Second Quarter 2023 Financial Results & Clinical Update

August 9, 2023

Forward Looking Statements

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This presentation contains forward-looking statements of Lumos that involve substantial risks and uncertainties. All such statements contained in this presentation are forward-looking statements within the meaning of The Private Securities Litigation Reform Act of 1995.

We are passionate about our business, including LUM-201 and the potential it may have to help patients in the clinic. This passion feeds our optimism that our efforts will be successful and bring about therapeutics that are safe, efficacious, and offer a meaningful change for patients. Please keep in mind that actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements that we make.

We have attempted to identify forward-looking statements by using words such as “projected,” "upcoming," "will," “would,” "plan," “intend,” "anticipate," "approximate," "expect," “potential,” “imminent,” and similar references to future periods or the negative of these terms. Not all forward-looking statements contain these identifying words. Examples of forward-looking statements include, among others, statements we make regarding progress in our clinical efforts including comments concerning screening and enrollment for our trials, momentum building in our LUM-201 program for PGHD, anticipated timing of interim analyses of trials, LUM-201’s therapeutic potential when administered to pediatric subjects with idiopathic or moderate growth hormone deficiency, that the interim sample size should be adequate to provide an initial indication of LUM 201’s impact, expecting the primary outcome data readout for our trials, market size potential for LUM-201, predictions regarding LUM-201, goals with respect to LUM-201, the potential to expand our LUM-201 platform into other indications, future financial performance, results of operations, cash position, cash use rate and sufficiency of our cash resources to fund our operating requirements through the primary outcome data readout from the OraGrowthH210 and OraGrowthH212 Trials, and any other statements other than statements of historical fact.

We wish we were able to predict the future with 100% accuracy, but that just is not possible. Our forward-looking statements are neither historical facts nor assurances of future performance. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements that we make due to a number of important factors, including potential material differences between the interim results of our LUM-201 trials and the final results of the trials which are not known at this time, the effects of pandemics (including COVID-19), other widespread health problems, the Ukraine-Russia conflict, the outcome of our future interactions with regulatory authorities, our ability to project future cash utilization and reserves needed for contingent future liabilities and business operations, the ability to obtain the necessary patient enrollment for our product candidate in a timely manner, the ability to successfully develop our product candidate, the timing and ability of Lumos to raise additional equity capital as needed and other risks that could cause actual results to differ materially from those matters expressed in or implied by such forward-looking statements. You should not rely on any of these forward-looking statements and, to help you make your own risk determinations, we have provided an extensive discussion of risks that could cause actual results to differ materially from our forward-looking statements in the "Risk Factors" section and elsewhere in our Annual Report on Form 10-K for the year ended December 31, 2022, as well as other reports filed with the SEC including our Quarterly Reports on Form 10-Q filed after such Annual Report. All of these documents are available on our website. Before making any decisions concerning our stock, you should read and understand those documents.

We anticipate that subsequent events and developments will cause our views to change. We may choose to update these forward-looking statements at some point in the future; however, we disclaim any obligation to do so. As a result, you should not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this presentation.

The data contained herein is derived from various internal and external sources. All of the market data in the presentation involves a number of assumptions and limitations, and there can be no guarantee as to the accuracy or reliability of such assumptions. Further, no representation is made as to the reasonableness of the assumptions made within or the accuracy or completeness of any projections or modeling or any other information contained herein. Any data on past performance or modeling contained herein is not an indication as to future performance. 8.9.2023

Agenda

Welcome

- Lisa Miller, *Senior Director of Investor Relations*

Review of Highlights & Clinical Development Program

- Rick Hawkins, *Chief Executive Officer & Chairman*

Financial Results

- Lori Lawley, *Chief Financial Officer*

Questions & Answers

- Rick Hawkins, *Chief Executive Officer & Chairman*
- John McKew, PhD, *President & Chief Scientific Officer*
- Lori Lawley, *Chief Financial Officer*
- Duke Pitukcheewanont, MD, *SVP, Clinical Development & Medical Affairs*

Primary Outcome Data for Two Phase 2 Trials in PGHD Expected Q4 2023

OraGrowthH210 TRIAL

Dose-finding Phase 2 Trial

Topline data on up to 82 PEM+ subjects

- Primary 6-month AHV & safety data on
  - ~20 subjects on 0.8 mg/kg/day LUM-201
  - ~20 subjects on 1.6 mg/kg/day LUM-201
  - ~20 subjects on 3.2 mg/kg/day LUM-201
  - ~20 subjects on daily rhGH
- 12-month AHV data on ~12 per cohort
- 18 & 24-month data on small group

OraGrowthH212 TRIAL

Mechanistic Phase 2 PK/PD Trial

Topline data on up to 22 PEM+ subjects

- Primary 6-month AHV & safety data on
  - ~11 subjects on 1.6 mg/kg/day LUM-201
  - ~11 subjects on 3.2 mg/kg/day LUM-201
- 12-month AHV data on ~7 per cohort
- 18 & 24-month data on small group

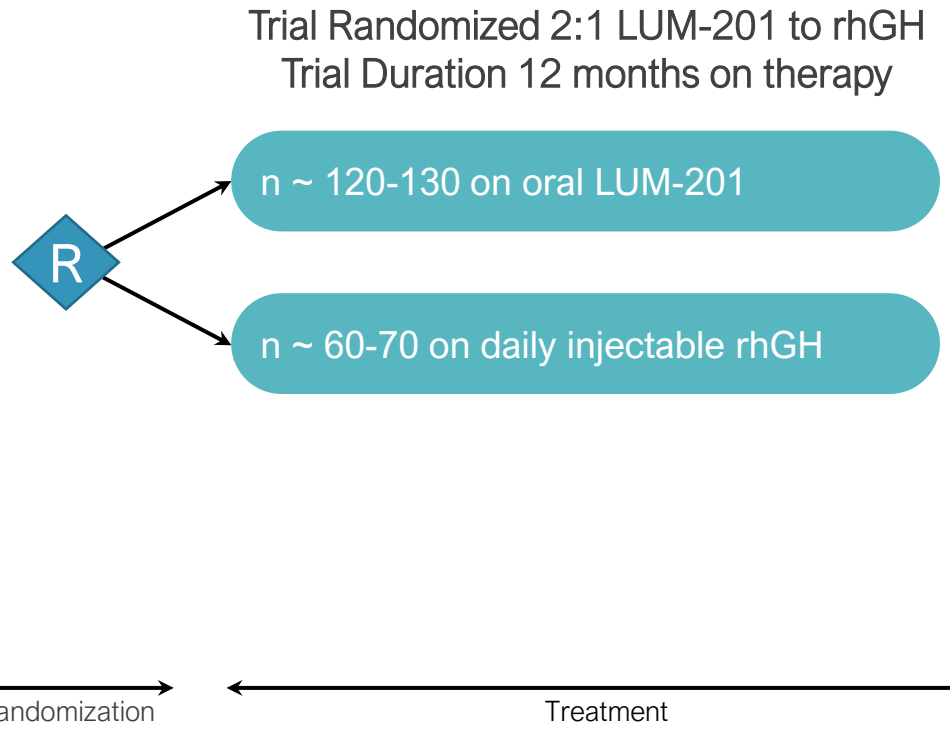
Phase 2 OraGrowthH210 Trial is *not* powered for non-inferiority vs rhGH

PGHD = Pediatric Growth Hormone Deficiency PEM = Predictive Enrichment Strategy = ability to identify likely responders to therapeutic candidate
PEM-positive (PEM+) = PGHD patients with baseline IGF-1 > 30 ng/ml & peak stimulation GH ≥ 5 ng/ml from single dose of LUM-201

Expected Registrational Phase 3 Trial Design Based on Recent Pivotal Trials in PGHD

Phase 3 Trial

- n = ~180-200
- Randomized 2:1 LUM-201 to rhGH control arm
- PEM(+) PGHD subjects
  - Peak stim GH ≥ 5 ng/ml after 1 LUM-201 dose
  - Baseline IGF-1 >30 ng/ml
- rhGH treatment naïve
- Multiple trial sites US & International
- 12 months on therapy



Phase 3 Objectives

- Annual Height Velocity (AHV) at 12 months on LUM-201 comparable to rhGH control
- Non-inferiority margin of less than 1.8 to 2 cm between LUM-201 and rhGH arm based on recent approvals
- Growth on treatment in line with AHV of ~8.3-8.6 cm/yr observed in historical datasets of moderate PGHD patients on rhGH

Phase 3 primary outcome data: AHV at 12 months on therapy

Phase 3 design dependent upon End of Phase 2 meeting with FDA and results from OraGrowthH210 Trial

Novel LUM-201 Formulation for Phase 3 and Commercial Use

Novel LUM-201 formulation

- Mini-tablets inside of a capsule
- Unique LUM-201 manufacturing techniques enabled novel formulation

Advantages of novel formulation

- Minimizes dose variability across wide weight range of patients on drug
- Easy form for oral administration across younger and older patients

Patent filed for new formulation

- USPTO response likely later this year
- Expect orange book listing with IP protection through late 2042

Image is not actual representation of novel LUM-201 formulation

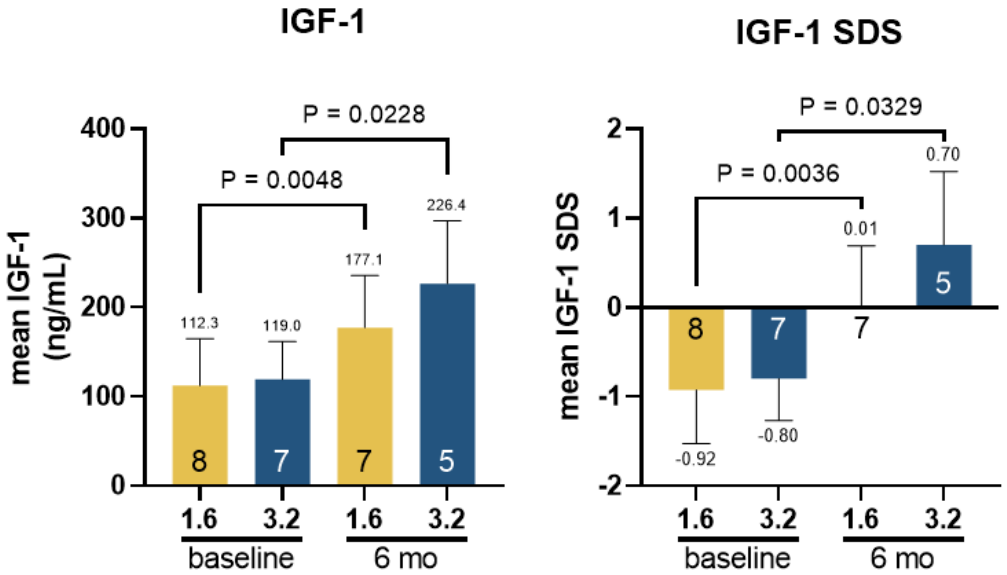
Endocrine Society Meeting (ENDO) Oral Presentations on LUM-201

ENDO Oral Presentation (Cassorla, et al)

Additional OraGrowthH212 Interim Data:

- LUM-201 produced an increase in IGF-1 levels that remained within normal range and an increase in IGF-1 SDS > 0
- Consistent increase in AHV over baseline observed on LUM-201 with durable response to 12 months[1]

OraGrowthH212 TRIAL

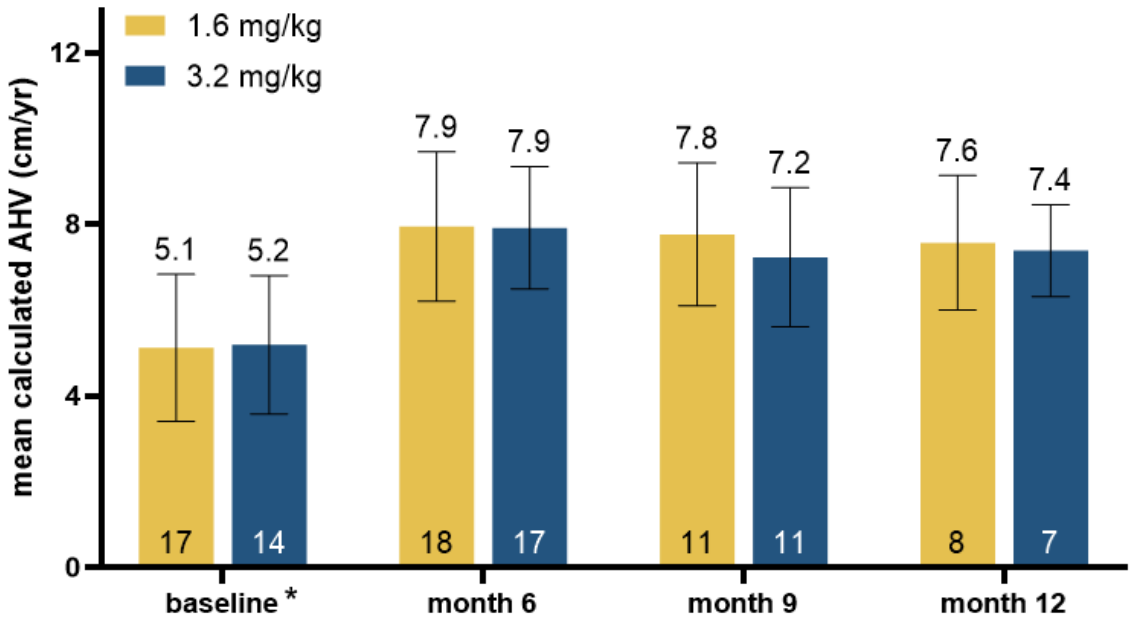


ENDO Oral Presentation (Tansey, et al)

Combined Interim OraGrowthH210 and '212 Data:

- Combined data from both trials at 1.6 and 3.2 mg/kg doses show improved AHV over baseline and durable response to 12 months, as well as equivalent AHV effect at both LUM-201 doses

OraGrowthH210 TRIAL + OraGrowthH212 TRIAL



Endocrine Society Meeting (ENDO) – June 2023

[1] Data included in ENDO presentation on Lumos Pharma website

*Pre-treatment baseline AHV was not required for OraGrowthH studies, but available data shown

**Interim data from 50% enrolled OraGrowthH210 Trial (N=20 at top 2 LUM-201 doses) & from ~70% enrolled OraGrowthH212 Trial (N=15)

Additional Highlights

European Society for Paediatric Endocrinology (ESPE) – September 2023

- Late-Breaking Abstract Accepted for Oral Presentation: *Deconvolution Analysis: GH secretagogue (LUM-201) enhances growth in individuals with moderate idiopathic Pediatric Growth Hormone Deficiency (iPGHD) by enhancing endogenous GH secretion and increasing IGF-1,* Cassorla, F.

Publication of GH in NAFLD in JCEM supports MGH evaluation of LUM-201

- Positive data from prior MGH study of growth hormone (GH) in NAFLD recently published in *JCEM*
- Data show GH reduces liver steatosis in obese subjects with NAFLD without worsening glycemic measures
- These data support MGH collaboration with Lumos Pharma to evaluate oral LUM-201 in NAFLD
- MGH-initiated pilot trial of LUM-201 in NAFLD continues to enroll

Next target indications narrowed for LUM-201

- Narrowed next indication targets for LUM-201 to ISS and PWS with analysis continuing

JCEM, June 2023, Dichtel, L, et al. NAFLD = Non-alcoholic fatty liver disease MGH = Massachusetts General Hospital ISS Idiopathic Short Stature PWS Prader-Willi Syndrome

Lumos Pharma Financial Information as of June 30, 2023

Values in USD

Cash, equivalents & short-term investments	$50.9M
Debt	$0
Shares Outstanding	8.0M
Cash Use per Quarter in 2023	$9.5-$10.5M
Fiscal Year End	December 31

Cash, cash equivalents, & short-term investments to support operations into 3Q 2024, beyond primary outcome data readouts for OraGrowtH210 and OraGrowtH212 Trials 4Q 2023

Overview
Lead asset targeting children with growth disorders

Novel Oral Rare Disease Asset	• Novel **oral** therapeutic asset, **LUM-201**, for growth hormone deficiency (GHD) disorders • LUM-201 **acts within natural endocrine pathway**, differentiated from injectable therapies
Pipeline in a Product	• **Worldwide *injectable* market** for GHD disorders is **$3.4 billion, excluding China*** • Market for **Pediatric GHD (PGHD)**, initial oral LUM-201 indication, is **$1.2 billion***
Late-stage Trials in PGHD	• **Primary outcome data** for two Phase 2 OraGrowtH Trials expected **4Q 2023** • PEM strategy **de-risks trials** by identifying and enrolling likely LUM-201 responders**
Solid Financial Position	• Cash balance of **$50.9 million** as of close of **2Q 2023** • Cash runway **into 3Q 2024,** beyond Phase 2 OraGrowtH Trials primary outcome data

PGHD = Pediatric Growth Hormone Deficiency
* USA, Germany, France, Italy, Spain, UK, Japan (Grandview Research, Growth Hormone Market Forecast, 2019)
** PEM (Predictive Enrichment Marker) strategy consists of screening for PEM+ PGHD patients = Baseline IGF-1 > 30 ng/ml & Peak stimulation GH ≥ 5 ng/ml from single oral dose of LUM-201