



Our Mission is to

Develop **Gene Therapies** to Cure
Blindness Diseases

and

Develop a **Vaccine** to Save Lives
from COVID-19

NASDAQ: OCGN

Corporate Deck: July 2021



Forward Looking Statement

This presentation contains forward-looking statements that involve substantial risks and uncertainties. All statements, other than statements of historical facts, contained in this presentation, including statements regarding our business strategy, future results of operations and financial position, prospective products, product approvals, research and development costs, timing and likelihood of success, estimated market size or growth, and plans and objectives of management for future operations, are forward-looking statements. When used in this presentation, the words “anticipate,” “believe,” “contemplate,” “continue,” “could,” “estimate,” “expect,” “intend,” “may,” “plan,” “potential,” “predict,” “project,” “should,” “target,” “would,” and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words.

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Ocugen Overview

VACCINE	<ul style="list-style-type: none">• COVAXIN™: Whole-virion inactivated COVID-19 vaccine candidate (with adjuvant). Licensed rights from Bharat Biotech for the US and Canadian markets (currently received EUA in India). Standard vaccine storage condition (2-8°C)• Demonstrated 77.8% overall efficacy, 93.4% in severe COVID-19 disease (including hospitalization) and 65.2% efficacy against Delta variant in Phase 3 trial by Bharat Biotech• Phase 3 clinical trial enrolled 25,800 participants between 18-98 years of age, including 2,760 over the age of 60 and 7,058 with at least one pre-existing condition. Phase 1/2 enrolled 755 participants• Potential coverage against multiple protein antigens of the virus and potentially applicable to broader population, including 12–17-year-olds (as seen in Phase 2 study)• Effectively neutralizes additional Kappa, Zeta, and Alpha variants of SARS-Cov-2, reducing the possibility of mutant virus escape
MODIFIER GENE THERAPY PLATFORM	<ul style="list-style-type: none">• Potential for one product to treat many diseases & multi-factor approach (POC study results published in Nature)• OCU400 (AAV-hNR2E3): Orphan medicinal product designation for the treatment of both retinitis pigmentosa (RP) and Leber Congenital amaurosis (LCA) covering diseases caused by mutations in over 175 genes. Initiation of Phase 1/2a this year• OCU410 (AAV-hRORA): Potential to treat dry age-related macular degeneration (Dry AMD) through multi-factor treatment approach – initiation of Phase 1/2 in 2022• Strategic manufacturing partnership with CanSinoBio (~\$13B market cap) – sets clear path for critical manufacturing
NOVEL BIOLOGIC	<ul style="list-style-type: none">• OCU200: Targeting major retinal diseases: Diabetic Macular Edema (DME), Diabetic Retinopathy (DR), and Wet Age-Related Macular Degeneration (Wet AMD) (estimated global market size over \$10B) – initiation of Phase 1/2 in 2022• Novel MoA: Potential to initially treat non-responders to anti-VEGF/ therapies (~50% of patients)

Leadership Team



Shankar Musunuri, PhD, MBA
Chairman, CEO and Co-Founder



Sanjay Subramanian, MBA
CFO and Head of Corporate Development



Bruce D. Forrest, MB, BS, MD, MBA
Acting CMO



J.P. Gabriel
SVP, Manufacturing & Supply Chain



Vijay Tammara, PhD
SVP, Regulatory & Quality



Michael Shine, MBA
SVP, Commercial



Arun Upadhyay, PhD
VP, Head of Research & Development



Jessica Crespo, CPA
Corporate Controller and Treasurer



Zara Gaudioso, SHRM-CP
Head of Human Resources



Scientific Advisory Boards

Retina Scientific Advisory Board



David Boyer, MD



Carl D. Regillo, MD, FACS



Mark Pennesi, MD, PhD



Geeta Lalwani, MD



Vaccine Scientific Advisory Board



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Bruce D. Forrest, MB, BS, MD, MBA



Catherine Pachuk, PhD



Harvey Rubin, MD, PhD



Susan Weiss, PhD



Pipeline and Regulatory overview

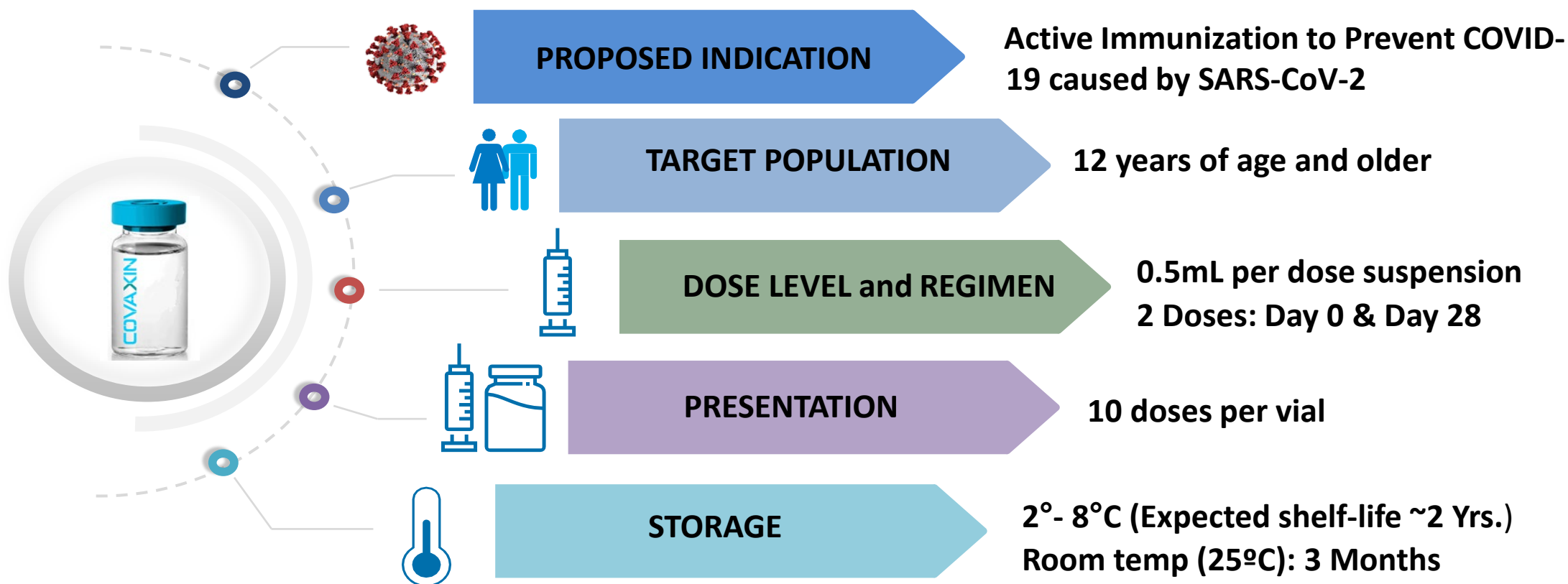
	Asset/Program	Indication	Phase	Notes
<div>VACCINE</div> <div>MODIFIER GENE THERAPY PLATFORM</div> <div>NOVEL BIOLOGIC</div>	COVAXIN™ Whole-Virion Inactivated Vaccine	COVID-19	Phase 3*	Discussions with FDA and Health Canada ongoing
	OCU400 AAV-hNR2E3	NR2E3 Mutation – Associated Retinal Degeneration**	IND-Enabling	Orphan designation US & EU [†]
		RHO Mutation – Associated Retinal Degeneration**	IND-Enabling	
		CEP290 Mutation – Associated Retinal Degeneration**	IND-Enabling	
		PDE6B Mutation – Associated Retinal Degeneration**	IND-Enabling	
	OCU410 AAV-hRORA	Dry Age-Related Macular Degeneration (Dry AMD)	Preclinical	
	OCU200 Transferrin – Tumstatin	Diabetic Macular Edema	Preclinical	
		Diabetic Retinopathy	Preclinical	
		Wet Age-Related Macular Degeneration (Wet AMD)	Preclinical	

COVAXIN™

**Whole-Virion Inactivated COVID-19 Vaccine
Licensed from Bharat Biotech (BBIL) for the
US and Canadian Markets**

COVAXIN™ - Product Profile

Whole virion inactivated SARS-CoV-2 (NIV-2020-770)
Antigen concentration & Adjuvant: 6µg + Algel-IMDG(TLR7/8)



Why COVAXIN™

Designed to fill a significant unmet need in our North American arsenal of vaccines against COVID-19

B

Broad Spectrum Immune Response

Both humoral & cellular responses generated against multiple viral proteins
Induces a Th1 response (cell-mediated immunity)

E

Efficacy → 77.8% Efficacy Demonstrated in Phase 3 Trial (93.4% against severe)

Effective in neutralizing multiple variants, including rapidly-spreading Delta variant (65.2% efficacy)
Potentially serve as a universal booster to minimize/eliminate viral escape and control the Pandemic

S

Safe in 12+ (Demonstrated in Phase 2 clinical trial)

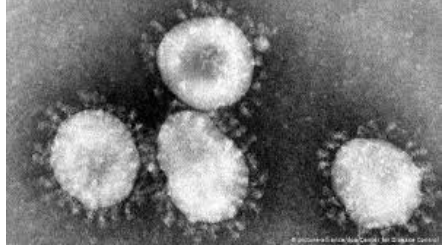
Proven technology platform and supply chain currently used for several licensed vaccines (Influenza, Polio, Rabies, JEV etc.).
Historically demonstrated acceptable safety, tolerability and efficacy consistent with adults

T

Transportation and Storage Ease

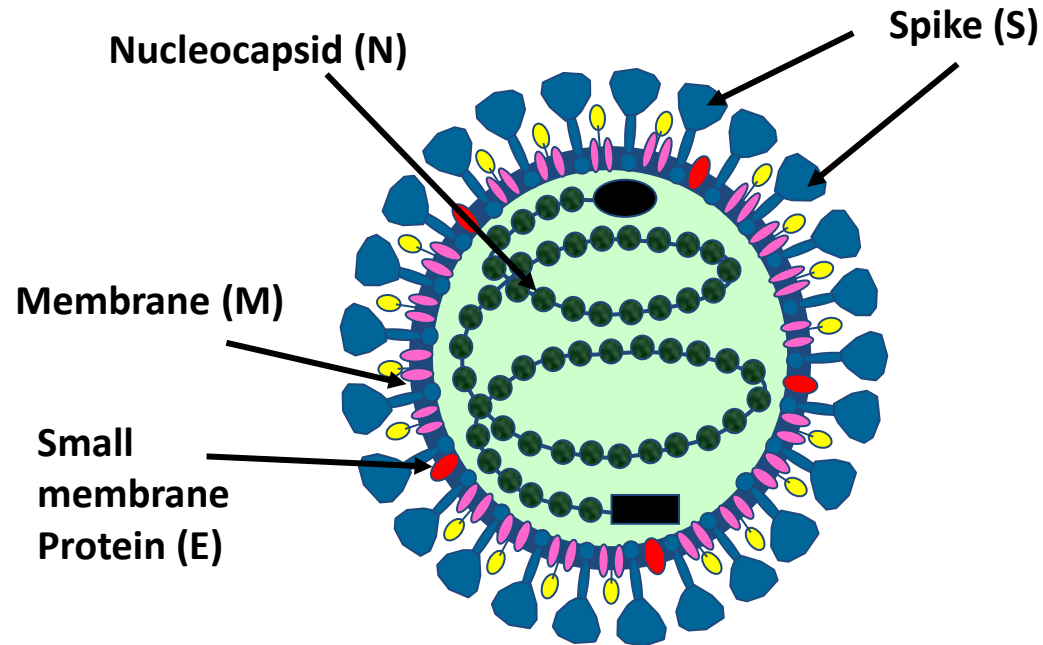
Stable for 3 months at room temperature
Can be stored in standard conditions (2° - 8°C) for several years. Can be stockpiled.

COVAXIN™ Presents Multiple Protein Targets to the Immune System Resulting in Broad Spectrum Response

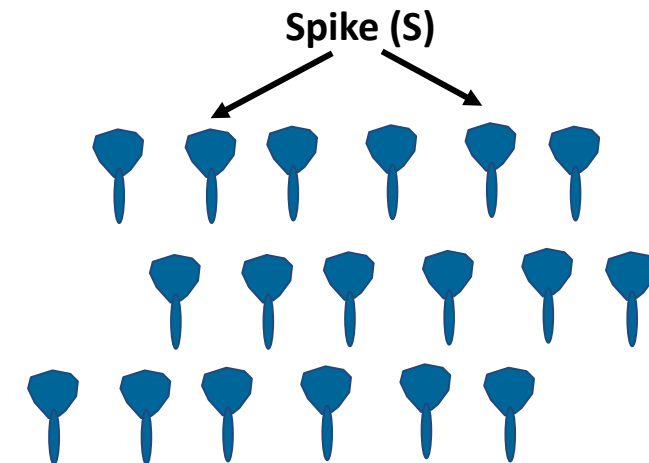


COVAXIN™, an adjuvanted inactivated virus vaccine candidate, elicited strong IgG responses against spike (S1) protein, receptor-binding domain (RBD), and the nucleocapsid (N) protein of SARS-CoV-2 along with strong cellular responses

COVAXIN™



mRNA and Adenovirus-Based Vaccines

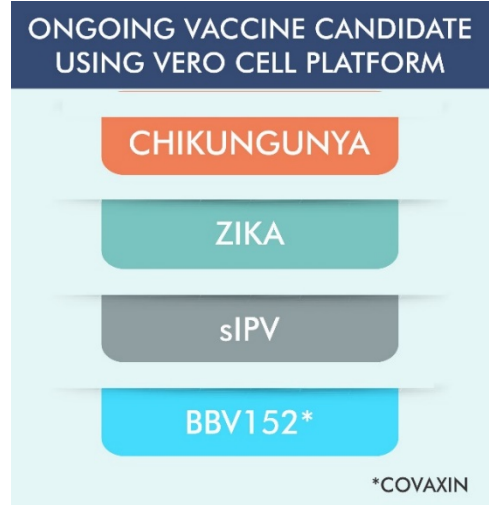


COVAXIN™ Developed and Manufactured by Bharat Biotech

Established Robust Manufacturing Process for COVAXIN

Ocugen licensed COVAXIN™ on the back of Bharat's strong track record of developing & commercializing vaccines globally

Inactivated Vero cell derived vaccines are proven, time-tested and long-lasting. A few include:



COVAXIN™ is Distinct Amongst Leading COVID-19 Vaccines and Select Vaccine Candidates in the United States and Canada

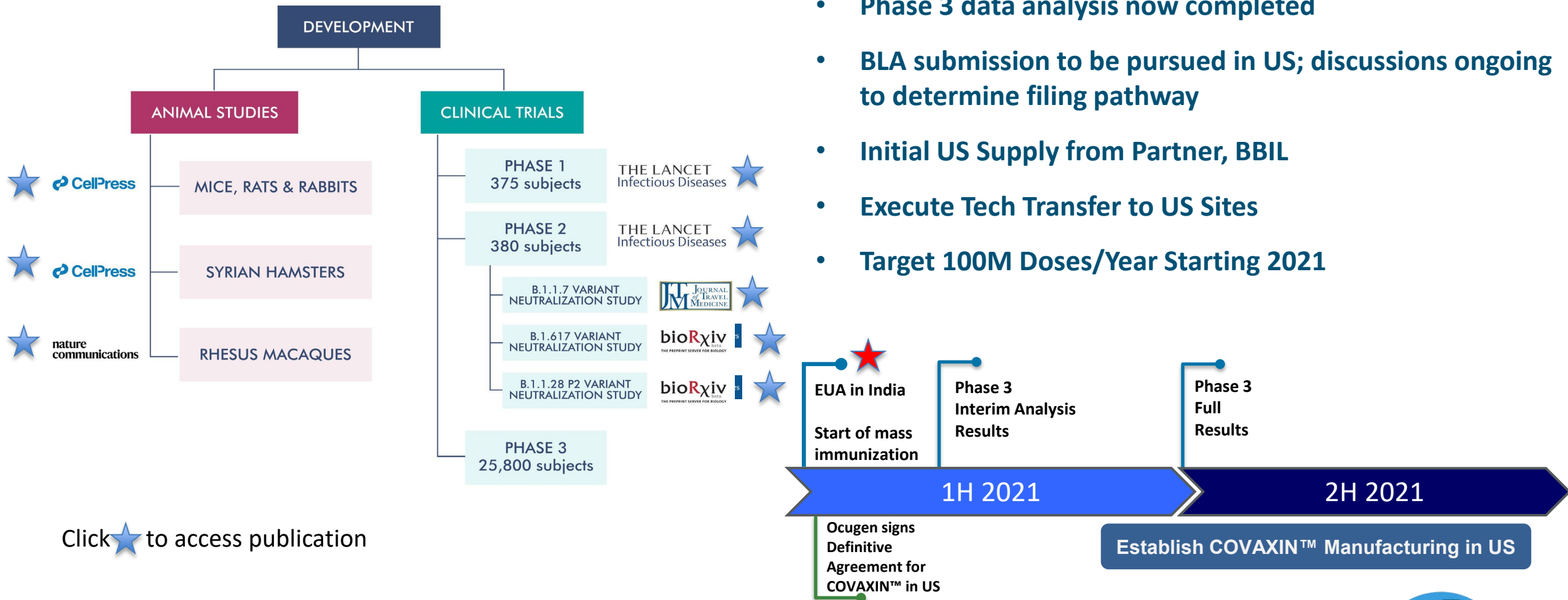
Company	Technology	Antigen	Status in US & Canada
COVAXIN™	Inactivated SARS CoV-2 Virus, Aluminum hydroxide, TLR agonist	Whole virus (Including S & N Proteins)	BLA submission to be pursued in US; regulatory pathway in process in Canada
Pfizer/ BioNTech	Lipoplex of SARS CoV-2 S protein mRNA	S protein	EUA in US; Authorized by Interim Order in Canada
Moderna	Lipoplex of SARS CoV-2 S protein mRNA	S protein	EUA in US; Authorized by Interim Order in Canada
AstraZeneca	Non-replicating infectious Adenovirus	S protein	Authorized by Interim Order in Canada
Johnson & Johnson	Non-replicating infectious Adenovirus	S protein	EUA in US; Authorized by Interim Order in Canada

Technology Comparisons: Target Product Profile

Characteristic	mRNA	Adeno- Based	COVAXIN™
Acceptable Safety	✓	✓	✓
Neutralizing antibody response	✓	✓	✓ ⁺
Cellular responses against multiple viral antigens	✓	✓	✓ ⁺
Efficacy	✓	✓	✓ ⁺
Stability at 2-8°C	✗	✓	✓
Multiple Viral Antigens	✗	✗	✓

“+” : B and T cell immune responses to multiple proteins, Safety and Efficacy in Phase 3 clinical trial by Bharat Biotech

COVAXIN™ Progress and Planned Milestones for U.S. Dev.



FINAL Phase 3 Clinical Trial Results Demonstrate Protective Effect of COVAXIN™

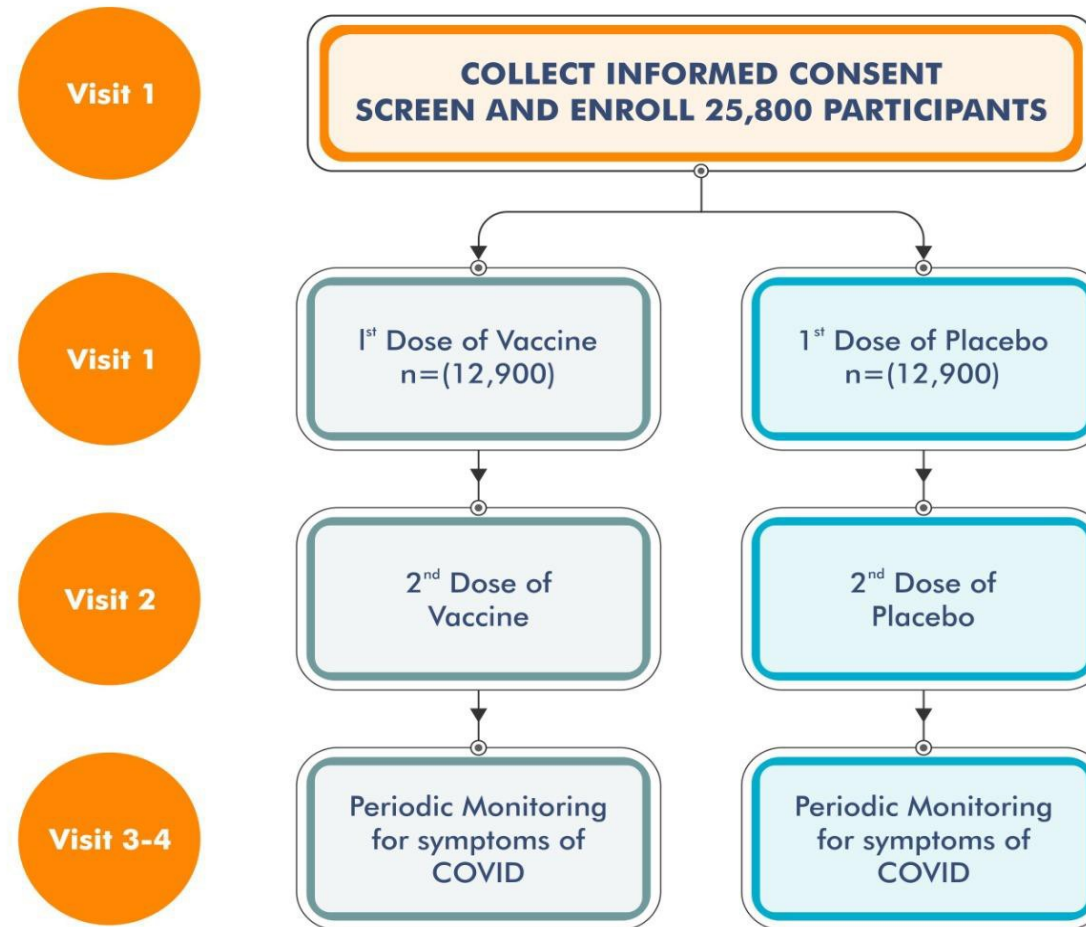
Fast facts of a double-blind, randomized, multicenter, Phase 3 clinical trial

- Participants recruited between November 2020 and January 2021 across 25 sites
- 1:1 randomization among healthy adults (age 18-98 years)
- n = 25,798
- Primary endpoint: Preventing symptomatic COVID-19 occurring at least 14 days after second dose
- Secondary endpoint: Efficacy in subgroups based on age (18 – 59 years; ≥60 years)
- Evaluated safety, reactogenicity and consistency of immune responses

- ✓ **Overall vaccine efficacy: 77.8%** (95% CI: 65.2 – 86.4)
- ✓ **Efficacy against severe disease: 93.4%** (95% CI: 57.1 – 99.8)
- ✓ **Efficacy against asymptomatic disease: 63.6%** (95% CI: 29.0 – 82.4)
- ✓ **Safety outcomes: 12.4%** reported adverse events (AE) in both vaccine and placebo arms (p<0.05)
 - Most frequently reported systemic AEs included headache, followed by pyrexia, fatigue and myalgia
 - Serious AEs were reported by <0.5% of clinical trial participants
- ✓ **Demonstrated efficacy against B.1.617.2 (Delta): 65.2%** (95% CI: 33.1 – 83.0)
 - *First Phase 3 clinical trial to include Delta variant data*

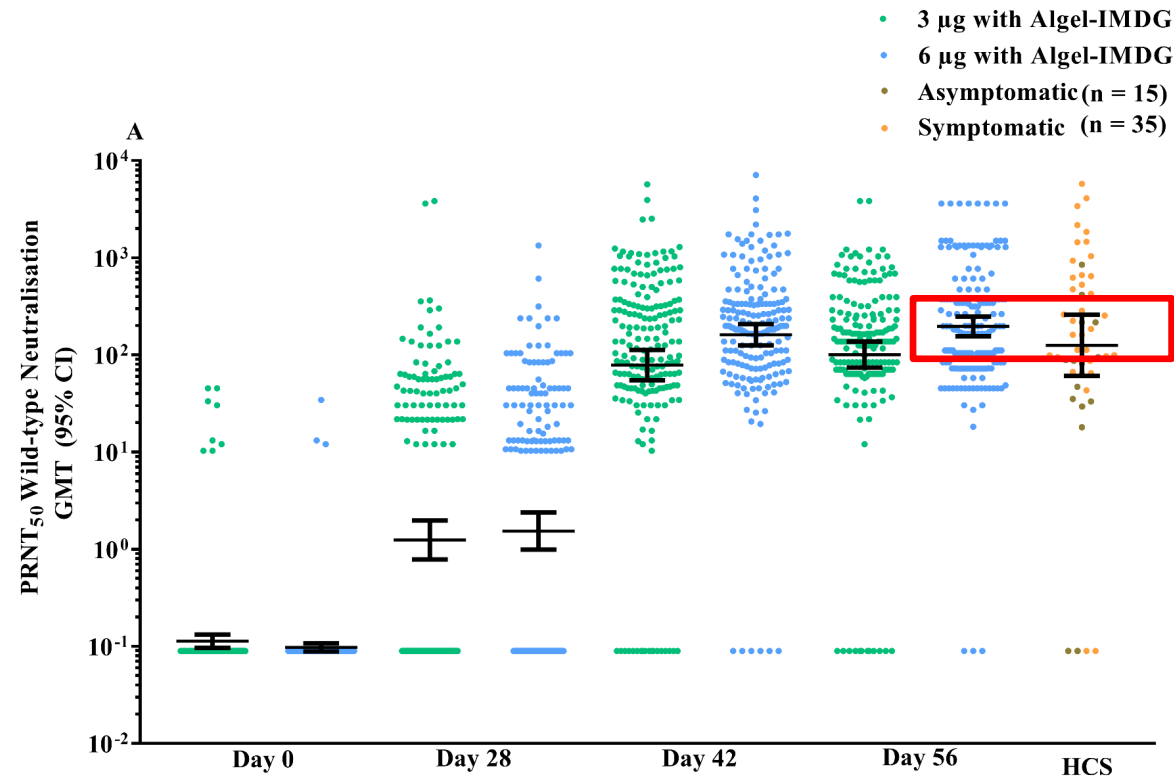
Source: Efficacy, safety, and lot to lot immunogenicity of an inactivated SARS-CoV-2 vaccine (BBV152): a, double-blind, randomised, controlled phase 3 trial; Ella, Reddy, Blackwelder, Potdar, et al.; [medRxiv 2021.06.30.21259439](https://doi.org/10.1101/2021.06.30.21259439); accessed July 7, 2021

Phase 3: Study Outline

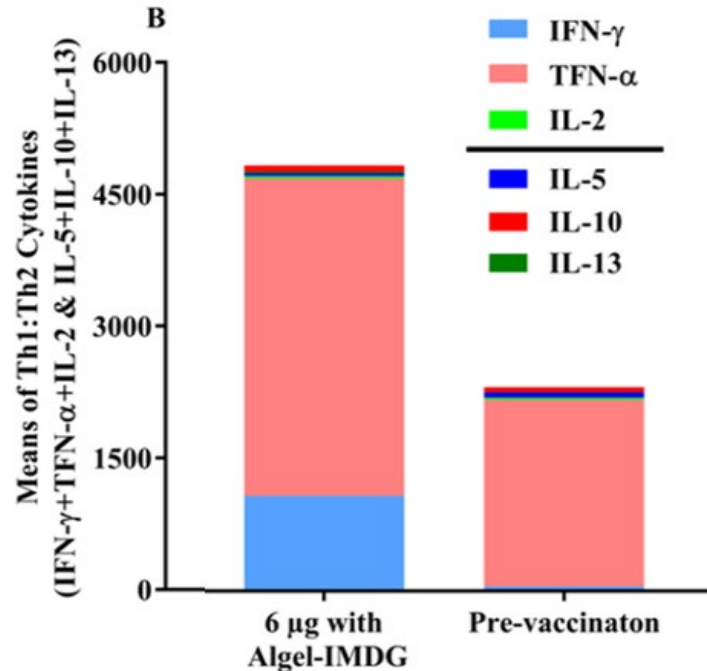
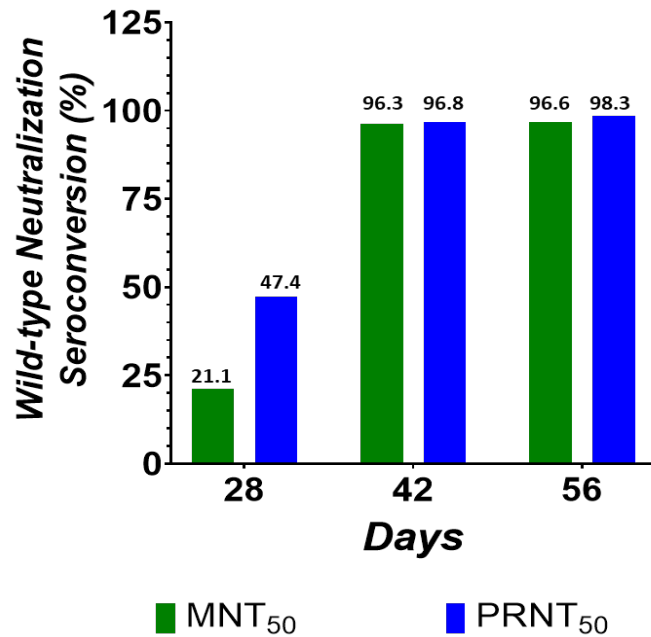


Phase 2: Study Results

- **6 μ g +Algel-IMDG** demonstrated high neutralizing Abs responses **compared to 3 μ g + Algel-IMDG group**
- Mean GMT (95% CI) **higher than human convalescent serum (HCS)**
- 6 μ g +Algel-IMDG (**Covaxin™**) selected for Phase 3 study



Phase 2: Study Results



Safety

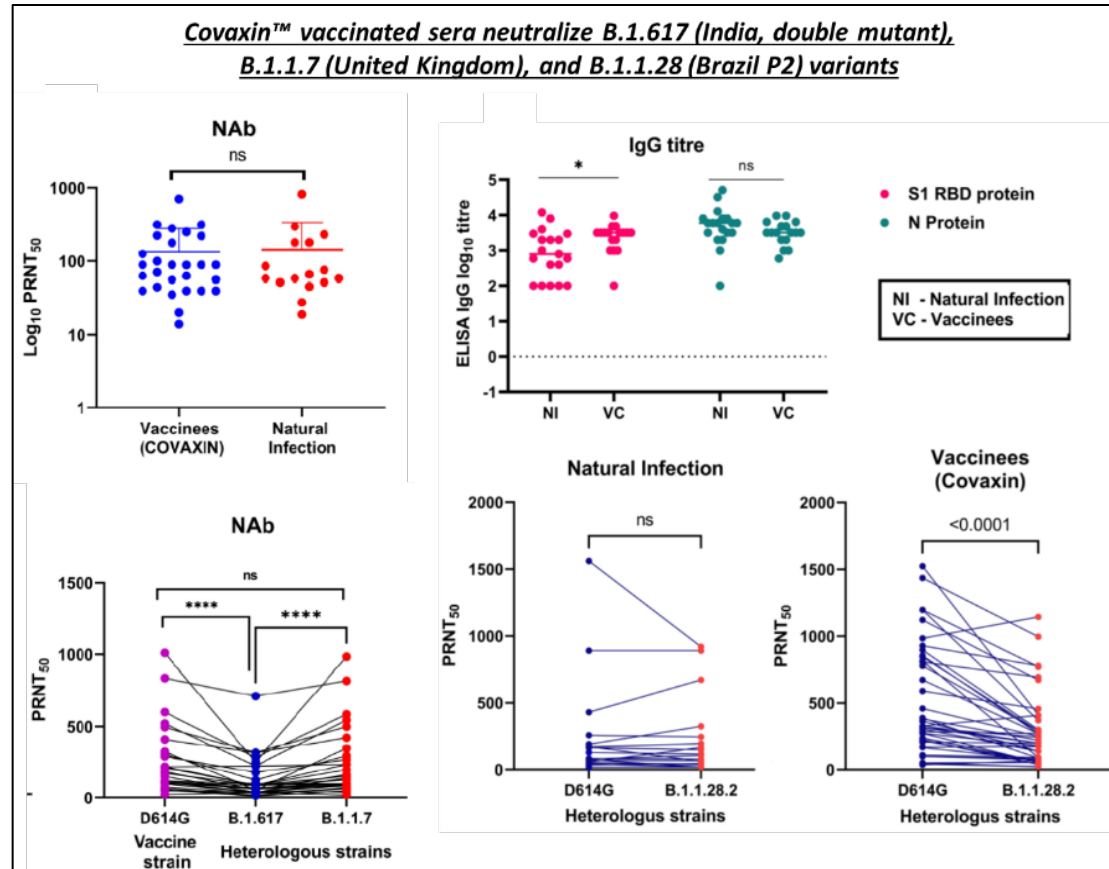
Events	Rate (%)	CI
Local	4.2% (1.8, 8.1)	95%
Systemic	7.4% (4.1, 12.1)	95%
Serious	0%	
Combined	10.3% (7.4, 13.8)	95%

- High Seroconversion rates (>96%) in both MNT50 and PRNT50 measured up to day 56
- Induction of Th1 cell mediated immunity as measured by IFN- γ , IL-2, TNF- α

- No vaccine-related severe or life-threatening adverse events reported to date

Additional Research Demonstrating Effect Against Multiple Variants

- COVAXIN-vaccinated sera effectively neutralized several SARS-CoV-2 variants in an in-vitro plaque reduction neutralization assay



- ✓ [B.1.617 \(India - Kappa\)](#)
- ✓ [B.1.1.7 \(United Kingdom - Alpha\)](#)
- ✓ [B.1.1.28 \(Brazil P2 - Zeta\)](#)

- The study was conducted by Indian Council of Medical Research (ICMR)-National Institute of Virology
- These studies suggest that COVAXIN vaccination may be effective against multiple SARS-CoV-2 variants.

Ocugen's Modifier Gene Therapy Platform

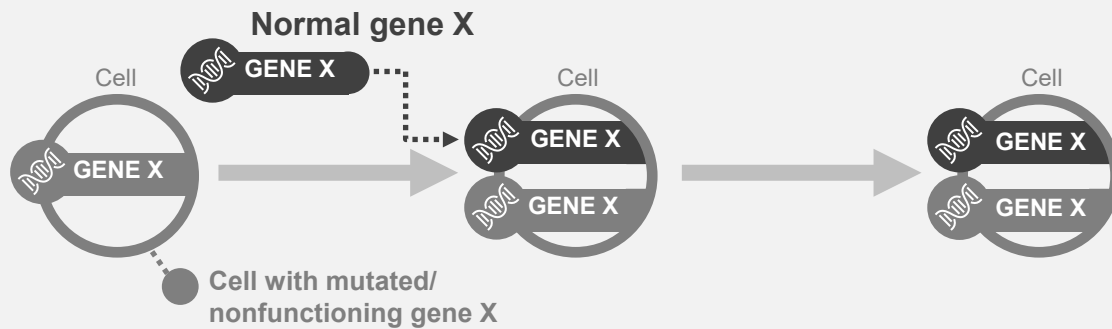
Breakthrough Technology Designed to

Address Multiple Diseases with One Product

Approach Complex Diseases Through Multiple Factors

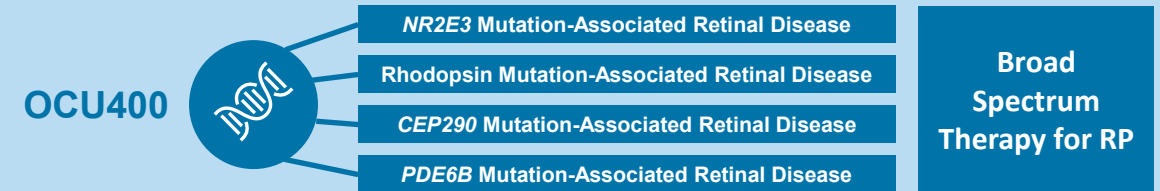
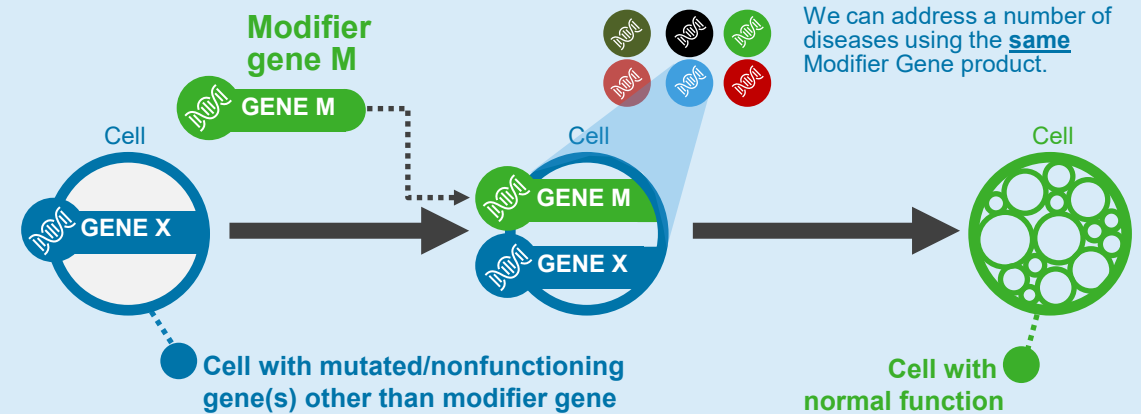
Traditional Approach vs. Ocugen's Novel Platform

Gene Augmentation: Transfer functional version of a non-functional gene into the target cells.



- ✓ Traditional approach that targets one individual gene mutation at a time
- ✓ Regulatory pathway focused on specific product for one disease
- ✓ Longer time to recoup development costs

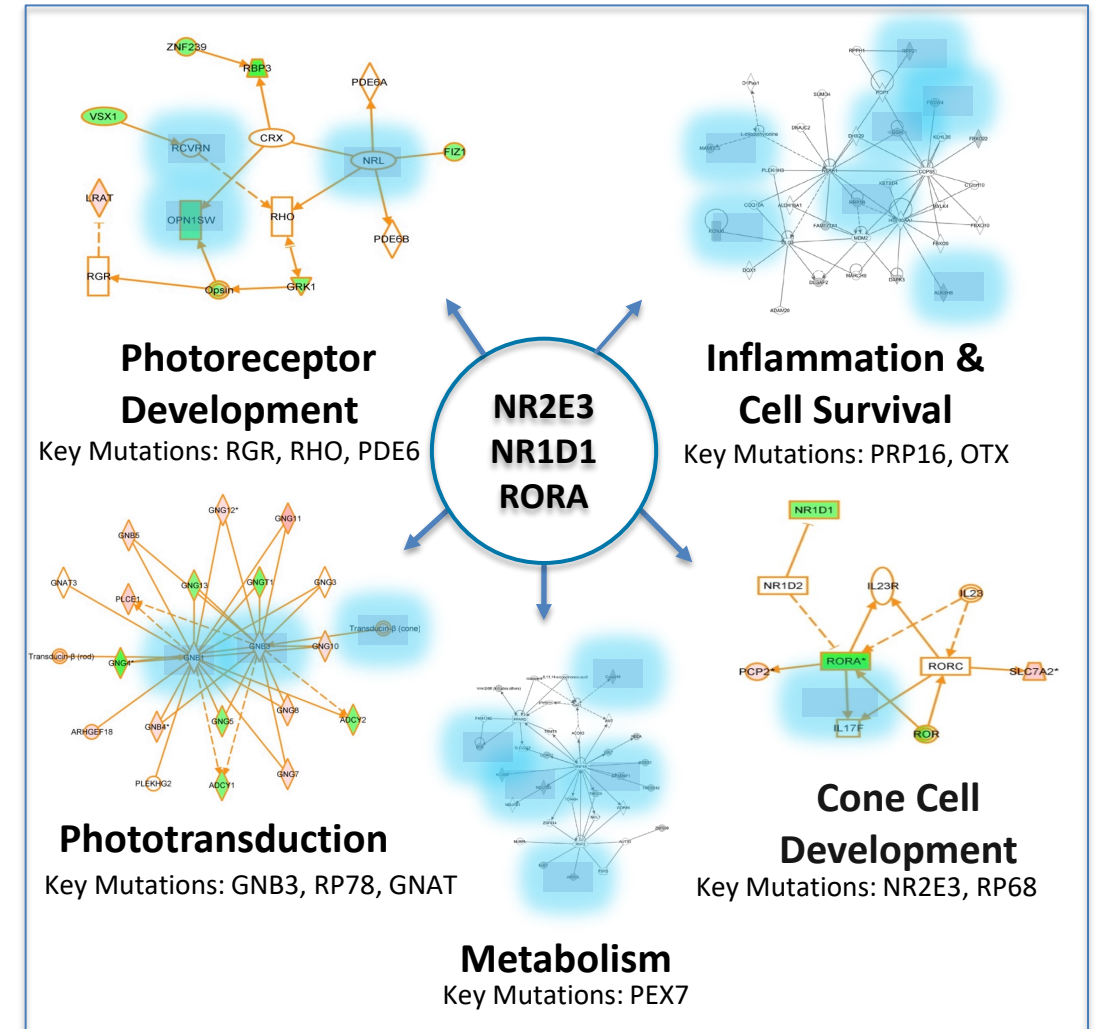
Modifier Gene Therapy: Introduce a functional gene to modify the expression of many genes, gene-networks and regulate basic biological processes in retina



- ✓ Novel approach that targets nuclear hormone genes (NHRs), which regulate multiple functions within the retina
- ✓ Smoother regulatory pathway due to ability to target multiple diseases with one product
- ✓ Ability to recoup development costs over multiple therapeutic indications

Why Target Nuclear Hormone Receptor Genes (NHRs)?

- Modulators of retinal development & function
- Act as “master genes” in the retina
- Molecular reset of key transcription factors and associated gene networks – retinal homeostasis
- Gene modifier concept including impact on clinical phenotypes is well known in other disease areas, CF and SMA *



Nature Gene Therapy Publication

Preclinical POC Data for *Nr2e3* Published in *Nature Gene Therapy*

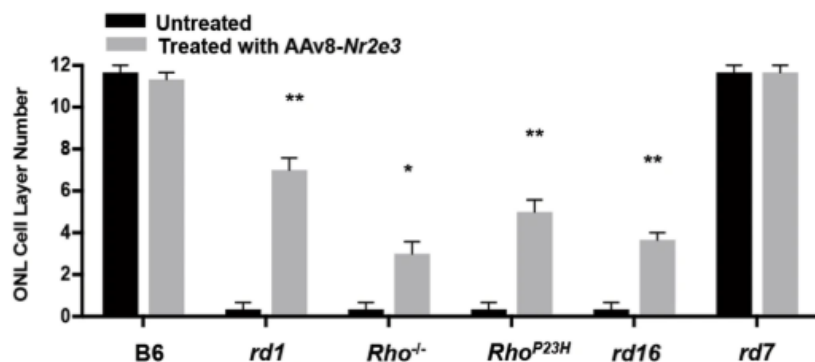
- Efficacy results shown in 5 unique mouse models of RP
- Technology developed at Harvard Medical School, Dr. Neena Haider's Lab
- Study demonstrates potency of modifier gene therapy to elicit broad-spectrum therapeutic benefits in early and advanced stages of RP
- Results show evidence of vision rescue in Early & Advanced Stages of disease



- Important milestone for development of therapy; demonstrated proof of principle
- Protection elicited in multiple animal models of degeneration caused by different mutations
- Potential to represent first broad-spectrum therapy and to provide rescue even after disease onset

OCU400 – Rescue in Early & Advanced Stage of Disease

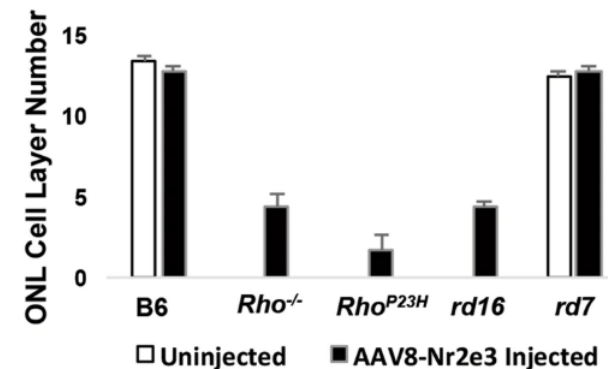
Early Stage Rescue



- P0 single subretinal injection, evaluation 3-4 months post injection
- *rd1* evaluated one-month post injection

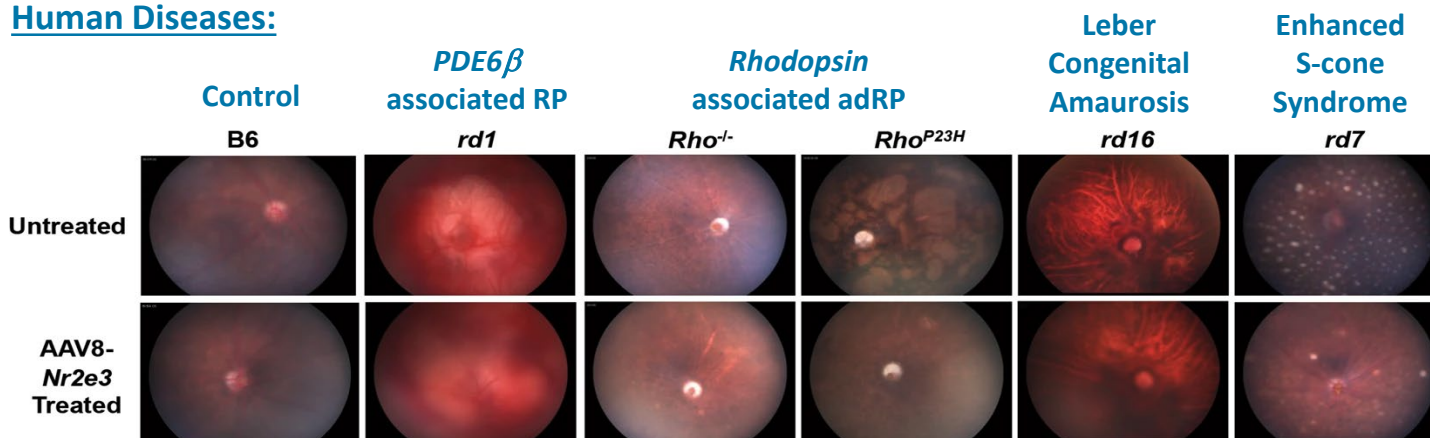
ONL: Outer Nuclear Layer

Advanced Stage Rescue



- P21 subretinal injection, evaluation 2–3 months post injection
- Restored ONL photoreceptors morphology in *rd7*
- ONL cell layer change in *rd7* model doesn't progress until 4-5 mos. of age

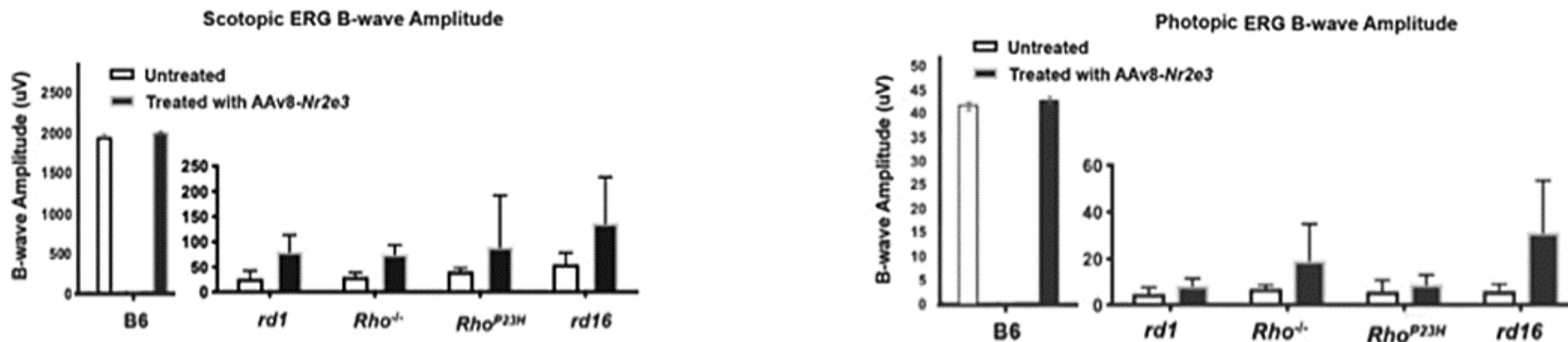
Human Diseases:



➤ Fundus images and ONL count show how single product rescues vision in multiple mutations

OCU400 – Demonstrates Improved Vision Signals in Retina

Electroretinogram (ERG) Response Reveals Rescue under Both Scotopic (dim-lit) as well as Photopic (well-lit) Conditions



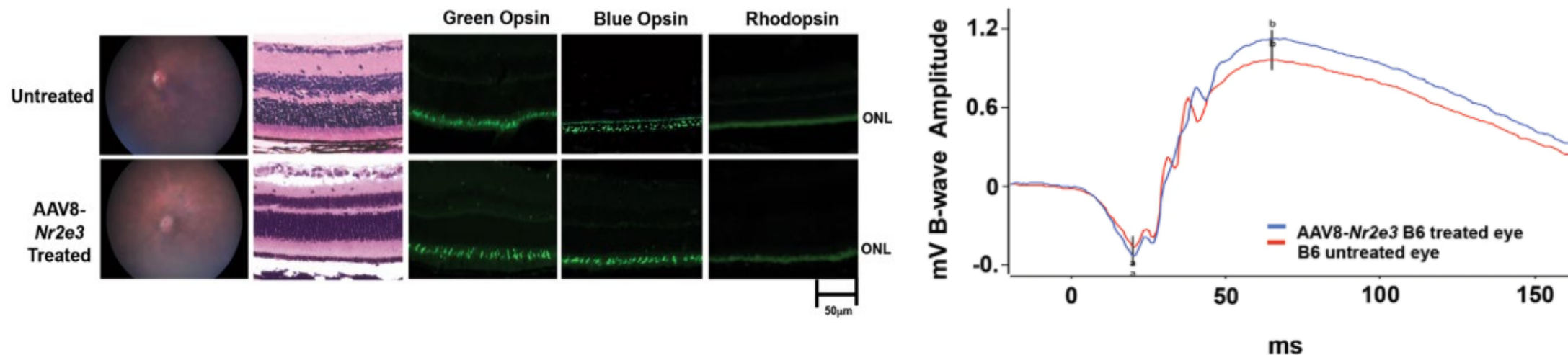
ERG response: P0 single subretinal injection, evaluation 3-4 months post injection

Human vision is enabled by three primary modes:

- **Photopic vision:** Vision under well-lit conditions, which provides for color perception and functions primarily due to cone cells in the eye
- **Mesopic vision:** A combination of photopic vision and scotopic vision in low lighting, which functions due to a combination of rod and cone cells in the eye
- **Scotopic vision:** Monochromatic vision in very low light, which functions primarily due to rod cells in the eye

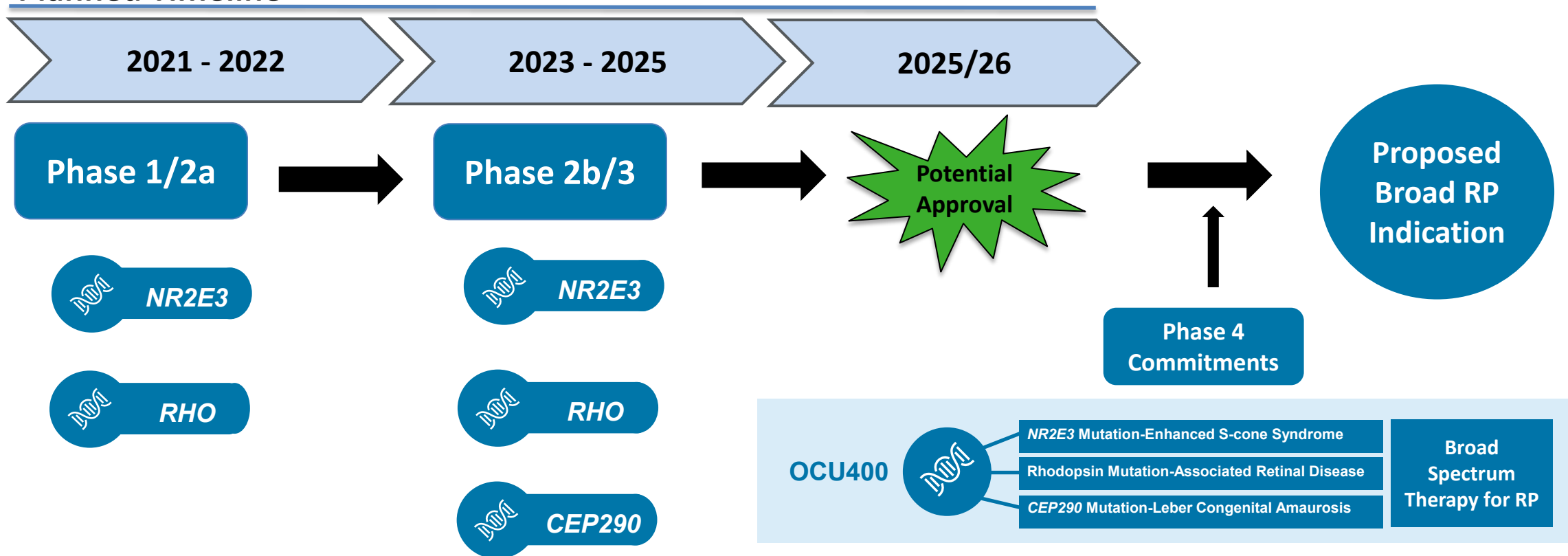
OCU400 – Demonstrated Safety in Mouse Model

Study Results Confirm Overexpression of *Nr2e3* by subretinal AAV8-*Nr2e3* Injection Is Not Detrimental to Retina – No Off-Target Effects
























OCU400 – Clinical and Regulatory Strategy

Planned Timeline



- Successfully completed manufacturing at commercial scale (200L) at CanSinoBio to support clinical studies
- Preclinical tox studies in-progress
- On target to file IND in 2H21

OCU400 – Competitive Overview

Features	OCU400	Traditional Gene Therapy	Cell Therapy
		       	  
One product for many IRDs (including broad RP indication)			Limited 
Technology established in the ocular disease space			
POC data in RP models with different genetic mutations			
Expected long-term outcome	Potentially longer benefit due to promotion of homeostasis	Potentially limited due to loss of retinal cells over time	Not established
Target Patient Population	Large	Small (specific to mutation)	Variable
Developmental cost	Low (economies of scale)	High (No economies of scale)	High

OCU410 (AAV-RORA) – Dry Age-Related Macular Degeneration

We Believe OCU410 Has the Potential to Address this Disease through its Multi-Factor Approach



Normal Retina

Dry AMD

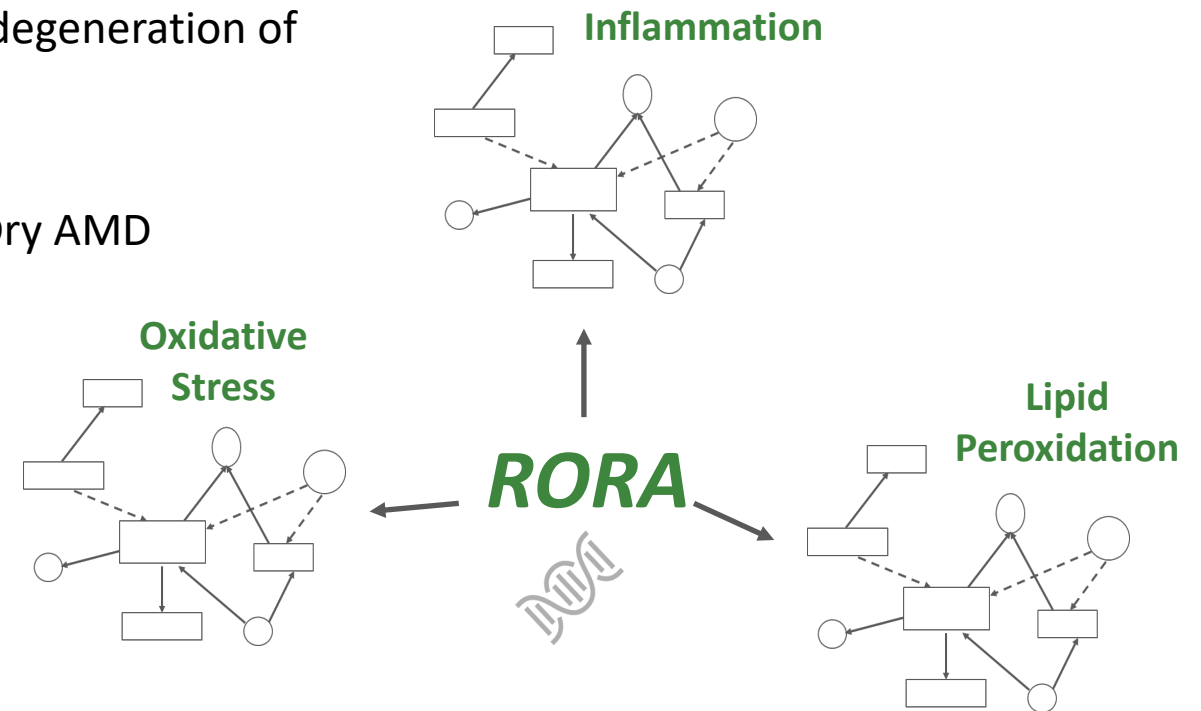
- Leads to irreversible blindness due to degeneration of the retina
- ~9-10M patients in the U.S.
- Currently no approved treatment for Dry AMD



Dry AMD

Contributing Factors

- Aging
- Genetics
- Environmental Factors



OCU200:

Diabetic Macular Edema (DME)

Diabetic Retinopathy (DR)

Wet Age-Related Macular Degeneration (Wet AMD)

Novel Biologic Offering Benefits Beyond Anti-VEGF

OCU200 – Potential to Treat DME, DR & Wet AMD

OCU200 Provides Hope to All patients with DME, DR or Wet AMD

DME → ~0.7M patients in the US*

DR → ~7.7M patients in the US*

Wet AMD → ~1.1M patients in the US*

~50% of Patients DO NOT Respond
to Anti-VEGF/Corticosteroids
Therapies

➤ OCU200 is a Transferrin-Tumstatin Fusion Protein

- Tumstatin: Multiple MOAs for treatment and prevention of macular degeneration and neovascularization
- Transferrin: Targets the site of action and improves uptake (better target engagement)

➤ Integrin Targeting provides hope to these patients who are non-responders to current therapies

➤ Distinct MOA through targeting Integrin pathways can potentially also help reduce number of injections for patients who do respond to Anti-VEGF & corticosteroids therapies

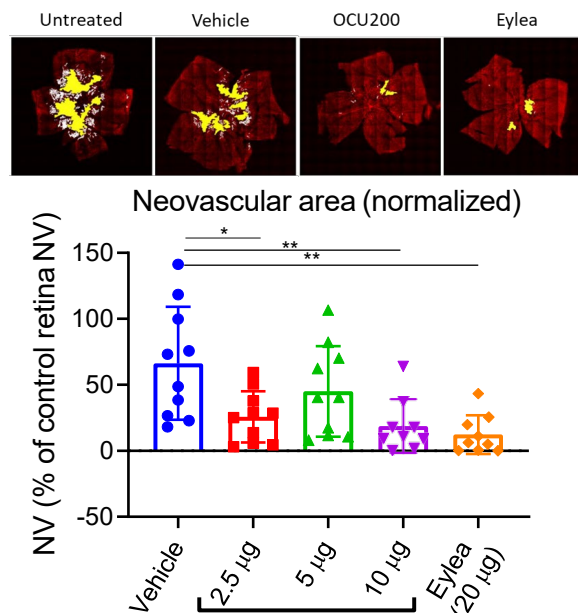
➤ Significant global market potential

OCU200 –Transferrin-Tumstatin Fusion Protein

OCU200 Demonstrated Superior Efficacy Compared to Existing Anti-VEGF Therapies

- Inhibits new blood vessel formation
- Anti-inflammatory
- Anti-oxidative

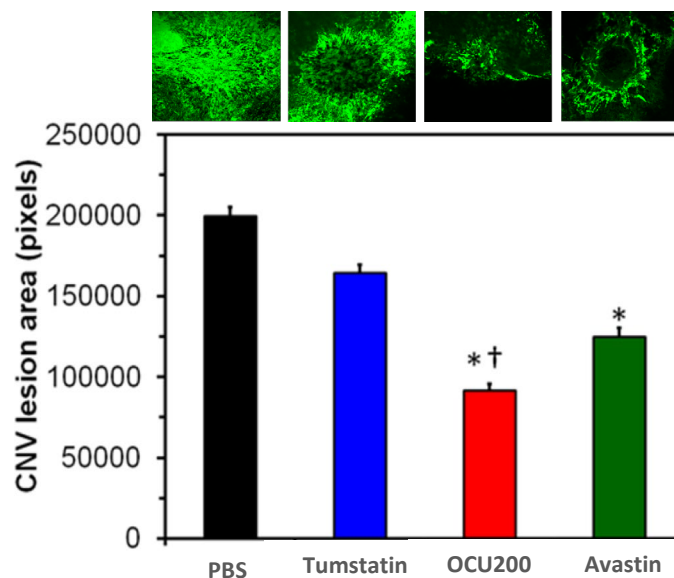
DME/DR Oxygen-Induced Retinopathy (OIR) Mouse Model



Effect of OCU200 intravitreal treatments on Neovascularization (NV). Data are presented as mean ± SD. Filled circles represent data points from individual eyes

* P < 0.05, ** P < 0.01 (n = 9-10 eyes per group)

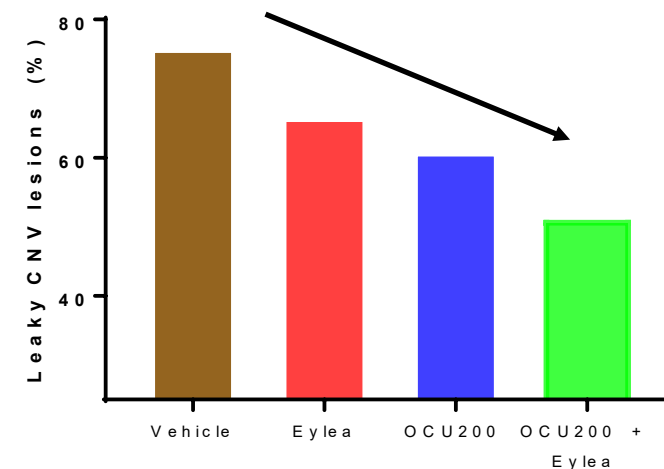
Wet AMD In-Vivo Laser-Induced Rat CNV Model



* indicates p<0.05 when compared to PBS and/or tumstatin treatment

† indicates p<0.05 when compared to Avastin; CNV lesions measured on day 14 after treatment






















Wet AMD In-Vivo Laser-Induced Mouse CNV Model



Data expressed as percentage of CNV lesions on Day 10 after treatment. Laser induction & treatment start on Day 0

OCU200 – Distinct Mechanism of Action

We believe OCU200 has the potential to become a disease modifying therapeutic for broader patient population

Features	OCU200	Anti-VEGF	Anti-Integrin
		 ⁽¹⁾  ⁽¹⁾  ⁽¹⁾ KODIAK	 
Reduces VEGF level/Fluid			
Selectively works on active endothelial cells (Neovascular)			
Activates native anti-angiogenic response			
Enhanced effective delivery through Transferrin			
Pro-apoptotic and anti-oxidative			
Dosing Frequency	Expected once in 3 months	1-3 months	1-3 months

Key Inflection Points

- COVAXIN™ - Vaccine candidate for the US and Canadian markets with potential for revenues this year
- Ophthalmology
 - Modifier Gene Therapy Platform has the potential for one product to treat many diseases
 - Novel biologic has the potential to treat anti-VEGF /corticosteroids non-responders (~50% of the patients)
 - Multiple near and mid-term milestones with plan to initiate four Phase 1/2 trials over next 18 months

A Bold Vision to Cure Blindness Diseases and Offer a Differentiated Vaccine to Save Lives from COVID-19

For more information, contact:

IR@ocugen.com

