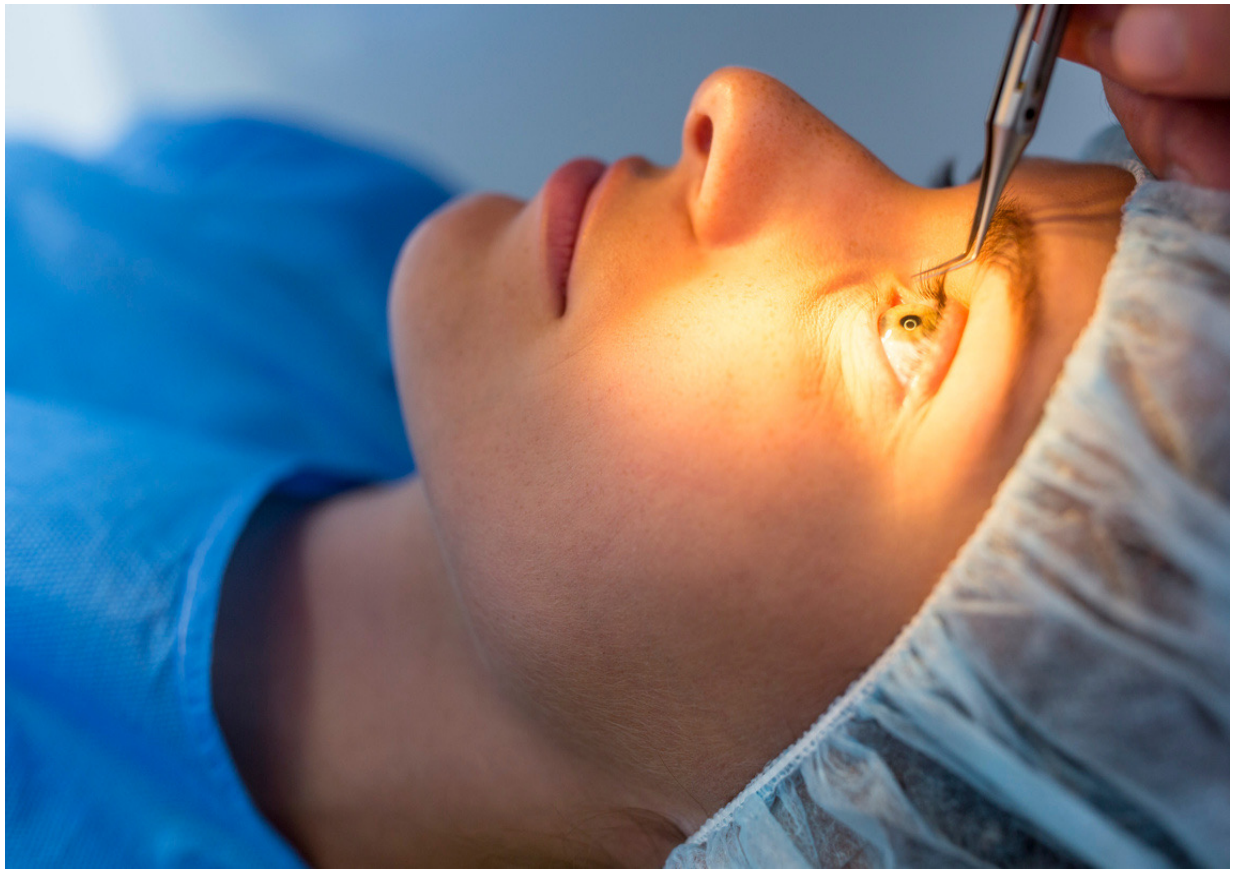
Business Update with Certain Financials for the Year Ending 2023

April 2, 2024

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. 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 include, but are not limited to, statements regarding the Company's clinical development activities and related anticipated timelines; strategy, business plans and objectives for its clinical stage programs; plans and timelines for the preclinical and clinical development of its product candidates, including the therapeutic potential, clinical benefits and safety thereof; expectations regarding timing, success and data announcements of current ongoing preclinical and clinical trials; the ability to initiate new clinical programs; Ocugen's financial condition and the expected impact of the restatement of certain financials. 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. 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, as well as discussions of potential risks, uncertainties, and other important factors in Ocugen's subsequent filings with the SEC. Any forward-looking statements that we make in this press release speak only as of the date of this presentation and should not be relied upon as representing its views as of any subsequent date. Except as required by law, we assume no obligation to update forward-looking statements contained in this press release whether as a result of new information, future events, or otherwise, after the date of this presentation.

The Journey of Hope: Battling Retinitis Pigmentosa



They told me about Ocugen, and I started the study. They did the surgery. I can see a little bit more in some areas that I didn't used to. You know, it was kind of dark, totally dark.

For a lot of people, it's not much. But for me, you know, it's a big step. I don't have to be guided."

- Patient testimonial after 12 months of being treated in OCU400 trial

2023 & YTD Accomplishments — Continued Clinical Momentum

Vaccines

OCU500

- ✓ Selected for inclusion in NIH/NIAID $5B Project Nextgen Initiative with other early-stage COVID-19 vaccine candidates
- ✓ Phase 1 trial planned for mid-2024

Cell Therapy

NeoCart®

- ✓ Completed renovations on cGMP facility
- ✓ Received final clearance and occupancy certificate
- ✓ Evaluating strategic value-building opportunities to further develop Phase 3 asset through commercialization

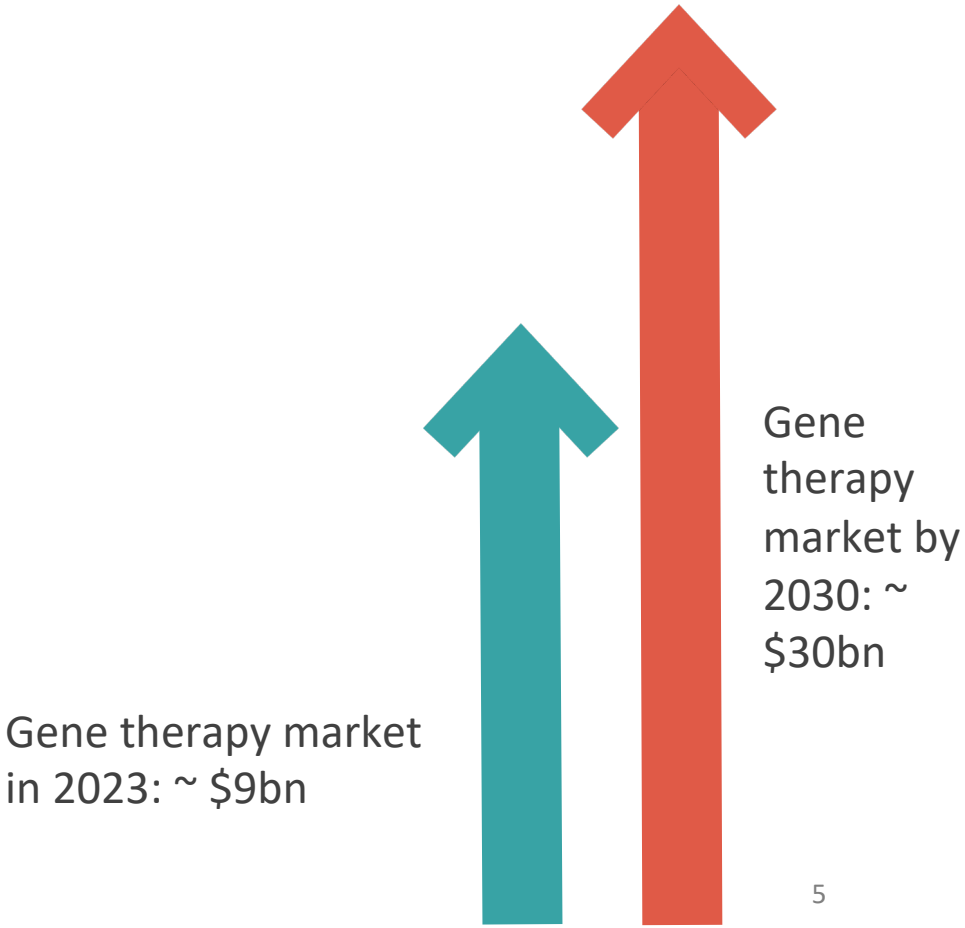
Modifier Gene Therapy: OCU400 for RP & LCA

Potential to address multiple genetic defects with a single product utilizing a gene-agnostic approach

Ocugen is gradually growing its position within the gene therapy market as it progresses its programs

- ✓ Received concurrence from FDA on Phase 3 clinical trial design
- ✓ First gene therapy Ph3 trial to receive broad RP indication from FDA
- ✓ Primary endpoint: Luminance Dependent Navigation Assessment
- ✓ Randomized, multi-centered two arm 150 patient study
- ✓ Generated compelling preliminary results from OCU400 Phase 1/2 trial
- ✓ FDA & EMA granted expanded Orphan Drug Designations for all RP and LCA mutations
- ✓ FDA granted RMAT designation for RP

Upcoming Catalyst: Initiate Phase 3 trial for RP in April 2024



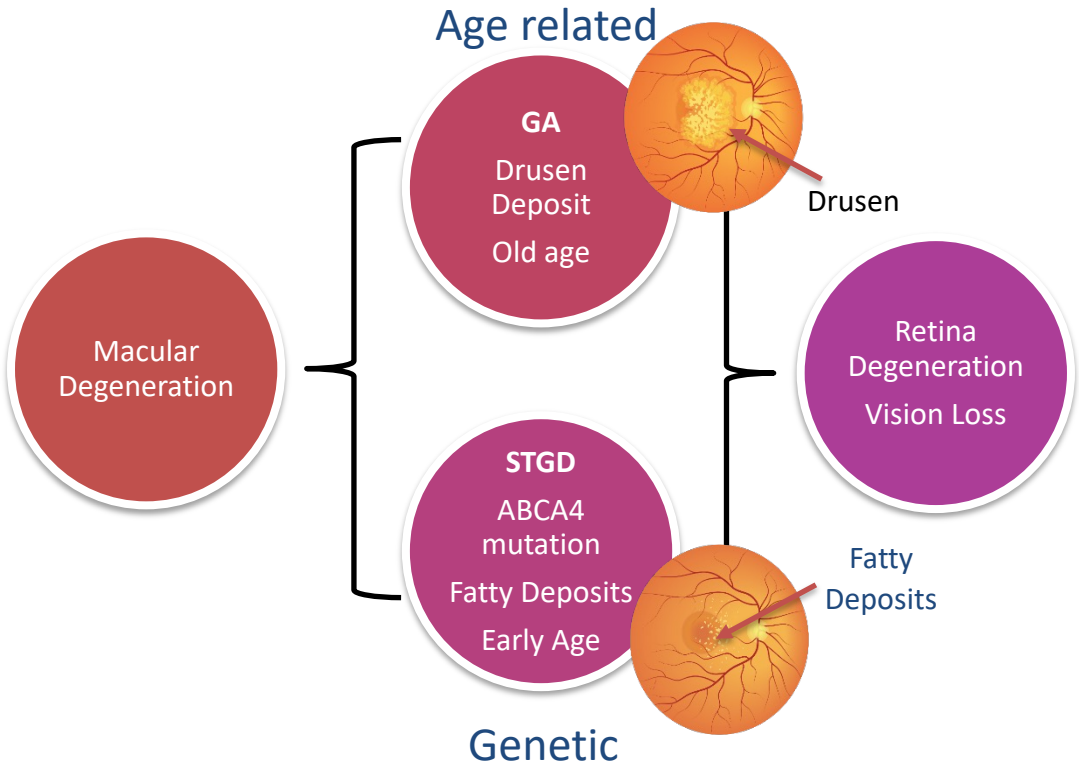
OCU410 & OCU410ST : Tackling Geographic Atrophy Secondary to Dry AMD & Stargardt Disease

OCU410 (ArMaDA Trial)

- ✓ Announced Cohort 1 dosing completion in Phase 1 /2 trial in March 2024
- ✓ High addressable market for GA/DAMD with limited therapeutic options – affects ~10M people in the U.S .alone and ~ 266 million globally
- ✓ Current therapies have significant limitations: multiple injections/year, targets one pathway , patient compliance
- ✓ OCU410 targets all four pathways with a potential single injection therapy for life

OCU410ST (GARDian trial)

- ✓ Announced Cohort 1 dosing completion in Phase 1 / 2 trial in February 2024
- ✓ Received Orphan Drug Designation from FDA
- ✓ Established Low Dose as Safe and Tolerable Dose in Current OCU410ST Clinical Trial
- ✓ DSMB Determination to Proceed with Medium Dose (Cohort 2)



Safety/efficacy updates will be provided periodically in 2024

Financial Update

Financial Update

- The Company intends to restate its consolidated financial statements as of and for the year ended December 31, 2022, in connection with the filing of its 2023 Form 10-K. Similarly, the Company will include restated unaudited financial information for each of the first three quarters of 2023 and 2022 in its 2023 Form 10-K (each such annual and quarterly period to be restated, a “Restated Period”).

- The identified errors in each of the Restated Periods relate to the Company’s non-cash accounting for the estimated costs in one of its collaboration arrangements. However, the Company does not expect the errors to result in any impact on its cash position, cash runway, or financial projections.

- Ocugen’s cash, cash equivalents, and investments totaled $39.5 million as of December 31, 2023, compared to $90.9 million as of December 31, 2022. The Company estimates that its current cash, cash equivalents, and investments will enable it to fund its operations into the fourth quarter of 2024. The Company had 256.6 million shares of common stock outstanding as of December 31, 2023.

Questions & Answers

Execution of High Value Gene Therapies—
Increase Value for Patients & Shareholders

Key Gene Therapy Milestones Achieved in 2023

- First gene therapy program to get alignment with FDA for broad RP indication in Ph3
- Initiated dosing in OCU410 Ph1/2 clinical trial (dry AMD/GA)
- Initiated dosing in OCU410ST Ph1/2 clinical trial (Stargardt)

Key Gene Therapy Target Milestones for 2024

- Completed dosing in Cohort 1 for OCU410 (dry AMD/GA) and OCU410ST (Stargardt)
- Initiate OCU400 Ph3 clinical trial and recruit efficiently – in line with 2026 BLA approval target
- Continue to provide OCU400 Ph3 clinical updates
- Provide preliminary safety/efficacy updates from OCU410 Ph1/2 clinical trial in GA patients
- Provide preliminary safety/efficacy updates from OCU410ST Ph1/2 clinical trial in Stargardt patients
- Finalize a partner for OCU400

Thank You