LINEAGE CELL THERAPEUTICS

www.lineagecell.com

Corporate Presentation
October 29, 2019

NYSE American: LCTX

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Lineage Cell Therapeutics

Lineage is a leading cell therapy company which manufactures and transplants specific types of cells to treat injuries and disease

Three Clinical-Stage Programs

OpRegen®

for Dry Age-Related Macular Degeneration with GA (dry AMD)

Phase 1/2a

OPC1

for Spinal Cord Injury (SCI)

Phase 1/2

VAC2

for Oncology (Non-Small Cell Lung Cancer, NSCLC)

Phase 1

Large portfolio of cell therapy-related patents and pending applications worldwide

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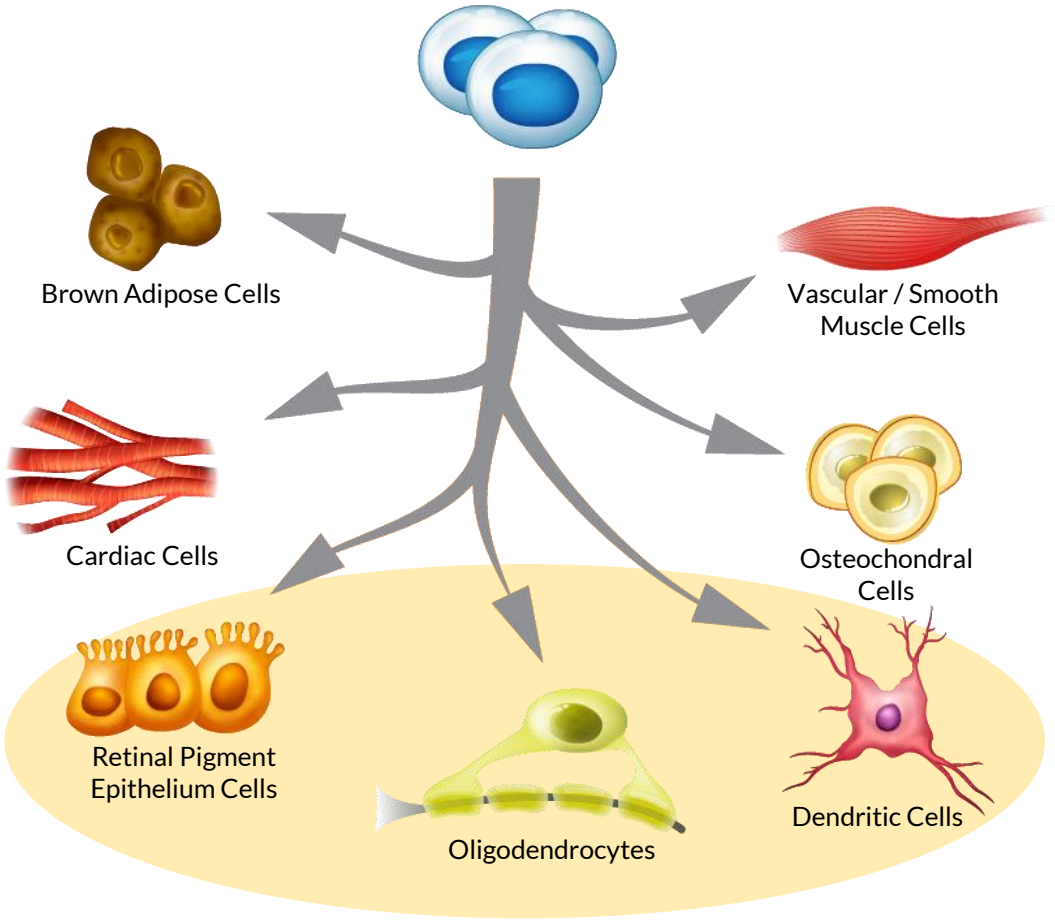
Cell Therapy Platform Technology

- **The Lineage Platform starts with normal human cell lines, which avoids risks from genetic modifications**
- **These cells have the capacity to become any human cell type, offering many potential indications**
- **A cell's lineage is controlled to generate only the desired cell type**
- **The cells have high proliferative capacity and can produce abundant clinical material**



CURRENT CLINICAL PROGRAMS

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Clinical-Stage Pipeline and Partners

Cell Therapy Programs	Phase I	Phase II	Partnerships & External Funding
OpRegen® Dry Age-Related Macular Degeneration with GA (Dry AMD)	→		רשות החדשנות Israel Innovation Authority **$16M**
OPC1 Spinal Cord Injury (SCI)	→		CIRM CALIFORNIA'S STEM CELL AGENCY **>$14M**
VAC2 Non-Small Cell Lung Cancer (NSCLC)	→		CANCER RESEARCH UK **>$10M in-kind**

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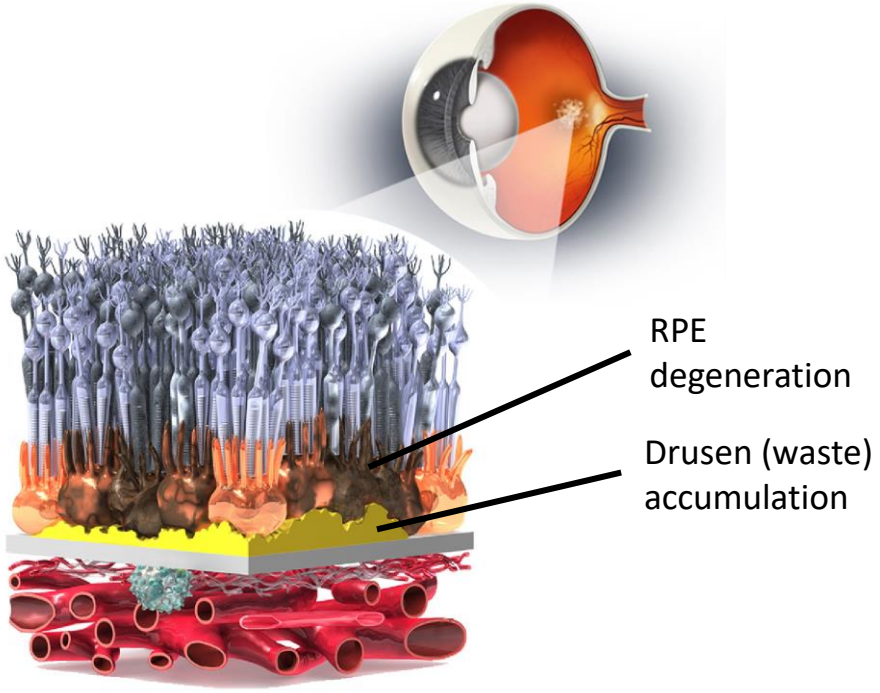
Cell Therapy for Dry AMD

Dry Age-Related Macular Degeneration (AMD)

- **Dry-AMD involves the loss of specialized retina cells (RPE), causing impaired vision**
- **OpRegen is a suspension of RPE cells, manufactured from a cell line and injected in the sub-retinal space**



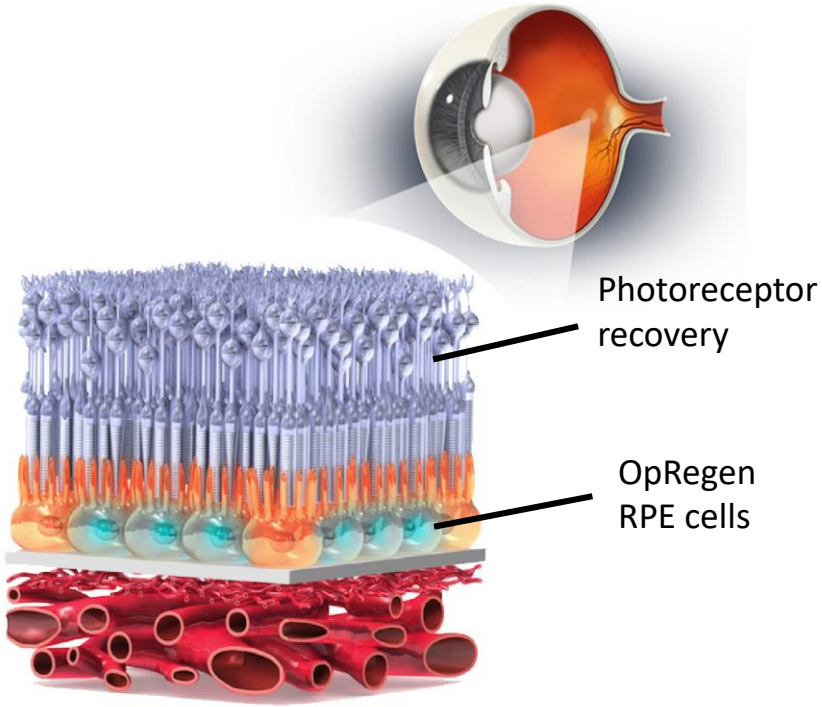


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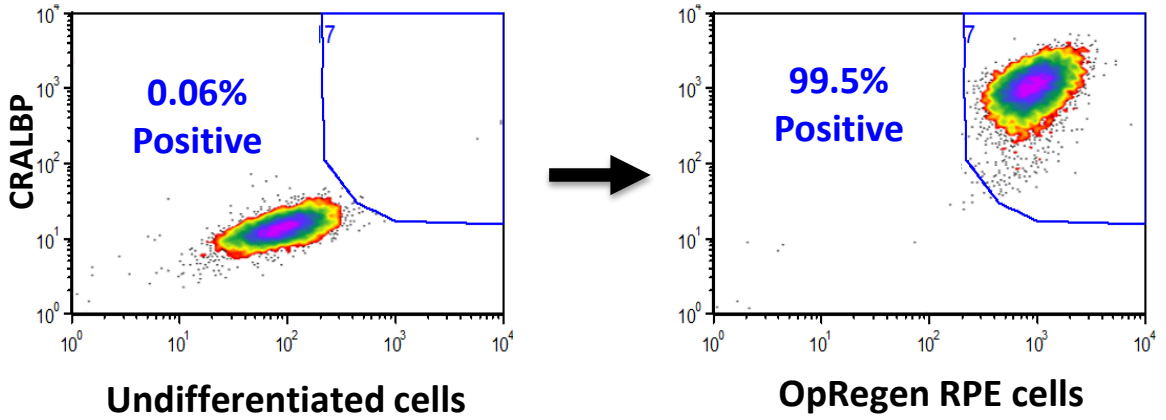
Image adapted from scienceofamd.org

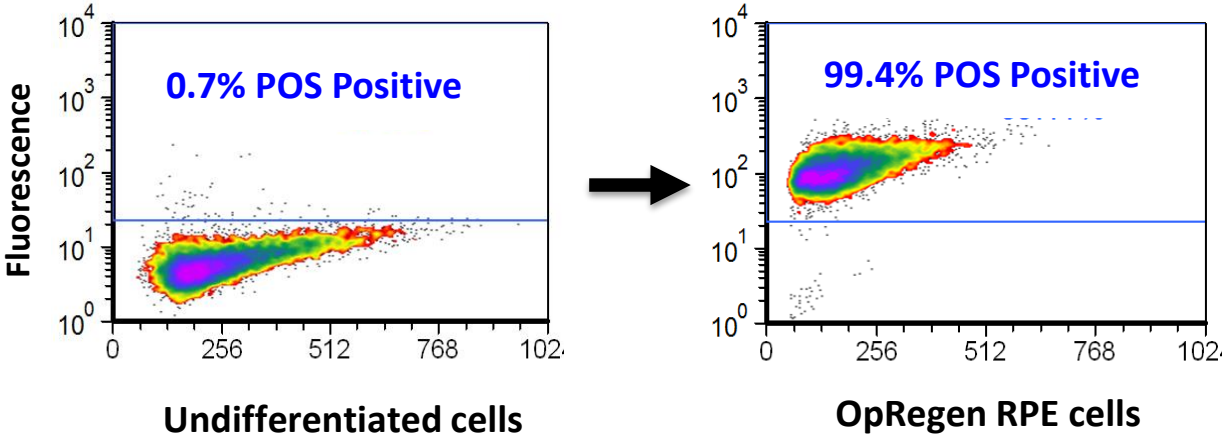
In-House GMP Manufacturing of RPE Cells

The lineage of an established line of pluripotent cells can be controlled to create a population of substantially pure RPE cells

Identity Assay (purity)



Functional Assay (phagocytosis)



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In-House GMP Production

Extensive experience directing the lineage of pluripotent cells into terminally-differentiated, specific cell types (such as retina cells, glial cells, etc.)

- Cell banking and handling
- Process development
- Manufacture of clinical material
- Scale-up into multi-liter bioreactors
- Multiple clean rooms for parallel GMP production runs

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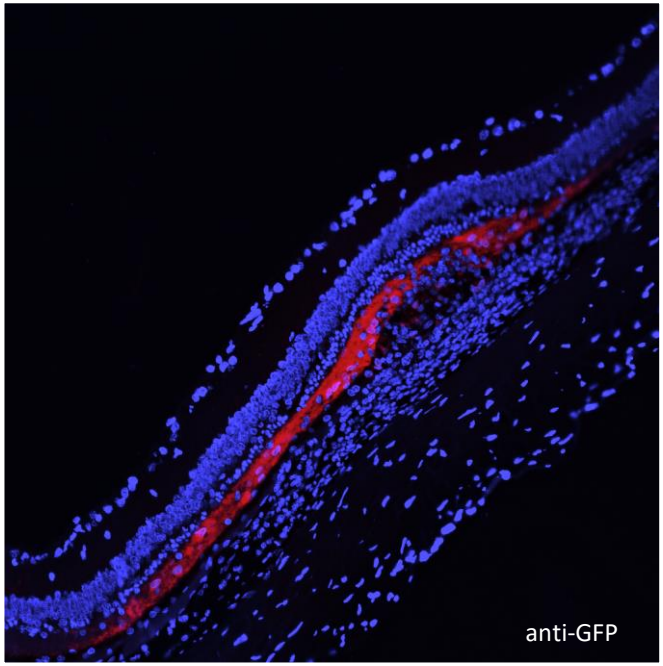
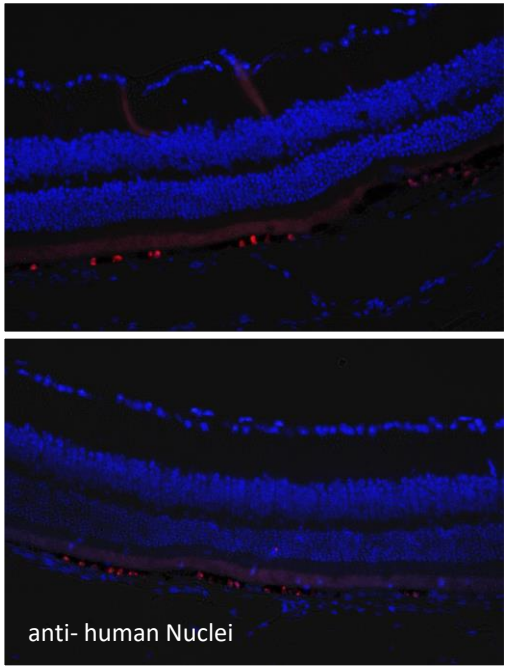
Engraftment and Survival of RPE Cells

- **OpRegen cells were counter-stained with DAPI (red line)**
- **OpRegen cells form a sustained monolayer in multiple species**

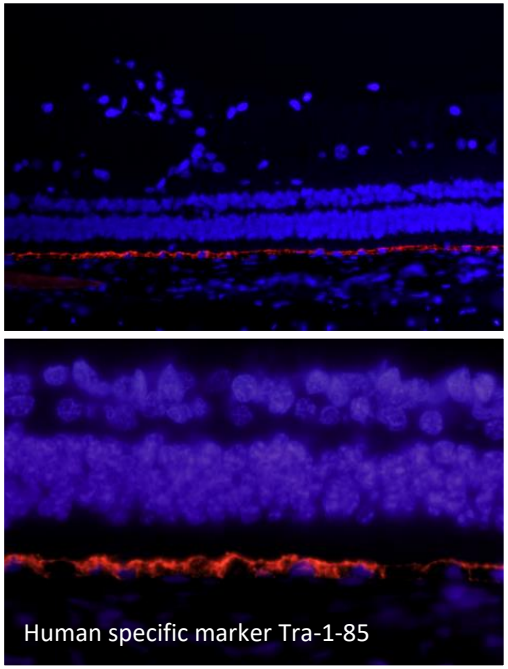
RCS Rat
19 weeks post-transplantation



NOD-SCID Mouse
2 months post-transplantation



Pig
2 months post-transplantation



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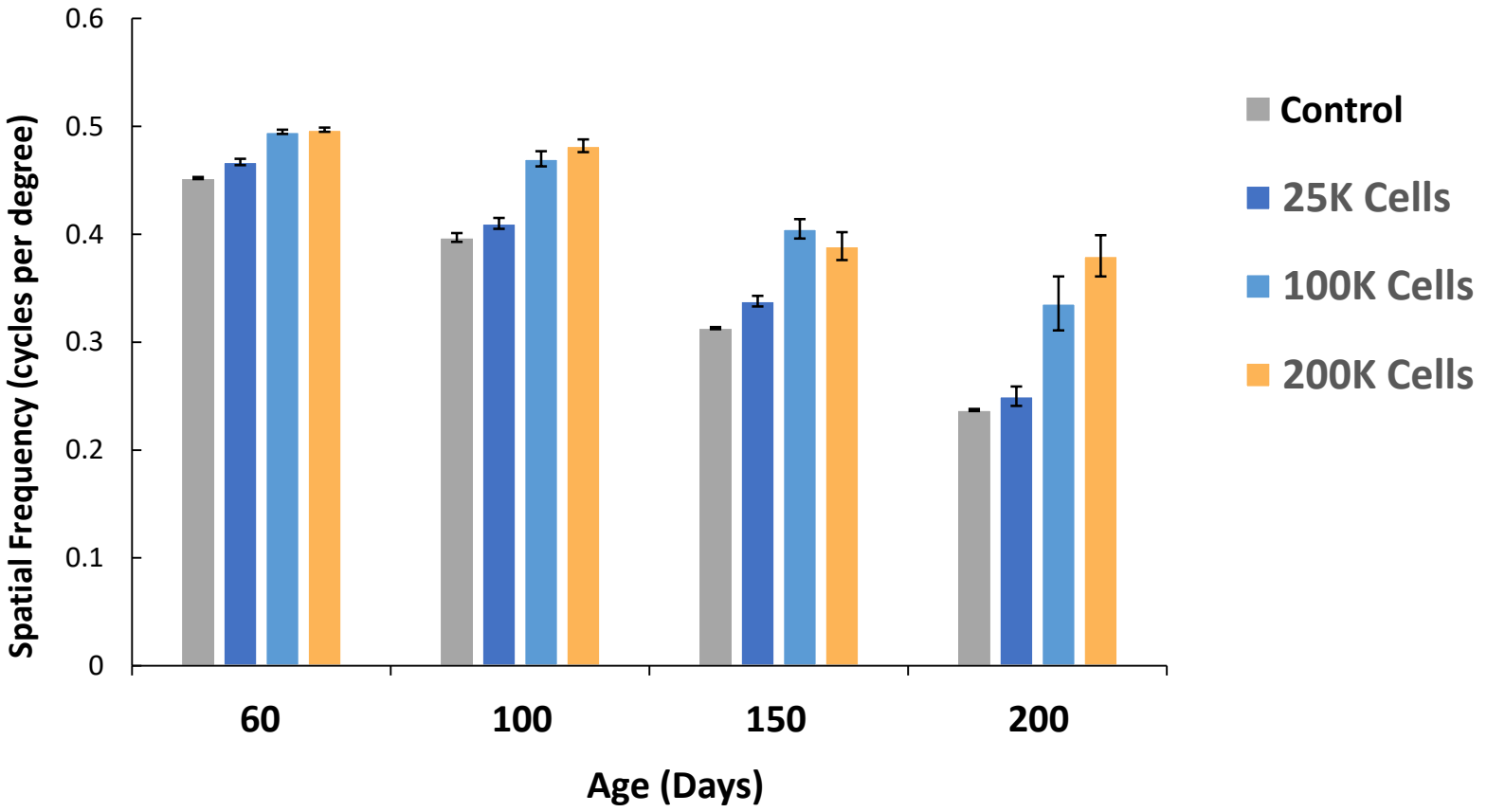
Improved Visual Acuity in RCS Rat Model

Dose-dependent rescue of vision can be observed via optokinetic nystagmus



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McGill TJ, et al. Transl Vis Sci Technol. 2017; 6:17.

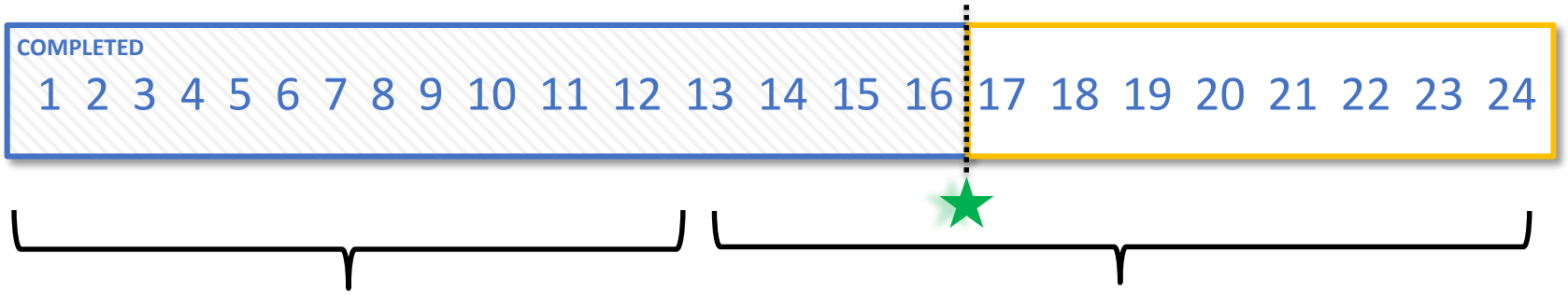
Ongoing Phase I/IIa OpRegen Clinical Trial

Purpose: To evaluate the safety and efficacy of subretinally transplanted RPE cells in patients with advanced dry AMD with geographic atrophy (GA)

Design: Open label, single-arm, and multi-center (US and Israel)

Dose and Administration: One 50-100 ul dose of cells injected into the subretinal space

Enrollment:



Part I

Safety and Anatomical Changes

Legally Blind (>20/200)

Part II

Safety and Visual Acuity

Impaired Vision (20/65 to 20/250)

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Phase I/IIa OpRegen Clinical Trial Overview

Parameter	Part 1 - Cohorts 1-3 (legally blind) n=12	Part 2 - Cohort 4 (better visual acuity) n=12
Duration	Screening up to 8 Weeks; FU – 1 year; long period FU – 4 years	
Management	Central reading/central labs/ Independent DSMB/Advisory Committees	
Treated disease	Advanced Dry AMD and GA	
Dose	Cohort 1: 50K cells Cohort 2-3: up to 200K cells	Up to 200K cells
GA size – Central Reading assessment	≥ 1.25mm^2 and ≤ 17 mm^2	≥ 4 mm^2 and ≤ 11 mm^2
BCVA	≤ 20/200	≤ 20/64 and ≥ 20/250
Historical Growth of GA	NA	SQRT per year of > 0.25 mm.
Cataract status	Not defined	Pseudophakic or phakic
Significant concomitant diseases exclusion (systemic/ocular)	Defined	

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Data presented at 2019 American Academy of Ophthalmology Annual Meeting

Phase I/IIa OpRegen Clinical Trial Patient Characteristics

Parameter	Part 1 - Cohorts 1-3 (legally blind) n=12	Part 2 - Cohort 4 (better visual acuity) n=4
Age: mean (SD/min-max)	78.3 (± 8.2/64.8-92.2) years	77.1 (± 3.1/74.6-80.6) years
ETDRS BCVA: mean (SD/min-max)	23.7 (± 11.7/0-39) letters [23 letters≈20/400]	55 (± 13.5/42-59) letters [55 letters≈20/80]
GA area: mean (SD/min-max)	12.7 (± 7/6-30) mm^2	7.1 (± 1.4/5.5-8.3) mm^2
Known duration of AMD: mean (SD/min-max)	100 (± 52.7/35.7-195.4) months	82 (± 23.7/66.8-99.2) months

Subretinal Delivery Solution

- **Standard sub-retinal injection technique requires vitrectomy and retinotomy**
  - Known complications include retinal detachment and other adverse events
- **Lineage has begun using a vitrectomy-free subretinal injection device:**
  - "For subretinal delivery of RPE cells for the treatment of all stages of dry AMD including geographic atrophy"
- **Device provides access to the subretinal space via a suprachoroidal route**
- **Avoids puncturing the retina and creates a stable bleb of delivered cells**
- **Addresses two major issues; dose control and adverse events due to efflux**

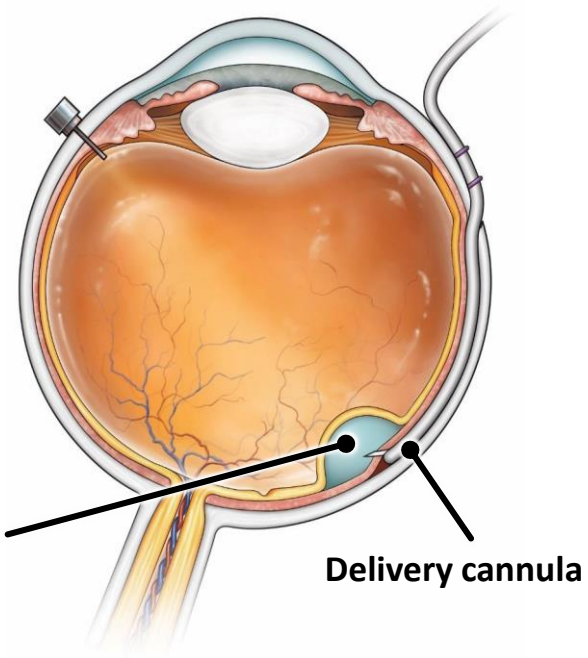

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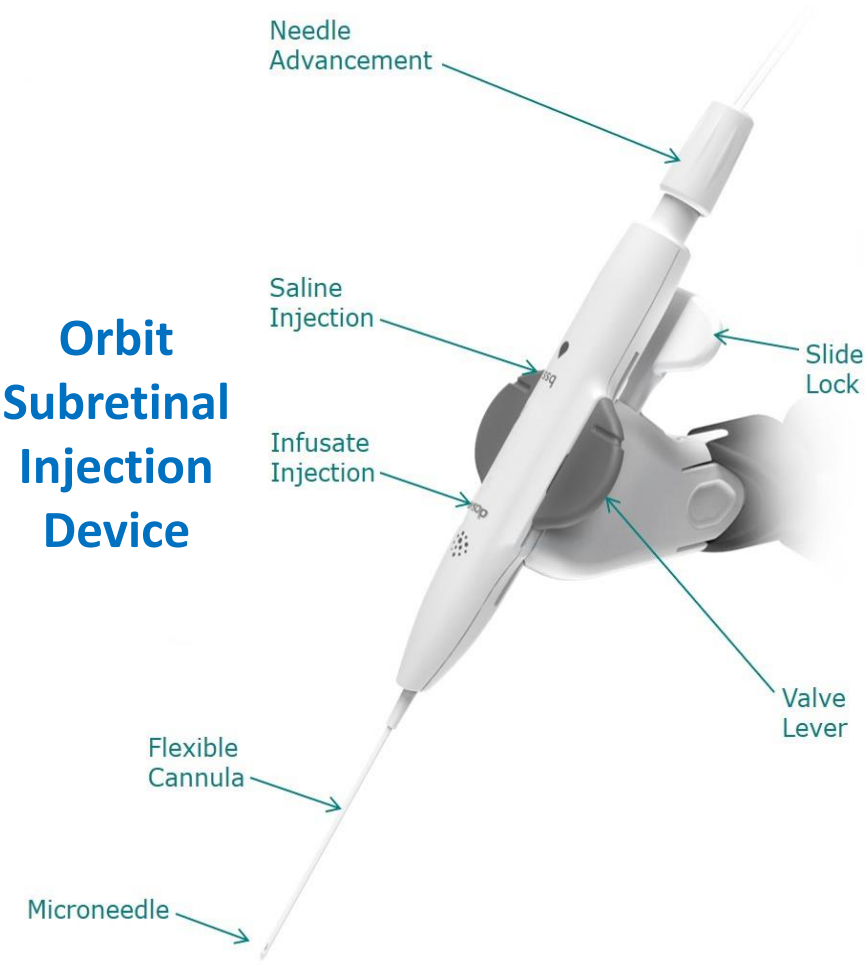
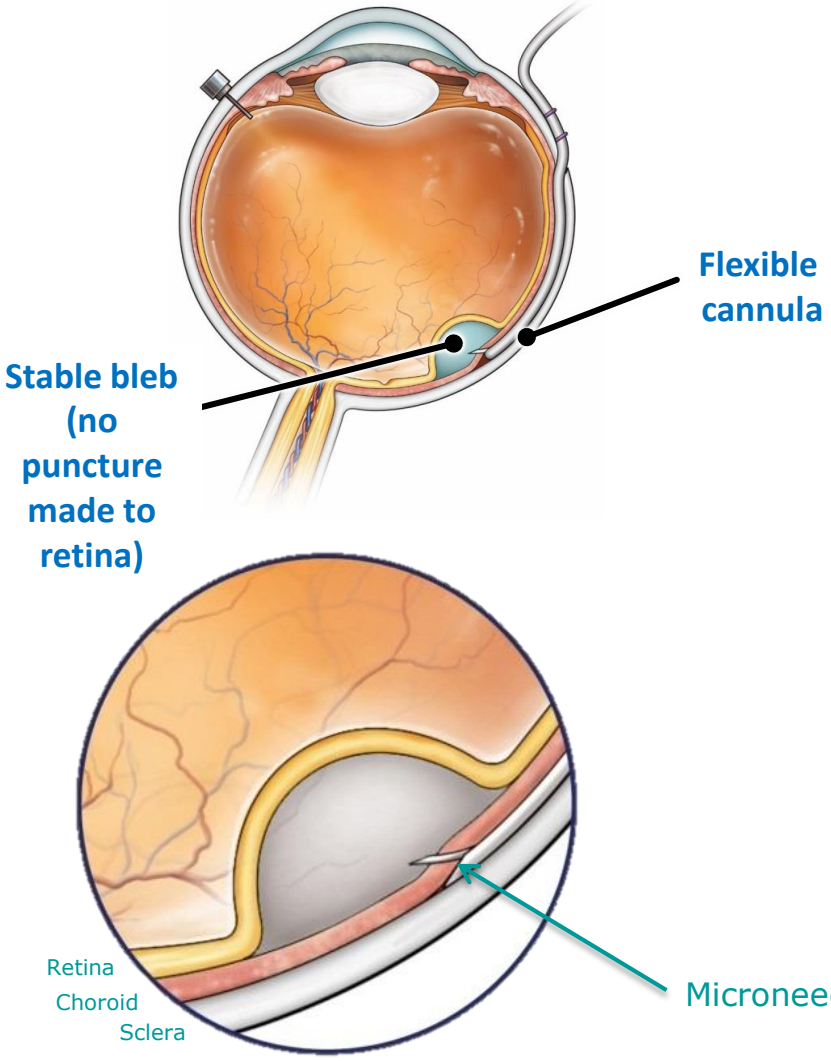
Image used with permission from Orbit Biomedical Ltd.

Orbit SDS (Suprachoroidal Approach)

Orbit Subretinal Injection Device





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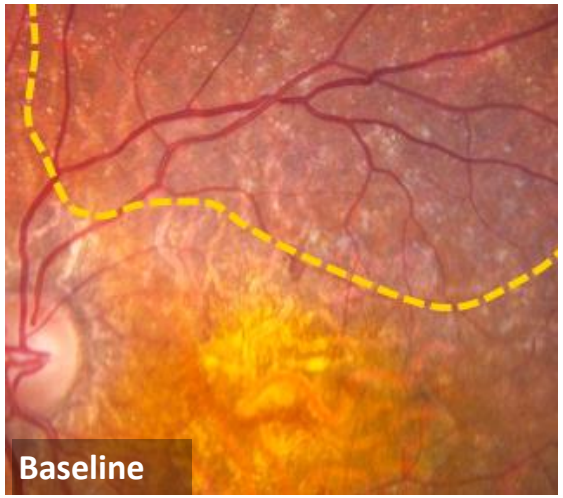
Images used with permission from Orbit Biomedical Ltd.

Phase I/IIa OpRegen Patient Data: Cell Engraftment



Bleb border (boundary of transplanted OpRegen cells)

Punctate shaded areas indicates stable engraftment of pigmented cells for more than 24 months

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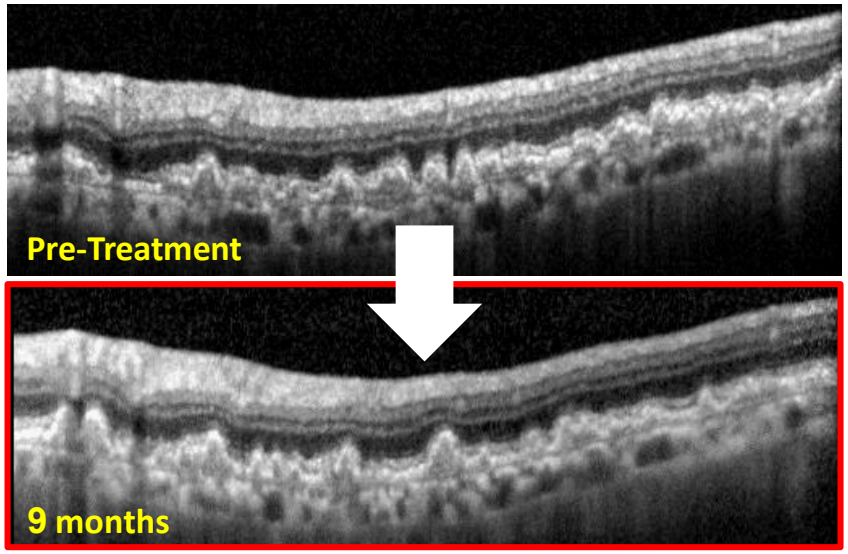
Images obtained through Color Fundus Photography

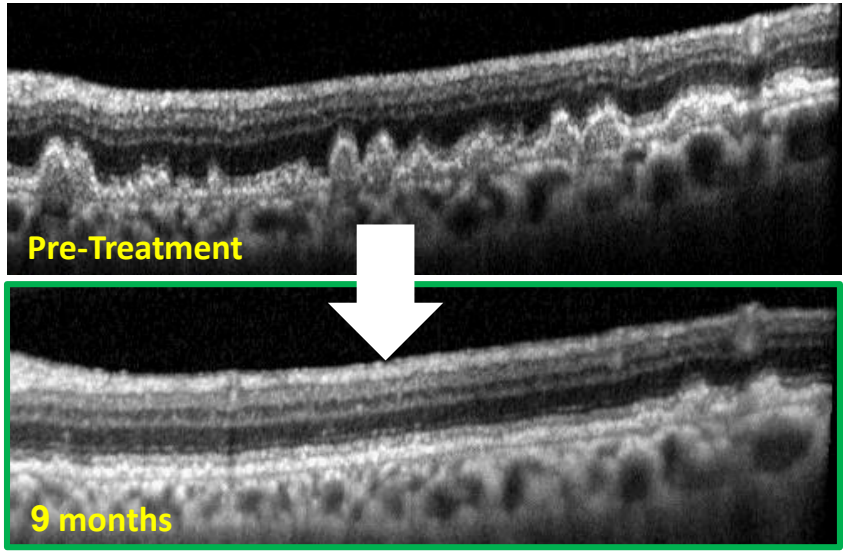
Phase I/IIa Patient Data: Drusen Reduction

- **Drusen accumulation is observed at pre-treatment (wrinkled white line)**
- **A reduction or change to drusen is observed through month 9 in some patients**

Untreated



Treated



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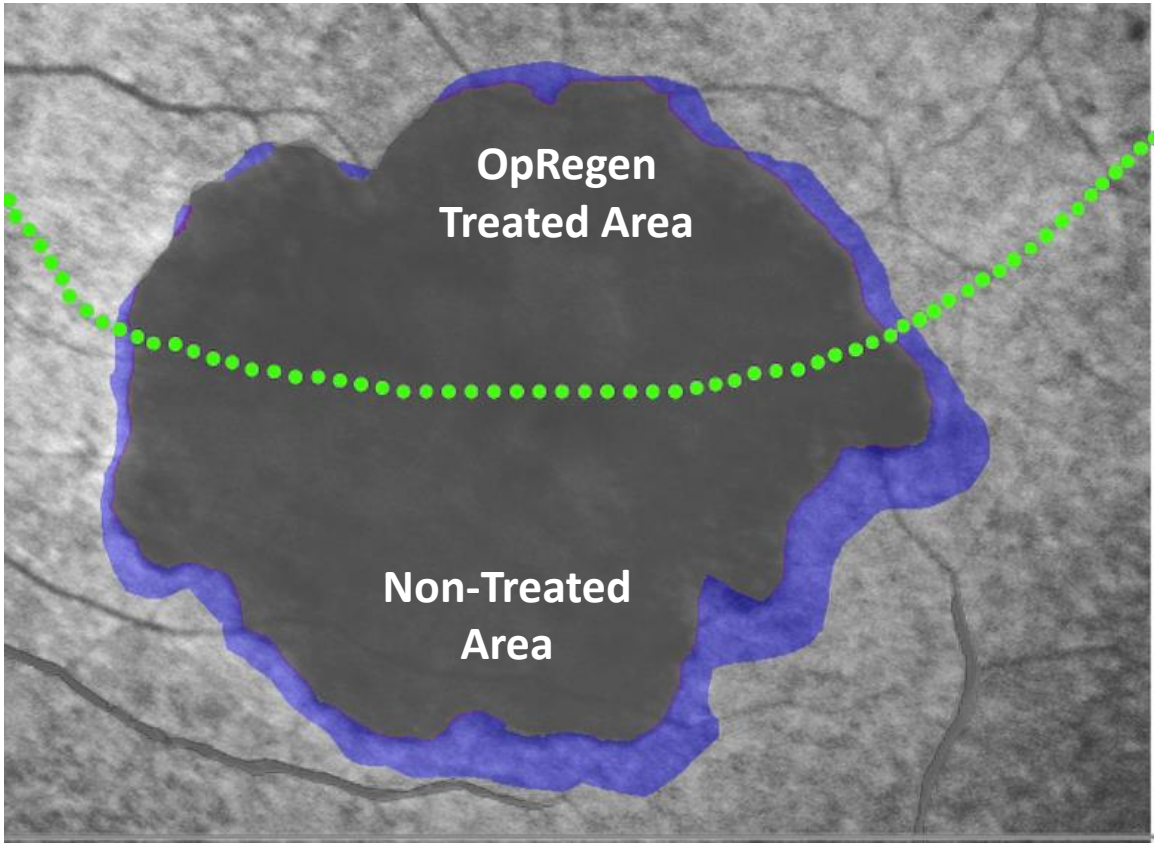
Phase I/IIa Patient Data: Reduced Growth of GA

Reduced directional growth in area of GA observed

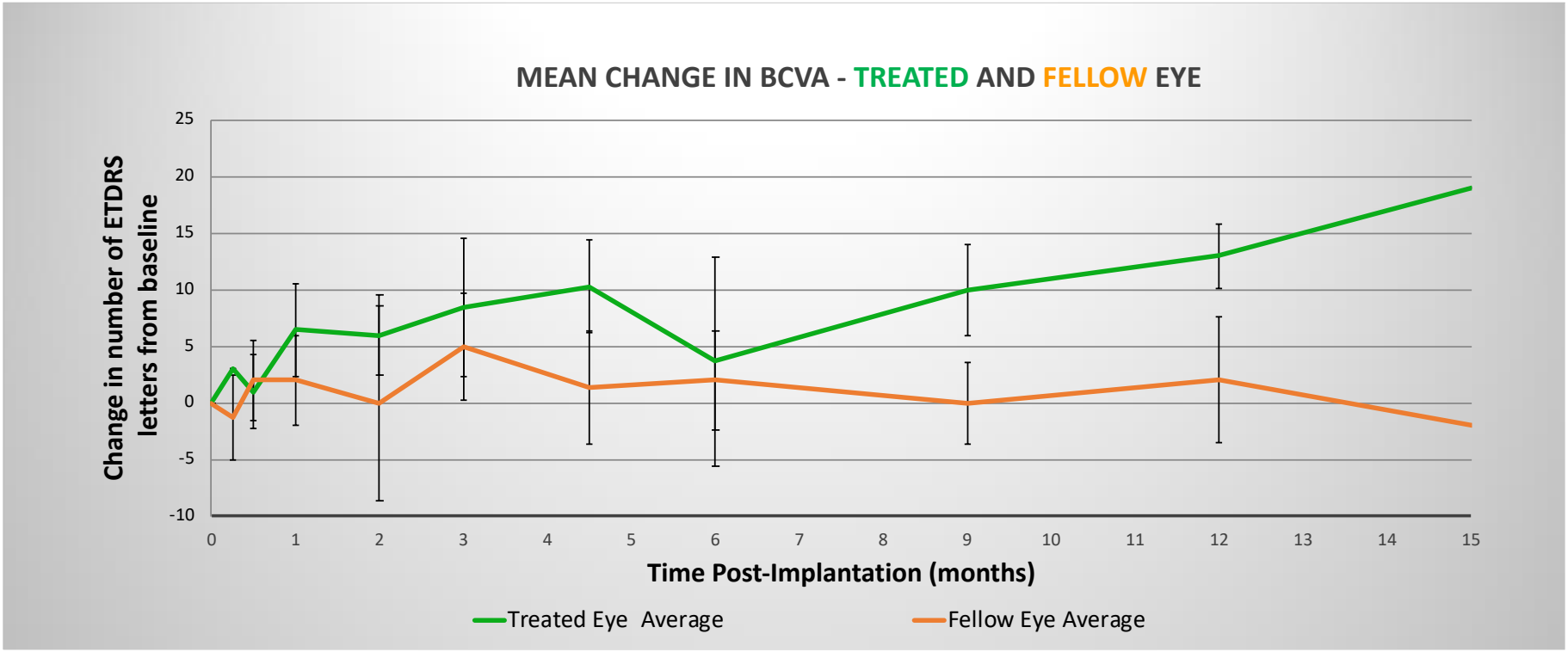


Bleb border (boundary of transplanted OpRegen cells)

- **GA is a progressive, slow process**
- **Asymmetrical, reduced directional growth of the area of GA in the treated area receiving OpRegen was observed following 12 months**

Phase I/IIa OpRegen Clinical Trial Results: Cohort 4

Mean Best Corrected Visual Acuity (BCVA) of 20/65 to 20/250 Patients via Early Treatment Diabetic Retinopathy Study (ETDRS)



(n=4)

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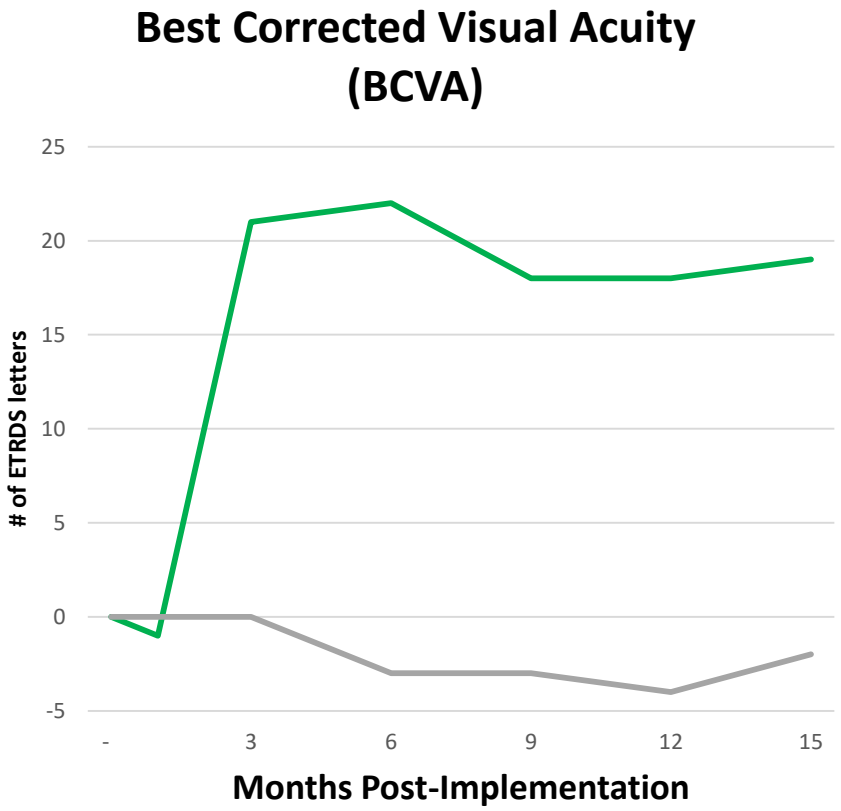
Phase I/IIa OpRegen Clinical Trial Individual Results: Cohort 4

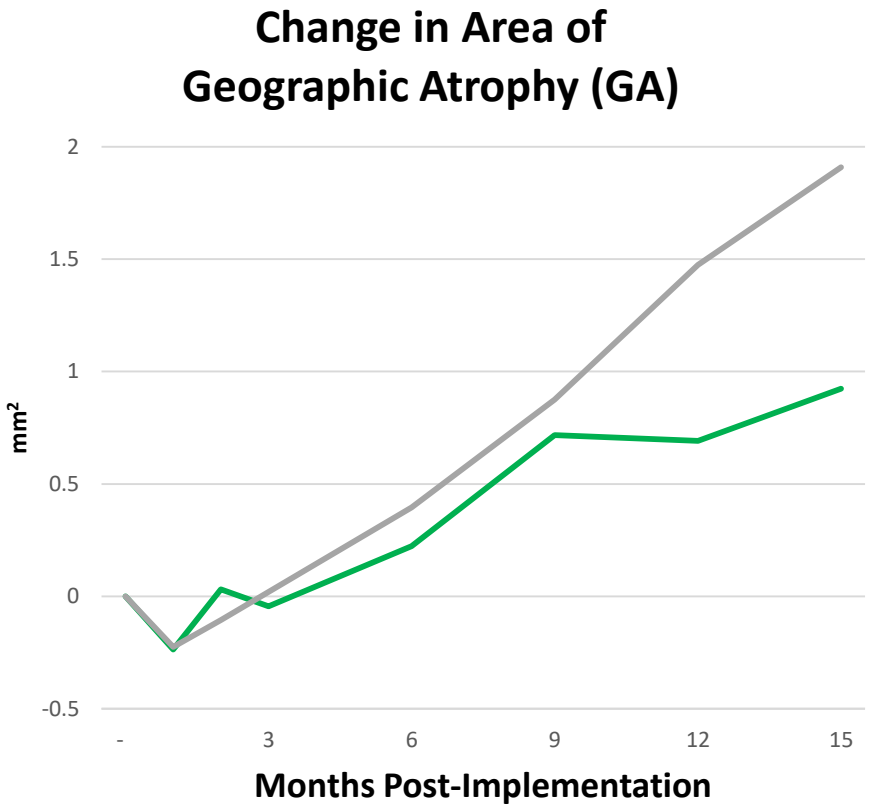
Individual Changes in Best Corrected Visual Acuity at Last Observation

Subject #	Change to Treated Eye	Last Timepoint*	Treatment Route
16	+ 13 letters	Month 3	Orbit SDS
15	+ 13 letters	Month 12	PPV/retinotomy
14	+ 8 letters	Month 12	PPV/retinotomy
13	+ 19 letters	Month 15	PPV/retinotomy

Gap in timepoints attributable to acquisition and validation of Orbit SDS following 510k approval in December 2018

Visual Acuity Case Study (Subject #13)





Treated Eye

Fellow Eye (Control)

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Phase I/IIa OpRegen Clinical Trial: Orbit SDS Case Study (Subject #16)

- **Subretinal injection of OpRegen suspension performed July 2019**
  - No operational complications and no unexpected post-op complications
  - Subject doing well, no unexpected AEs as measured 3 months post-op

- **Subject has demonstrated signs of improved visual acuity in treated eye**
  - Measured 13 letter improvement via ETDRS at 3 months post-injection

Phase I/IIa OpRegen Clinical Trial Highlights

Treatment with OpRegen has been well-tolerated

Structural Improvement

Some patients show signs of structural improvement in the retina and decreases in drusen density

- Photoreceptor layer and ellipsoid zone assumed a more regular structural appearance in areas of the transition zone where cells were administered

Encouraging Data

Recent data from patients with earlier-stage disease and better baseline vision is encouraging

- Evidence of durable transplantation and & structural improvement within the retina
- Some improvements in visual acuity noted

No Unexpected Adverse Events

No unexpected adverse events or treatment-related systemic serious adverse events reported through 16 patients

- Current subjects are being dosed with a new delivery device (Orbit SDS), eliminating the need for a vitrectomy and retinotomy

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Competitive Landscape: Cell Therapies in Dry-AMD

OpRegen well positioned in comparison to other cell therapies in development (manufacturing, route of administration)

Company	Stage	Types of Patients	Route of Administration	Status
Lineage Cell Therapeutics	**Phase 1/2a (n=24)**	**12 @ 20/200+ 12 @ 20/65-20/250**	**Supra-choroidal injection (previously trans-vitreal)**	**16 patients dosed; enrollment ongoing**
Astellas (new cell line)	Phase 1 (n=9) Phase 2 (n=150)	20/200+	Trans-vitreal injection	Phase 1 complete Phase 2 ongoing
Astellas (Ocata* cell line)	Phase 1 (n=18) terminated		Trans-vitreal injection	Study terminated
Regenerative Patch Technologies	Phase 1/2a (n=20). 16 enrolled (study completed)	10 @ 20/200+ 10 @ 20/80+	Surgical placement of parylene membrane with RPE cells	Study complete; First 4 subjects published on 04/18; Full publication forthcoming

Ocata acquired by Astellas for $379M in 2015

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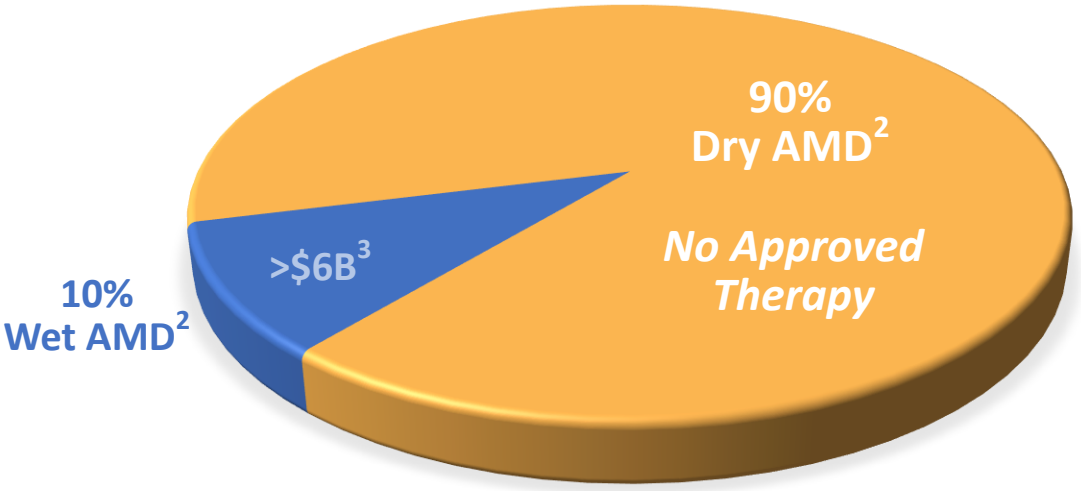
Significant Market Opportunity

- **AMD afflicts ~11 million people in the United States**
  - **90% of AMD patients have the dry form**
  - **~$6B in sales of approved Wet AMD therapies[2]: Lucentis® and Eylea®**
  - **Currently, there are no approved therapies for Dry AMD**



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Sources: (1) Pennington and DeAngelis, Eye and Vision, 2016 3:34; (2) JM Seddon, Epidemiology of age-related macular degeneration. (AP Schachat, S Ryan eds.) Retina, 3rd ed. St. Louis, MO: Mosby; 2001;1039-50; (3) 2016 product sales summary based on publicly reported revenue figures for Lucentis and Eylea and (4) Assumes ASP of $10,000 per treatment. Market share based on total population of 9.9 million.

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Cell Therapy for Spinal Cord Injury

Lucas' Story

Lucas Linder, an OPC1 clinical trial participant, was paralyzed from the neck down following an accident.

The next year, he threw out the first pitch at a Major League Baseball game.

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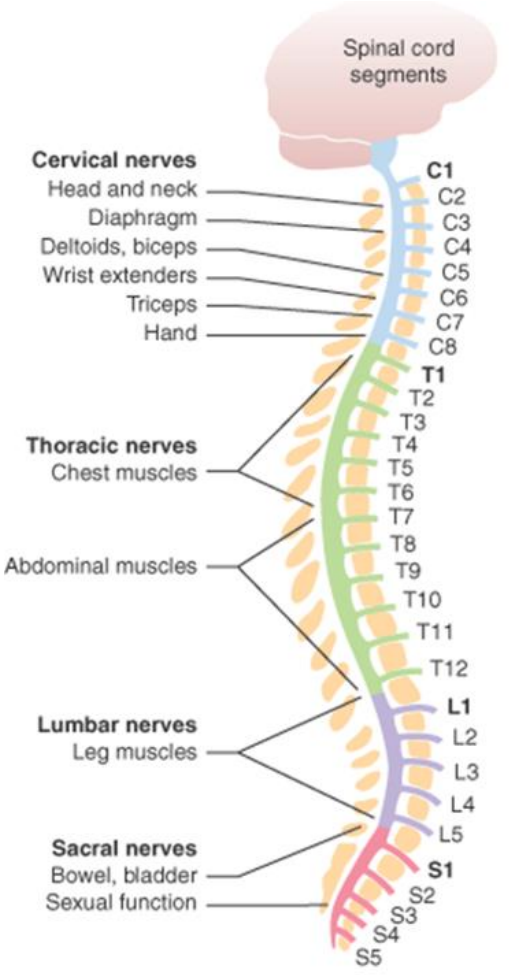
Spinal Cord Injury (SCI)

- **SCI creates a significant burden for patients and caregivers***
  - **67% of patients are unemployed 10 years post-injury**
  - **Lifetime direct healthcare costs can reach $5 million for one patient**
- **Motor level improvements can translate into clinically significant improvements in self-care and reductions in cost of care**
- **The therapeutic goal is to restore arm, hand, and finger function, increasing independence and quality of life**



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(*) National SCI Statistical Center, 2019 SCI Data Sheet.

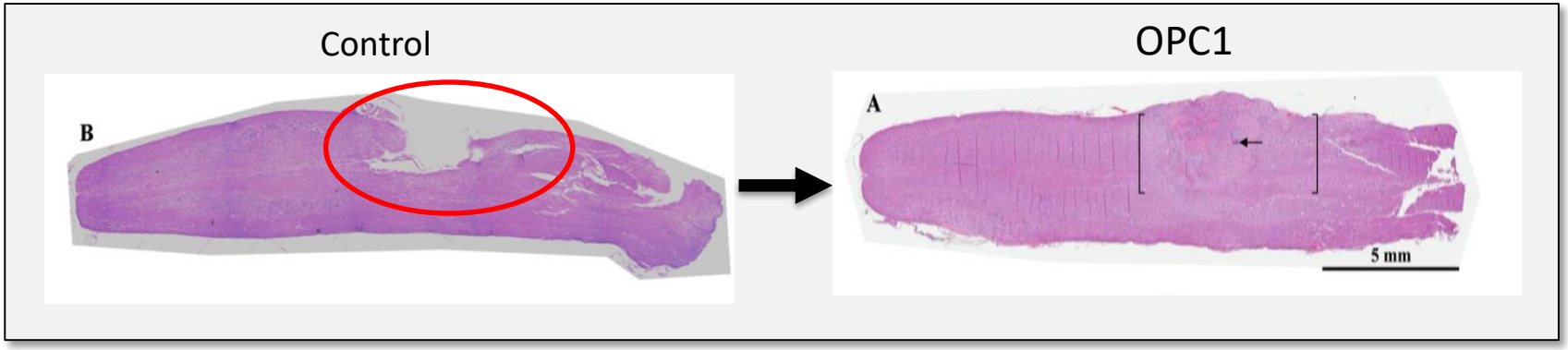
OPC1 Overview

- **OPC1 is a population of non-patient derived oligodendrocyte progenitor cells (OPCs)**
- **OPCs are precursors to the cells which provide electrical insulation for nerve axons in the form of a myelin sheath**
- **OPC1 has RMAT and Orphan Drug Designations from the FDA**
- **Program has received >$14M from CIRM**

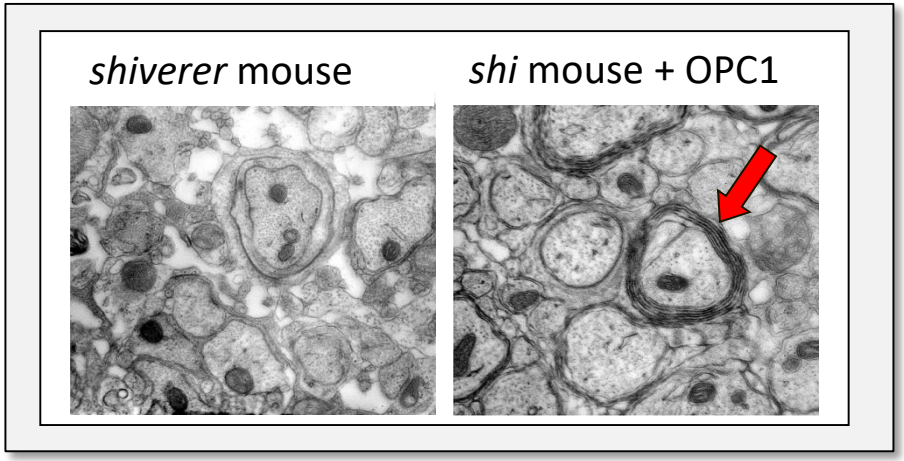
OPC1 Injection Procedure

OPC1 Potential Mechanisms of Action

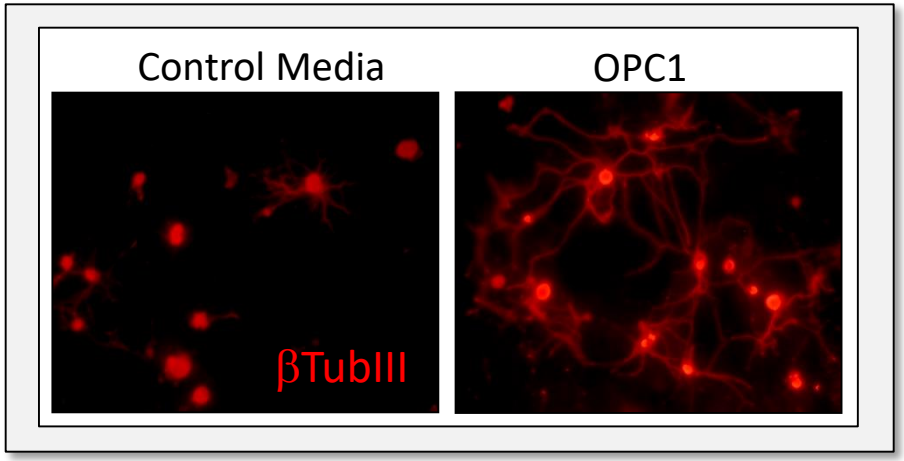
Prevention of Cavitation



Myelination of axons



Secretion of neurotrophic factors



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Completed Studies in Spinal Cord Injury

Pre-Clinical

28 Animal Studies

- Cells survive in the spinal cord
- Improves locomotor activity
- Reduces parenchymal cavitation
- Migrates up to 5cm in spinal cord
- No distribution outside of CNS
- Does not increase mortality
- Does not induce systemic toxicity
- Does not produce teratomas

Clinical (n=30)

Phase 1 Thoracic Study

- Long-term follow up has shown no evidence of adverse changes in any subjects

Phase 1/2a Cervical Study

- 25 subjects received up to 20M cells
- Evidence of durable cell engraftment
- Increased motor recovery
- No serious adverse events (SAEs)

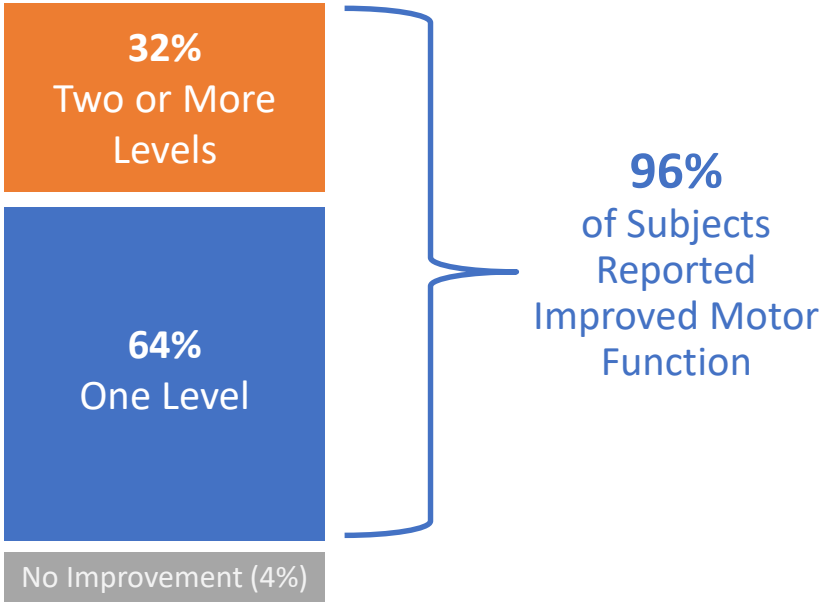
Safety and Efficacy from OPC1 Phase 1/2a Study

Cell Engraftment

(cohorts 2-5 at 12 months, n=22)

Motor Function Gain

(cohorts 2-5 at 12 months, n=22)



To date, there have been no serious adverse events related to the OPC1 cells

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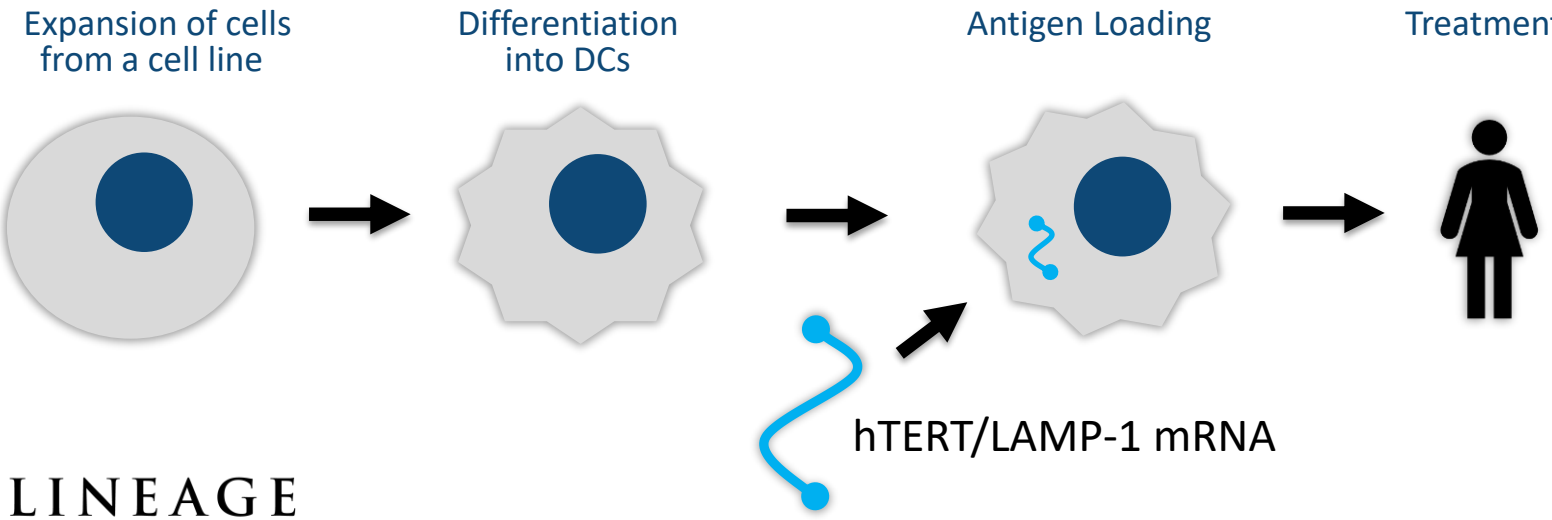
Cell Therapy for Cancer

VAC Immuno-Oncology (I-O) Program

- **VAC platform uses mature dendritic cells (DC) to increase a patient's tumor response**
- **Treatment is an allogeneic vaccine; cells are manufactured from a pluripotent cell line and not derived from the patient**
- **Mature dendritic cells are manufactured and loaded with an antigen present in >85% of all cancers and an MHC-presenting sequence, to stimulate CD8+ (cytotoxic) and CD4+ (helper) T cell responses**
- **Targeted education of T cells increases immune response and tumor cell destruction**



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VAC2 Clinical Program

- **Partnered with Cancer Research UK, which is responsible for the costs and conduct of manufacturing and the clinical trial**
- **Primary endpoint: safety and tolerability**
- **Secondary objectives: immunological response and survival**
- **Enrollment is ongoing**

CANCER RESEARCH UK

The world's largest cancer charity dedicated to saving lives through research.

Potential Advantages of the VAC2 Approach

Attribute	VAC2
Single master cell bank for scalability and consistency	✓
Available 'off-the-shelf', on demand	✓
No known significant off-target effects	✓
Low AE-related cost of treatment	✓
Lower anticipated COGS than CAR-T	✓
Use in combination with chemotherapy	✓
Use in combination with immune checkpoint inhibitors	✓

VAC2 was designed to overcome limitations of first-generation I-O combinations and autologous approaches, while providing cost and safety advantages in combination or competition with CAR-T, CTL4, or Immune Checkpoint Inhibitors (ICIs).

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Renevia®

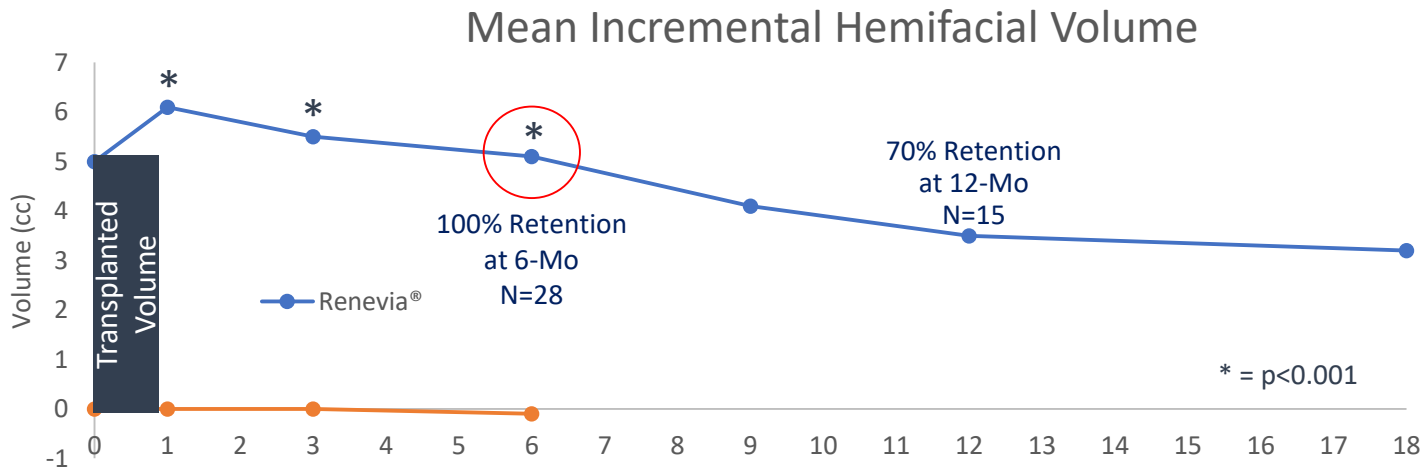
CE Mark Granted September 2019

Renevia®

- **A proprietary 3-D scaffold designed to support adipose tissue transplant and retention**

- **50-patient, HIV-Associated Lipoatrophy Pivotal Study:**
  - Renevia in combination with SVF fat for facial volume augmentation
  - Increase in hemifacial volume measured by 3D image scan at 6 months

- **Comparative clinical trial met its primary endpoint of change in hemifacial volume at six months (p<.001)**



Renevia®

- **CE Mark granted September 2019**
  - **Intended use in adults for the treatment of facial lipoatrophy**
    - **Approved as resorbable matrix for delivery of autologous adipose tissue preparations to restore and/or augment facial volume after subcutaneous fat volume loss**
- **Lineage has engaged an EU-based representative to identify a commercial partner**
- **Renevia could be further developed for other applications, such as fat loss caused by pharmaceuticals or aging**
- **Might also serve as an alternative to currently-available dermal fillers**
  - **More than a million procedures each year in the European facial aesthetics market**

Financial Overview

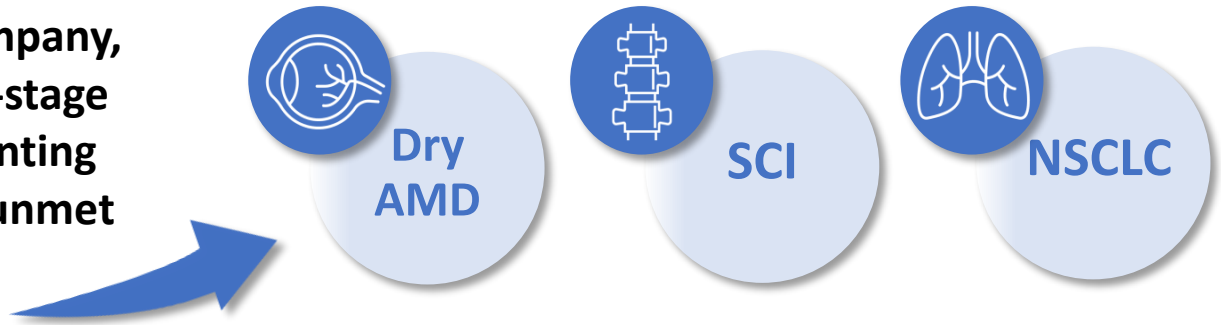
- **Cash and cash equivalents and marketable securities**
  - Balance of **$16.7 million** (as of 6/30/2019, last reported quarter)
  - Sold **$10.7 million** of OncoCyte (OCX) holdings in Q3 2019
- **Value of Remaining Equity Holdings in OCX**
  - **$17.7 million** (based on closing stock price on 9/30/2019)
- **Convertible promissory note due from Juvenescence**
  - **$23.2 million** (as of 9/30/19, matures Aug 2020)
- **Market Capitalization**
  - **~$147 million** (as of 9/30/2019)
- **Employees**
  - **62** (as of 10/15/2019)

Lineage Investment Highlights

- ✓ **Implemented cost efficient business model focused on clinical development of cell therapy candidates**
  - **2020 expenses expected to be significantly lower than 2018 Lineage & Asterias stand-alone expenses**
  - **Reduced headcount by 40% during 2019**
- ✓ **Strengthened extensive IP portfolio with the issuance of 3 new U.S. patents**
- ✓ **Awarded $2.5M grant from Israel Innovation Authority for OpRegen development and SBIR grant from NIH for Innovative Vision Restoration Program**
- ✓ **Received CE Mark for Renevia in September 2019**
- ✓ **Encouraging data from ongoing OpRegen Phase I/Iia clinical study announced in October 2019**

Renewed Corporate Focus

A leading cell therapy company, developing three clinical-stage programs, each transplanting specialized cells to treat unmet medical needs



LINEAGE CELL THERAPEUTICS

Near Term Corporate Priorities

- **Complete patient enrollment in the U.S. with the Orbit SDS in OpRegen study**
- **Continue to tech transfer and advance OPC1 program by introducing improvements to the manufacturing process**
- **Announce VAC2 initial immunogenicity data from ongoing Phase 1 study in NSCLC run by Cancer Research UK (CRUK)**
- **Meet with FDA to discuss clinical development of OPC1 for treatment of SCI**
- **Identify external partner for commercialization of Renevia in Europe**
- **Continue to focus on efficient use of resources to support optimal clinical development of our cell therapy platform**
- **Strengthen existing partnerships with NIH, IIA, CIRM and CRUK**

LINEAGE
CELL THERAPEUTICS

The future of cell therapy.