Ocular Modifier Gene Therapy Program Update

A PHASE 1/2 STUDY TO ASSESS THE SAFETY AND EFFICACY OF OCU400 (MODIFIER GENE THERAPY) FOR RETINITIS PIGMENTOSA ASSOCIATED WITH *NR2E3* AND *RHO* MUTATIONS AND LEBER CONGENITAL AMAUROSIS WITH MUTATION(S) IN *CEP290* GENE

Forward Looking Statements

This presentation contains forward-looking statements within the meaning of The Private Securities Litigation Reform Act of 1995, which are subject to risks and uncertainties, including, but not limited to, statements regarding the development of OCU400 and the interpretation of preliminary clinical trial results. We may, in some cases, use terms such as “predicts,” “believes,” “potential,” “proposed,” “continue,” “estimates,” “anticipates,” “expects,” “plans,” “intends,” “may,” “could,” “might,” “will,” “should,” or other words that convey uncertainty of future events or outcomes to identify these forward-looking statements. Such statements are subject to numerous important factors, risks, and uncertainties that may cause actual events or results to differ materially from our current expectations, including, but not limited to, the risk that preliminary clinical data may not be indicative of final clinical data or data in later stage clinical trials. These and other risks and uncertainties are more fully described in our periodic filings with the Securities and Exchange Commission (SEC), including the risk factors described in the section entitled “Risk Factors” in the quarterly and annual reports that we file with the SEC. Any forward-looking statements that we make in this presentation speak only as of the date of this presentation. Except as required by law, we assume no obligation to update forward-looking statements contained in this presentation whether as a result of new information, future events, or otherwise, after the date of this presentation.

Today's Agenda

Opening	Shankar Musunuri, PhD, MBA Chairman, CEO and Co-founder, Ocugen
Overview of Preliminary Safety and Efficacy Results	Arun Upadhyay, PhD Chief Scientific Officer, Head of Research, Development and Medical, Ocugen
Closing	Shankar Musunuri, PhD, MBA

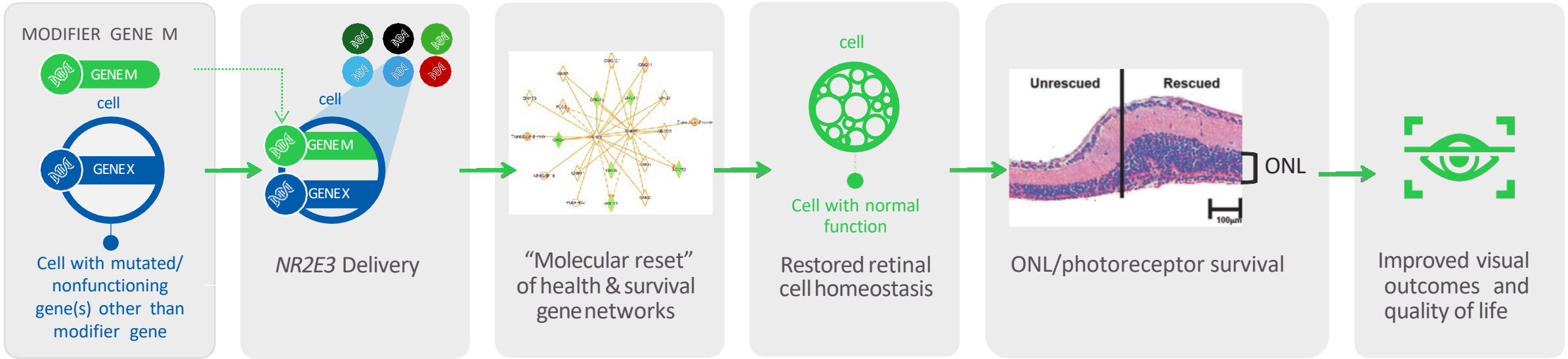
Q&A

- Huma Qamar, MD, MPH, Head of Clinical Development and Medical Affairs, Ocugen
- David Birch, PhD, Scientific Director, Retina Foundation of the Southwest, Primary Investigator of the Study
- Neena B. Haider, PhD, Fellow of ARVO and Inventor of Modifier Gene Therapy

Modifier Gene Therapy: A Broader Reach

Gene modifier therapy can potentially address multiple genetic defects with a single product utilizing a gene agnostic approach.

In patients with IRDs, this could mean:



Study Overview

Primary Endpoint: Safety

Safety of subretinal administration of OCU400

Exploratory Endpoint: Efficacy

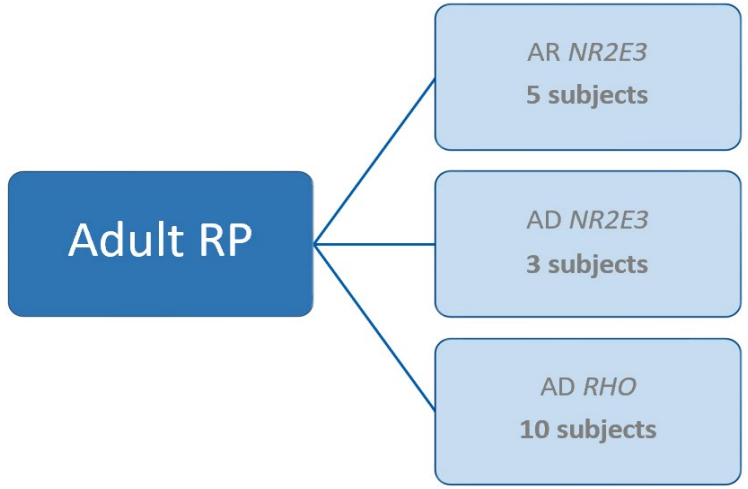
Multi-Luminance Mobility Test (MLMT)

Best Corrected Visual Acuity (BCVA)

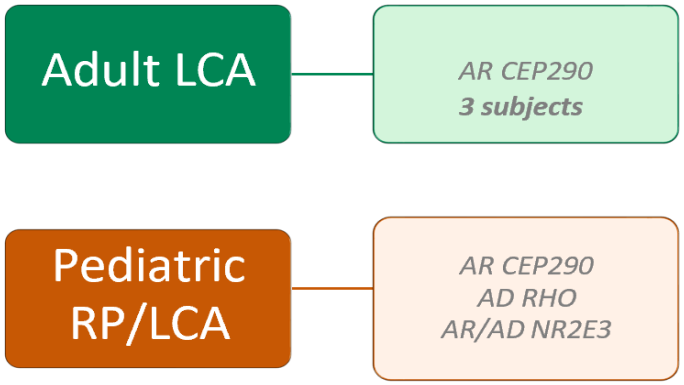
Clinical Trials.gov Identifier: **NCT05203939**

Enrollment Status

COMPLETED



ENROLLING



Multi-Luminance Mobility Test

	Total Subjects for analyses (N=7) Subjects with 9-months follow-up : Cohort 1, N=3 Subjects with 6 months follow-up: N=1 from Cohor1 and N=3 from Cohort 2	
	Improvement ≥ 1 Lux	**Improvement ≥ 2 Lux**
Treated Eye	71.4%	28.6%
Untreated Eye	28.6%	0.0%

- 100% of treated eyes showed stability or improved MLMT scores
- 71.4% of treated eyes improved by at least 1 Lux Level vs ONLY 28.6% of untreated eyes
- 28.6 % of treated eyes improved by at least 2 Lux Level vs 0 % of untreated eyes

One subject had advanced RP at baseline with subsequent foveal detachment

MLMT is used as efficacy measure to assess visual function

ocugen

Best Corrected Visual Acuity (BCVA) Score

	Total Subjects for analyses (N=7) Subjects with 9-months follow-up : Cohort 1, N=3 Subjects with 6 months follow-up: N=1 from Cohor1 and N=3 from Cohort 2
	Improvement ≥ 8 Letters
Treated Eye	42.9%
Untreated Eye	0.0%

OCU410: Dry Age-related Macular Degeneration (dAMD) and Stargardt Disease (STGD)

Dry AMD

Limited options, presenting significant unmet medical need

- US: 10M
- Worldwide: condition affects more than 266M people

Stargardt--an orphan disease

No treatment options exist

- US: 35,000
- Worldwide: condition affects approximately 800,000 people

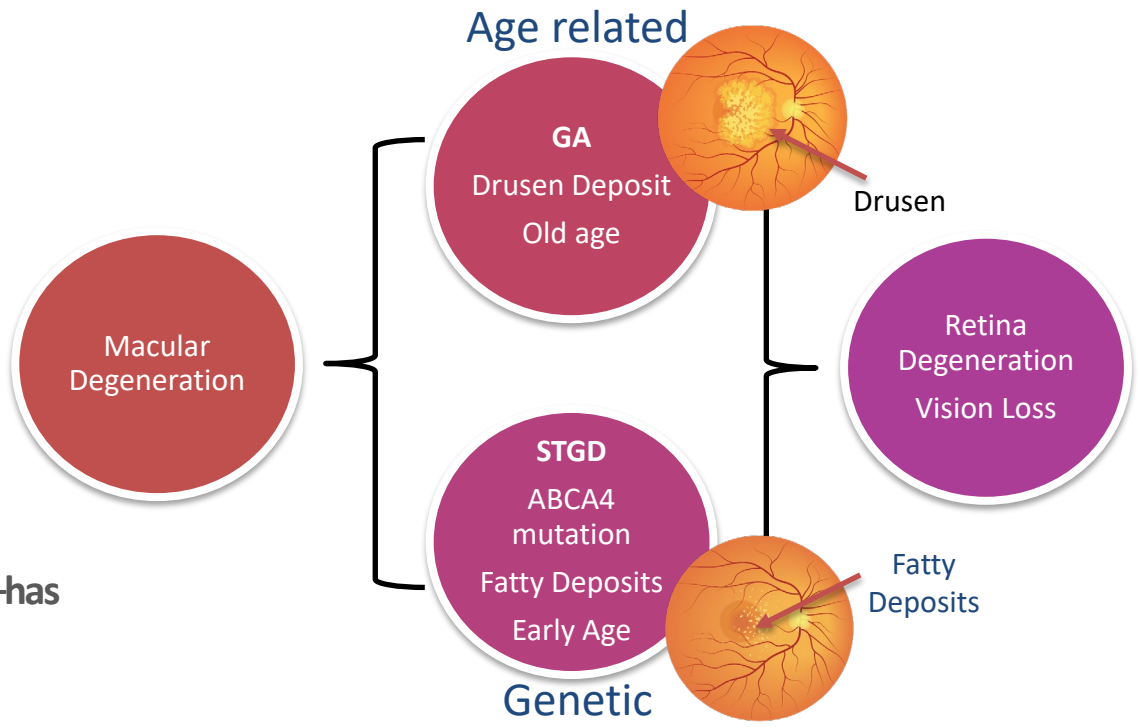
Recently approved therapy for geographic atrophy (GA)—advanced form of dAMD–has limitations

- Frequent intravitreal injections (N ~6-12 doses per year); Patient compliance
- Limited effect of GA lesion growth rate
- Approximately 12% of patients experience neovascular AMD when the drug is administered every month for two years

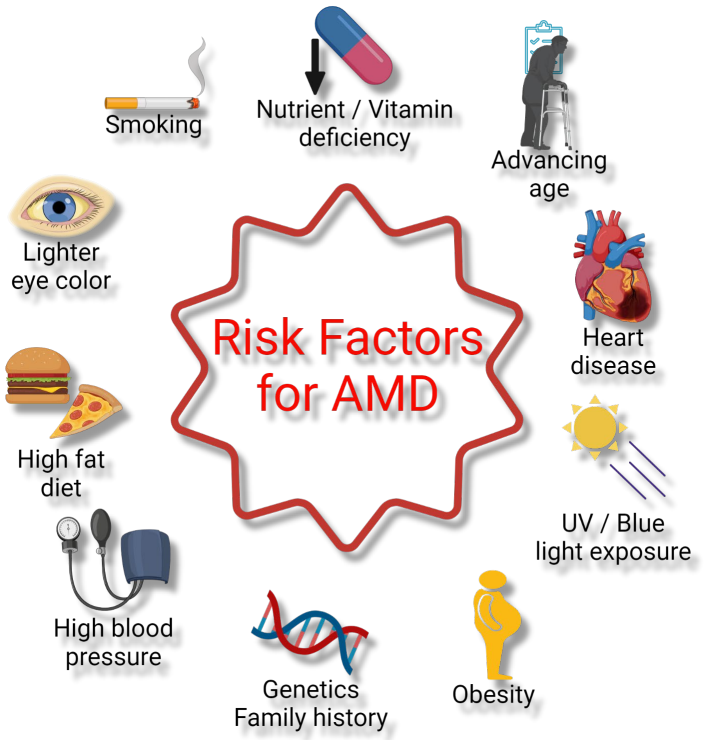
OCU410 addresses shortcomings of current approaches

- Broad-spectrum, gene-agnostic approach
- Potential one-time, curative therapy with a ***single*** sub-retinal injection, using RORA

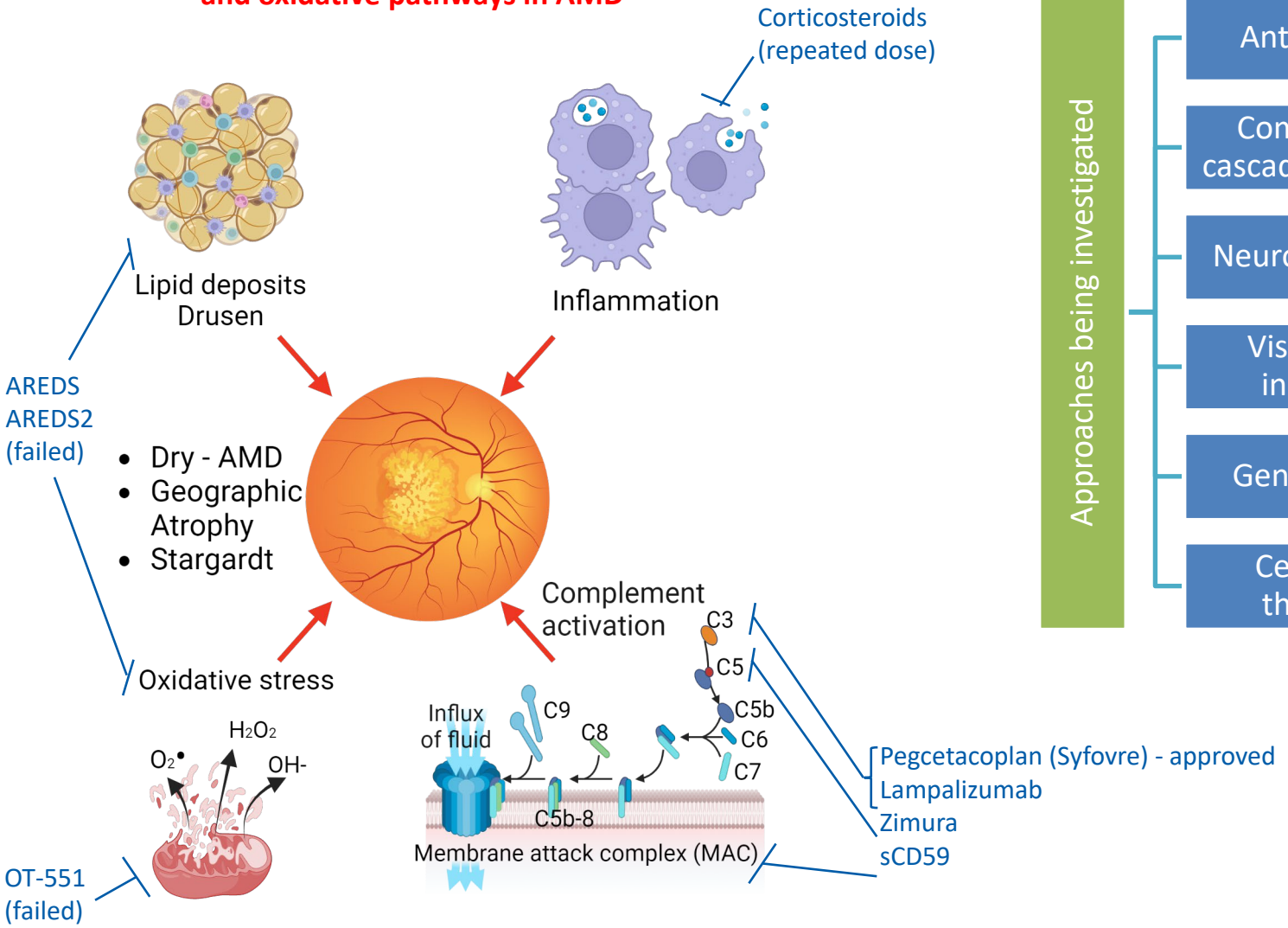
Plan to Initiate Phase 1/2 clinical trial in 2Q 2023



AMD: Risk Factors, Treatment Options and Unmet Needs



A strong role of inflammation, complement, and oxidative pathways in AMD

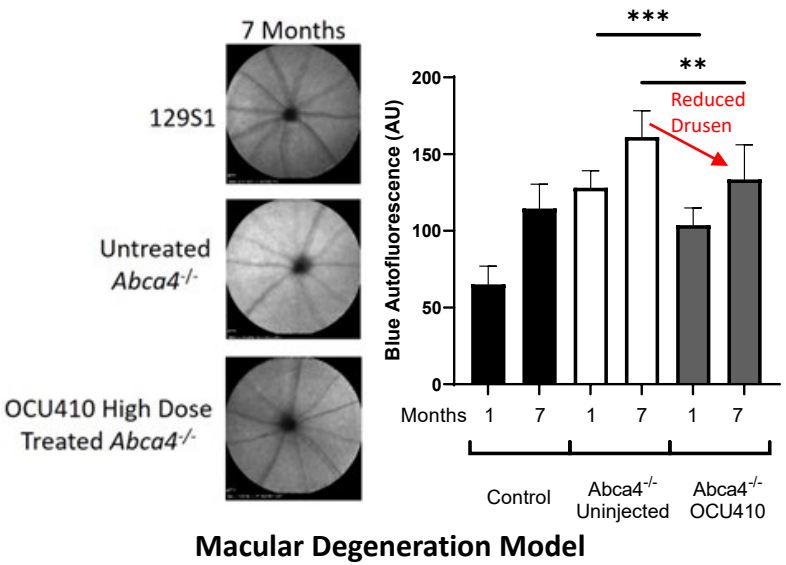


Approaches being investigated

- Antioxidants
- Complement cascade inhibitors
- Neuroprotective
- Visual cycle inhibitors
- Gene therapy
- Cell-based therapies

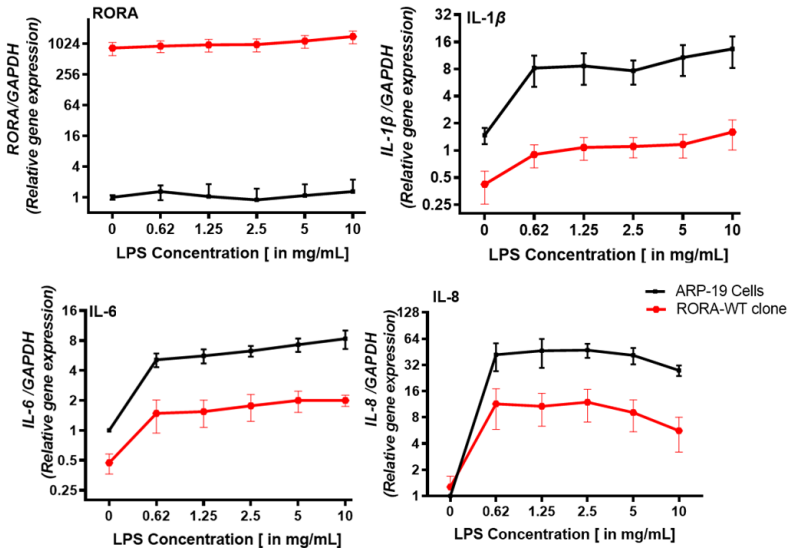
OCU410 (RORA): A Potential Modifier Therapeutic for Dry-AMD and STGD

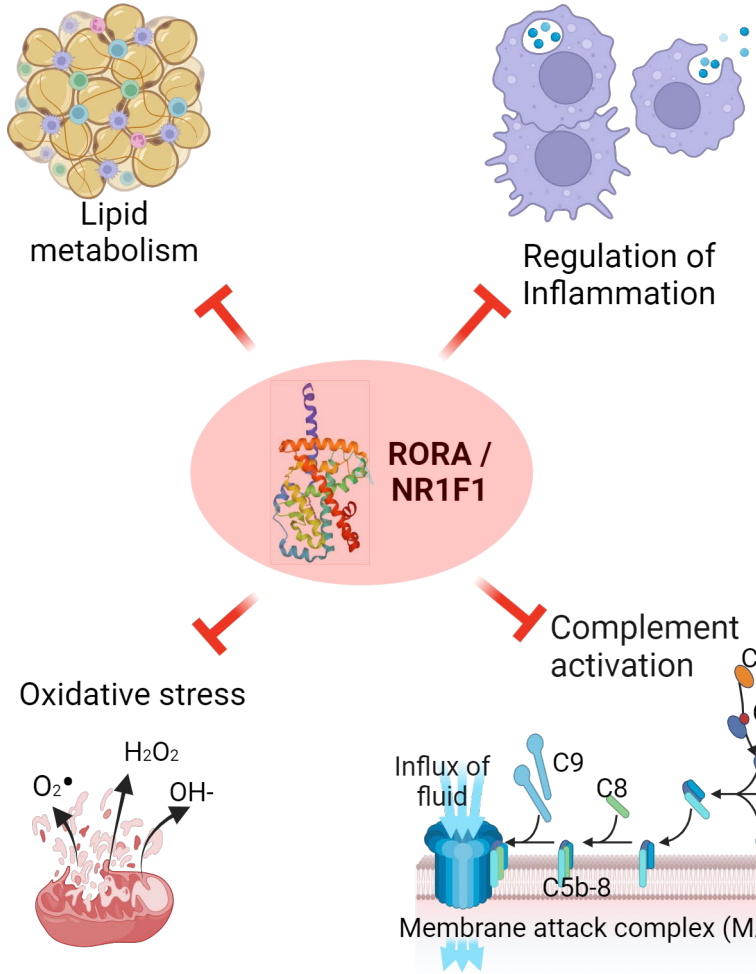
Anti-drusen activity and improves retinal function



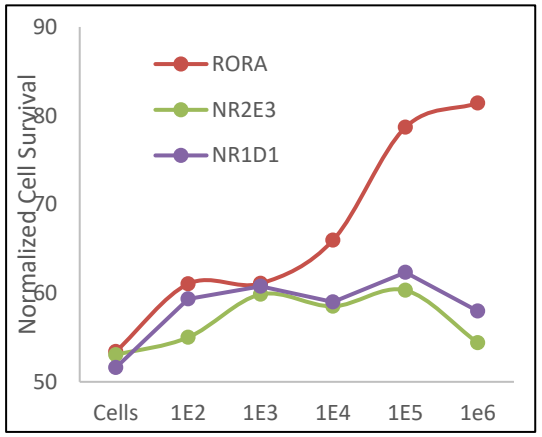
Macular Degeneration Model

Anti-inflammatory: Suppresses inflammation in HMC3 cells

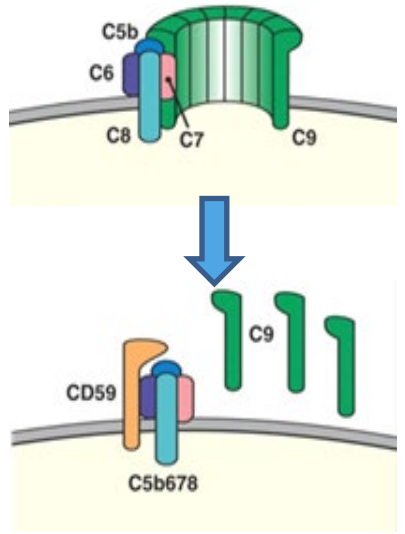


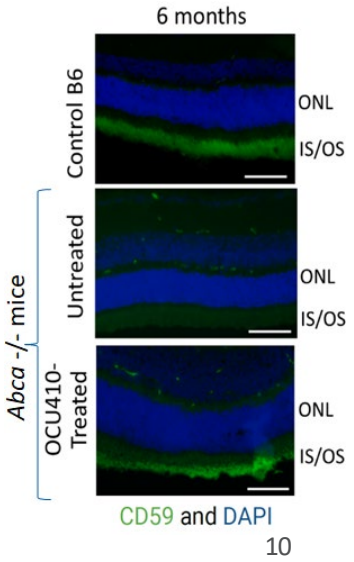


Anti-oxidative: Improves ARPE19 cells survival



Anti-complement: Increased anti-compliment (Cd59) protein





Q&A

Ocugen™ Vision

Fully integrated, patient-centric biotech company focused on vaccines in support of public health and gene and cell therapies targeting unmet medical needs through **Courageous Innovation**