The C1 Technology Platform
Making Healthcare Accessible & Affordable
NASDAQ: DYAI
Investor Presentation – February 2020
Certain statements contained in this presentation are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934, including those regarding Dyadic’s expectations, intentions, strategies and beliefs pertaining to future events or future financial performance. Actual events or results may differ materially from those in the forward-looking statements as a result of various important factors, including those described in Dyadic’s most recent filings with the SEC. Undue reliance should not be placed on the forward-looking statements in this press release, which are based on information available to us on the date hereof. Dyadic assumes no obligation to update publicly any such forward-looking statements, whether as a result of new information, future events or otherwise. For a more complete description of the risks that could cause our actual results to differ from our current expectations, please see the section entitled “Risk Factors” in Dyadic's annual reports on Form 10-K and quarterly reports on Form 10-Q filed with the SEC, as such factors may be updated from time to time in Dyadic’s periodic filings with the SEC, which are accessible on the SEC’s website at www.dyadic.com.
Dyadic Investment Thesis

Recent Nasdaq Listing; Compelling Valuation

April 17, 2019
Up-listed on Nasdaq Capital Markets

Funded On-going R&D Collaborations with Top Tier Pharm

Proven Technology for Industrial Use

Experienced Board Members and Management Team

Strong Balance Sheet

- US$37.2M cash & equivalents\(^1\)
- No Debt or Warrants

\(^1\)As of September 30, 2019, incl. accrued Interest

Proprietary Technology - C1 Fungal Gene Expression Platform - Broad Applications

DYADIC INFORMATION

\(^1\) As of September 30, 2019, incl. accrued Interest
Dyadic Highlight

- Ticker: NASDAQ: DYAI
- Share Price: $6.02
- 52 Weeks Range: $1.84-$7.30
- Market Capitalization: ~$163.8 million
- Shares Outstanding: ~27.2 million
- Insider Ownership Percentage: 30.3%
- Debt/Warrants: None
- Cash and Investment Grade Securities: ~$37.2 million

1 As of 2/7/2020
2 As of 9/30/2019, including Francisco Trust
3 Based on 9/30/2019 balance, incl. accrued interest
Dyadic Overview

HQ: Jupiter, FL
BD&L: London
R&D Management: Budapest
R&D: Valladolid
R&D: Helsinki

20+ YEARS EXPERIENCE IN BIOPHARMA BD&L AND FUNGAL GENE EXPRESSION PLATFORM R&D
Dyadic Leadership Team

M. Emalfarb
Founder, CEO

P. Rawson
Chief Financial Officer

R. Tchelet
Chief Scientific Officer

M. Jones
Chief Commercial Officer

Inventor of 25+ U.S. and foreign biotechnology patents related to Dyadic’s proprietary C1 fungus. Formation of several strategic research and development, manufacturing and marketing relationships with U.S. and international partners since founding the company in 1979.

More than 20 years’ finance and accounting experience, including technical accounting, SEC reporting, acquisition, and capital market consulting to large banks and multinational public companies.

MBA and MS in Accounting from SUNY Buffalo and CPA in New York State.

More than 15 years of experience in research and pharmaceutical industry. Previously, CTO of Biotech at the API Division of TEVA Pharmaceuticals and founder and Managing Director of Codexis Laboratories Hungary.

Ph.D. in Molecular Microbiology and Biotechnology from Tel Aviv University in 1993 and Postdoctoral as an EERO fellow at the Institute of Environmental Science and Technology (EAWAG) in Switzerland.

M. Jones leads Dyadic’s Commercial deal making BD and Licensing.

More than 20 years life science and BioPharma industry leadership as well as Private Equity deal making advisory experience incl. a founding member of Concept Life Sciences. Senior roles held with Lonza, Bain, Ricerca BioSciences, MDS Pharma Services, Alkermes and GlaxoSmithKline.
Dr. Bose worked at Pfizer for 34 years and held leadership roles within bioprocess development and clinical manufacturing and is widely recognized as a Key Thought Leader in the biopharmaceutical industry.

Dr. Bose is a Member of the US National Academy of Engineering. Additionally, he was elected Fellow of AIChE, American Chemical Society and American Institute for Medical and Biological Engineering.

Dr. Buckland worked at Merck for 29 years where he served in a number of senior R&D leadership roles focusing on fermentation and bioprocess development and the commercial manufacturing of biologics and is widely recognized as a Key Thought Leader in the biopharmaceutical industry. Currently, Dr. Buckland is the Executive Director, NIIMBL (National Institute for Innovation in Manufacturing Biopharmaceuticals).

Dr. Buckland is a Member of the prestigious US National Academy of Engineering. In addition, he is a Fellow of the American Institute of Medical and Biological Engineering (AIMBE) as well as of University College, London.

Mr. Tarnok (Dyadic chairman) spent the majority of his career at Pfizer and is a seasoned finance and operational executive with extensive experience in the pharmaceutical industry. Currently also serves on the Board of the Global Health Council, and Ionetix, Inc. Prior Board service includes Keryx Biopharmaceuticals, Inc., where he also served as Chairman of the Board.
2019 Corporate Achievements and Milestones

Corporate Achievements
- Form 10 effective on February 12, 2019
- Initiated trading on Nasdaq on April 17, 2019
- Dyadic stock was added to the Russell Microcap® Index in May 2019

Serum Institute of India Collaboration Announced May 7, 2019
- Collaboration to express and manufacture in C1 up to 12 antibodies and vaccines
- Research funding, milestone payments, royalties/licensing

Four Additional Proof-of-Concept Collaborations with Top Pharma Companies
- Centered on various classes of proteins, mAbs, and vaccine antigens
- Following 9 collaborations in 2018, including those with Sanofi-Aventis, and the Israeli Institute of Biological Research (IIBR).

Two Sublicensing Agreements
- Luina Bio/Novovet: with equity stake and royalties to sub-license C1 platform to develop biologic vaccines and drugs for companion animals
- Alphazyme: with equity stake, milestone payments, and royalties to sub-license C1 gene expression platform for reagents in therapies or diagnostics

One Fully Funded Collaboration with a Leading Animal Health Company

Two Research Licenses:
- Expanded relationship with one leading pharma company – an existing collaborator
- University of Iowa
Biopharmaceutical Market Overview - The Opportunities

TWO OF TOP FOUR ANIMAL HEALTH CO’s
ZAPI, BDI, NOVOVET and others
Recombinant vaccines for animal health
Market size – $8.7 Billion by 2022¹

Sanofi, and others
New Biologics
mAbs, Bispecifics, Fc-Fusions
BioPharmaceutical Market size – $319 Billion by 2021²

Cimzia, Opdivo®
Biosimilars / Biobetters (non-Glyco. and Glyco Proteins.)
Global Market size – $69 Billion by 2025³

ZAPI, IIBR and Coronavirus
Vaccines and drugs for Pandemic and Epidemic zoonotic diseases and biologic threats

Serum, and others
Recombinant vaccines and drugs for human health
Market size – $66.5 Billion by 2027⁴

In-house projects
AAV for gene therapies
Primary and secondary metabolites

¹ Source https://tinyurl.com/y544yxg7
² Source https://tinyurl.com/yyurkcml
³ Source https://tinyurl.com/yxtfsm6v
⁴ Source https://tinyurl.com/y2gg78ss
C1 Gene Expression Platform
C1 – *Myceliophthora thermophila*

C1 is a thermophilic fungus, *Myceliophthora thermophila*, originally isolated from alkaline soil in Russia.

Dyadic and its licensees invested several hundred million dollars to turn C1 into an industrially proven gene expression platform.

- Low cost, high yield, scalable, robust and stable system with improved downstream purification benefits
- C1 genome fully sequenced and annotated
- C1 received a Generally Recognized As Safe (GRAS) designation from the US FDA (2009)
- Clear demonstration that C1 can speed development & lower costs of biopharmaceutical production

Proprietary & patented genetic elements (tool box) for use in engineering C1 strains.
C1 – *Myceliophthora thermophila*

Dyadic built an industrial enzyme business, and licensed the C1 technology platform for industrial uses to Abengoa, BASF, Codexis/Shell and others:

- Generated >$100 mm in enzyme product revenues from customers in 35 countries
- Received > $30 mm in cash payments for non-exclusive licenses

Sold the Industrial Biotech Business to DuPont for $75 mm on 12/31/2015

We now apply the powerful C1 gene expression workhorse technology to human and animal therapeutic products
C1 – The Science

**High Purity of target protein secreted**
- Greater retention of target secreted protein through downstream processing
- Requires only low cost synthetic media
- No Viruses which simplifies processing compared to CHO
  - No Low pH viral inactivation
  - No virus nanofiltration

**Shorter Development & Production Cycle**
- Develop g/l/d C1 cell lines in 15 weeks
- From seed flask to fermenter
  - Savings of nearly 10 -14 days vs CHO
- Develop g/l/d C1 cell lines in 15 weeks
- Fermentation Cycle time 4-7 days
  - 1/2 to 1/3rd the time of CHO

**Unique Morphology**
Translates into better growth conditions
- Higher yields of secreted protein
- Lower viscosity

**Wide operating conditions for pH and temperature**
- At scales ranging from laboratory shake flasks to 20,000l tanks and above
- C1 has received GRAS (Generally Recognized as Safe) designation from FDA and is considered fit for human consumption
How Dyadic Leverages C1 Advantages for Biologics

- High productivity -
- Advanced genetic tools (Efficient transformation) -
  - Efficient secretory system -
  - Low viscosity -
- Wide range of fermentation conditions -
  - Fast growing -
- Grow on simple defined media -
- Can tolerant high glucose concentration -
- Easy scaling up (was scaled up to 500m³) -

Efficient vast screening system for drug discovery

Fast development timeline for Biologics

Simple fermentation process in stainless steal bioreactors

Success in Single use reactors

Growing on 24 or 96 MTP

Low cost of USP & DSP
Generic Process Flow Chart for C1 (12 – 14 days) (*)

1. **Pre-inoculum:**
   - Mycelium activation
   - 1 – 1.5 days

2. **Seed train:**
   - Inoculum expansion in flask
   - 0.75 – 2.5 days

3. **Inoculum expansion - bioreactors**
   - 5 days

4. **Production bioreactor**

5. **Passage 1:**
   - Plate

6. **Passage 2:**
   - Flask

7. **Scales:**
   - N-3 ~1.6L scale
   - N-2 ~40L scale
   - N-1 ~1000L scale
   - N ~12,000L scale
Generic Process Flow Chart for CHO (41 – 54 days)

1. Seed train: inoculum expansion
2. Inoculum expansion - bioreactors
3. Production bioreactor

- Passage 1
- Passage 2
- Passage 3
- Passage 4
- Passage 5
- Passage 6

- N-3 ~80L scale
- N-2 ~400L scale
- N-1 ~2,000L scale
- N ~12,000L scale

Timelines:
- 18-28 d
- 9-12 days
- 14 days
Potential advantage of commercial scale production of SBV antigen by C1

- The production volume that will be needed to produce 1 batch of 100K, 1,000K and 10,000K SBV doses with C1 (1.75 g/L)
- C1 fermentation is based on Fed-batch technology with glucose feeding and synthetic media

<table>
<thead>
<tr>
<th>Doses per batch (20ug/dose)</th>
<th>100 K</th>
<th>1,000 K</th>
<th>10,000 K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total volume (g)</td>
<td>2</td>
<td>20</td>
<td>200</td>
</tr>
<tr>
<td>Productivity (g/L)</td>
<td>1.75</td>
<td>1.75</td>
<td>1.75</td>
</tr>
<tr>
<td>Recovery (%)</td>
<td>75</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>Working volume (%)</td>
<td>80</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Fermentation volume needed for 1 batch run with C1</td>
<td>2L</td>
<td>20L</td>
<td>200L</td>
</tr>
</tbody>
</table>

E.Coli and Baculovirus would require between 7,000 L to 20,000 L capacity for 10,000 K dosages vs 200 L using C1
C1 Can Operate Successfully in Single Use Bioreactor

C1, a filamentous fungi, produces Certolizumab in Single Use bioreactors with the same performances as Stainless Steel Bioreactors.

The productivity of 9.2 g/l is virtually identical to the productivity achieved in the Stainless Steel Bioreactor control that was based on an earlier C1 Certolizumab strain and process. The current yield in SSB is 14.5 g/l in 7 days fermentation.

Results between batches are consistent, showing the robustness of the technology.

**Certolizumab production in SUB (g/L)**

**Single Use Bioreactor**

<table>
<thead>
<tr>
<th>Conditions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial medium: 25L</td>
<td></td>
</tr>
<tr>
<td>Final broth: 32kg</td>
<td></td>
</tr>
<tr>
<td>DO2 controlled by air flow and pure oxygen addition.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Titer / Time</strong></td>
<td>9.2 g/L at 112 hrs</td>
</tr>
<tr>
<td><strong>Productivity</strong></td>
<td>2.0 g/L/day</td>
</tr>
</tbody>
</table>

**Equipment:** 50L XDR-50MO

**Single Use GE bioreactor**

**Product protein:** Certolizumab
C1 Applied to Production of Therapeutic Proteins
C1 Gene Expression System is a Versatile “Workhorse”

Impressive Yield and Purity Demonstrated for Therapeutic Proteins

<table>
<thead>
<tr>
<th>mAbs</th>
<th>24.5 g/l</th>
<th>168 Hours</th>
<th>3.5 g/l/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fab (Certolizumab)</td>
<td>14.5 g/l</td>
<td>164 Hours</td>
<td>2.1 g/l/day</td>
</tr>
</tbody>
</table>

Proof of Principal for Antigen Classes Routinely Used in Vaccines

<table>
<thead>
<tr>
<th>Hemagglutinin (HA)</th>
<th>413 mg/l</th>
<th>137 Hours</th>
<th>72 mg/l/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antigen</td>
<td>1,780 mg/L</td>
<td>121 Hours</td>
<td>350 mg/l/day</td>
</tr>
<tr>
<td>Virus-Like Particles</td>
<td>2,400 mg/L</td>
<td>110 Hours</td>
<td>500 mg/l/day</td>
</tr>
</tbody>
</table>
MAbY Binding Assay by Biacore T200

Studying the interaction of mAbs in real time

MAbY for which the ligand was commercially available was produced in CHO (control Mab) and C1 (C1-produced mAb).

The binding properties of a pharma’s mAbs to the ligand were compared in a Biacore T200 assay.

The control mAbY and C1-produced MAbY showed virtually indistinguishable binding kinetics.

Similar results were obtained with other mAb.

<table>
<thead>
<tr>
<th>CHO-produced</th>
<th>C1-produced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single cycle</td>
<td>Single cycle</td>
</tr>
<tr>
<td>Multi-cycle</td>
<td>Multi-cycle</td>
</tr>
<tr>
<td>$ka (1/Ms): 1.033E+5 \pm 80$</td>
<td>$ka (1/Ms): 1.009E+5 \pm 88$</td>
</tr>
<tr>
<td>$kd (1/s): 3.558E-4 \pm 6.2E-7$</td>
<td>$kd (1/s): 3.051E-4 \pm 8.6E-7$</td>
</tr>
<tr>
<td>$KD (M): 3.44E-9$</td>
<td>$KD (M): 3.417E-9$</td>
</tr>
<tr>
<td>$ka (1/Ms): 1.026E+5 \pm 63$</td>
<td>$ka (1/Ms): 1.028E+5 \pm 230$</td>
</tr>
<tr>
<td>$kd (1/s): 4.621E-4 \pm 7.3E-7$</td>
<td>$kd (1/s): 5.017E-4 \pm 8.4E-7$</td>
</tr>
</tbody>
</table>

**Immobilization:**
- α-Human Fc & α-Mouse Fc
Bispecific Produced in C1 and CHO Have Identical/Similar Activity

- The function of C1-produced bispecific was compared to the CHO-produced control in a bioassay
  - C1-produced purified using only single chromatography step
  - CHO-produced fully purified
- Potency of C1-produced bispecific in the bioassay is comparable to the CHO-produced control
- No negative effects of the C1-derived potential impurities in cellular assays
Glycoengineering - Advantage of C1 over Yeast and CHO

- Fundamentally, the C1 glycan structure is more mammalian-like than that of yeast
  - Native C1 glycans are mostly high mannose type (Man3-Man9) including low amount of hybrid glycans
  - Fewer engineering steps needed to modify C1 glycosylation pathways
  - Stable genome - defined glycan structure is stable from culture to culture and batch to batch

- We have successfully completed our initial step to glycoengineer C1 cells and achieved a G0 glycan level of ~ 95%. In addition to G0, only Man3 and GlcNAcMan3 remain in the glycan pattern.
Applying C1 Technology in Collaborations and on Our Own Account...
Our Approach to Business Development and to Selection of Internal Programs

We meet our business partners and research collaborators where they are, seeking to leverage our C1 technology at little or no cost to us:

For big pharm companies focused on specific therapeutic agents, we seek funded Proof of Concept (POC) collaborations followed by up front access fees, milestones and royalty arrangements.

For small biotechnology firms, we seek equity, milestones and royalties.

We own 7.5% of Alphazyme\(^1\), 20% of Novovet, 16.1% of BDI Group, and 16.3% of VLP Bio.

\(^1\) Upon successful transfer of the C1 technology platform and training we are expected to receive 7.5% equity of Alphazyme.
ZAPI, is a research and development program sponsored by the EU with the goal of developing a platform suitable for the rapid development and production of vaccines and protocols to fast-track registration of developed products to combat epidemic Zoonotic diseases that have the potential to effect the human population.

https://www.imi.europa.eu/projects-results/project-factsheets/zapi

- SBV causes congenital malformations and stillbirths in cattle, sheep, goats, and alpaca.

- An antigen against Schmallenberg Virus (SBV) that was developed by ZAPI group, was expressed by C1 (next slide).

- The C1 expressed SBV antigen that was assembled to Nano-particle expression molecules was tested in animal tests:
  - All immunized mice survived challenge infection without any clinical signs of disease. Protection was conferred even after only one immunization.
  - Cattle were completely protected, the particles conferred sterile immunity (no virus replication after challenge infection) after 2 immunizations.
Collaboration with Sanofi-Aventis Deutschland GmbH

A fully funded collaborative research project where C1 was utilized to express multiple genes for vaccine and drug applications

- To express multiple types of important therapeutic compounds using our C1 production platform

- The objective is to overcome specific gene expression challenges and to further demonstrate the potential of C1 to become a platform of choice for manufacturing protein-based biologics because of its speed of development and low cost of goods
Dyadic and Serum to Develop and Manufacture Affordable and Accessible Antibody Products and Vaccines Globally

Serum Institute of India

- World’s largest vaccine manufacturer -- > 1.3 billion doses
- Serum supplies vaccines to more than 140 countries
- 65% of the children in the world receive at least one vaccine produced by Serum Institute(1)
- Scope of Research and Commercialization Collaboration:
  - To develop and manufacture 12 antibodies and vaccines using Dyadic C1 Gene Expression Platform
  - Potential for downstream milestones and royalties

“Serum has a proven track record of more than 50 years of developing and delivering affordable vaccines and drugs globally and we are eager to incorporate Dyadic’s industrially proven C1 gene expression platform into our antibody and vaccine development and manufacturing programs. Dyadic’s C1 gene expression platform has the potential to help us deliver on our commitment to bring down the cost of biologics in order to make them more accessible and affordable to patients globally.”

Adar Poonawalla, CEO
Serum Institute of India
In our collaboration with IIBR, a proprietary IIBR Fc-fusion enzyme has been expressed using our C1 technology. This Acetyl Choline Esterase enzyme has previously been shown to provide certain countermeasures against nerve agents such as sarin and VX gas which are toxic and rapidly acting chemical warfare agents. The recombinant IIBR Fc-fusion enzyme, produced in HEK293 cells, has been shown to provide longer lasting protection than the common Acetyl Choline Esterase.

The Israel Institute for Biological Research “IIBR” is a governmental, applied research institute specializing in the fields of biology, medicinal chemistry and environmental sciences. Backed by five decades of experience, IIBR combines highly trained personnel with cutting-edge technologies and infra-structure to conduct applied research and development in the fields of biology, medicinal chemistry and environmental sciences, in addition to basic research studies closely related to IIBR’s applied projects.

IIBR’s research projects include sponsorships by international authorities and institutions such as the US Public Health Services, Center for Disease Control, US Army Medical Research and Development Command, the World Health Organization, US-Israel Binational Science Foundation, National Foundation of Cancer Research and the German Ministry for Scientific Research and Technology.
Dyadic’s Certolizumab (Cimzia) Biosimilar Program

Certolizumab is a pegylated Fab’ antibody fragment targeting TNFα; indicated for various rheumatic diseases.

Cimzia 2018 sales of € 1.44 billion for UCB.

C1 produces certolizumab in inexpensive single use bioreactors or in stainless steel bioreactors (SSB) with equivalent yields.

SSB Yield of 14.5 g/l in 7 days fermentation.

Results between batches are consistent, showing the robustness of the technology.

Certolizumab production in SUB (g/L)

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Equipment: 50L XDR-50MO
Single Use GE bioreactor
Product protein: Certolizumab
Roadmap for Biosimilar Certolizumab Development

**USP&DSP development**

- Generation of producing strain
  - In 30L bioreactor
  - 14.5 g/l (2.4 g/l/day) production rate
  - Based on EMA assessment report for approval of an Infliximab (anti-TNFα) biosimilar (2013)
  - (1) O-glycosylation has recently been identified in Certolizumab, it will need to be reduced or removed

**Cell line development**
- In Bench scale C1 using protein L

**CMC development**
- In vitro assays to compare product mechanisms of action.
  - Primary: TNFα neutralization by binding and inhibition of cell signaling for proliferation
  - Secondary: activation of immune responses as CDC, ADCC....

**Year 1**

- Analytics to compare the structural & physicochemical characteristics of product vs. commercial reference

**Year 2**

- CMC development and batches production (GMP for clinical assays)
- Optimization of process & product quality attributes profile, cell line characterization & stability, formulation & product stability testing.

**Year 3 – Year 6**

- 1 year Phase I trial to determine PK equivalence (mainly safety) in AS patients (250)
- 2 year Phase I pilot study for RA patients (19)
- 1 year Phase III trial to mainly determine therapeutic equivalence in RA patients (606)

- In vitro PD studies to compare neutralization, activity, CDC, ADCC and apoptotic effects and cross-reaction with human tissues
- In vivo PK studies to detect products in animal serum & to measure anti-products Ab concentration
- In vivo toxicity & toxic kinetics assays
The immunotherapy drug Opdivo (nivolumab), manufactured by Bristol Myers Squibb, is indicated for metastatic cancers, including melanoma and lung cancer.

Opdivo is priced at $12,500 a month, or about $150,000 for a year of treatment, and is projected to have $8.0 B peak sales.

Our goal is to create a glycoengineered C1 cell line that will express nivolumab (mAb) with a glycan structure similar to nivolumab produced from CHO cells.

We have created a glycoengineered C1 cell line with ~95% G0 level.

1 Trefis team Analyst Opdivo Estimate for 2023
Sanofi Vaccine Trial and Model Vaccine

**Murine Immunogenicity Study of HA/NC Produced by C1 vs. baculovirus**

Recombinant Hemagglutinin (HA) produced in C1 is well tolerated in mice
- No weight loss
- No negative clinical signs

HA/New Caledonia from C1 has excellent immunogenic properties

Superior response than control HA/New Caledonia produced in baculovirus

C1 can produce high amounts of HA (~1 g/L) and other antigens in 3-7 days by using low cost fermentation

Large market opportunity: 146M influenza doses/year

Each 0.5 mL dose typically contains: 15 µg of HA for each strain

Thus, three 1000L C1 fermentation runs theoretically can supply the annual global HA demand of ~2,175 g

**Immune response after single immunizations in mice (% responders)**

<table>
<thead>
<tr>
<th>Expression System</th>
<th>Dose of rHA 1 u/g</th>
<th>Dose of rHA 3.3 u/g</th>
<th>Dose of rHA 10 u/g</th>
<th>Dose of rHA 30 u/g</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>50% (4/8)</td>
<td>57% (4/7)</td>
<td>100% (8/8)</td>
<td>100% (8/8)</td>
</tr>
<tr>
<td>Baculovirus</td>
<td>62% (5/8)</td>
<td>12% (1/8)</td>
<td>50% (4/8)</td>
<td>75% (6/8)</td>
</tr>
</tbody>
</table>

Potential Use of C1 to Produce Associated Virus (AAV) Vectors

New York Times, Nov 27, 2017:
Gene Therapy Hits a Peculiar Roadblock: A Virus Shortage

- As new gene therapies are approved by the FDA, there’s a backlog in the production of therapeutic viruses
- Manufacturing disabled viruses (typically a disabled adenovirus or lentivirus) is costly and onerous

Recombinant Adeno-Associated Virus (AAV) Vectors
- A widely used vehicle for delivering gene therapy to humans
- Used in nearly 50% of the 483 currently ongoing gene therapy trials, and use likely to persist
  - Wild-type AAV does not cause human disease
  - AAV can transduce non-dividing as well as dividing cells, unlike other viral vectors.
  - Robust transgene expression has been observed in several Phase I and II trials.
  - Distinct AAV vector serotypes target different tissues, organs, and cells, thus expanding potential therapeutic utility
  - Efforts in large markets (Alzheimer’s Disease, Parkinsons, RA) necessitate better ways of manufacturing AAV

Global Opportunity Analysis and Industry Forecast, 2017-2023, estimates a large market opportunity:
"the global gene therapy market accounted for $584 million in 2016, and is estimated to reach $4,402 million by 2023, registering a CAGR of 33.3% from 2017 to 2023"
Applying C1 to Produce Metabolites

Primary metabolite
- Dyadic collaborated with a third party to develop C1 strain for a high yield, low cost primary metabolite product
- Dyadic is using precise genetic manipulation that is based on metabolic modeling and synthetic biology
- Funded by the third party
  - Phase 1 milestone achieved
  - Phase 2 terms, including strain optimization and manufacturing agreement, under discussion
  - Dyadic has option to pursue program independently

Secondary metabolite
- Project initiated by Dyadic
- Centered on a class of high-value secondary metabolites used in pharmaceutical, cosmetic, and wellness applications

Our in silico metabolic model supports precise engineering of C1 for optimal primary and secondary metabolites production:
Dyadic Investment Thesis

Proprietary Technology - C1 Fungal Gene Expression Platform - Broad Applications

- Success in Industrial Use
- Over Two Decades Of Biotechnology Experience
- Sold Industrial Biotech Unit to DuPont for $75M in 2015

- Proven Technology for Industrial Use
- Experienced Board Members and Management Team
- Strong Balance Sheet
- US$37.2M cash & equivalents\(^1\)
- No Debt or Warrants

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THANK YOU!