




## Corporate Overview


# Forward-Looking Statements

This presentation is for informational purposes only and is not an offer to sell or a solicitation of an offer to buy any securities of Lineage Cell Therapeutics, Inc. (“Lineage”). This presentation includes certain information obtained from trade and statistical services, third-party publications, and other sources. Lineage has not independently verified such information and there can be no assurance as to its accuracy.

All statements in this presentation, other than statements of historical fact, are forward-looking statements within the meaning of federal securities laws. In some cases, you can identify forward-looking statements by terms such as “may,” “will,” “would,” “expect,” “plan,” “anticipate,” “strategy,” “designed,” “could,” “can,” “intend,” “believe,” “estimate,” “target,” “potential,” “aim,” “seek,” “continue,” “next steps,” “upcoming,” or the negative of these terms and other similar expressions. Such statements include, but are not limited to, statements relating to the broad potential for Lineage’s regenerative medicine platform and Lineage’s ability to expand the same; the projected timing of milestones of future studies, including their initiation and completion; the projected timing of interactions with the FDA to discuss product designation, manufacturing plans and improvements, and later-stage clinical development; the collaboration and license agreement with Roche and Genentech and activities expected to occur thereunder, its potential success, the milestone and royalty consideration payable to Lineage and Lineage’s planned use of proceeds therefrom; the potential success of other existing partnerships and collaborations, the potential opportunities for the establishment or expansion of strategic partnerships and collaborations and the timing thereof; the potential for Lineage’s investigational allogeneic cell therapies to generate clinical outcomes beyond the reach of traditional methods and provide safe and effective treatment for multiple, diverse serious or life threatening conditions; and cash management and runway. Forward-looking statements involve risks, uncertainties and assumptions that may cause Lineage’s actual results, performance, or achievements to be materially different from those expressed or implied by the forward-looking statements in this presentation, including risks and uncertainties inherent in Lineage’s business and other risks described in Lineage’s filings with the Securities and Exchange Commission (SEC). Lineage’s forward-looking statements are based upon its current expectations and involve assumptions that may never materialize or may prove to be incorrect. All forward-looking statements are expressly qualified in their entirety by these cautionary statements. Further information regarding these and other risks is included under the heading “Risk Factors” in Lineage’s periodic reports filed with the SEC, including Lineage’s most recent Annual Report on Form 10-K, Quarterly Report on Form 10-Q and its other reports, which are available from the SEC’s website at [www.sec.gov](http://www.sec.gov). You are cautioned not to place undue reliance on forward-looking statements, which speak only as of the date on the cover of this presentation. Lineage undertakes no obligation to update any forward-looking statement to reflect events that occur or circumstances that exist after that date, except as required by law.



**“We aim to pioneer a new branch of  
medicine, based on transplanting specific  
cell types into the body”**



## **Business Overview**

# Company Overview

## Innovative Platform

Manufacturing and transplanting *specific cell types* from a single pluripotent cell line; scalable “off the shelf” cell transplants for multiple conditions

## Validating Partnerships

**Genentech**  
A Member of the Roche Group

**CIRM**  
CALIFORNIA / STEM CELL AGENCY

 **CANCER RESEARCH UK**

## Five Allogeneic Product Candidates in Development

**OpRegen®:** Dry Age-Related Macular Degeneration (dry AMD)  
**OPC1:** Spinal Cord Injury  
**VAC2:** Oncology (NSCLC)  
**ANP1:** Hearing Loss (Auditory Neuropathy Disorders)  
**PNC1:** Various Forms of Blindness

## Differentiated Data

Outer retinal structure improvement observed in five dry AMD patients  
One-third of spinal cord injury patients gained at least 2 levels of motor function  
Potent induction of immune responses observed in advanced cancer patients

## Market Opportunity

Multiple billion-dollar commercial opportunities

## Financial Position

\$66.4 million in cash and cash equivalents as of September 30, 2022

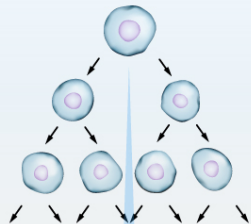
## Market Capitalization

~\$226 million\*

# Lineage Technology Platform – Allogeneic Cell Transplants

## Expansion

- Product development starts from a frozen vial of self-renewing stem cells
- These pluripotent cells can become any cell type in the body when provided with the correct instructions



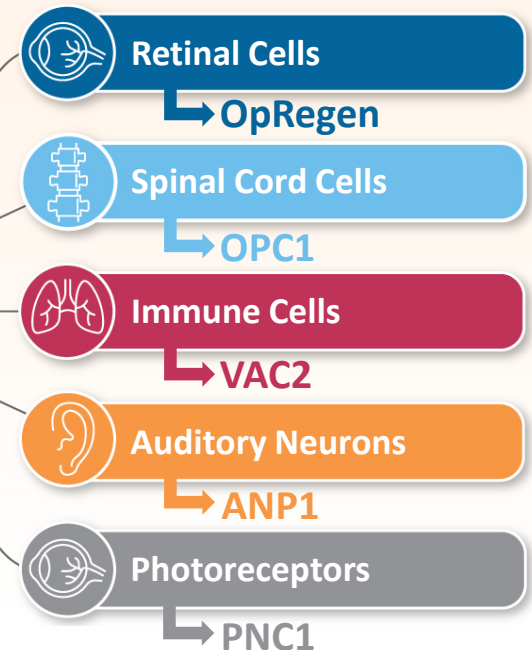
## Differentiation

- Lineage's proprietary process, honed from decades of institutional experience, creates only the cell type which is desired
- No alterations are made to the cell's DNA
- In-house cGMP manufacturing allows for commercial-scale production from a single vial of stem cells



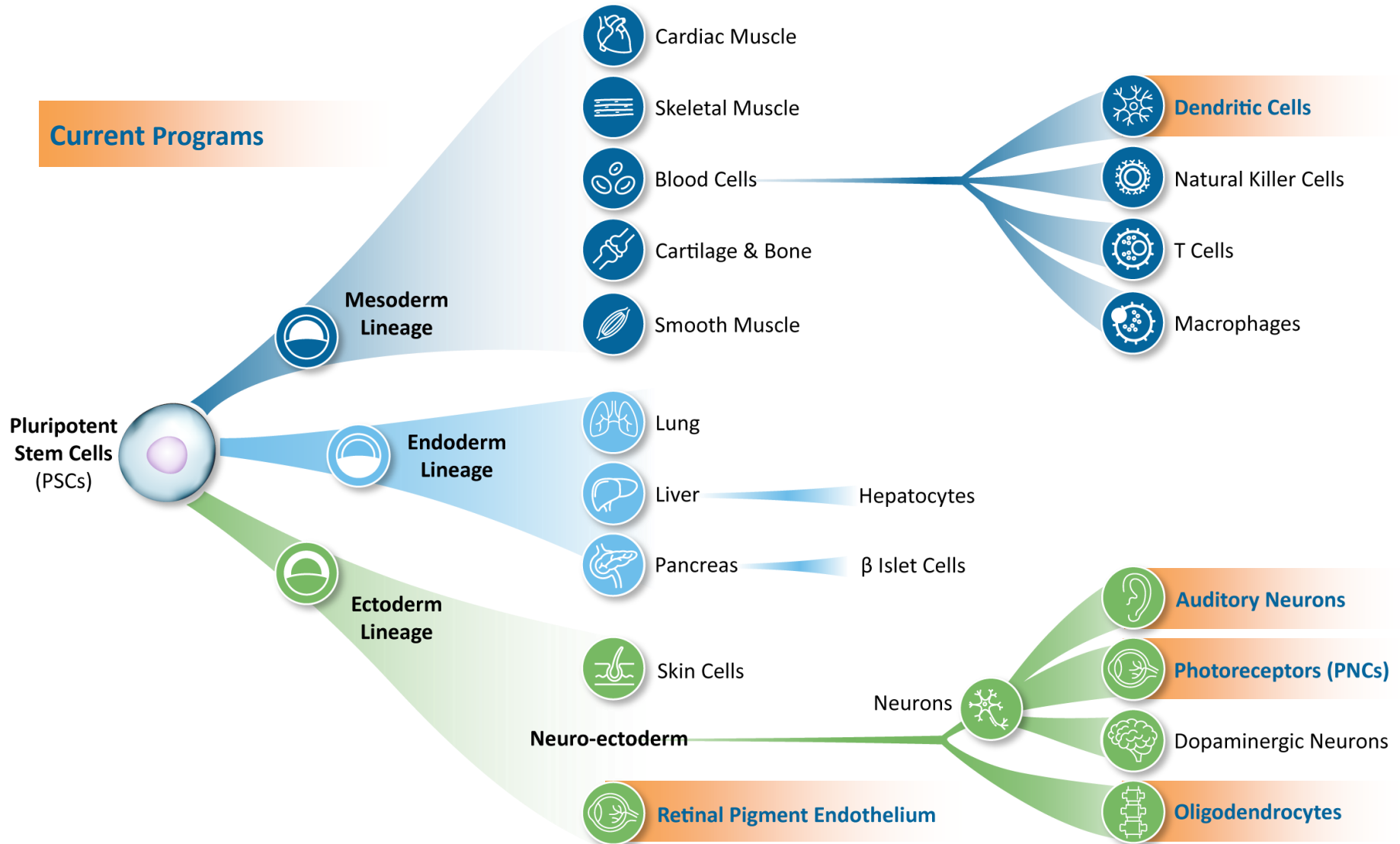
## Development

- Value is created by developing *clinically and commercially-viable* product attributes
- Expansion occurs via broadening indications or adding new cell types











# Many Potential Product Opportunities



# Cell Therapy Pipeline

LINEAGE	PROGRAM	PHASE 1	PHASE 2	PHASE 3	PARTNERS
 Ophthalmology	<b>OpRegen</b> Dry AMD with Geographic Atrophy (GA)	<div> <div>24 patients treated</div> </div>			<b>Genentech</b> A Member of the Roche Group
 Demyelination	<b>OPC1</b> Spinal Cord Injury (SCI)	<div> <div>30 patients treated</div> </div>			<b>CIRM</b> CALIFORNIA STEM CELL AGENCY
 Immuno-oncology	<b>VAC2</b> Non-Small Cell Lung Cancer (NSCLC)	<div> <div>8 patients treated</div> </div>			 <b>CANCER RESEARCH UK</b>
 Neurology	<b>ANP1</b> Auditory Neuropathy (Hearing Loss)	<div> <div>Preclinical</div> </div>			Internally-Owned
 Ophthalmology	<b>PNC1</b> Various Forms of Blindness	<div> <div>Preclinical</div> </div>			Internally-Owned

# Competitive Advantage – Differentiation (Process Development)

**Lineage's competitive advantage is the *differentiation* of an *unlimited* supply of pluripotent stem cells into *specialized cell types***

## Capabilities

- Source cell characterization, banking and versatile expansion systems
- Differentiation process development; culture conditions, systems, optimization of differentiation cues (growth factor selection, timing, etc.)
- Analytical method development for process control and product release
- Scale-up modalities, substrates, harvesting protocols
- Enhancements; genetic modification (optional), various expression systems
- Clinically compatible post-production processing

## cGMP Facility - Israel



**Multiple Clean Rooms for Parallel cGMP Production Runs**

**Extensive IP portfolio covers processes, products, and methods of use**



## New U.S. R&D Facility - Lease Begun October 2022

---

- **Recently established in Carlsbad, CA, broadens company's R&D capabilities**
- **Serves as a “center of excellence” for Lineage’s longer-term programs**
  - Facilitates advancement of current and future allogeneic cell transplant programs and partnerships
- **Provides opportunity to collaborate with partners in the San Diego biotech community**
- **Expanded footprint and operations aim to reduce reliance on vendors and reduce costs and risks of timeline uncertainty or supply chain disruption**





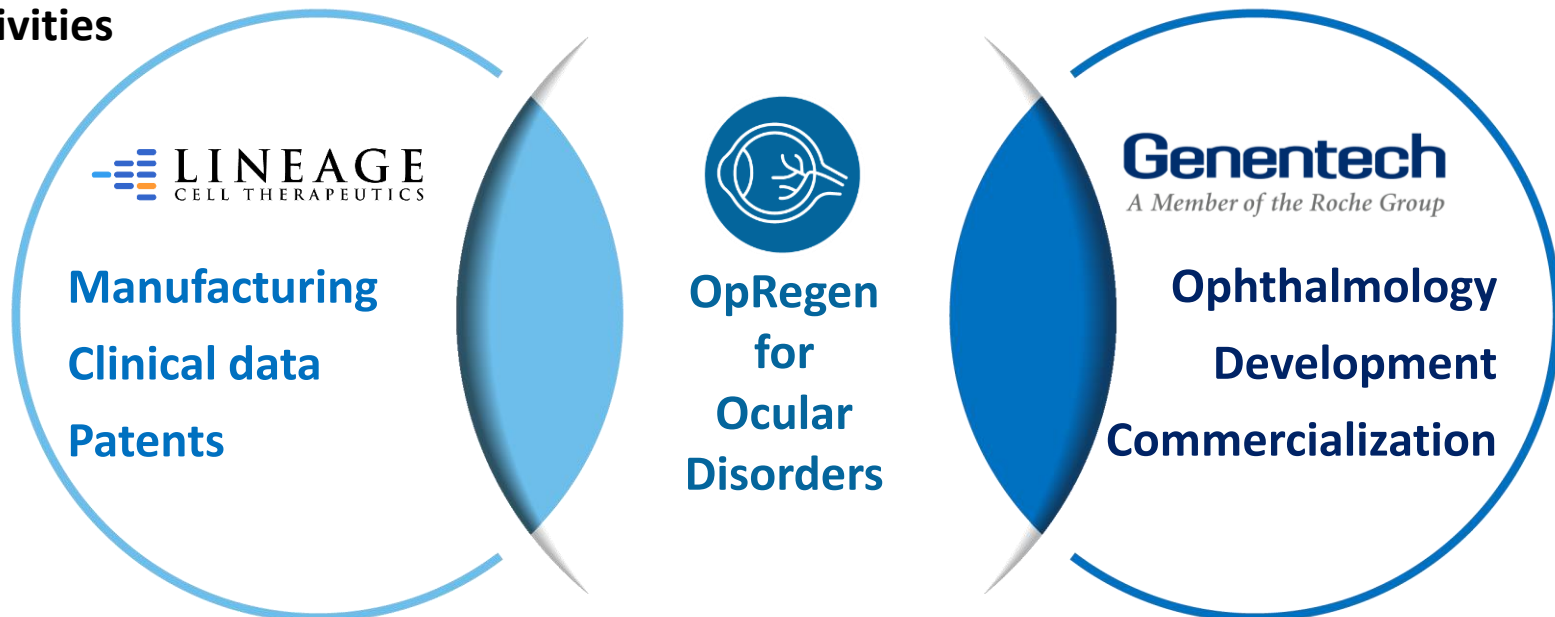
AMD is the **leading cause** of  
irreversible vision loss in the US

*Source: [aao.org](http://aao.org)*

**OpRegen<sup>®</sup> : RPE Cell Transplants to Treat Dry AMD**

## Exclusive collaboration for the development and commercialization of OpRegen for the treatment of ocular disorders

- \$50 million up front; \$620 million of potential milestone payments; double-digit tiered royalties
- Genentech responsible for clinical development and commercialization
- Lineage to complete ongoing study and continue certain development and manufacturing activities

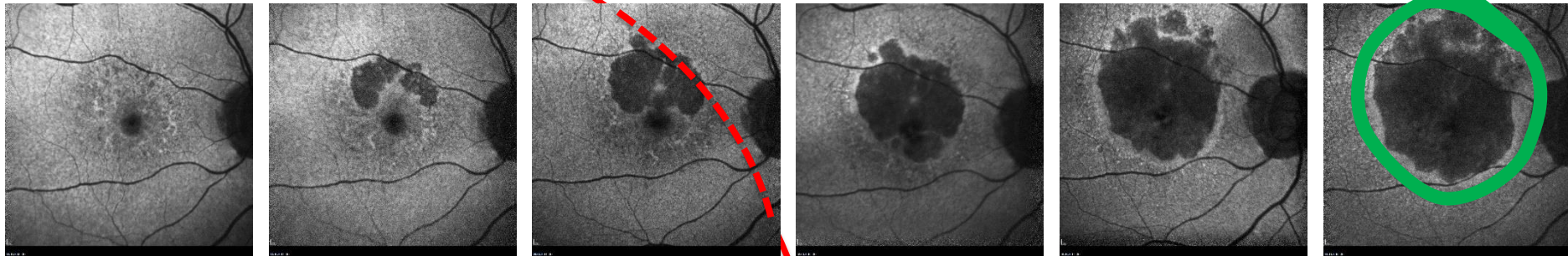


# Dry AMD Can Lead Rapidly to Blindness

## Visual acuity over time...

20/20  
(normal)

The area of geographic atrophy or “GA” grows larger as retinal cells die



2012

2013

2014

2015

2017

2019

Dry AMD involves the progressive loss of retina cells, which can lead rapidly to blindness

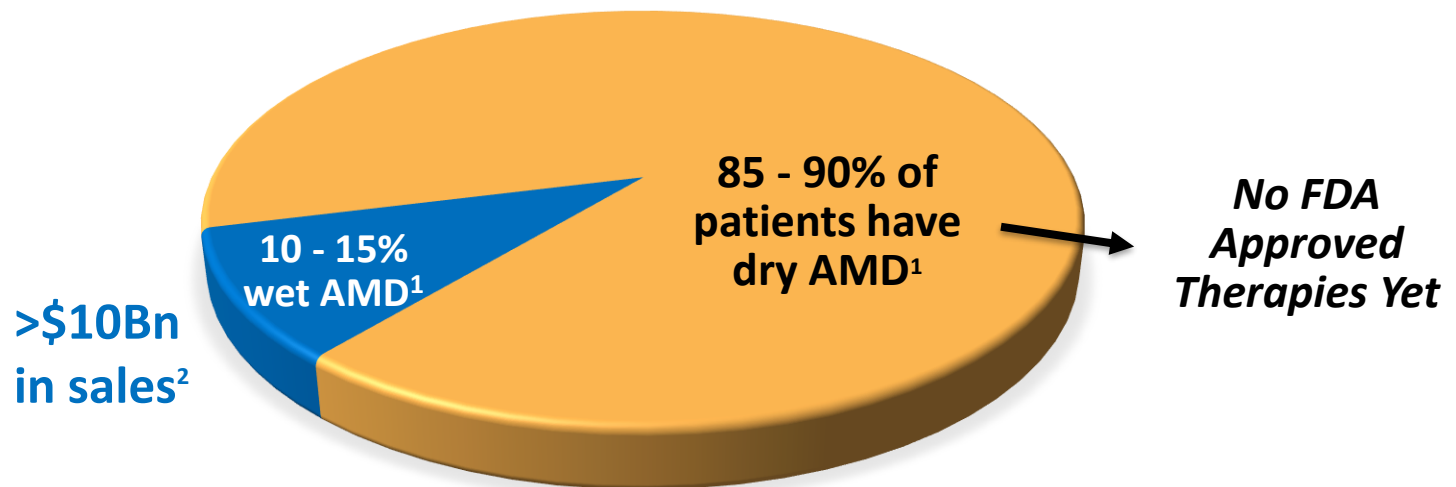
20/200  
(legally blind in 3 years)

20/640

# Dry AMD: A Multi-Billion Dollar Market Opportunity in the U.S.

**Age-related Macular Degeneration (AMD) in all forms afflicts  
~11 million people in the United States**

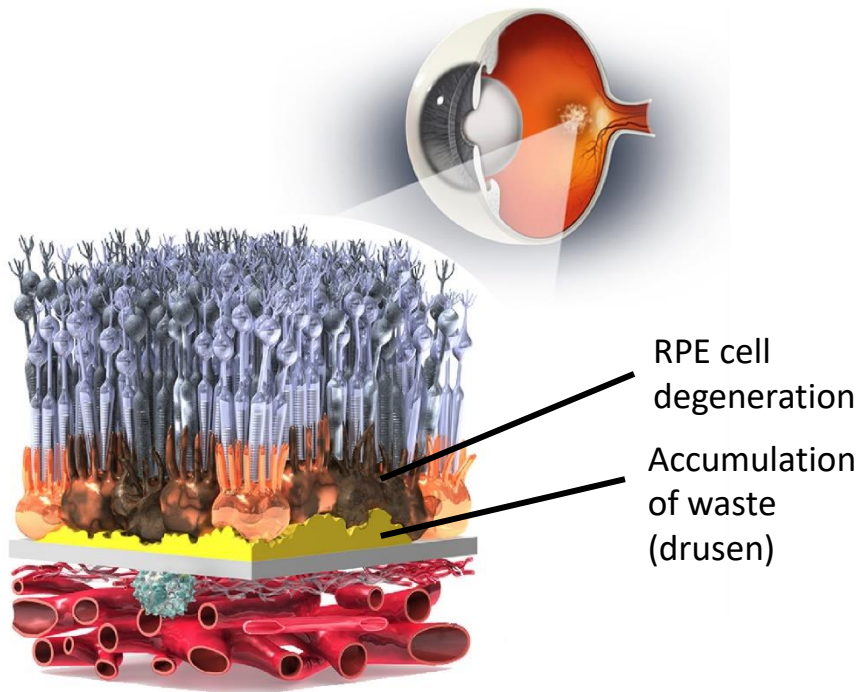
Type of AMD	% of AMD Cases	FDA Approved Therapies
Wet AMD	10 – 15%	Lucentis & Eylea (\$10 billion in annual sales)
Dry AMD	85 – 90%	None





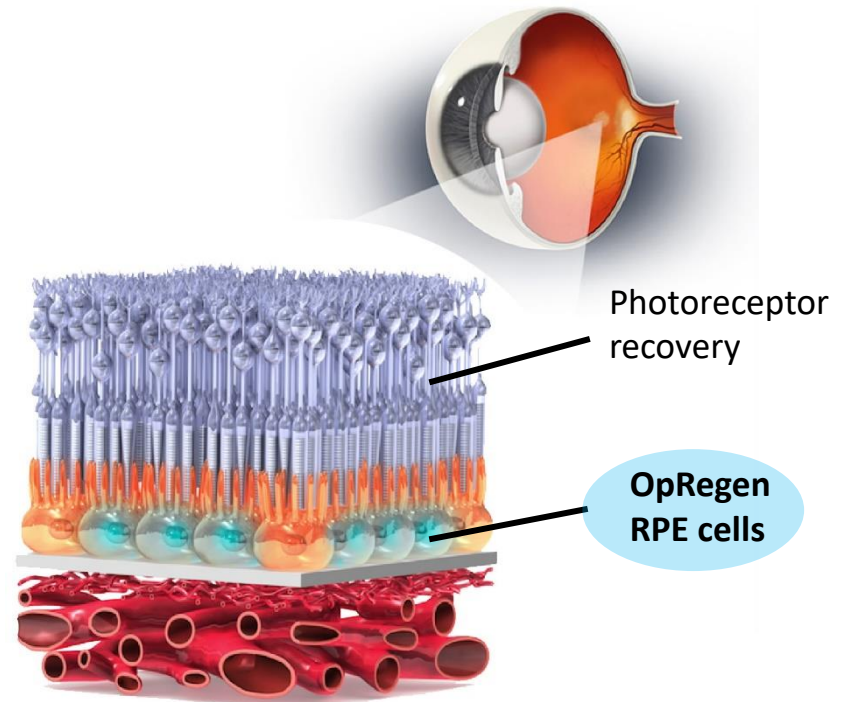
# Lineage Approach – OpRegen, an RPE Cell Transplant

## Pre-Transplant



**Dry (atrophic) AMD involves the loss of retina cells, creating an area of geographic atrophy (GA), which causes impaired vision and blindness**

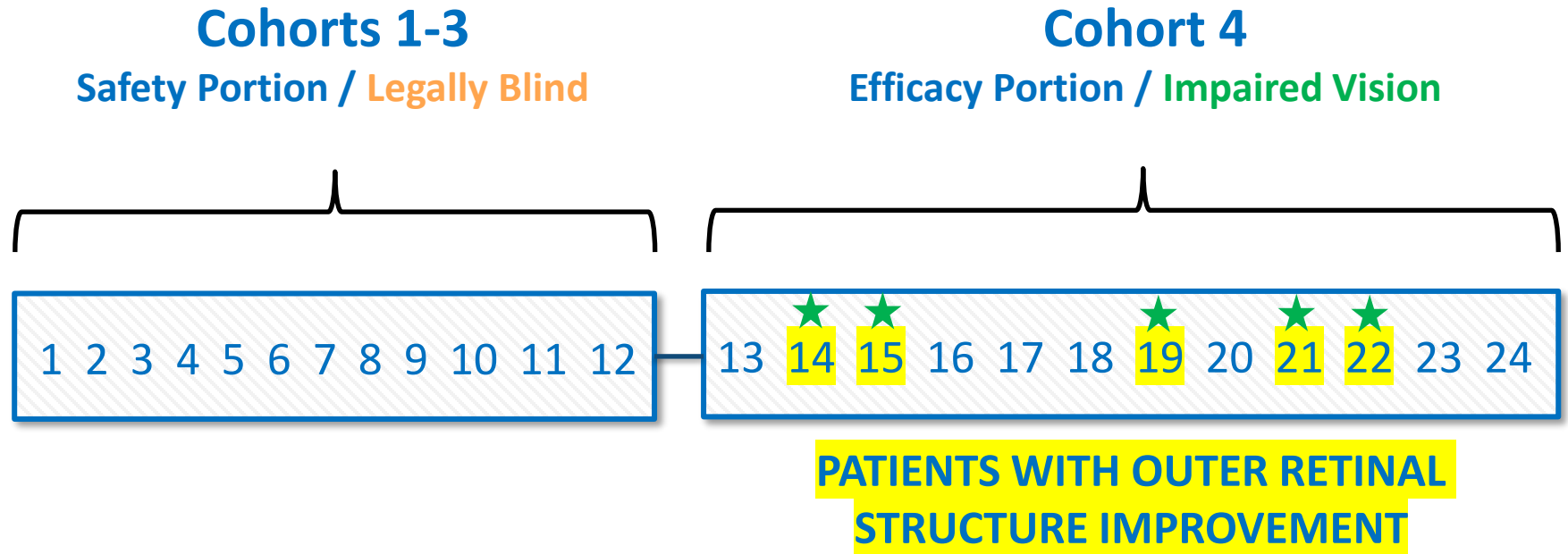
## Post-Transplant



**OpRegen is an injection of RPE cells beneath the retina, to potentially replace and restore lost retinal cells, and preserve or improve vision**



# Phase 1/2a Clinical Trial of OpRegen – Enrollment Complete, Long-Term Follow-Up Ongoing



## Purpose:

To evaluate the safety and efficacy of transplanted RPE cells in patients with dry AMD with geographic atrophy

## Design:

Open label, single arm, international, multi-center

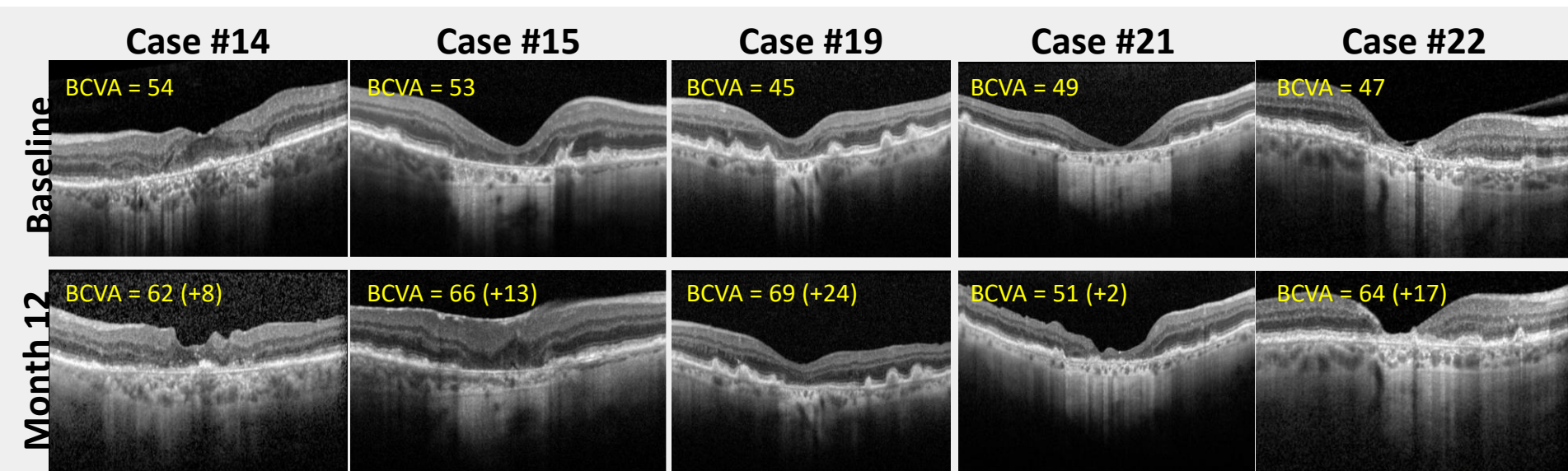
## Dose and Administration:

One 50-100 ul dose of cells injected into the subretinal space

# Phase 1/2a Clinical Trial - Subretinal Delivery of OpRegen to GA Area and Fovea

## Greater Visual Function Gains With Areas of Outer Retinal Structure Improvement

- Five patients in Cohort 4 had OpRegen delivered to most or all of the GA area, including the fovea
  - These 5 patients had greater gains in visual function (average 12.8 letter gain), with evidence for regions of apparent improvement of outer retinal structure as assessed by SD-OCT



SD-OCT, spectral domain optical coherence tomography. BCVA measured by ETDRS letter score.

# Third Case of Retinal Restoration – Evident at 3 Months

## ELM-based Area of Atrophy (Baseline to 3 Months)

OCT 5, 2020

JAN 21, 2021



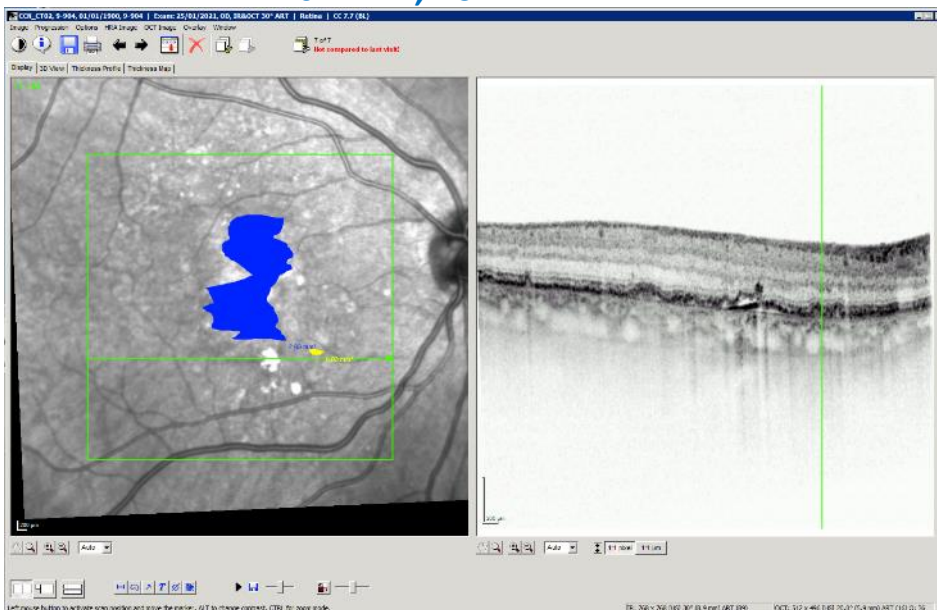
**TOTAL AREA: 3.56 mm<sup>2</sup>**

**Total area**

**3M GROWTH RATE:**

**SQRT transformation**

**3M GROWTH RATE:**



**TOTAL AREA: 2.69 mm<sup>2</sup>**

**– 0.87 mm<sup>2</sup>**

**(ANNUAL RATE – 3.48 mm<sup>2</sup>)**

**– 0.23 mm**

**(ANNUAL RATE – 0.92 mm)**

# Commercially-Suitable Manufacturing Process

- **OpRegen consists of pure RPE cells >99%**
  - Starts from an NIH-approved cell line established >20 years ago
  - Extensive functional and identity characterization is employed for product release
  - No genetic modifications are made to the cells
  - No residual pluripotent cells detectable in clinical material
- **Clinic-ready, immediate-use “thaw and inject” formulation**
  - No dose preparation required
  - From frozen cells to delivery device in 5 minutes
- **Current production scale is 5 billion RPE cells per 3-liter bioreactor**
  - Equal to 2,500 clinical doses/batch
  - Further scale-up can be performed in larger or parallel reactors



# OpRegen - A Multi Billion-Dollar Commercial Opportunity

---


- **Outer retinal structure improvement was observed in five dry AMD patients (the only known clinical cases)**
- **Market opportunity is not limited by monogenic deficiencies (e.g. gene therapy)**
- **Treatment has been well-tolerated; no cases of rejection (90d immunosuppression)**
- **Potential application in other retinal diseases**
- **Issued patents cover aspects of production, characterization, and formulation**
- **Fast Track designation from FDA**
- **Validating development partnership with global ophthalmology leader, Genentech**

## Key Takeaway for the Lineage Approach:

- **In certain settings, replacing whole cells may provide restorative benefits beyond the reach of traditional approaches; #replaceandrestore**



Lifetime care for an SCI  
patient can cost nearly  
**\$5 million**



*Source: [christopherreeve.org](http://christopherreeve.org)*

**OPC1: Cell Therapy for Spinal Cord Injuries**



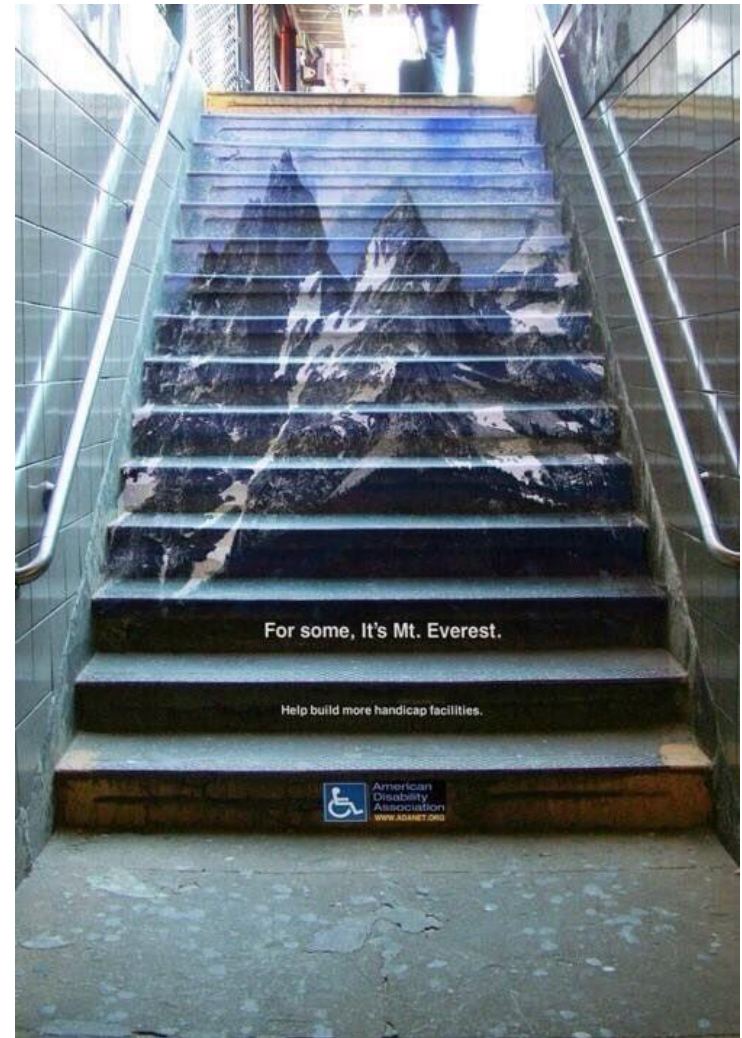
# Why Spinal Cord Injury (SCI) Matters



**Lucas Lindner, an OPC1 clinical trial participant, was paralyzed from the neck down. The next year, he threw out the first pitch at a Major League Baseball game.**

# SCI Burden and Unmet Needs

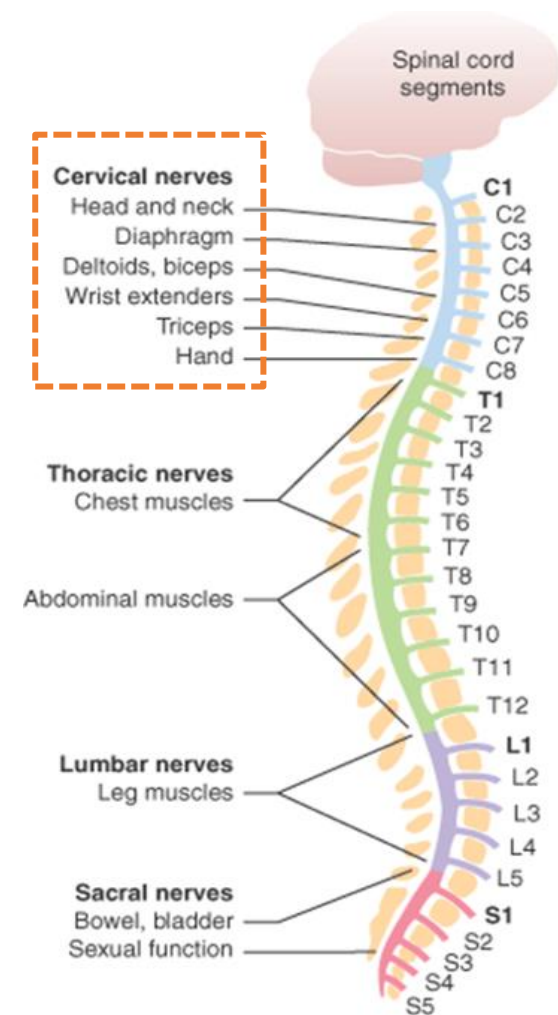
- **Approx. 18,000 cases per year (US)<sup>1</sup>**
- **A significant burden for patients and caregivers<sup>2</sup>**
  - 67% of patients are unemployed 10 years post-injury
  - Lifetime healthcare costs can reach \$5M for one patient
- **Potential lifelong impairments**
  - Mobility (wheelchair)
  - Pain
  - Re-hospitalizations
  - Infections
  - Ventilator dependency
  - Depression
  - Shortened life expectancy



# SCI Treatment Objectives

## Loss of movement is the primary feature of a spinal cord injury

- **Higher-level injuries result in more extensive impairments**
- **Gains in motor function, particularly in the upper extremities, can provide significant benefits in self-care and lower costs of care**
- **The goal of Lineage's cell therapy is to provide additional arm, hand, and finger function, increasing independence and quality of life**

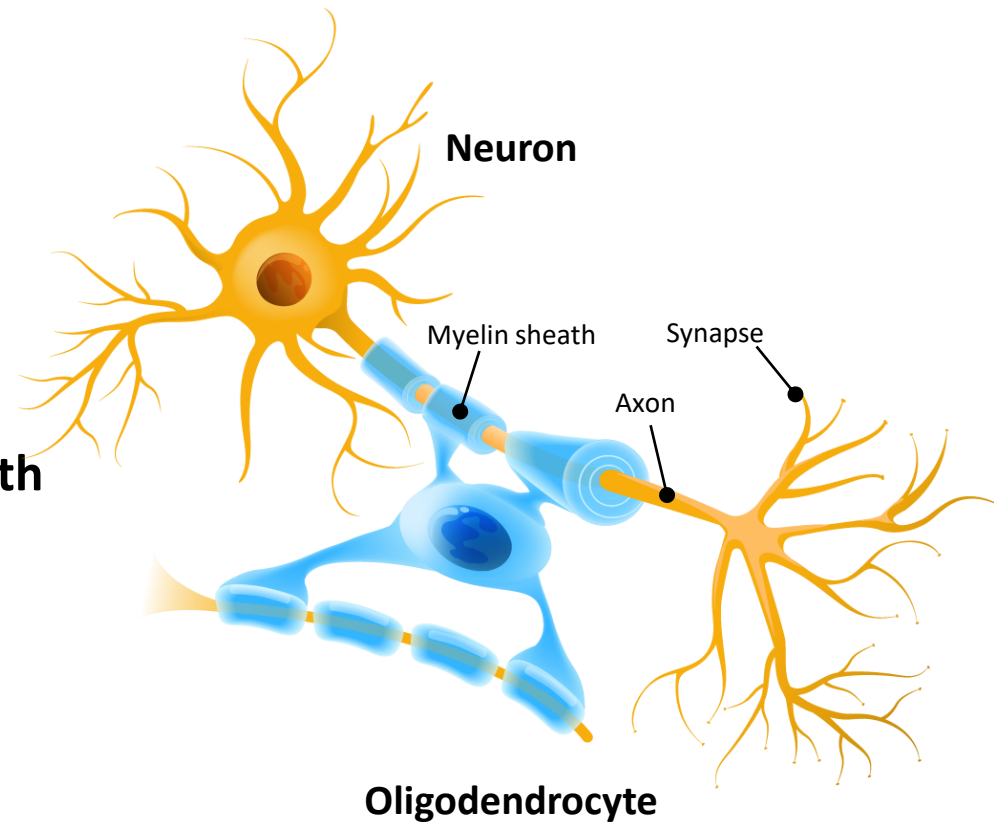




# OPC1 cells for Spinal Cord Injury

**Transplanting oligodendrocytes may provide additional upper extremities function (arms and fingers) and improve quality of life**

- **OPC1 is comprised of OPCs (oligodendrocyte progenitor cells)**
- **OPCs are precursors to oligodendrocytes, the myelinating cells of the central nervous system which provide insulation to nerve axons in the form of a myelin sheath**
- **Myelin is essential for proper function of neurons**
- **OPC1 cells are implanted into the spinal cord at the injury site**



# OPC1 Asset Overview

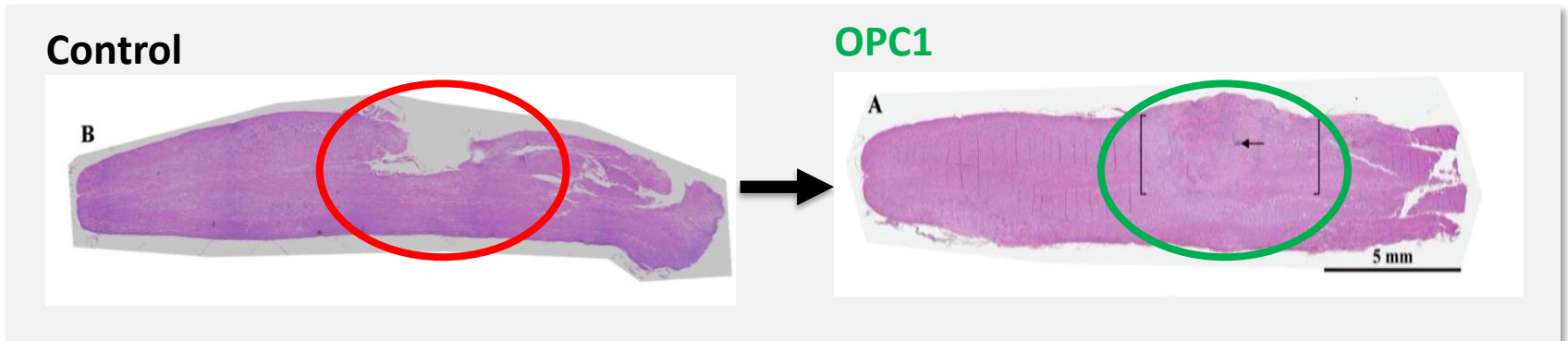
- **OPC1 utilizes targeted cell replacement (similar approach as OpRegen)**
- **OPC1 is covered by multiple issued patents**
- **OPC1 has RMAT Designation**
- **OPC1 has Orphan Drug Designation**
- **OPC1 has received >\$14M in support from CIRM (California Institute for Regenerative Medicine)**
- **OPC1 may have application to other demyelinating conditions**



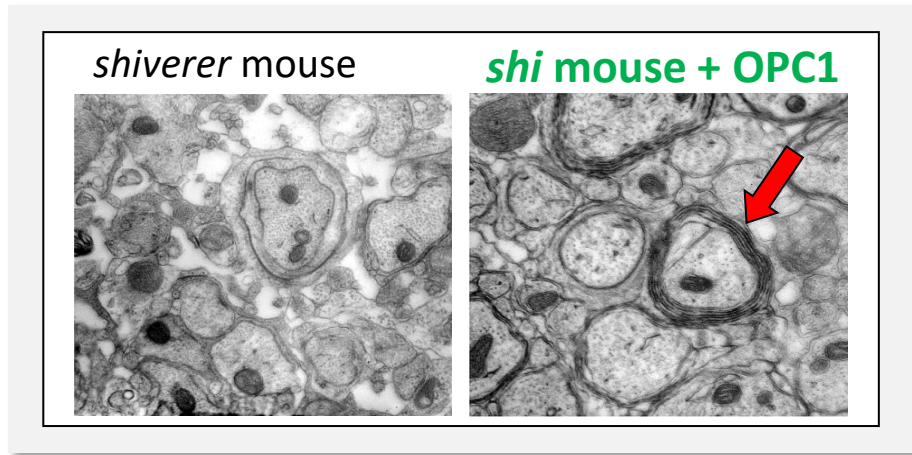
**OPC1 Transplant Procedure**

# OPC1 Mechanisms of Action

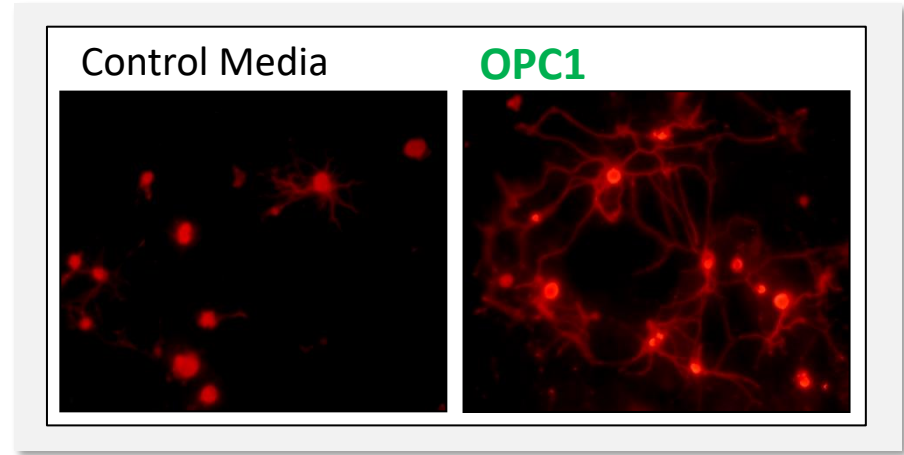
## Suppression of Cavitation



## Myelination of axons



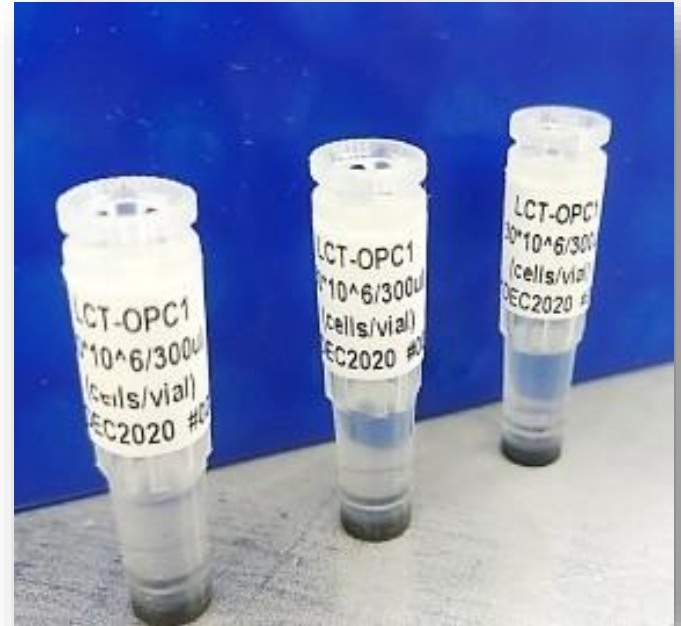
## Secretion of neurotrophic factors





# OPC1 for Spinal Cord Injury

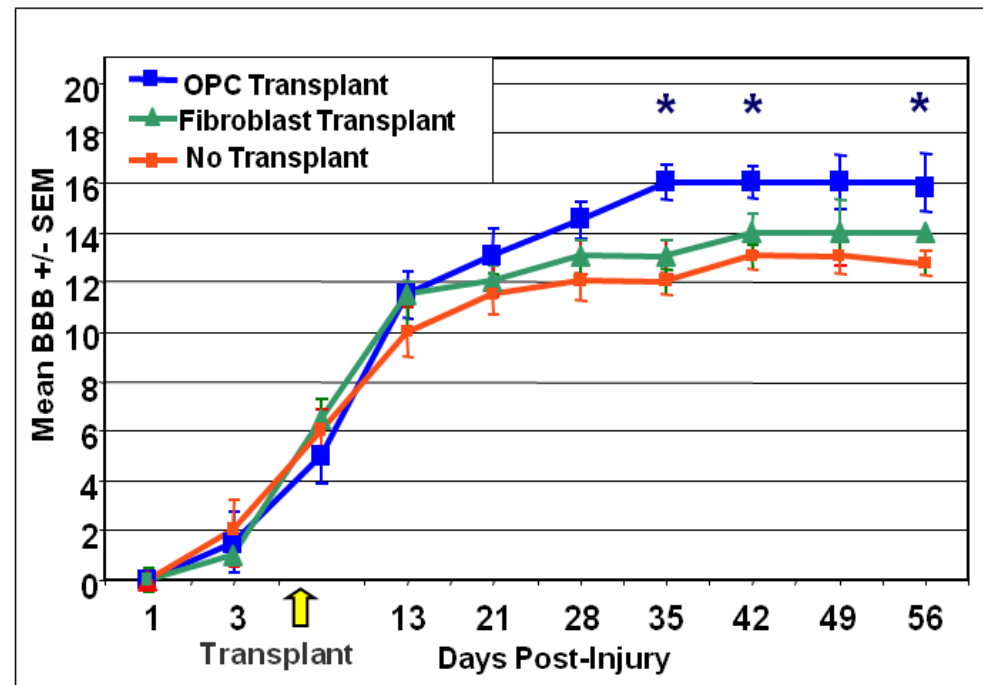
- Lineage's OPCs are derived from an NIH-registered cell line
- The OPCs are allogeneic ("off the shelf"), and not taken from the patient
- Treatment of SCI occurs 3-6 weeks post-injury and includes short-course (60-day) immunosuppression
- The OPCs are "ready to use" in a cryopreserved thaw-and-inject formulation



# OPC1 Improved Motor Function in Preclinical Animal Models

## Locomotor Improvement in Thoracic SCI

- Increased weight bearing
- Improved hindlimb-forelimb coordination
- Improved hind paw clearance
- Improved trunk stability
- Decreased tail drag



# OPC1 Cervical Clinical Trial - Summary of Adverse Events

**Majority of adverse events were mild to moderate in severity**

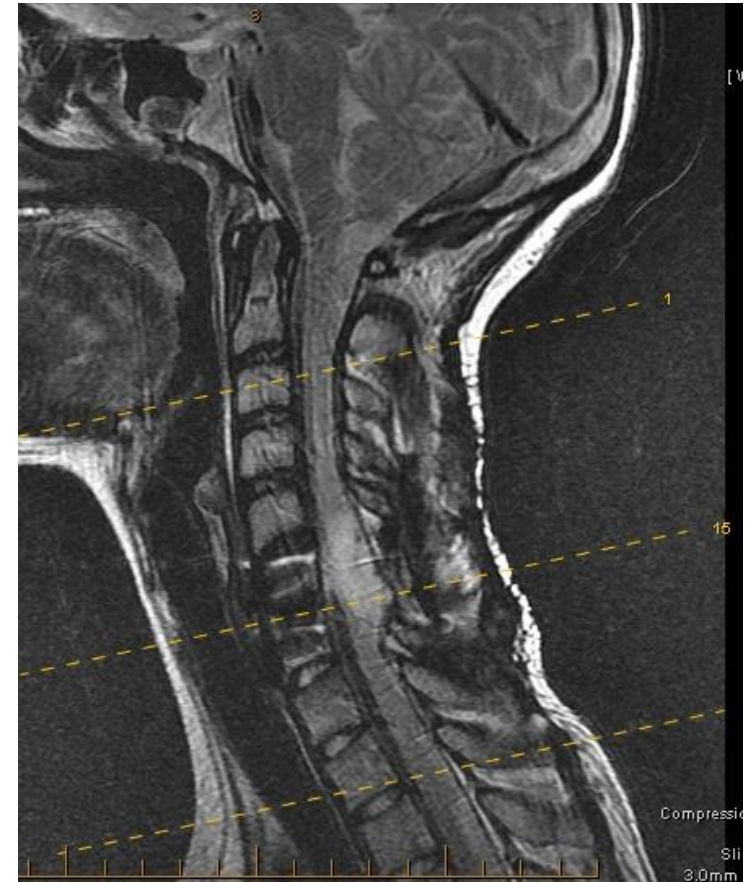
All Treated Subjects (n=25)	AEs	SAEs
<b>Total</b>	<b>534</b>	<b>29</b>
<b>Related to OPC1</b>	<b>1*</b>	<b>0</b>
<b>Related to Injection Procedure</b>	<b>20</b>	<b>1</b>
<b>Related to Tacrolimus</b>	<b>11</b>	<b>1</b>

**To date, there have been no serious adverse events related to the OPC1 cells**  
**Safety data is available for 2 to 5 years on all 25 patients**

# OPC1 Cervical Clinical Trial - Cell Engraftment

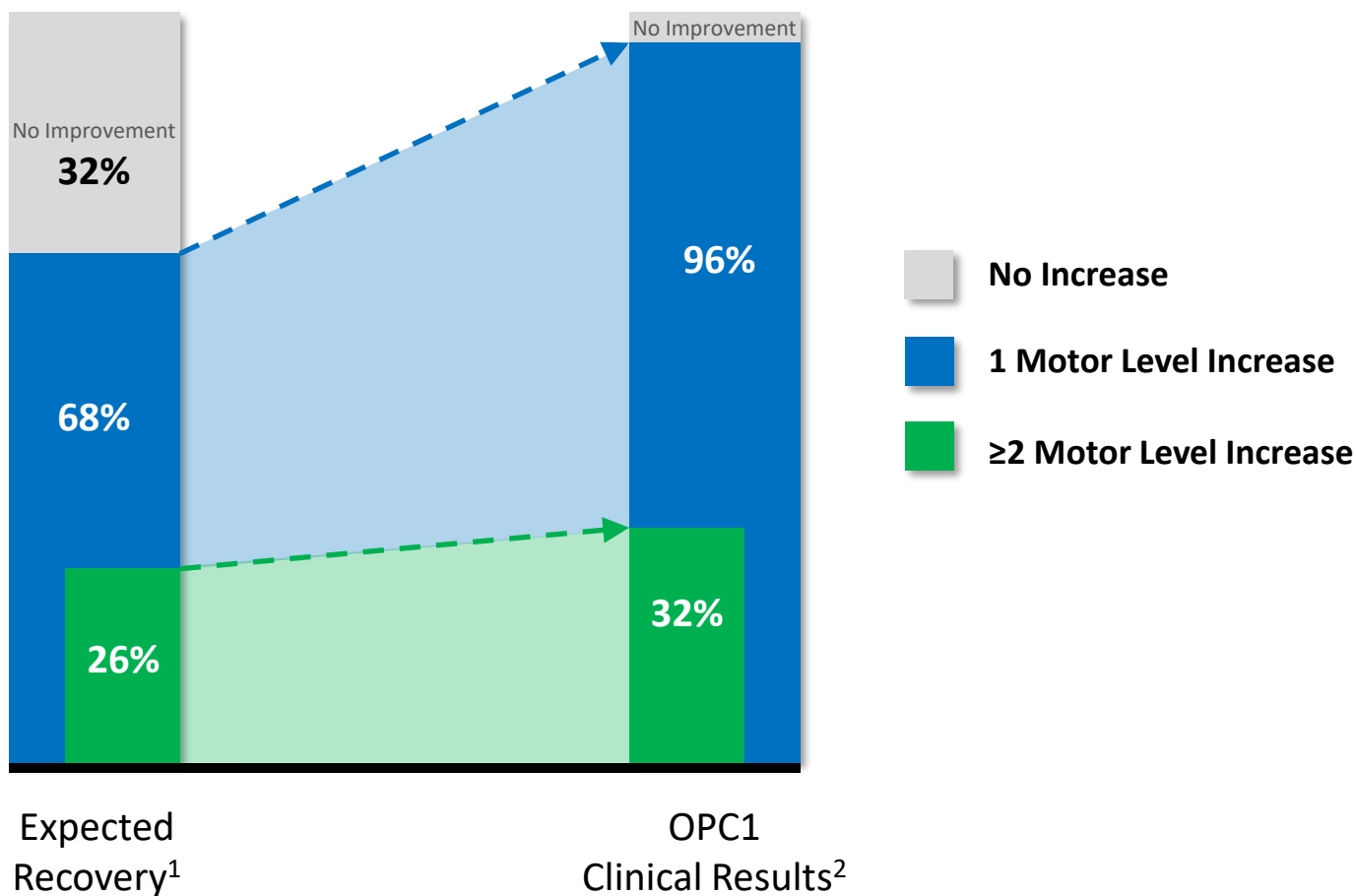
## 12- and 24-Month MRI Scans Indicate Durable Engraftment

- Cystic cavitation (syringomyelia) occurs in ~80% of SCI cases
- MRI results suggest formation of a tissue matrix at the injury site, indicating that OPC1 cells have durably engrafted and helped prevent syringomyelia
- 96% (24/25) of OPC1 patients had serial MRI scans that indicated no sign of a lesion cavity at 12 months (or 24 months for 22 scans available)



Weighted sagittal MRI

# Motor Function Gains – Expected Recovery<sup>1</sup> vs OPC1-Treated (Cervical Clinical Trial)



# Real-World Benefit from a 2 Motor Level Improvement

Motor level gains translate into clinically meaningful improvements in self-care and reductions in cost of care

32% had +2 Level Improvement

Function	Cervical Injury Level				
	C1-C3	C4	C5	C6	C7-C8
Bowel					
Bladder					
Bed Mobility					
Transfers					
Pressure Relief					
Eating					
Dressing					
Grooming					
Bathing					
Wheelchair					
Car transport					
Daily Home Care	24 hr attendant	18-24 hr attendant	6-12 hr assistance	4 hr housework	1 hr housework

**Total Assist**

**Partial Assist**

**Independent**



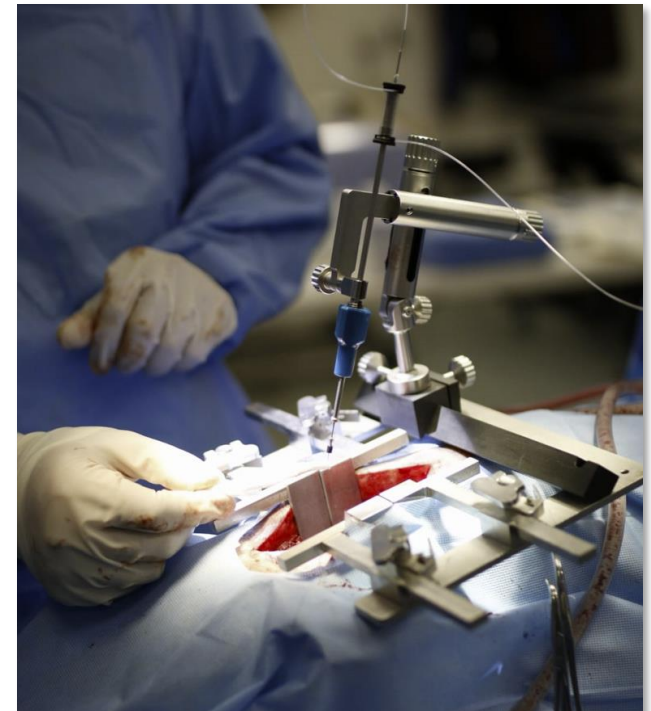
# OPC1 Cervical Clinical Trial – 2 Year Results

---

- **Overall safety profile of OPC1 continued to be excellent**
  - All 25 subjects evaluated for at least 2 years
  - MRI scans showed no evidence of adverse changes
  - No unexpected serious adverse events related to the OPC1 cells
  - No study subjects had worsening of neurological function
- **Motor Level Improvements Have Been Durable; One Patient Improved Further**
  - Cohort 1 subjects continued to be stable 2-4 years after treatment
  - 5 subjects in cohort 2 achieved at least 2 motor levels of improvement over baseline on at least one side (previously 4 of 6 at 12 months)
  - 1 subject in cohort 2 achieved 3 motor levels of improvement on one side; maintained at 3 years

# New Spinal Cord Delivery System – Clinical Testing Planned

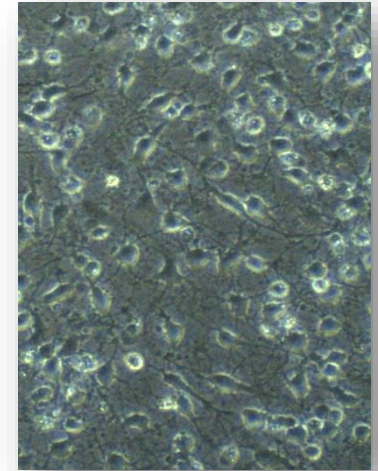
- **Better stability and control**
  - Eliminates motion between platform/XYZ manipulator/needle
- **Enhanced usability and safety: no cessation of ventilation**
  - Attaches directly to the patient, compatible with breathing motion
- **Improved user experience**
  - Smaller and fewer components
  - Single hand operation
- **Verification and validation activities preclinical testing completed in support of regulatory submission**
- **Device clinical trial in sub-acute and chronic patients planned**



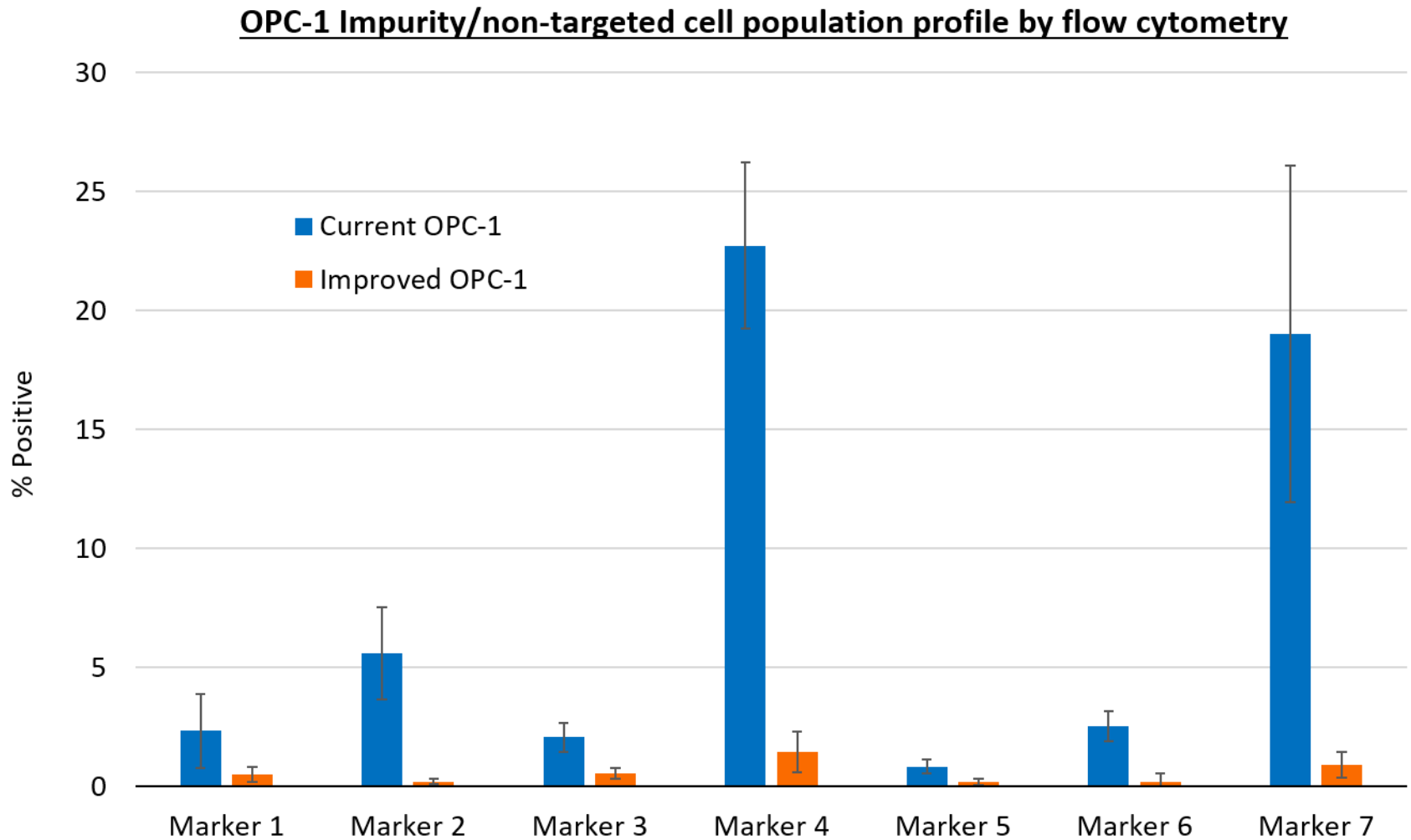
# OPC1 Manufacturing Improvements Following FIM Study

## Lineage has made major improvements in production and quality of OPC1

- A new ready-to-inject formulation was developed
- Elimination of dose preparation achieved
- 10- to 20-fold increase in production scale
- Significant reduction in impurities
- No reduction in functional activity
- 12 new analytical and functional methods developed
- Elimination of all animal-based production reagents
- Estimated expiration dates of pending patent applications range from 2036 to 2040




# OPC1 Manufacturing Improvements: Lower Impurities



## OPC1 Program – Key Clinical Trial Takeaways & Next Steps

---

- **95% of patients exhibited UE motor recovery at 12 months (at least 1 motor level on 1 side)**
- **Syringomyelia events reduced to 4% (~80% expected)**
- **96% durable engraftment confirmed via MRI**
- **Excellent overall safety profile (5 years in cervical SCI and 10 years in thoracic SCI and continues)**
- **Can enrich for better-performing patients in next trial**
- **Improved purity and production scale of clinical material**
- **Clinical testing planned for new spinal cord delivery system**
- **Planning underway for a randomized, controlled clinical trial**
- **Engagement underway with California Institute of Regenerative Medicine (CIRM), various patient advocacy organizations and patient advocates**



Hearing loss currently **afflicts over 5% of the world's population**, and by 2050, it is estimated that over 700 million people will have disabling hearing loss

*Source: WHO*



**ANP1: Auditory Neuronal Progenitors for Hearing Loss**



# ANP1 (Auditory Neuronal Progenitors) for Hearing Loss

---

- **Lineage's first internally-developed development program**
  - Auditory neuronal transplants with an initial focus on the treatment of auditory neuropathy spectrum disorders
  - Replacing auditory neurons or augmenting existing but damaged auditory neuron population may provide a benefit beyond the reach of alternate approaches
- **Can leverage knowhow and capabilities in neuronal lineage differentiation in an indication with a large and growing unmet need**
  - Hearing loss currently afflicts 430 million people
- **Filed new patent application covering the composition and methods for generating Auditory Neuronal Progenitors (ANPs)**
  - Filed IP includes methods of treatment that employ these cells for the treatment of auditory neuropathy
- **Completion of R&D manufacturing process sufficient to support initiation of preclinical testing and initiation of preclinical testing planned for Q4 2022.**



Globally, at least **2.2 billion people** have a  
near or distance vision impairment

*Source: WHO*



**PNC1: Photoreceptor Neural Cell Transplants for  
Diseases of Blindness**

# PNC1 - Photoreceptor Neural Cells

## For Diseases Which May Lead to Blindness

---

- **Lineage's second internally-developed development program**
  - Photoreceptor neural cell (PNC) transplants for the treatment of vision loss due to photoreceptor dysfunction or damage
  - Both types of photoreceptors; rods and cones
  - Dynamic culturing process offers path to clinical- and industrial-scale production
  - *In vivo* data demonstrated that these cells may be capable of forming reconstructed retina with high survivability and neural connectivity to surrounding functional layers
  - Leverages Lineage's knowhow and capabilities in neuronal lineage differentiation in an indication with a large unmet need
- **Filed new patent application covering the composition and methods for generating PNC transplants**
- **Initial preclinical studies currently ongoing**



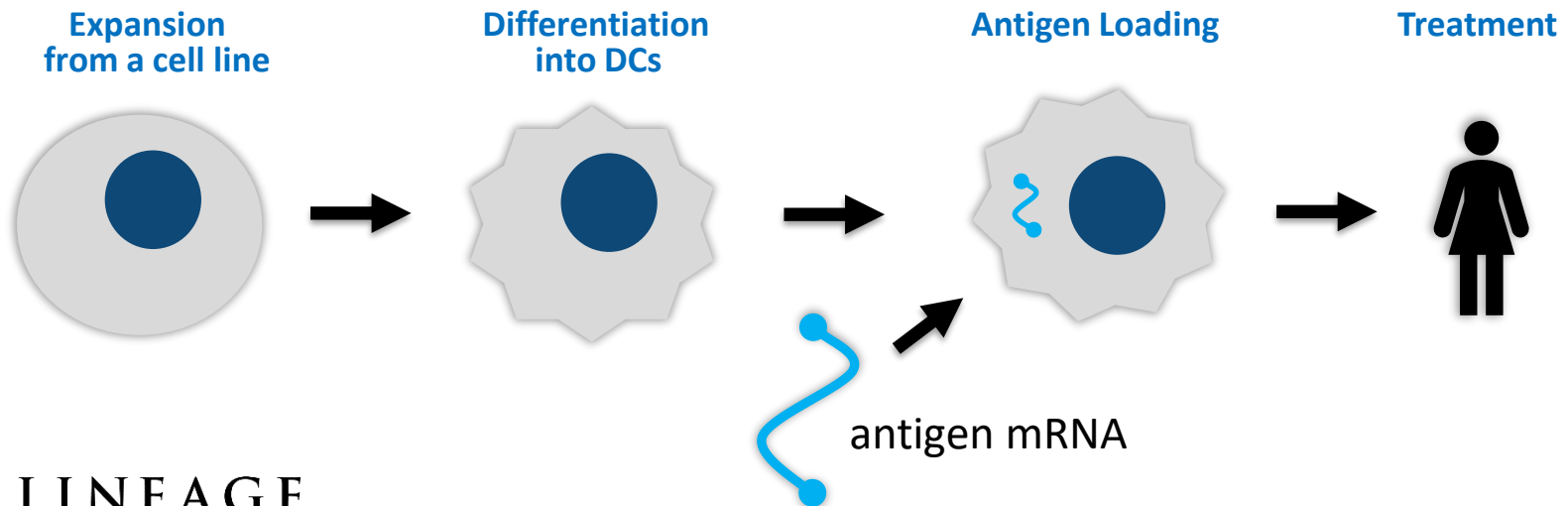
Immunotherapy is "poised to  
**revolutionize treatment** for all  
types of cancer"

*Source: [cancerresearch.org](http://cancerresearch.org)*

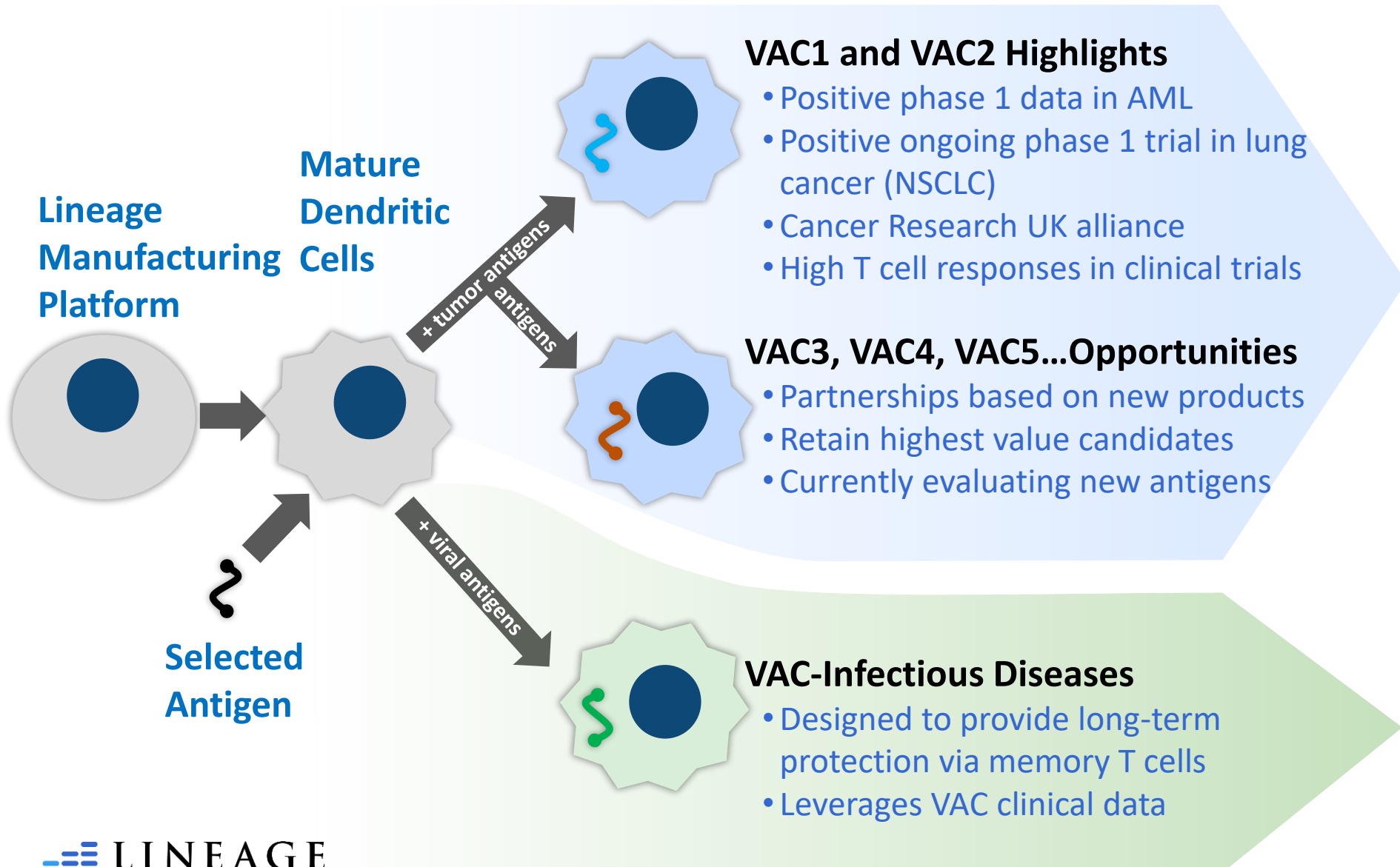
**VAC: A Cell Therapy Platform for Cancer and Infectious Diseases**

# The VAC Platform: On demand cell therapy for cancer

- The VAC platform consists of large-scale, allogeneic (“off the shelf”) production of mature dendritic cells (DCs). No production delay between diagnosis and treatment, as with autologous or patient-specific therapies.
- DCs are manufactured and loaded with either a **tumor antigen** (to treat cancer) or a **viral antigen** (as a vaccine for infectious diseases)
- Antigen presentation to the patient’s T cells creates a *targeted* and robust immune response (up to 3%), aiding tumor cell destruction or pathogen clearance



# VAC Development – A Platform for Multiple Product Candidates





# Our Goal is to Provide Life-Changing Cell Therapies to Patients

## Lineage Cell Therapeutics: Bringing the Promises of Cell Therapy into Clinical Reality



**Clinical-stage programs with billion-dollar potential and partnership opportunities**



**World class in-house process development and GMP manufacturing**



**One of the largest patent portfolios in cell therapy**



**Multiple validating corporate partnerships**



**Leader in the field of regenerative medicine**

# The Patients Are Our Inspiration.

View their stories at [lineagecell.com/media/#patients](https://lineagecell.com/media/#patients)

## OPC1 SCiStar Study Participants

**CIRM**  
CALIFORNIA STEM CELL AGENCY



### Lucas Lindner

“There’s no reason to not look forward in the same way now that I had before all of this happened. I’m looking forward to driving again... it’s a bright future.”



### Kris Boesen

“I couldn’t drink, couldn’t feed myself, couldn’t text or pretty much do anything, I was basically just existing. I wasn’t living my life, I was existing.”



### Jake Javier

“Even though it’s a completely different perspective, I can still lead that way. I can just try to be the best I can and to persevere the best I can.”

*Diablo Magazine, Feb. 16, 2017*

## The Millions Worldwide Suffering from Dry AMD Vision Loss

“Macular degeneration is a very frustrating condition which can greatly affect your day-to-day life.”

- Macular Society



Courtesy of CIRM, American Macular Degeneration Foundation, and Macular Society