to None	**Tunable**
Dose Requirement	High dose and repeated admin. if high cell turnover	Low dose & single administration	High dose and repeated admin. if high cell turnover	Repeated administration	Repeated administration	**Low dose and repeated admin. optional**
Targeting Potential	Low	Low	Low	Low	Moderate	**High**
Immunogenic Risk	High	Low	High	Low	Moderate	**Low***
Manufacturing Cost	High	High	High	Low to Moderate	Moderate	**Moderate**

*Not yet assessed in humans

CARGO: Cells Delivering Payload to Cells

- Overcoming the delivery shortcomings of AAV and LNP
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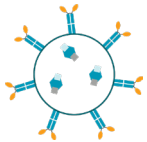

CARGO (delivery cell)

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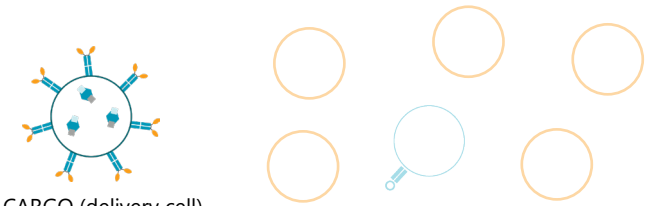

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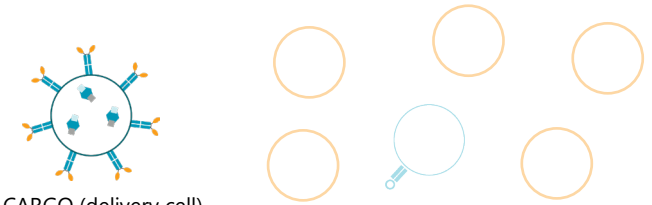

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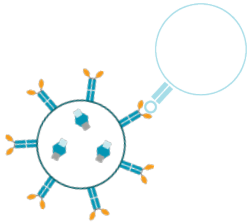
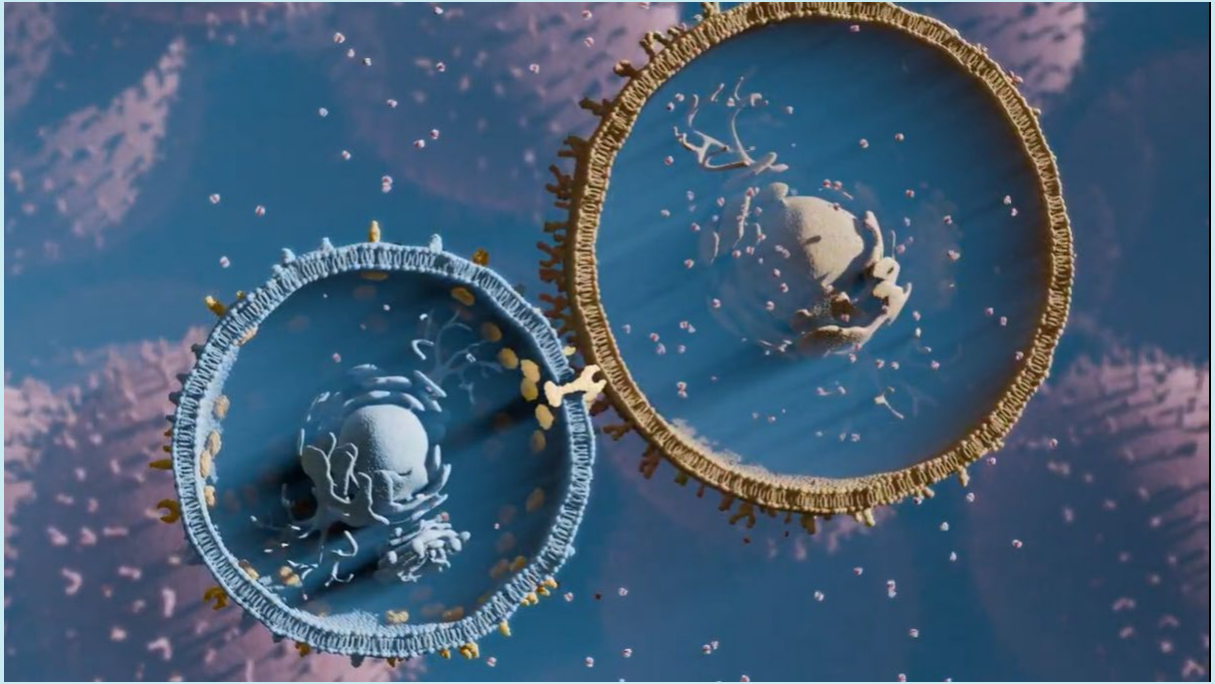


Carrigent - CARGO System

Antigen Mediated Cell Targeting

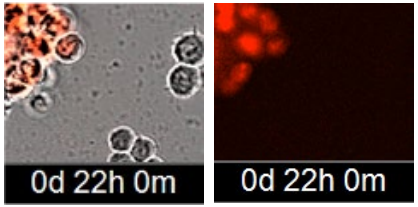


Click here to go to the CARGO Video

CARGO: Proof-of-Concept – Delivery of GFP in vitro

1

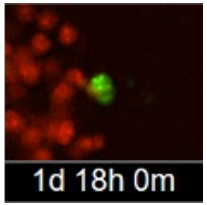
The delivery cell homes to the target cell and binds. Co-location of the delivery and target cell not yet bound, yields no CARGO package.



Brightfield and fluorescent images of Raji target cells (red) and Jurkat cells (green)

2

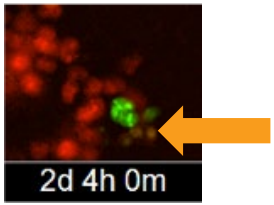
Binding the target cell (A) sends a signal to Inducible Promotor to (B) create the CARGO package in the delivery cell.



Fluorescent images of target cells (red) and delivery cell with payload (green)

3

The payload is transported (A) out of the delivery cell and (B) into the bound target cell. One delivery cell can deliver payload to multiple target cells.

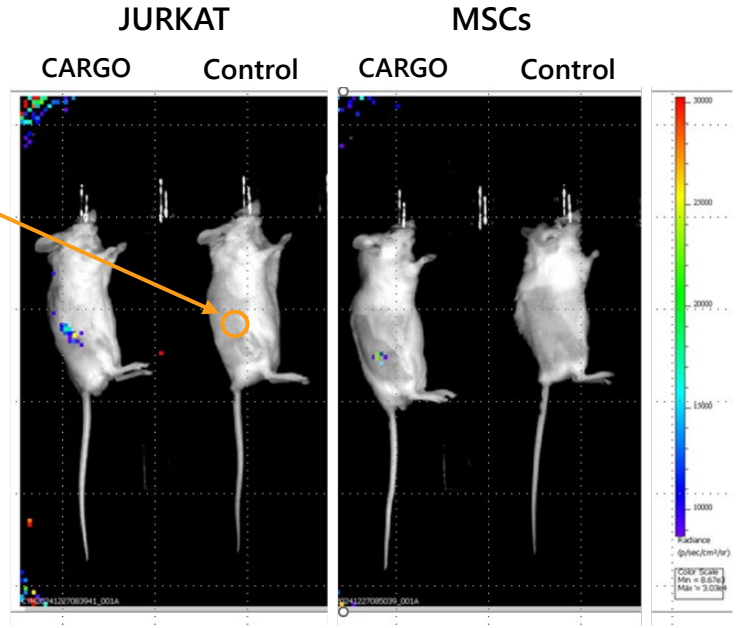


Fluorescent images of target cells (red), delivery cell with payload (green), and target cells with payload (orange)

CARGO: Early Proof-of-Concept Data Validates Platform

Outline

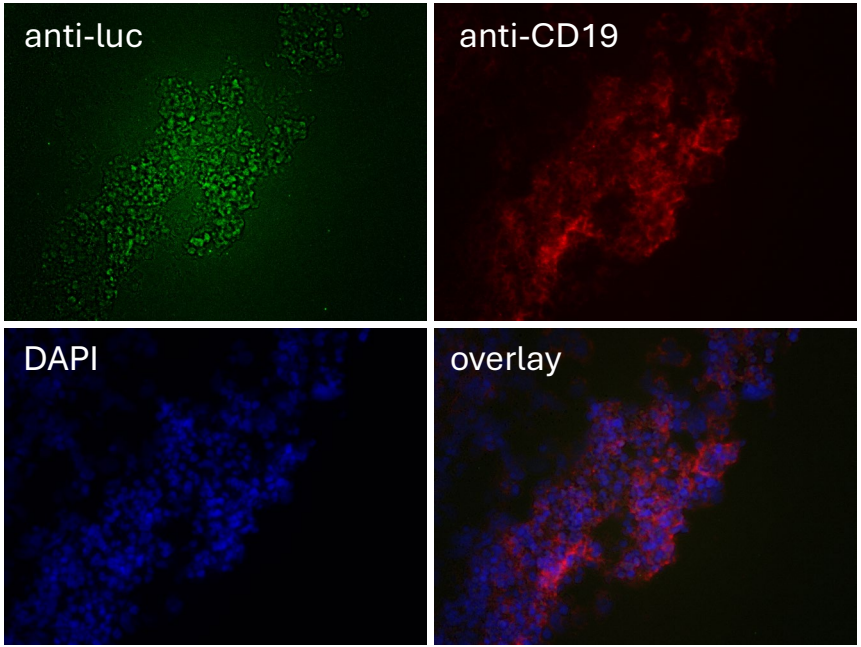
- Raji target cells injected IM right hindquarter on d0
- Jurkat or MSCs delivery cells injected IV (tail vein) on d1
  - Targeted to CD19
  - Carrying luciferase as mRNA translated to protein prior to delivery
  - Translated only upon binding to target



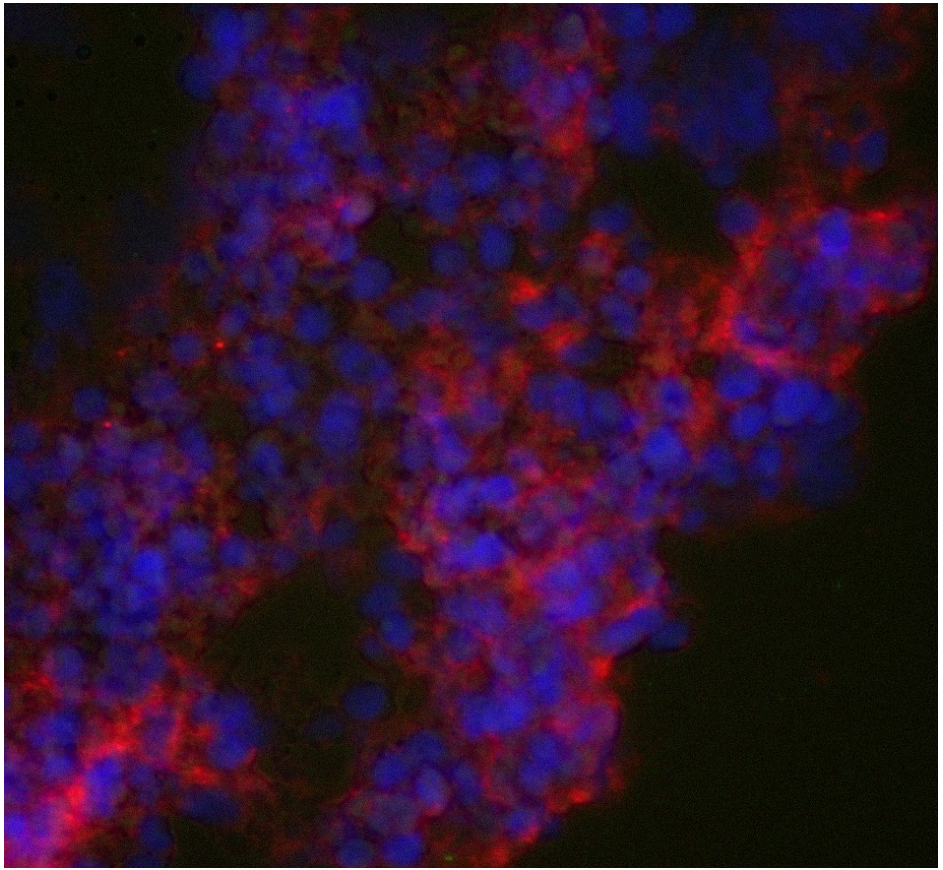
Outcome

- Homing and migration completed
- Production of CARGO completed
- Histology shows directed delivery only to target cells

CARGO: Overlay of payload and target cells POC data



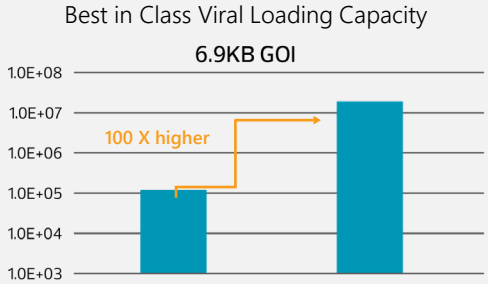
Frozen tissue sample > cryosection > immunostaining



Payload delivered to and only to target cells

Enabling Efficiencies in CGT Manufacturing (to divest)

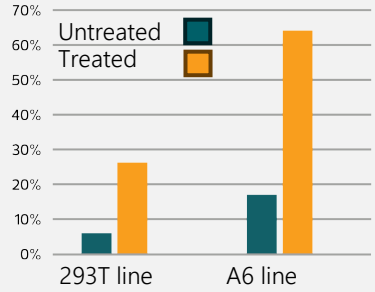
*Patents pending



Gene modified HEK lines*

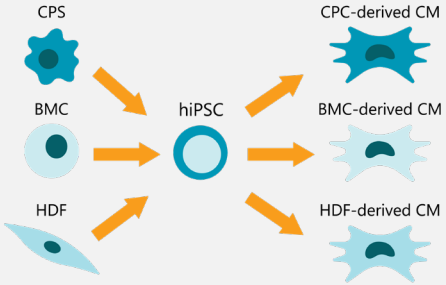
(adherent and suspension)

- Up to 100x Higher Titers
- Use up to 40% less DNA
- Increased genetic stability



Transduction enhancer*

- Can increase transduction efficiency by up to 4x
- Two versions, one already GMP



iPSC passaging reagent

- Reduced spontaneous differentiation by >90%
- Repurposed product with regulatory approval – easy path for GMP use
- Save time and money in iPSC expansion

CARGO: Hybrid Design De-Risks Regulatory Path

Predicate	Benefit
1st generation CAR domain	Has been seen by regulators, design and IP are open
Lentiviral construction	Well vetted as an *ex vivo* gene modification tool
Failed CAR-T	Add a suicide gene to CAR-T to improve function
Failed AAV	Use targets where toxicities were related to AAV only
Use of MSCs and NKs	Cells shown to work in an allogenic setting with low risk

The SMA Market: We Are Enlarging the Pie

Past market size (in $) is irrelevant when you bring paradigm shifting therapies to indications where no treatment exists.

	2016	2017	2018	2019	2020	2021	2022
Palliative*	$34	$34	$34	$34	$34	$34	$34
Spinraza		$200	$500	$1,000	$1,300	$1,500	$1,600
Evrysdi					$60	$660	$1230
Zolgensma					$900	$1,350	$1,400
Total	**$34**	**$234**	**$534**	**$1,034**	**$2,294**	**$3,544**	**$4,264**
YoY Growth		596%	128%	94%	122%	54%	20%

Spinraza on the market did not hinder Zolgensma nor did Zolgensma take over the market – it expanded.

Market pre-Spinraza was not indicative of potential.

Focus needs to be on patient number, potential penetrance, and cost/dose.

*Assuming this is staying static but there is a lack of data with new therapies

Current Delivery Systems Are Inefficient and Toxic

Carrigent

Case Study

AAV9 'targets' the CNS but in reality <5% of systemically injected AAV9 makes it there (most goes to the liver)

Massive overdosing required

Issues with over-dosing

- Toxicities
- Cost
- Immunogenicity

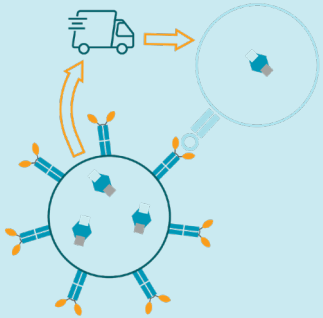
>95% of your product can be wasted

Multiple therapies discontinued due to toxicities

We need Next-Generation Products

The Carrigent Solution – Rewriting Payload Delivery

The CARGO* System



CARGO provides cell-specific delivery

If you can define the target with an antigen – we can deliver payload

* Patent pending

Benefits of CARGO system

- Cell-Specific Targeting
- Large and diverse payload
- Low toxicities
- Low cost
- Non-viral → repeated dosing

Viruses, VLP and LNPs can't cut it

CARGO: Driving the CGT Industry Forward

What Does CARGO Offer that other systems do not?	What Does It Mean for CGT?
Delivery of RNA, DNA or protein payloads	Versatile, platform-ready drug delivery technology
Unrestricted cargo capacity	Works for indications previously unattainable
Transient or long-term transgene expression	Tunable durability fo therapeutic response
High specificity to cell type	Low dose requirements Low toxicity
Non-viral delivery technology	Low immunogenic risk

Carrigent: The ‘Intel’ of the Therapy

The Process