

# **Lumos Diagnostics Holdings Limited (LDX)**

Rob Sambursky, MD CEO and President Lumos Diagnostics

www.lumosdiagnostics.com

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### **Our Mission**

To develop, manufacture and provide access to rapid, accurate and actionable diagnostic solutions for a diverse range of unmet needs in order to improve outcomes, reduce unnecessary treatments, minimise disease spread and contribute to more effective clinical management and therapeutic decisions.

# **About Lumos (LDX)**







## Capable of manufacturing ~10M test strips per month

- Sarasota: ~75 FTEs (Primary manufacturing site with R&D transfer)
- Carlsbad: ~50 FTEs (Primary R&D site with pilot manufacturing)
- 42,000 ft across 2 leased facilities
- Geographically strategic locations and redundancy (supply chain access and international markets)
- Fully automated capabilities for test strips and assembly

### MDSAP certified, ISO 13485 compliant and FDA compliant facilities

 Reducing the time and risk involved to take new diagnostic tests through development to manufacture and commercialisation.

## **FY21 At A Glance**



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While FY20 was all about integration and transformation, FY21 represented strategic action and growth.

The Lumos team achieved major accomplishments this year across all aspects of our business.

Rob Sambursky, MD President & CEO Lumos Diagnostics



A\$25.0M total revenue in FY21 198% YoY increase



A\$22.7M Commercial Services business unit revenue in FY21 188% YoY increase



Global manufacturing capacity expanded up to 10 million rapid diagnostics tests per month



**A\$2.3M** Products business unit revenue in FY21 significant YoY increase



FebriDx® U.S. multicentre clinical trail (DISRUPT) complete and U.S. FDA 510(k) submitted



**Developed two Lumos-branded POC diagnostic products for launch in FY22** 

# **Lumos Business Model**

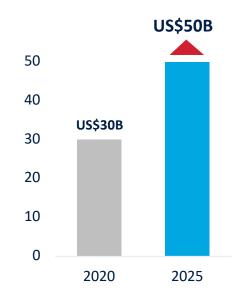


Lumos is a fully integrated innovator, developer and manufacturer of rapid POC diagnostic solutions that allow clinicians and patients to make important medical decisions quickly and accurately.



### **GLOBAL POC DIAGNOSTIC TEST SALES<sup>1</sup>**

(US\$ in billions)



**11.5%** 5-year CAGR for North America & Europe

<sup>&</sup>lt;sup>1</sup> MarketsandMarkets Report, 2021

# **Proprietary Readers: Different Settings**



Lumos is developing a comprehensive digital reader platform designed to satisfy the specific needs of different customer groups.



### **SINGLE-USE DISPOSABLE**

- Single use disposable tests
- Simple "yes/no" tests
- Out-of-clinic use
  - Over the counter
  - Consumers / at home testing



### **MULTI-USE DISPOSABLE**

- 10-50 single use test strips
- Limited reuse disposable reader
- Lower volume clinical settings



### **DESKTOP**

- High performance desktop reader
- Multiple tests using same reader
- Higher volume / higher complexity settings e.g. Electronic Medical Record / Lab Information System connectivity

# **Overuse of Antibiotics**



Extensive inappropriate use of antibiotics is adversely impacting healthcare through the emergence of antimicrobial resistance, adverse side effects and increased costs to healthcare systems



- Antibiotics can only treat bacterial infections<sup>1</sup>
- Hard to distinguish ARIs that are caused by viruses from those caused by bacteria based on symptoms alone because the symptoms are very similar<sup>1</sup>
- Diagnostic uncertainty is one of the most common causes for the inappropriate prescribing of antibiotics<sup>2</sup>

## **Diagnostic uncertainty**

Healthcare providers unable to determine cause of infection (viral vs bacterial) based on patient symptoms alone<sup>2</sup>



Antibiotics often prescribed as a precautionary measure<sup>2</sup>



Over 30% of antibiotic prescriptions are given to patients who do not have a bacterial infection<sup>3</sup>

# Antimicrobial resistance (AMR)

 Overuse of antibiotics enables antibioticresistant strains to emerge

#### **Adverse side effects**

- 1-in-10 patients experience side-effects and 1-in-15 experience an allergic reaction<sup>4</sup>
- 16% of all outpatient adverse drug event visits<sup>5</sup>

# Increased healthcare cost

 Both AMR and the treatment of side effects from antibiotics increase healthcare costs

<sup>1.</sup> The Pew Charitable Trust (2016), Antibiotic Use in Outpatient Settings. 2. Handle with care: Chief Public Health officer of Canada's 2019 spotlight report. 3. 2020 - Measuring Outpatient Antibiotic Prescribing.. 4. NHS, Antibiotics side effects, published on May 2019. 5. National Estimates of Emergency Department Visits for Antibiotic Adverse Events Among Adults—United States, 2011–2015, (https://doi.org/10.1007/s11606-018-4430-x)N.

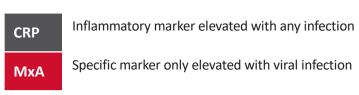
# Febri Dx: A Simple Test For Microbial Infection



FebriDx can rapidly identify patients who have a microbial infection<sup>1</sup> and, if positive, determine if that infection is caused by a viral or bacterial pathogen.



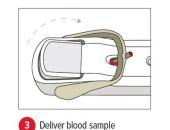
**Key: Markers for infection** 

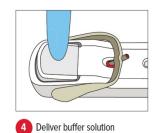


# FebriDx® Test Procedure and Interpretation of Results

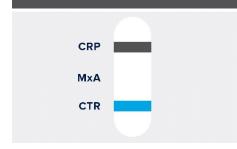






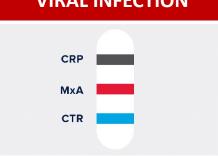


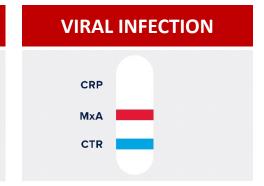
**BACTERIAL INFECTION** 



Patient can be treated with antibiotics

## **VIRAL INFECTION**





**Viral Infection - Antibiotics will not work**Patient needs to be managed differently

# Febri Dx: A Validated Rapid Test for Microbial Infection



FOR FEBRILE PATIENTS PRESENTING WITH SYMPTOMS AND SIGNS OF ARI <sup>2</sup>				
Bacterial	Sensitivity	95%		
	Specificity	91%		
	NPV	97%		
Viral	Sensitivity	77%		
	Specificity	85%		
	PPV	92%		

#### **Markers for infection**

CRP

Inflammatory marker elevated with any infection

Specific marker only elevated with viral infection

FebriDx® is a clinically validated,¹ patented, easy-to-use, point-of-care test that uses a unique combination of two different markers for infection.



- FebriDx completed clinical evaluation in a U.S. prospective multicentre clinical trial (DISRUPT)
- FebriDx achieved all U.S. FDA predetermined clinical performance criteria
- FebriDx submitted for U.S. FDA 510(k) clearance and is under active review
- Strong clinical performance for microbiologically confirmed infection and final clinical diagnosis

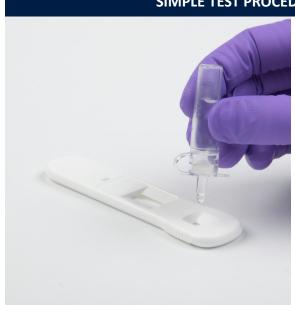


<sup>&</sup>lt;sup>1</sup> Diagnosis of bacterial or viral infections in Acute Respiratory Illness (ARI) patients
<sup>2</sup> Clinical data represents combined U.S. Pilot and DISRUPT clinical trial data.

# CoviDx: Rapid COVID-19 Antigen Test Solution



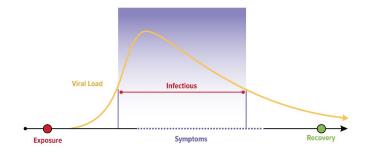
#### SIMPLE TEST PROCEDURE → RESULTS IN 15 MINUTES



- Initial sales commenced into Europe
- Launch in Canada and Australia in FY22 pending regulatory approvals
- Works with all variants including Delta
- Used in conjunction with FebriDx for diagnosing acute respiratory infection patients
- Manufactured in the U.S.
- Synergistic with FebriDx and will sell through same sales channels

# SARS-CoV-2 Viral Load Over Course of Infection<sup>1</sup>

Frequent testing with antigen tests can identify people when their infection is most likely to be transmissible.<sup>2</sup>



#### STRONG U.S. CLINICAL DATA AGAINST HIGH SENSITIVITY PCR

#### CoviDx Results vs. RT-PCR

CoviDx-SARS-CoV-2	PCR Test			
Rapid Antigen Test	Ct ≤ 35			
	Positive	Negative	Total	
Positive	40	5	45	
Negative	0	96	96	
Total	40	101	141	
Positive Percent Agreement (PPA) Sensitivity	<b>100%</b> (95% CI: 91.2% - 100%)			
Negative Percent Agreement (NPA)	<b>95%</b> (95% CI: 88.9% - 97.9%)			

<sup>&</sup>lt;sup>1</sup> Adapted from Crozier A. Put to the test: Use of rapid testing technologies for Covid-19. *Br Med J*. 2021;372:n208 https://doi.org/10.1136/bmi.n208

<sup>&</sup>lt;sup>2</sup> Mina MJ, Parker R, Larremore DB. Rethinking Covid-19 test sensitivity – A strategy for containment. *N Engl J Med*. 2020;383:e120. doi: 10.1056/NEJMp20256315

# **Promising Product Pipeline**



Lumos has a growing portfolio of POC diagnostic solutions for healthcare providers in a variety of care settings.

Lumos is leveraging its expertise and infrastructure to expand the Lumos-branded family of POC diagnostic tests and readers.



Differentiate viral from bacterial acute respiratory infection

COVID-19 antigen

A suite of proprietary digital reader formats including connectivity options



Influenza A/B and COVID-19 antigen

A connected, multi-use reusable platform to include FebriDx

Reusable, digitally read FebriDx results

UriDx™
Urinary tract infection
SepsiDx™
Blood stream infections

<sup>1</sup> In various global markets based on required regulatory approvals

## **Lumos Commercial Services**



## Lumos' commercial services business provides clients with a complete, end-to-end POC solution



## **Assay Development<sup>1</sup>**

Development of robust POC diagnostic tests



### **Reader Customisation**

Integration of POC diagnostic tests into reader formats suitable for different end users



## Manufacturing

High-quality, volume production at a commercially attractive price point







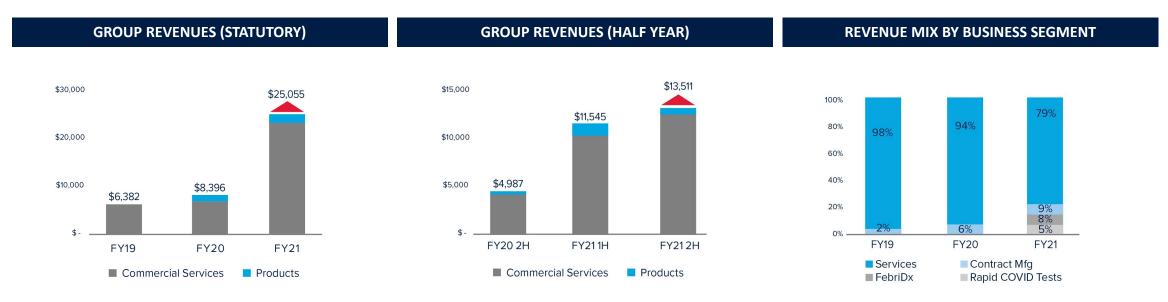
End-to-end provider of connected digital rapid diagnostic solutions targeting specialised applications within the POC Diagnostics Market

<sup>1.</sup> Assays are investigative procedures that qualitatively assess a compound or examine a compound's effects on identified molecular, cellular, or biochemical targets.

## **FY21** Revenue



(A\$ in thousands)



#### **COMMENTARY**

#### A record year

- Lumos reporting group revenues of A\$25.0M, up \$198% on FY20
- Commercial Services revenue of A\$22.7M, up 188% on FY20, 91% of group revenue
- Product revenue of \$2.3M with initial commercial sales of FebriDx® in the UK, Germany and Canada
- Increasing diversification of revenue mix

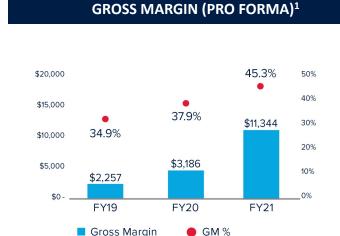
#### Strong demand for services during FY21

- High demand from partners for development and contract manufacturing services
- Won 30 proposals for work spanning 10 different programs
- High levels of staff utilisation (95%) with an aim to return to industry norm (80—85% utilisation) in FY22

# FY21 Margin, OPEX & EBITDA

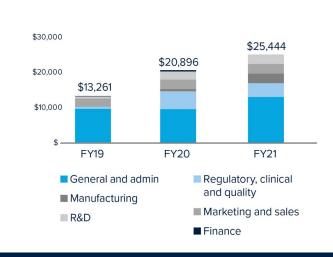


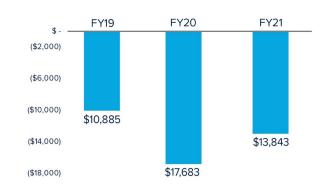
(A\$ in thousands)



### **OPERATING EXPENSES (PRO FORMA)**

### EBITDA (PRO FORMA)





#### **COMMENTARY**

#### Gross margin evolving with revenue mix

- Ahead of prospectus forecast
- Higher margin development services driven by pandemic demand
- Contract manufacturing margins remain strong as opportunities initiated in FY21 carry over in FY22
- Product margins expected to improve as sales volumes increase

#### **Investment in growth and operations**

- Actual EBITDA ahead of prospectus forecast by \$0.9M
- DISRUPT clinical trials to submit for U.S. FDA clearance for FebriDx®
- Addition of commercial manufacturing capacity able to produce 10 million tests per month
- Increased investment in European and North American sales and marketing infrastructure

<sup>1</sup> Pro-forma gross margin analysis in recent prospectus reflected impact of out-sourced reader development services under Planet Innovation MSA which is expected to reduce in FY22.

# **FY22** First Quarter Highlights



### Listed on the ASX



Listed on the Australian Stock Exchange (ASX) on 5 July 2021 following a successful Initial Public Offering (IPO) that raised A\$63M at \$1.25 per share.

### Appointed Strategic Healthcare Adviser



Appointed Dr Jerome Adams, immediate former U.S. Surgeon General, as a Strategic Healthcare Adviser on Lumos' Medical Advisory Board.

## **Expanded Operations**



Commenced operations at its new manufacturing facility in Sarasota, Florida, USA capable of producing up to 10 million POC test strips per month.

Performed on 11 active R&D service contracts at various stages of development.

### FebriDx Featured in Medical Journals



FebriDx® was featured in two highly regarded peer-reviewed medical journals:

The Journal of Health Economics & Outcomes Research (JHEOR)

The British Medical Journal (BMJ)

## **FY22 Outlook**



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Lumos is well positioned as an emerging technology leader in the rapidly growing global POC diagnostics industry. Looking ahead, there are attractive near- and long-term growth opportunities in every segment of our business.

Rob Sambursky, MD President & CEO Lumos Diagnostics



Solid, diversifying revenue mix in FY22 driven by expansion of product business and contract manufacturing



**Broader engagement** with clients as a result of expanded Commercial Services offerings



New commercial scale manufacturing facility providing significant new revenue stream in FY22



FebriDx U.S. commercialisation following U.S. FDA 510(k) clearance and the follow-on publication of clinical trial results and U.S. cost analyses



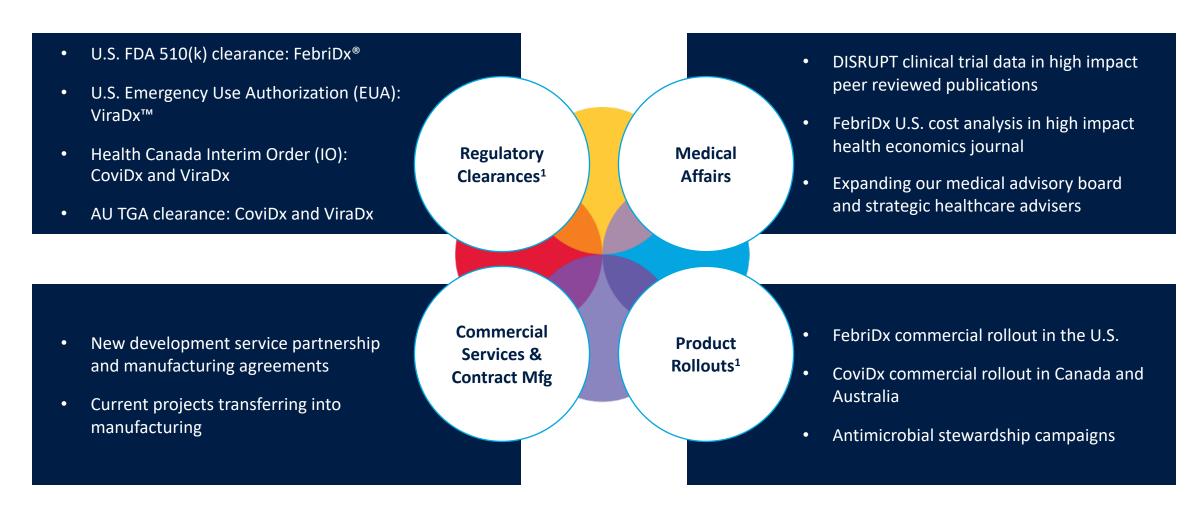
Product portfolio expansion with broader market access and expected launches of CoviDx and ViraDx in FY22



**Expanded sales of Lumos-branded digital POC diagnostic products through existing distribution channels** 

# **FY22 Milestones & Achievements**





# **Operational Leadership Team**





Rob Sambursky, MD CEO and Board Member

Founder of RPS Diagnostics. 25+ years in clinical, medical sciences, opthamology and infectious disease



Sacha Dopheide, PhD Chief Technology Officer

Commercially driven biomedical scientist with a proven track record in IVD and POC diagnostics



Jill Thompson
Sr VP of Corporate Strategy

and Development

25 years of experience in life science and diagnostics industry leading licensing, M&A, and business development



Aaron Erlandson, MBA

Sr VP of Finance

20+ years experience in diagnostics leading financial and accounting activities, including business planning, forecasting, compliance & audit functions



Jeff Bishop, PhD Sr VP of Research and Development

25+ years as an R&D leader in the diagnostics space including deep expertise in point of care applications



Jennifer Christiansen
VP of Corporate Marketing

and Communications



Jason Inman

VP of Information Technology

25+ years experience in the IT healthcare industry leading ERP and implementation to support sales, manufacturing & accounting



**Kurt Phinney** 

**Vice President of Operations** 

Experienced operations director with deep capability in infectious disease assay development and production



Sarah Glubka

Sr Director of Human Resources

17+ years of Human Resources experience developing business initiatives, fostering employee engagement and mobilizing talent



Annie Bell MSN, APN

**Sr Director of Medical Affairs** 

15+ years managing clinical trial design and submission (FDA), and direct clinical practice in nursing



Sue Hibbeln, MS, RAC

Sr Director of Regulatory Affairs

15+ years of Regulatory Affairs and Quality Assurance experience in medical devices, including IVD devices, software, hardware, implants and sutures



**Huan Tran** 

**Director of Quality** 

18 years of experience in both Quality and Regulatory Affairs within the IVD industry including FDA QSR, ISO 13485, MDSAP and HIPAA

# **Lumos Board of Directors**



### Executive Directors

- Sam Lanyon (Chair)
- Rob Sambursky (CEO and President)

### Non-Executive Directors

Larry Mehren
 Global business leader in healthcare including CEO/Exec roles at Accelerate Dx and Ventana

Catherine Robson
 20 years of financial leadership and audit committee experience

Bronwyn Le Grice
 15+ years in health-tech and venture capital. Founder and Managing Director, ANDHealth

## Company Secretary and Chief Financial Officer

Melanie Leydin
 25+ years of ASX-listed CFO and Company Secretary experience





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