Safe Harbor Statement

Certain statements made in this presentation include forward-looking actions that Oragenics, Inc. (“Oragenics,” or the “Company”) anticipates based on certain assumptions. These statements are indicated by words such as “expect”, “anticipate”, “should” and similar words indicating uncertainty in facts, figures and outcomes. Such statements are made pursuant to the Safe Harbor Provisions of the Private Securities Litigation Reform Act of 1995. While Oragenics believes that the expectations reflected in such forward-looking statements are reasonable, it can give no assurance that such statements will prove to be correct. The risks associated with the Company are detailed in the Company’s various reports filed by the Company with the Securities and Exchange Commission.
Oragenics (NYSE American: OGEN) is a development stage company dedicated to fighting infectious diseases. It is focused on advancing its TerraCoV2 vaccine candidate to combat the novel coronavirus pandemic, leveraging coronavirus spike protein research licensed from the National Institutes of Health. It is also developing lantibiotics, a novel class of antibiotic, focused on combatting multidrug-resistant organisms.
Investment Highlights

1. Recent Acquisition of Noachis Terra provides access to NIH-created SARS-CoV-2 (COVID-19) Spike Protein Vaccine Technology
   Expect to enter human clinical studies in early 2021

2. Multi-billion market for COVID-19 vaccines likely to accommodate multiple players
   Cash through early 2021; Grants for COVID-19 under review at funding agencies including BARDA

3. Lantibiotics Platform: A novel class of peptide antibacterial compounds, with activity against a variety of MDR infections
   Lead lantibiotic OG716 addresses *C. difficile*
Lead Program:
NIH-created SARS-CoV2 S-2P (COVID 19) vaccine candidate focused on the stabilized “Spike Protein”
Objective: To develop and commercialize a vaccine providing lifetime immunity from SARS-CoV-2 infection focusing on the spike protein.

Benefits: Lifetime protection from SARS-CoV-2 virus, COVID-19 infection prevention, more rapid immune response, lower antigen concentration required.

Future: Potential cross protection against other coronaviruses.

The molecular structure of the spike protein.

Jason Mclellan/Univ. of Texas at Austin
Accessible antigenic sites depend on protein conformation:
- Pre sites: O, V
- Post site\(^1\): I
- Pre/post sites: II, III, IV

Absorption of human convalescent serum with postfusion F modestly reduces neutralizing antibodies

Absorption of human convalescent serum with prefusion F removes almost all neutralizing antibodies

1. MAbs to site 1 preferentially bind postfusion conformation

Flynn et al, PLOS ONE|DOI:10.1371/journal.prone.0164789 Oct. 20, 2016
Stabilized Prefusion Spike Protein Ectodomain Trimer

- Class I fusion protein
- Two amino acid substitutions stabilize prefusion conformation
- T4 fibritin trimerization domain
- Expressed in mammalian cell line

Daniel Wrapp et al. Science 2020; 367:1260-1263
SARS-CoV-2 S-2P IgG subclass Results: B6C3 Mice

Immunizations with mRNA-1273 and S-2P protein, delivered with TLR4 agonist, elicit S-specific Th1-biased T cell responses. B6C3F1/J mice were immunized at weeks 0 and 3 with 0.01, 0.1, or 1 µg of mRNA-1273 or SAS-adjuvanted SARS-CoV-2 S-2P protein. Sera were collected 2 weeks post-boost and assessed by ELISA for SARS-CoV-2 S-specific IgG1 and IgG2a/c.

Endpoint titers (a-b) were calculated. For mice for which endpoint titers did not reach the lower limit of detection (dotted line), ratios were not calculated (N/A).

SARS-CoV-2 S-2P protein with SAS adjuvant produces significant and balanced IgG1 and IgG2a/c levels at doses as low as 0.01 ug demonstrating level of immune response.

SARS-CoV-2 S-2P IgG subclass Results: BALB/c and C57BL/6 Mice

SAS-adjuvanted S-2P protein elicit both IgG2a and IgG1 subclass S-binding antibodies. BALB/cJ (b) or C57BL/6J (e) mice were immunized at weeks 0 and 3 with 0.01 (green), 0.1 (blue), or 1 μg (red) of SARS-CoV-2 S-2P protein adjuvanted with SAS. Sera were collected 2 weeks post-boost and assessed by ELISA for SARS-CoV-2 S-specific IgG1 and IgG2a or IgG2c for BALB/cJ and C57BL/6J mice, respectively.

Similar significant and balanced IgG1 and IgG2a or IgG2c titers were also observed in BALB/c and C57BL/6 mice immunized with SARS-CoV-2 S-2P protein with SAS adjuvant indicating the immune response is robust and seen in a second strain of mouse.
**SARS-CoV-2 S-2P Neutralization Titers**

*Extended Data Table 1. Concordance of Pseudovirus Neutralization Assay and PRNT.*

<table>
<thead>
<tr>
<th>Mouse Serum Pool #</th>
<th>Reciprocal IC₅₀ Titer</th>
<th>Fold Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pseudovirus Neutralization</td>
<td>PRNT³</td>
</tr>
<tr>
<td>1</td>
<td>893.5 +/- 1.4</td>
<td>933.5</td>
</tr>
<tr>
<td>2</td>
<td>211.6 +/- 1.5</td>
<td>314.5</td>
</tr>
<tr>
<td>3</td>
<td>159.8 +/- 1.3</td>
<td>397.1</td>
</tr>
</tbody>
</table>

1. BALB/cJ mice were immunized at weeks 0 and 3 with 1 μg SARS-CoV-2 S-2P protein, adjuvanted with SAS. Sera were collected 2 weeks post-boost and pooled (N = 3 mice/pool).
2. IC₅₀ titers were averaged from pseudovirus neutralization assays completed in 5 experimental replicates. (GMT +/- geometric SD)
3. IC₅₀ titer from PRNT assay completed once.
4. Fold difference calculated as average pseudovirus neutralization IC₅₀ titer relative to PRNT IC₅₀ Titer

SARS-CoV-2 S-2P protein with SAS adjuvant produces significant Nab titers in BALB/c mice.
Well Established Production Process for Terra Cov-2 Vaccine Creation

Creation of Antigen Producing cell line (CHO) (Aragen)

Production of Antigen under GMP (Avid)

Addition of FDA approved Adjuvant (Example: CpG 1018: Dynavax)

Completion of Fill/Finish (Ology Bioscience)

Examples of recombinant protein + Adjuvant
Hepatitis B
HPV
Technology Overview – Current Status

- NIH/NIAID license secured with acquisition of Noachis Terra
- Non-dilutive grants, including BARDA submitted or under development
- Utilize NIAID pre-clinical services for pre-IND enabling studies
- Contracts in place for:
  - Cell bank manufacture
  - Vaccine manufacture
  - Clinical Research Organization & Regulatory Consultants
- Utilize BARDA services for fill/finish
- Creation of cell line complete
- Development of analytical methods and transfer to manufacturing facility underway
Regulatory Strategy: Aggressive Fast Track Approach

Proposed Clinical Trial Pathway and Timeline

- **FDA Pre-IND mtg, 9/20**
- **File U.S. IND, 1Q21**

<table>
<thead>
<tr>
<th>4Q20 - 1Q21</th>
<th>2/3Q21</th>
<th>4Q21 - 4Q22</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technology Transfer from NIH</strong></td>
<td><strong>Pre-IND Enabling Studies</strong></td>
<td><strong>Phase 1 Clinical Trial</strong></td>
</tr>
<tr>
<td><strong>Phase 2/3 Clinical Trial</strong></td>
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**Assumptions:**
1. RCB used as GMP cell line
2. Pilot batch acceptable for IND
3. Toxicology study report initially filed with clinical only
Novel Lantibiotic Platform for Multidrug Resistant Bacterial Infections
2019 CDC List of Antibiotic Resistant Bacteria and Fungi

Urgent Threats
• Carbapenem-resistant Acinetobacter
• Candida auris
• \textit{Clostridioides difficile}
• Carbapenem-resistant Enterobacteriaceae
• Drug-resistant \textit{Neisseria gonorrhoeae}

Serious Threats
• Drug-resistant \textit{Campylobacter}
• Drug-resistant \textit{Candida}
• ESBL-producing Enterobacteriaceae
• Vancomycin-resistant \textit{Enterococci} (VRE)
• Multidrug-resistant \textit{Pseudomonas aeruginosa}
• Drug-resistant nontyphoidal \textit{Salmonella}
• Drug-resistant \textit{Salmonella} serotype Typhi
• Drug-resistant \textit{Shigella}
• Methicillin-resistant \textit{Staphylococcus aureus} (MRSA)
• Drug-resistant \textit{Streptococcus pneumoniae}
• Drug-resistant Tuberculosis

Concerning Threats
• Erythromycin-Resistant Group A \textit{Streptococcus}
• Clindamycin-resistant Group B \textit{Streptococcus}

Watch List
• Azole-resistant \textit{Aspergillus fumigatus}
• Drug-resistant \textit{Mycoplasma genitalium}
• Drug-resistant \textit{Bordetella pertussis}
Lantibiotics: Novel Platform of Antibiotics to Treat Serious Life-Threatening Infections

- Lantibiotics are a novel class of peptide antibacterial compounds naturally produced by a variety of Gram-positive bacterial strains to attack competing bacterial strains.
- Platform: >700 lantibiotic structures created, potentially generating a pipeline of new compounds.
- Platform provides potential for development in multidrug resistant infections:
  - Methicillin Resistant *Staphlococcus aureus* (MRSA)
  - Vancomycin Resistant Enterococci (VRE)
  - Virulent *Clostridium difficile*
  - Gram(-) infections

**Mutacin 1140:** A lantibiotic produced by *Streptococcus mutans*
C. difficile and C. difficile Infection (CDI): Epidemiology

- *C. difficile* is an infection of the colon causing colitis by producing toxins that damage lining of the colon
- 223,900 infections annually resulting in 12,800 deaths
- 83,000 will experience at least one recurrence
- Healthcare-associated infections occur: 37% hospital onset, 36% nursing home onset, and 27% community onset
- *C. difficile* associated diarrhea is associated with a 1-2 week hospital stay at a cost of $1BN/year
- **Emerging problem**: 8% of CDI associated with onset of concomitant Vancomycin Resistant Enterococci (VRE) infection
Oral OG716 Superior at Preventing *C. difficile* Deaths in Hamster Model

![Graph showing survival comparison between OG716, Vanco, OG253, and Vehicle across different phases of *C. difficile* infection.]

- **DAYS 3-7**: Antibiotic Treatment Phase
- **DAYS 8-22**: Recurrence Phase

**Survival (%)**
- **0%** to **100%**
- **Days**: 0, 1, 2, 3-7, 8-22

**OG716**
- Continuous survival across all phases

**Vanco**
- Survival dip during Recurrence Phase

**OG253**
- Survival dip during Antibiotic Treatment Phase

**Vehicle**
- Survival dip during Infection Phase

**Antibiotic Treatment Phases**
- DAY 2: Clindamycin
- DAY 1: Infection

**Recurrence Phase**
- DAY 2: Clindamycin
Lantibiotics: OG716 C. difficile Program Milestones

4Q16
- Tech Transfer of Manufacturing Process
  - Fermentation complete; purification underway

1Q17
- Manufacture of API
  - Ongoing at 1400L scale: transitioning to GMP manufacture; Enough material generated for rat tox study, lots for monkey tox study ongoing

3Q19
- Toxicology and Microbiology Underway
  - 14-day rat tox study underway and monkey tox study under development

2Q21 (estimate)
- File IND
  - Timing of filing of the IND is subject to having adequate available capital to complete requisite studies
## Capitalization

<table>
<thead>
<tr>
<th>Common Stock Equivalents</th>
<th>Cash</th>
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<tbody>
<tr>
<td><strong>Common Stock Outstanding</strong>(1)</td>
<td>61,004,917</td>
</tr>
<tr>
<td><strong>Series A and Series B Convertible Preferred (As Converted)</strong></td>
<td>2,261,703</td>
</tr>
<tr>
<td><strong>Series C Non-Convertible Perpetual Preferred</strong>(2)</td>
<td>-</td>
</tr>
<tr>
<td>(113,941 shares outstanding)</td>
<td></td>
</tr>
<tr>
<td><strong>Warrants (WAEP $1.35)****(1)</strong></td>
<td>20,513,145</td>
</tr>
<tr>
<td><strong>Reserved for issuance under stock incentive plan</strong></td>
<td>8,009,250</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>91,789,015</strong></td>
</tr>
</tbody>
</table>

(1) Information is as of August 7, 2020.

(2) As of June 30, 2020, the Non-Voting, Non-Convertible Series C Preferred Shares have a stated value of $33,847 per share and have an accruing dividend of 20% per year. The Series C Preferred Shares resulted from the conversion of approximately $3.3 million in debt obligations previously owed to Precigen (fka: Intrexon).

The Series A, B, and C Preferred stock have no price based downround protection for the conversion price.

(3) Information is as of June 30, 2020 (excludes net proceeds from warrant exercises after the quarter).
Experience Management Team

Dr. Alan F. Joslyn  
Director, President and Chief Executive Officer  
- Assumed CEO position at Oragenics in June 2016  
- Held CEO positions at several private biotechnology companies including Sentinella Pharmaceuticals, Edusa Pharmaceuticals and Mt. Cook Pharma  
- Over 25 years of drug development experience at Glaxo, Johnson & Johnson and Penwest

Mike Sullivan  
Chief Financial Officer  
- Held senior-level financial positions for both publicly and privately held businesses  
- Significant experience in product licensing and IP issues with strong background in both domestic and international retail operations

Dr. Martin Handfield  
Senior Vice President, Discovery Research  
- Molecular Microbiologist and former Tenured Associate Professor, College of Dentistry at The University of Florida  
- Prolific researcher focusing on infectious diseases, host-pathogen interactions and non-invasive diagnostics
Experienced Management Team

Dr. David Zarley
Consultant

- More than 30 years in vaccine research and development in the private sector
- Vice-President of Program Management for Vaccine Research and Development at Pfizer
- Senior Director /Medicines Team Leader for Pfizer Primary Care Business Unit
- Senior Director for Wyeth Research Project Management Business Unit
- Senior Director for Technical Operations and Product Supply (TOPS) at Wyeth Vaccines
- Senior Research Biochemist / Project Leader for Viral Vaccine Research and Development at Lederle-Praxis Biologicals
Near Term Milestones

3Q20
- Complete CHO cell line Vaccine Development
- Initiate Vaccine CDMO work
- Complete FDA pre-IND meeting for Vaccine Candidate

4Q20
- Complete pre-clinical studies for Vaccine Candidate
- Advance Vaccine GMP manufacture at CDMO
- Initiate building of CHO MCB for the Vaccine

1Q21
- File IND for Vaccine

2Q21
- Initiate Phase 1 Clinical Study
- File IND for OG716
Investment Summary

• License to NIH-created SARS-CoV-2 Spike Protein Vaccine Technology set to enter human clinical studies in early 2021; potential for permanent protection for SARS-CoV-2 and other coronaviruses

• $Multi-billion market for COVID-19 vaccines likely to accommodate multiple players

• Cash through early 2021; Federal Grants for COVID-19 under review at BARDA

• Novel class of peptide antibacterial compounds called Lantibiotics
  • Activity against a variety of MDR infections, believed to be the next human health crisis
  • Lead lantibiotic OG716 addresses C. difficile – a significant infection identified by the CDC.