



# OpGen Corporate Overview

January 2020



# Forward Looking Statements

This presentation contains forward-looking statements that are subject to many risks and uncertainties. Forward-looking statements appear in a number of places throughout this presentation and include statements regarding our intentions, beliefs, projections, outlook, analyses or current expectations concerning, among other things, our pending business combination transaction with Curetis GmbH (“Curetis”), a wholly owned subsidiary of Curetis N.V.; ongoing and planned product development by each of OpGen and Curetis; revenues, net loss from operations and cash burn of the combined company, the timing of, and ability to make, regulatory filings and obtain and maintain regulatory approvals for product candidates of OpGen and Curetis; expectations regarding product launch; our results of operations, cash needs, and spending of the proceeds from this offering, including the funds to be lent to Curetis; the financial condition, liquidity, prospects, growth and strategies of the combined company; the industry in which we and Curetis operate; and the trends that may affect the industry or us or the combined company.

We may, in some cases, use terms such as “believes,” “estimates,” “anticipates,” “expects,” “plans,” “intends,” “may,” “could,” “might,” “will,” “should,” “approximately” or other words that convey uncertainty of future events or outcomes to identify these forward-looking statements. Although we believe that we have a reasonable basis for each forward-looking statement contained in this presentation, we caution you that forward-looking statements are not guarantees of future performance and that our actual results of operations, financial condition and liquidity, and the development of the industry in which we operate may differ materially from the forward-looking statements contained in this presentation.

Factors that could cause results to differ materially from those described include, but are not limited to, our ability to successfully and timely seek approval of, and obtain approval of our stockholders for the business combination with Curetis, satisfy the closing conditions under the implementation agreement, successfully combine the businesses of OpGen and Curetis, comply with the complexities of a global business, achieve the synergies we expect and successfully implement the combined company’s strategic and business goals and objectives. For a discussion of the most significant risks and uncertainties associated with OpGen's business, please review the factors described in the “Risk Factors” section of our Registration Statement on Form S-1 filed with the U.S. Securities and Exchange Commission (“SEC”) on October 17, 2019, including the documents incorporated by reference therein. As a result of these factors, we cannot assure you that the forward-looking statements in this presentation will prove to be accurate. Furthermore, if our forward-looking statements prove to be inaccurate, the inaccuracy may be material. In light of the significant uncertainties in these forward-looking statements, you should not regard these statements as a representation or warranty by us or any other person that we will achieve our objectives and plans in any specified timeframe, or at all. Any forward-looking statements that we make in this presentation speak only as of the date of such statement, and we undertake no obligation to update such statements to reflect events or circumstances after the date of this presentation or to reflect the occurrence of unanticipated events except to the extent required by applicable securities laws.

# OPGEN CORPORATE OVERVIEW

Precision medicine company focused on combatting the global antibiotic resistance crisis by leveraging molecular diagnostics, informatics, and genomic analysis



Provides rapid and actionable information about life threatening drug resistant infections



Building global network of customers and partners to improve patient outcomes, and decrease the spread of infections caused by multidrug-resistant microorganisms, or MDROs



Key product Acuitas® AMR Gene Panel is designed to detect five pathogens and up to 47 resistance genes, predicting resistance for 9 classes of antibiotics



Collaborations with industry leaders to support the execution of our commercialization strategy as we work to address a \$2 billion potential market for precision medicine MDRO solutions

# CURETIS GROUP CORPORATE OVERVIEW



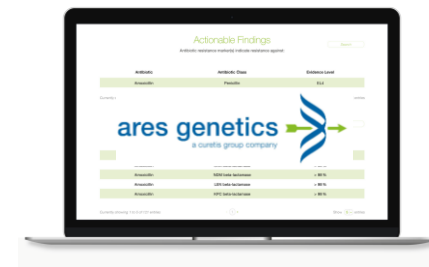
A commercial stage molecular diagnostics company striving molecular microbiology leadership through proprietary platforms and content



MDx platforms for low-to high-plex sample-to-answer PCR testing for a broad range of sample types relevant for molecular microbiology



Five CE-IVD-marked and 2 US-FDA cleared syndromic testing panels for major infectious disease indications in hospitalized patients



AMR data intelligence and biomarkers based on what Curetis believes to be the most comprehensive whole-genome knowledge base, ARESdb, on the genetics of antibiotic resistance



Direct sales channel in the U.S. complemented by a large network of distributors world-wide. Strategic partnerships for NGS and Bio-IT solutions for fighting AMR with key life science, IVD, and pharma players

# COMBINING TO BUILD A STRONGER FUTURE

## Strategic Rationale

- Establish a leading antimicrobial resistance (AMR) precision medicine business
  - Broad portfolio of high impact rapid diagnostics and AMR bioinformatics
  - Leverage combined sales, distribution, bioinformatics and operating infrastructure
- **Combined company expected to be positioned for strong growth profile and sustained value creation**

## Structure of Transaction

- OpGen acquisition of Curetis GmbH for 2.66 million new shares of OpGen common stock

# TRANSACTION TIMELINE AND CONDITIONS TO CLOSING

**Both companies' Boards of Directors have approved the implementation agreement**

The transaction is expected to close following approval by shareholders and debt holders for both OpGen and Curetis.

## Conditions to Closing

- ✓ Successful completion by OpGen of \$10 million equity financing
- ✓ Supported by debt holders of Curetis N.V., Curetis GmbH, and OpGen, Inc.
- Both companies now seeking approval from their respective shareholders in meetings to be held on March 10, 2020

# STRATEGIC BENEFITS



Market leader positioned to capitalize on global opportunities in infectious disease and rapid AMR detection



Proprietary molecular diagnostic tests and platforms



Premier AI-powered bioinformatics solutions for multi-drug resistance diagnostics



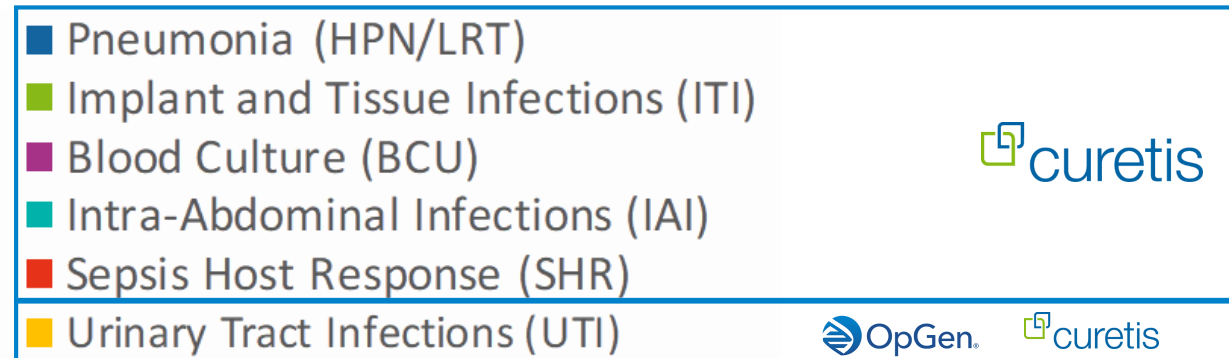
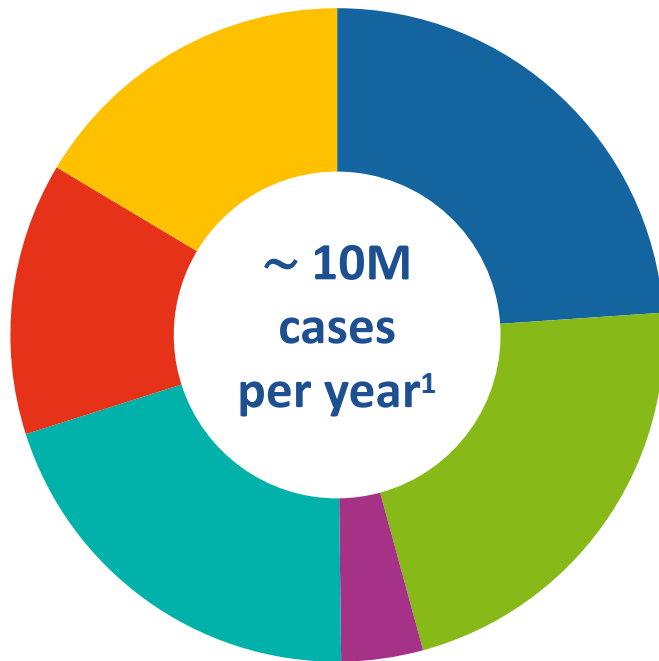
Global commercial channel capabilities & partners



Financial leverage, operational synergies, and positive growth-driven business outlook

# COMBINED COMPANY TO ADDRESS MULTIPLE HIGH IMPACT UNMET CLINICAL NEEDS AND LARGE AVAILABLE MARKET OPPORTUNITIES

U.S. and European market with high unmet medical need addressable through hospital-focused sales channels



The current Curetis portfolio and pipeline of cartridges according to Curetis management estimates target about 10 million patients annually in EU and U.S. with additional upside in Asia / Pacific and ROW markets



# COMBINED COMPANY'S PORTFOLIO OF COMMERCIAL STAGE PRODUCTS & STRATEGIC RELATIONSHIPS

## Unyvero Platform & Tests (Curetis)

Unyvero FDA-cleared platform  
and lower respiratory tract  
infection (LRT) test



## Acuitas Tests & Acuitas Lighthouse (OpGen)

Acuitas tests in development and  
pending FDA clearance to improve  
antibiotic decision making



## Global Commercial Presence (Curetis)

Direct sales in U.S., European distribution  
with A. Menarini Diagnostics,  
China distribution with Beijing Clear Biotech



## Strategic Fit

Transformative Strategic Relationship in MDx and BioIT



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# SAMPLE-TO-ANSWER AND HIGH-THROUGHPUT TESTING CAPABILITIES

Molecular microbiology leadership through proprietary platforms and content

## Striving for Molecular Microbiology Leadership

### MDx Platforms

unyvero



**Unyvero A50**  
High-Plex PCR



**Unyvero A30 RQ\***  
Low- to Mid-Plex PCR

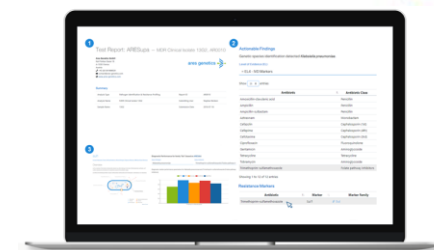
Low- to High-Plex PCR  
Broad Sample Range

### MDx Content

**Acuitas**  \*\*  
AMR Gene Panel

**Acuitas**   
Lighthouse®

**ares genetics**   
a curetis group company



**ARESdb**  
MDx Content & NGS Applications

Proprietary PCR & NGS Applications based on  
Leading AI-Powered AMR Knowledgebases

\* Unyvero A30 RQ Analyzer in development, latest design concept;  
final product may differ

\*\*Pending 510(k), not for diagnostic use.

# CURRENT AND NEAR-TERM U.S. PRODUCT OFFERINGS

## Curetis Unyvero Pneumonia (LRT / LRT BAL)

### Description:

- Sample-to-answer multiplex PCR from native specimen in about 5 hours with ~2min hands-on time
- 19 / 20 multiplexed PCR assays covering 36 / 37 Pathogen ID, 10 resistance genes

### Status:

- LRT FDA-cleared (*De Novo* 510(k)) April '18, launched June '18
- LRT BAL FDA cleared (510(k)) in Dec 2019

### Differentiators:

- Most comprehensive panel specifically tailored to bacterial pneumonia delivering unique clinically actionable insights

### Coming Next:

- Unyvero LRT plus high sensitivity application for BAL samples. 510(k) cleared December 2019
- Launch of LRT BAL in USA in Q1-2020

## OpGen Acuitas AMR Gene Panel

### Description:

- Sample-to-answer multiplex PCR from bacterial isolates in <3 hours
- Up to 47 resistance genes, accurate prediction of resistance for 9 antibiotics
- Available now for Research Use Only (RUO)

### Status:

- FDA 510(k) submitted May '19

### Differentiators:

- Rapid AMR prediction
- CRE infection control

### Coming Next:

- Rapid urine test with sample-to-answer multiplex PCR from native specimen in <3 hours
- 5 pathogen ID/quantitation, up to 47 resistance genes, and accurate prediction of resistance for 9 antibiotics
- Testing to support FDA *De Novo* submission in progress

# CURETIS' UNYVERO A30 RQ RAPID SAMPLE-TO-ANSWER TESTING PLATFORM



Platform open for partnering to rapidly create a broad menu of tests

First partnering agreement is anticipated to be negotiated in 2020

## Key Design Features

- Fully integrated, closed, sample-to-answer MDx platform
- Universal real-time PCR technology for low- to mid-plex testing
- Flexible cartridge fluidics for numerous chemistries and assay formats
- Fast turn-around time of 45-90 minutes
- Light-weight, stackable benchtop design with small footprint
- Modular and scalable from 1 to 8 cartridge slots
- Designed for ease-of-use and flexible deployment in labs and near-patient settings
- Attractive COGS for instruments and reagents

## Development Status

- First multiplex PCR successfully demonstrated on fully functional prototypes
- Manufacturing aspects fully specified and in development or implementation phase
- Curetis is aiming to have the the Unyvero A30 RQ platform ready for partnering in 2020

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Global commercial channel capabilities & partners



Financial leverage, operational synergies, and positive growth-driven business outlook

Curetis' bioinformatics subsidiary with globally leading proprietary AI-powered knowledgebase for AMR informing PCR & NGS-based diagnostics



## Global ARESdb Database

- Leading Knowledgebase on quantitative Antibiotic Resistance Markers building on **SIEMENS** Microbiology Strain Collection

## Technology evaluation agreement with leading global IVD corporation

- Includes option to 3 month exclusive negotiation period for a license to ARESdb and ARES Technology Platform for human clinical diagnostic use

## Bio-IT AMR agreement with QIAGEN

## Pharma R&D agreement with Sandoz

## NGS Service Laboratory

# ACUITAS LIGHTHOUSE®: DIAGNOSTICS DATA MANAGEMENT PLATFORM FOR ANTIBIOTIC RESISTANT PATHOGENS<sup>†</sup>

Rapid molecular antibiotic resistance prediction

**Acuitas Lighthouse** **OpGen**

Report Date: 07/25/2017    Sample ID: 646547    Test: Acuitas® AMR Gene Panel  
Test Date: 07/25/2017    Sample Type: Urine    Plate ID: P23894

Organisms Detected		Antibiotic Support
Organism	Copies/mL	
E. coli	Not Detected	NO EVIDENCE OF RESISTANCE Predicted for: Gentamicin, Tobramycin, Trimethoprim/Sulfonamide and Cefazidime
E. faecalis	Not Detected	
P. mirabilis	>10 <sup>5</sup>	RESISTANCE Predicted for: Cefazolin, Cefepime, Cefotaxime, Ceftriaxone and Ampicillin
K. pneumoniae	Not Detected	
P. aeruginosa	Not Detected	

Antibiotic Resistance Genes Detected		
Gene	Antibiotic class	Copies/mL
CTX-M-2	Cephalosporin	> 10 <sup>5</sup>
CTX-M-1	Cephalosporin	> 10 <sup>5</sup>

**Comments:**

1. Detection of multiple resistance genes in a polymicrobial specimen does not confirm which resistance marker is associated with the organism(s) detected. Subculturing and subsequent testing of the isolated organism is necessary to definitively link antimicrobial resistance with a specific organism.
2. Predictions are based on scenarios assuming the most resistant phenotype of organisms detected.

For Research Use Only. Not for use in diagnostic procedures. Antimicrobial resistance can occur via multiple mechanisms; the present test does not test for all applicable mechanisms for the antibiotics indicated. Therefore, failure to detect resistance genes does not necessarily infer antimicrobial susceptibility of the microorganisms present. In mixed cultures containing gram-negative bacteria and/or other microorganisms, the Acuitas AMR u5.47 test may not identify all the detectable microorganisms in a specimen. In rare instances, for specimens with microorganisms carrying a resistance marker, the Acuitas AMR u5.47 test may not yield a positive result for the resistance marker when the organism(s) are detected; subculture may be required for species identification and antimicrobial susceptibility testing of isolates.

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Development contract for potential State-wide AMR surveillance network



Cloud-based bioinformatics platform powers our ability to rapidly generate meaningful results that have the potential to change the landscape of clinical management and improve outcomes for patients

<sup>†</sup>In development; For Research Use Only. Not for use in diagnostic procedures.



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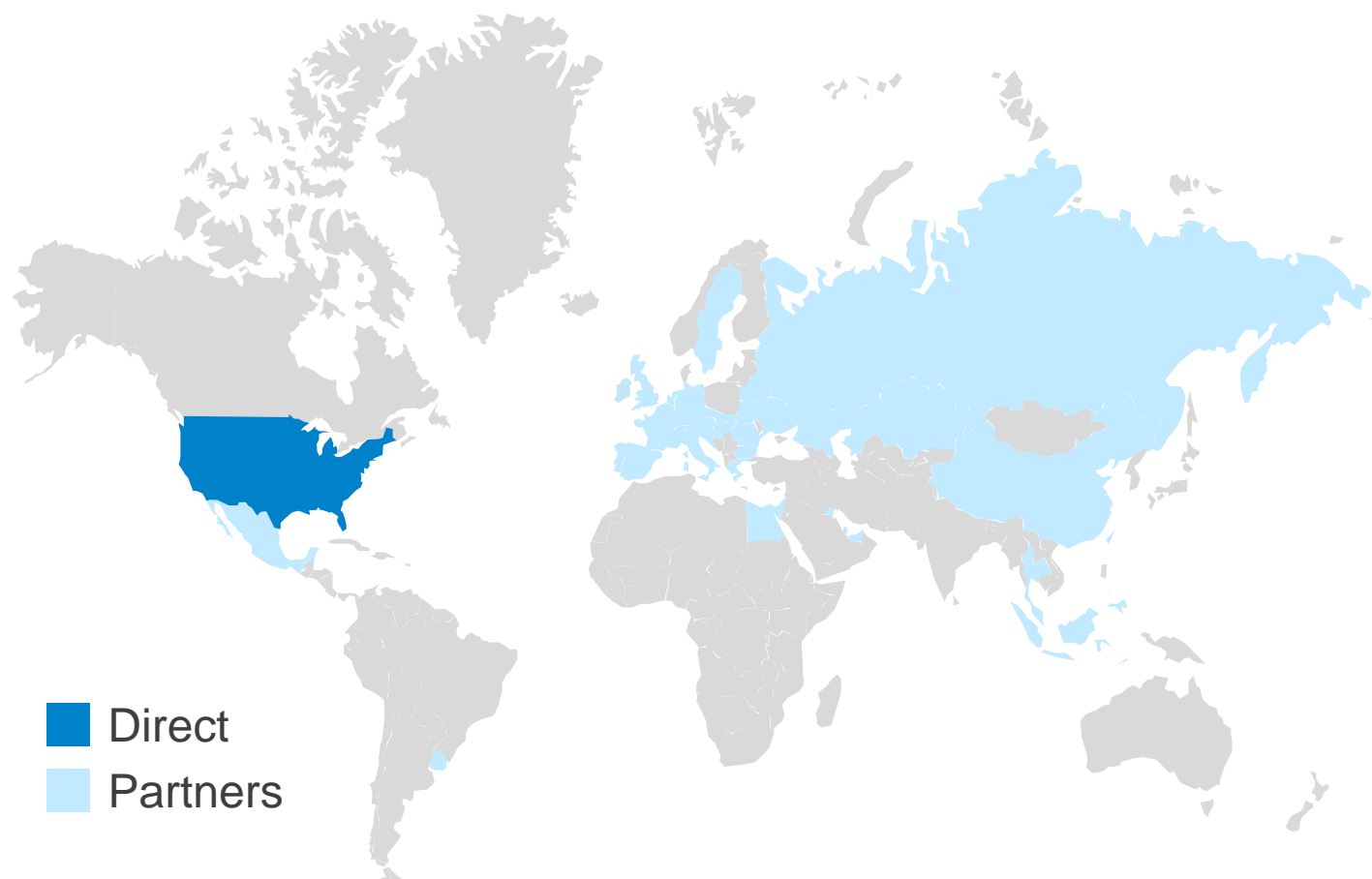


Financial leverage, operational synergies, and positive growth-driven business outlook

# COMMERCIAL STRATEGY

## OpGen and Curetis to realize synergies from a combined commercial effort

- Multiple products to same hospital call points via same sales channel to drive synergies and cost efficiencies

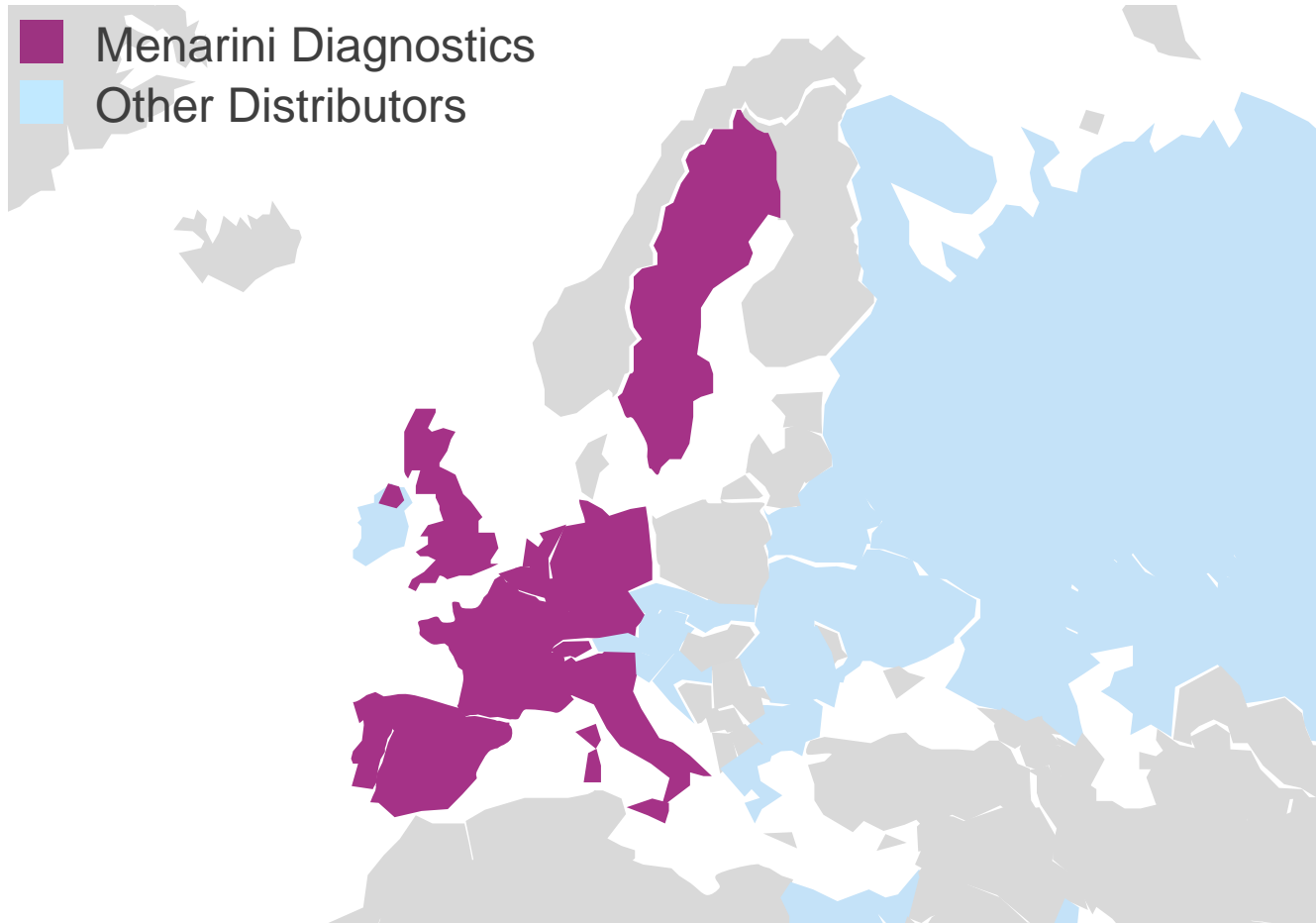


### Expanding global commercial reach through direct sales in U.S. and global distributors

- > Direct sales in the U.S.
- > European distribution through Menarini Diagnostics
- > China distribution through Beijing Clear Biotech
- > 18 distributors covering 43 countries in EU, ME, LATAM, and Asia

# CURETIS PAN-EUROPEAN DISTRIBUTION BY MENARINI DIAGNOSTICS

Starting with 11 EU countries – option to expand relationship to further EMEA markets and additional product lines



## Menarini Diagnostics Collaboration (Q1-2019)

- > Covers entire Unyvero A50 product line
- > Initial countries: **BE, CH, DE, ES, FR, IT, LU, NL, PT, SE, UK**
- > Option to expand relationship to further EMEA countries
- > Launch of collaboration at ECCMID 2019



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# FINANCIAL CONSIDERATIONS

- We anticipate combined company will be positioned for strong growth profile and sustained value creation
  - FY2018 revenues of \$1.6 million (Curetis) and \$2.9 million (OpGen)
  - Estimated FY2019 combined revenue of \$5-6 million
  - Estimated 2020 combined revenue of \$8-12 million
- Net loss from operations and cash burn anticipated to decrease starting in 2020 due to operating synergies from combined corporate, manufacturing & distribution, R&D, and sales & marketing organizations
- Transaction close contingent on completing interim equity financing as well as debt holder and shareholder approvals from both existing companies
  - ✓ OpGen has completed the interim equity financing
  - ✓ Debt holder approval obtained from EIB

# EXPECTED COMBINED COMPANY GOVERNANCE TEAM

**Combined team has decades of experience in precision medicine, molecular diagnostics and capital markets**

**Chairman of the Board:**

William Rhodes

**Chief Executive Officer:**

Oliver Schacht, Ph.D.

**Chief Financial Officer:**

Timothy C. Dec

**Board Members:**

William Rhodes (Chairman)

Evan Jones (Non-executive role)

Three additional members selected by Curetis

Two additional members selected by OpGen

# POTENTIAL BUSINESS MILETONES

## OpGen / Curetis Business Combination

- Successful shareholder votes and remaining debt holder approvals
- Closing of business combination transaction

## Unyvero and Acuitas Rapid DNA tests

- FDA clearances and future FDA submissions
- LRT BAL launch in USA
- Unyvero A30 RQ partnering deal(s)
- China NMPA approval and launch for Unyvero HPN test

## Ares Genetics

- Completion of Global IVD Corporation technology evaluation and licensing

# Thank You!

