OpGen
Corporate Overview

July 2020

Forward looking statements disclaimer

This presentation contains forward-looking statements that are subject to many risks and uncertainties. These statements, among other things, relate to our business strategy, goals and expectations concerning our products, future operations, prospects, plans and objectives of management. The words “anticipate,” “believe,” “could,” “estimate,” “expect,” “intend,” “may,” “plan,” “predict,” “project,” “will” and similar terms and phrases are used to identify forward-looking statements in this presentation. These statements and other statements regarding our future plans constitute “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, and are intended to qualify for the safe harbor from liability established by the Private Securities Litigation Reform Act of 1955. Such statements are subject to risks and uncertainties that are often difficult to predict, are beyond OpGen’s control, and that may cause results to differ materially from expectations.

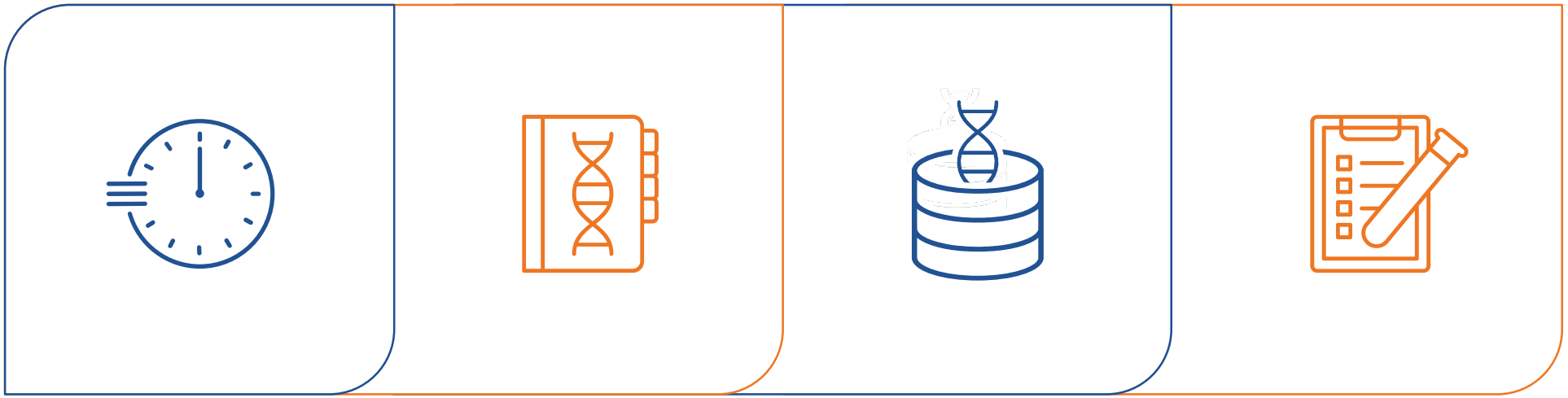
Factors that could cause results to differ materially from those described include, but are not limited to, our ability to successfully, timely and cost-effectively develop, seek and obtain regulatory clearance for and commercialize our product and service offerings, the rate of adoption of our products and services by hospitals and other healthcare providers, the realization of expected synergies from our business combination transaction with Curetis GmbH, the successful integration of our company with the operations and business of Curetis GmbH and its subsidiaries and the implementation of the combined company’s strategic and business goals and objectives, the impact of COVID-19 on our operations, financial results, and commercialization efforts as well as on capital markets and general economic conditions, the ability to comply with the complexities of operating a global business, the success of our commercialization efforts, the effect on our business of existing and new regulatory requirements, and other economic and competitive factors. For a discussion of the most significant risks and uncertainties associated with OpGen's business, please review our filings with the Securities and Exchange Commission. You are cautioned not to place undue reliance on these forward-looking statements, which are based on our expectations as of the date of this presentation and speak only as of the date of this presentation. We undertake no obligation to publicly update or revise any forward-looking statement, whether as a result of new information, future events or otherwise.

Recent newsflow

OpGen has recently announced several key updates and milestones

- OpGen Releases Preliminary Data from Collaboration with Karolinska Institute, Stockholm, Sweden. Investigator-initiated clinical study demonstrates that Unyvero HPN Panel for Pneumonia Identifies Life-Threatening Bacterial Co-Infections in COVID-19 Patients in Just Five Hours
- OpGen expands partnership with New York State Department of Health and IDC to detect antimicrobial resistant infections
- OpGen publishes first quarter 2020 financial results and provides business update
- Ares Genetics and Mayo Clinic publish validating data on feasibility of NGS-based AMR prediction
- OpGen and Curetis complete business combination

OpGen and its group companies: Striving to innovate molecular microbiology



Combined company's portfolio: Synergistic products & capabilities

Unyvero Platform & Syndromic Tests

Unyvero FDA-cleared platform for lower respiratory tract infection (LRT & LRT BAL) as well as 5 CE IVD tests; Unyvero A30 *RQ* platform in development

Acuitas Tests & Acuitas Lighthouse

Acuitas AMR Gene Panel tests in clinical trials (Urine) and pending FDA clearance (isolates) to improve antibiotic decision making; Lighthouse knowledge base deployed for public health use

Global Commercial Presence

Direct sales in U.S., European and China distribution with partners; 18 distributors covering 43 countries; CoV-2 test kit distribution in EMEA

Ares Genetics NGS & Bioinformatics

Ares Technology for AI-powered AMR prediction combining ARESdb with NGS; Strategic partnerships with globally leading IVD & pharma companies

OpGen®

Strategic rationale and benefits

Well 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

OpGen®

Combined company to address unmet clinical needs and large available market opportunities

U.S. and European markets with ~10 million hospitalized patients annually addressed through hospital-focused sales channels

- Pneumonia (HPN/LRT)
- Implant and Tissue Infections (ITI)
- Blood Culture (BCU)
- Intra-Abdominal Infections (IAI)
- Sepsis Host Response (SHR)

curetis

- Urinary Tract Infections (UTI)

OpGen curetis

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

OpGen

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OpGen®

We help fight the COVID-19 global pandemic

SARS CoV-2 PCR kits, PCR-compatible universal lysis buffer, COVID-19 pneumonia co-infections

CE and FDA marked BGI 2019-nCoV RT-qPCR test kits

- Real-Time fluorescent RT-PCR kit for detecting SARS CoV-2 kit with 50 reactions, including 2 controls pos./neg. for 48 patient samples
- Validated for Qiagen QIAamp Virus RNA Mini Kit and ABI7500 instrument
- Sample material: nasopharyngeal swabs, sputum and BAL
- PCR-compatible Universal Lysis Buffer (PULB)

HPN/LRT cartridges CE marked & FDA cleared for lower respiratory tract infections such as bacterial pneumonia

unyvero

- Multiplex PCR system capable of detecting COVID-19 bacterial co-infections such as bacterial pneumonia.
- HPN: Coverage of 29 pathogens and 19 resistance markers
- LRT (LRT BAL): Coverage of 36 (37) pathogens and 10 (10) antibiotic resistance markers
- Range of sample materials: sputum, bronchoalveolar lavage and tracheal aspirates
- Results in 4-5 hours

OpGen®

Sample-to-answer high-throughput testing capabilities

Innovating molecular microbiology through proprietary platforms and content

Striving for molecular microbiology innovation

MDx Platforms	MDx Content

unyvero

Unyvero A50
High-Plex PCR

Unyvero A30 *RQ
Low- to Mid-Plex PCR

Acuitas® AMR Gene Panel**

Acuitas Lighthouse®

ares genetics

ARESdb
MDx Content & NGS Applications

Low- to high-plex PCR
Broad range of sample types

Proprietary PCR & NGS applications based on leading AI-powered AMR knowledgebases

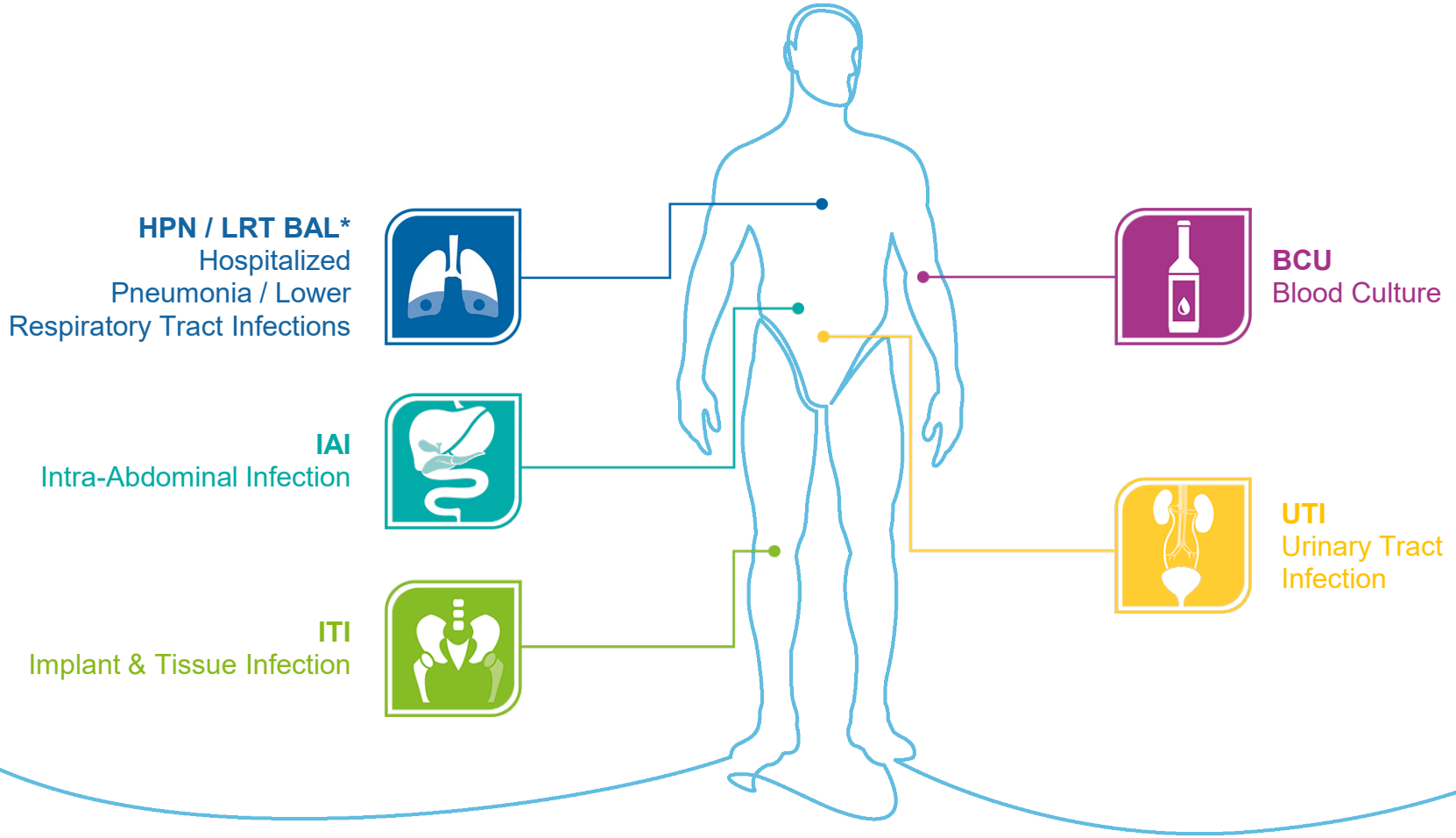
**Unyvero A30 RQ Analyzer in development, latest design concept; final product may differ.*

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

OpGen®

Broad Unyvero cartridge portfolio

unyvero



HPN / LRT BAL*
Hospitalized
Pneumonia / Lower
Respiratory Tract Infections

IAI
Intra-Abdominal Infection

ITI
Implant & Tissue Infection

BCU
Blood Culture

UTI
Urinary Tract
Infection

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* Unyvero LRT / LRT BAL are FDA cleared – all other products CE IVD marked.

Unique and differentiated syndromic panels

unyvero

Cartridge	Indication area	Number of targets covered	Sample types	Clearance status
HPN** 	Severe cases of Pneumonia	48 targets****, pathogens (29) and antibiotic resistance markers (19)	Sputum, broncho-alveolar lavage, tracheal aspirate	CE-IVD marked Singapore (HAS) Thailand Malaysia
LRT & LRT BAL 	Lower Respiratory Tract Infections	LRT (LRT BAL): 46 (47) targets****, pathogens 36 (37) and antibiotic resistance markers 10 (10)	LRT: Tracheal aspirates LRT BAL: Bronchoalveolar Lavage (BAL)	LRT: FDA cleared (4/2018) LRT BAL: FDA cleared (12/2019)
ITI 	Severe cases of Implant and Tissue Infections	102 targets, pathogens (85) and antibiotic resistance markers (17)	Sonication fluid, swabs, striche, tissue, pus, aspirate/ exudate, etc.	CE-IVD marked
BCU*** 	Bloodstream infections	103 targets, pathogens (86) and antibiotic resistance markers (17)	Positively flagged blood cultures	CE-IVD marked Singapore (HAS) Thailand
IAI 	Severe Intra-Abdominal Infections	130 targets, pathogens (105), toxins (3) and antibiotic resistance markers (22)	Paracentesis fluids, biliary fluids, peritoneal fluids, drainage fluids, retroperitoneal fluids, pus, swabs, samples from positively flagged blood culture bottles inoculated with other fluids than blood (IAI fluids such as ascites)	CE-IVD marked
UTI 	Severe cases of Urinary Tract Infections	103 targets, pathogens (88) and antibiotic resistance markers (15)	Midstream urine, suprapubic aspiration, tissue	CE-IVD marked

***HPN: Hospitalized Pneumonia ***BCU: Blood Culture Application ****Difference between HPN and LRT (BAL) due to different reporting requirements between CE-IVD and U.S. FDA-cleared products.*

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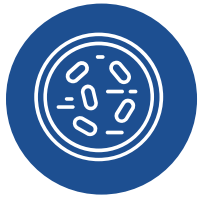
Current U.S. product offerings: Unyvero LRT & LRT BAL

Providing Clear Direction

- FDA-cleared, sample-to-answer, in less than 5 hours with just about 2 min hands-on time
- Direct from native specimen, FDA-cleared for bronchoalveolar lavage fluids and tracheal aspirates
- Multiplex PCR with array detection
- Detects the most clinically relevant pathogens (incl. atypicals) and antibiotic resistance markers associated with lower respiratory tract infections including pneumonia
- Broadest carbapenemase resistance coverage
- The only FDA-cleared LRT panel that detects *Pneumocystis jirovecii*
- Critical information for life-saving treatment decisions

Current U.S. product offerings: Acuitas AMR Gene Panel*

Panel available for RUO in outbreak monitoring and epidemiology settings (for isolates FDA clearance decision pending) – and in clinical trials for cUTI



Detects most deadly superbugs

E. coli, K. pneumoniae, P. mirabilis, P. aeruginosa, E. faecalis

Identifies

Up to 47 Resistance Genes, spanning 9 Antibiotic Classes

Tests

Directly from Urine (in Clinical Trials) or Isolated Colonies (FDA Clearance Decision Pending), Sample-to-Answer Multiplex PCR from Bacterial Isolates (or Native Urine Specimen) in under 3 hours

Acuitas® AMR Gene Panel

**For Research Use Only. Not for use in diagnostic procedures.*

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Unyvero A30 *RQ*
Rapid sample-to-answer testing platform in development

Platform available for partnering to rapidly create menu of tests and commercial channel(s)

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

- Currently working towards clinical proof of concept from sample to answer with various assays including SARS CoV-2
- Multiplex PCR successfully demonstrated on functional prototypes
- Manufacturing aspects fully specified and in development or implementation phase
- Curetis aims at having Unyvero A30 *RQ* platform ready for partnering in 2020

OpGen®

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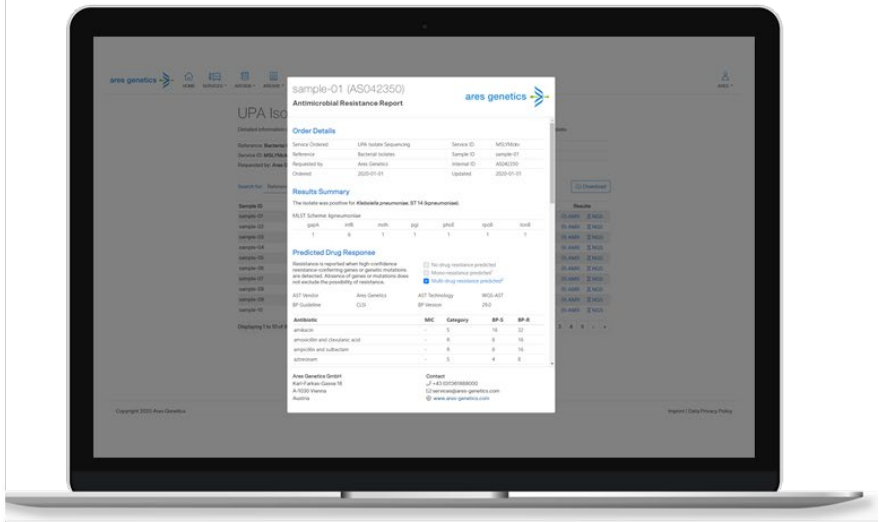
Ares Genetics & ARESdb*

Bioinformatics powerhouse with industry-leading proprietary AI-powered AMR knowledgebase for molecular microbiology



Global ARESdb Database

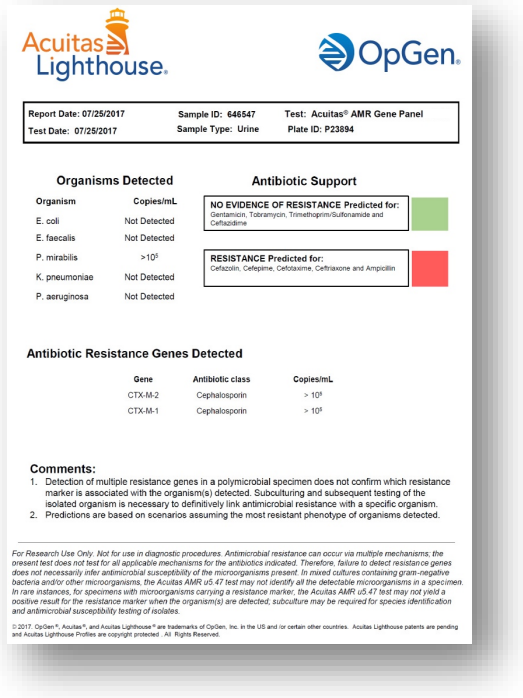
- Unique Knowledgebase on Antibiotic Resistance Markers building on **SIEMENS** Microbiology Strain Collection
- Demonstrated up to **> 99 % Accuracy** for **Antibiotic Susceptibility Prediction** in evaluation studies
- Based on **> 50,000 Pathogens** and associated Resistance Data for **> 100 Antibiotics**

First RUO applications launched through NGS service laboratory and cloud platform

Partners and customers include globally leading IVD & pharma companies

**In development; For Research Use Only. Not for use in diagnostic procedures.*

Acuitas Lighthouse®: Diagnostics data management platform for antibiotic resistant pathogens*



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

Organism	Copies/mL
E. coli	Not Detected
E. faecalis	Not Detected
P. mirabilis	$>10^5$
K. pneumoniae	Not Detected
P. aeruginosa	Not Detected

Antibiotic Support

NO EVIDENCE OF RESISTANCE Predicted for: Gentamicin, Tobramycin, Trimethoprim/Sulfonamide and Ceftazidime

RESISTANCE Predicted for: Cefazolin, Cefepime, Cefotaxime, Ceftriaxone and Ampicillin

Antibiotic Resistance Genes Detected

Gene	Antibiotic class	Copies/mL
CTX-M-2	Cephalosporin	$>10^5$
CTX-M-1	Cephalosporin	$>10^5$

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 v5.47 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 v5.47 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.

Rapid molecular antibiotic resistance prediction

Cloud-based bioinformatics platform powers our ability to trace AMR in real-time with the potential to change the landscape of clinical infectious disease management and improve outcomes for patients

Successfully met all development milestones under 1st year contract – potential state-wide AMR surveillance network and expanded the partnership for 2nd year contract term – Currently discussing re-start of testing post COVID-19 related testing pause at all sites

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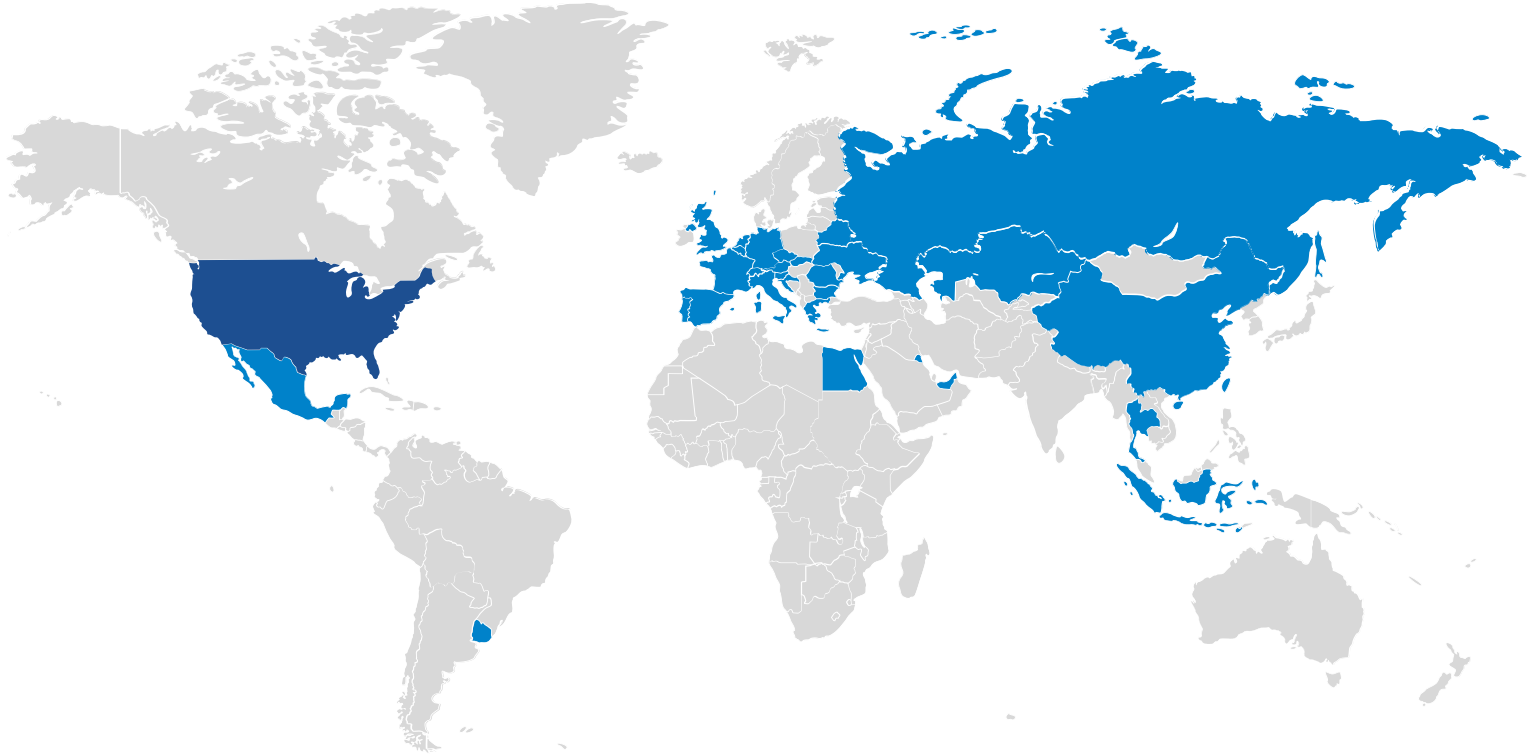
Dual commercial model

Leveraging synergies from our now combined commercial team structures

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

Direct Partners



Expanding global commercial reach though direct sales in U.S. and via 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
- EMEA distribution and sales of BGI's SARS CoV-2 test kits

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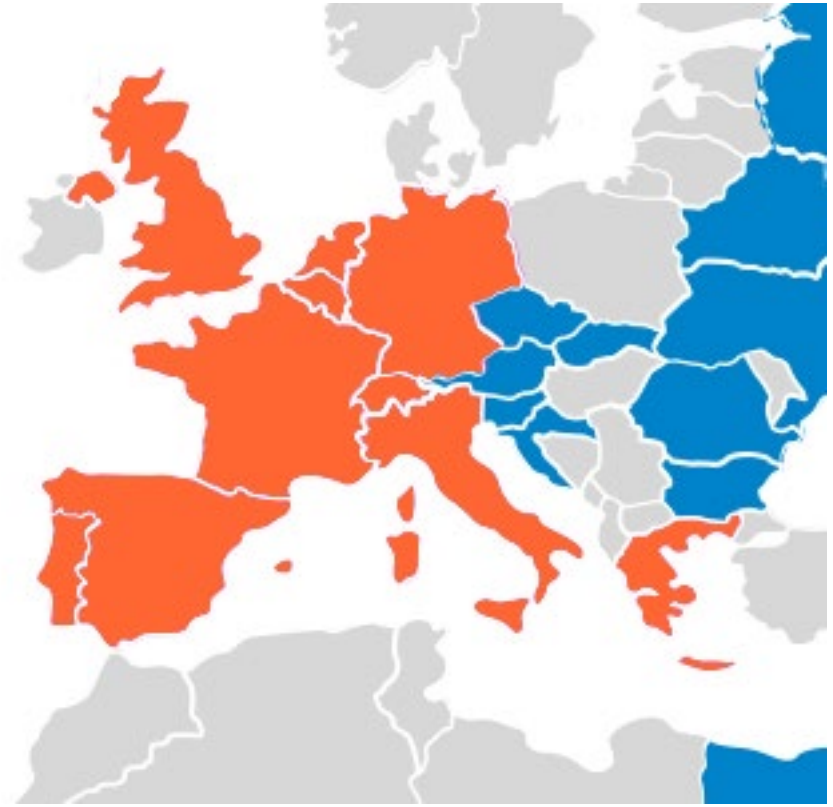
Pan-European distribution via Menarini

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

Menarini Diagnostics Other distributors



Menarini Diagnostics & Curetis Collaboration (since Q1-2019)

- Covers entire Unyvero A50 product line
- Currently covered countries: **BE, CH, DE, ES, FR, IT, LU, NL, PT, UK, GR**
- Option to expand relationship to further EMEA countries

A.MENARINI diagnostics

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Financial considerations

Proforma combined revenue

- FY2018 revenues of $4.5
- FY2019 revenues of $6.0 million
- 1Q2020 revenues of $1.5 million
- No revenue guidance for 2020 at this time due to COVID-19 situation

Cash position

- March 31, 2020 – $12.4 million (includes $0.9 million at Curetis and Ares)
- Cash raised via ATM and warrant exercises YTD 2020 – $15.6 million
- ATM gross capacity - $8.2 million
- Warrants outstanding – 864k @ avg. exercise price $2.16 – gross available proceeds $1.9 million
- Cash Burn – estimated to be approximately $4.5-$5.5 million per quarter

Capital structure - shares outstanding

- Common Stock – 15,460,971
- Warrants – 1,040,107 (864,000 warrants avg. exercise price $2.16)
- Convertible – 234,998
- Equity Awards – 158,525
- Fully Diluted Shares Outstanding – 16,894,601

Operations

Other Key Items

- 15,000 sq. ft. corporateHQ and FDA registered R&D/ manufacturing facility in Gaithersburg, Maryland, USA
- 17,000 sq. ft. FDA registered R&D, operations and G&A facility in Holzgerlingen, southern Germany
- 17,000 sq. ft. FDA registered manufacturing facility in Bodelshausen, southern Germany
- 15 Acuitas AMR Gene Panel system placements in the U.S.
- Legacy FISH products from AdvanDx sold via combined U.S. commercial team and via Curetis GmbH in Europe
- ~170 Unyvero Analyzer placements globally

Employee count:

- Approximately 110 employees globally:
  - ~57 R&D, Operations, SW & Bioinformatics
  - ~20 Manufacturing, QM /QA /QC & RA
  - ~18 Sales & Marketing
  - ~15 General & Administration

OpGen Inc. executive leadership team and board

Team has decades of experience in precision medicine, molecular diagnostics and capital markets

Chief Executive Officer:	Oliver Schacht, Ph.D.
Chief Financial Officer:	Timothy (Tim) C. Dec
Chief Operating Officer:	Johannes (Jan) Bacher
Board Members:	William (Bill) Rhodes (Chairman)
	Evan Jones
	Mario Crovetto
	Don Elsey
	Prabhavathi Fernandes, Ph.D.
	Oliver Schacht, Ph.D. (CEO)

Upcoming milestones, newsflow & catalysts

Unyvero & Acuitas® rapid molecular tests

- Final study data from Karolinska Institutet, Stockholm, Sweden in COVID-19 bacterial pneumonia co-infection clinical study
- FDA clearance decision Acuitas® AMR Gene Panel (isolates)
- USA commercial updates on Unyvero LRT / LRT BAL
- Unyvero A30 *RQ* partnering deal(s)
- Clinical trial updates (FDA trial enrollment, data read-out, China clinical trial etc.)
- Regulatory submissions (e.g. next FDA submission upon trial completion)
- China NMPA approval and launch for Unyvero HPN test

Ares Genetics

- Completion of global IVD corporation technology evaluation and R&D program
- Potential future expansion of the partnership with global IVD corporation (e.g. option for 90 day exclusive negotiation about licensing)
- Further partnering / licensing deal(s)
- Publication of clinical data validating ARESdb for NGS-based antibiotic susceptibility testing

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