Dyadic International, Inc.
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Nasdaq : DYAI

Shares Outstanding (as of 8/15/2019): ~27.1M
Stock Price (as of 8/15/2019): $6.15
Market Capitalization (as of 8/15/2019): ~$166.7M
Cash & Liquid Investments (as of 6/30/2019): ~$38.8M

Dyadic International, Inc. is a global biotechnology company focused on improving and applying its proprietary C1 gene expression platform, based on a patented and proprietary genetically modified strain of the fungus *Myceliophthora thermophila,* to address opportunities in the human and animal health markets. C1 is a potentially game-changing biopharmaceutical gene expression platform that may help bring biologic vaccines, drugs and other biologic products to market faster than existing expression platforms, such as Chinese hamster ovary (CHO) cells, *E. coli* and others, in greater volumes, at lower cost and with new properties that can improve access and cost to patients and the healthcare system.

Dyadic's C1 Gene Expression Platform: Faster, Viable, More Efficient, Cost-Effective
Research data generated in our third-party collaborations and our own internal research programs indicate that C1 is capable of expressing a variety of vaccines and therapeutic proteins, such as human and animal recombinant antigens, vaccines, Virus like Particles (VLPs), monoclonal antibodies (mAbs), bi-specific antibodies, Fc-Fusions, Fabs and certain difficult-to-express antibodies, at a higher productivity level than other gene expression platforms. Dyadic is also beginning to explore the use of its C1 technology to conduct research and development of Adeno-associated viral (AAV) vectors and certain metabolites.

Industrially Proven Platform Technology: DuPont Transaction and Licensing Agreements
C1 technology has been used for producing commercial quantities of enzymes and other proteins for decades and it has previously been licensed to leading industrial companies, including Abengoa, BASF, Codexis, Shell and others to produce numerous industrial products and applications at low cost and large volumes. In 2015, Dyadic sold its industrial biotechnology business to DuPont for $75 million while retaining co-exclusive rights to use the C1 technology in human and animal pharmaceutical applications, with the exclusive ability to enter into sub-license agreements. Dyadic pursues R&D collaborations, licensing arrangements and other commercial opportunities with its partners and collaborators in the development and manufacture of biopharmaceuticals.

Biopharmaceutical R&D Collaborations & Sublicensing Agreements

- Six Top Tier Pharmaceutical Companies:
  - Serum Institute of India Pvt., Ltd: Research and commercialization collaboration to develop and manufacture up to twelve antibodies and vaccines using C1.
  - Sanofi-Aventis Deutschland GmbH: Funded collaboration to use C1 to produce multiple types of biologic vaccines and drugs of interest for human health indications.
  - Four additional funded research collaborations with top 25 pharmaceutical companies: To express multiple different types and classes of proteins from C1 technology platform.
- Zoonoses Anticipation and Preparedness Initiative (ZAPI) Vaccination Program: Demonstrated further success with fermentation results of the ZAPI antigen against the Schmallenberg virus with a yield of 1,780 mg/l (time point 121h) or 17 times the initially targeted expression level. Animal trials with the C1 produced ZAPI antigen are expected to begin this year.
- LuinaBio/Novovet: Sublicensing agreement (w/ equity interest and royalties) to use C1 to develop biologic vaccines and drugs for companion animals.
- Alphazyme: Sublicensing agreement (w/ equity stake, milestone payments and royalties) upon the commercialization of C1.
- Israel Institute for Biological Research (IIBR): Evaluating C1 for the development and manufacture of recombinant vaccines and neutralizing agents comprising targeted antigens and monoclonal antibodies. Animal trials with a C1 produced biologic are expected to begin this year.
- Internal Research Projects: Evaluating a range of therapeutic proteins and a Virus Like Particle that are used in the animal and human health markets, including glycosylated or non-glycosylated proteins (mAbs, Fabs and bi-specific mAbs, etc.), metabolites and adeno associated viral (AAV) vectors to determine which, if any, of these biologics might be potential candidates for future commercialization.
- Sanofi-Pasteur: Prior collaboration indicated C1-produced influenza antigen generated an equal or better immune response in mice than the industry-standard antigen used in the mice trial and no negative effects on the health of the mice observed.

Scientific and Business Development Milestones/Corporate Events

- 9 proof of concept research collaborations to produce various biologic vaccines and drugs for human and animal health applications, including Sanofi-Aventis, Mitsubishi Tanabe, IIBR, Structural Genomics Consortium (a part of the University of Oxford) and the Fraunhofer USA Center for Molecular Biotechnology 2018 ✔
- Protease Library: Increased the number of C1 proteases (> 50) in our expression library in Pichia Q1 2019 ✔
- Host cell improvement: Improved protein stability and productivity in C1 host cell by deleting 11 protease genes Q1-Q2 2019 ✔
- ZAPI: Demonstrated 17 times the initial target productivity of an antigen against the Schmallenberg virus (SBV) Q1 2019 ✔
- Demonstrated two times (2X) the initial target expression of a FC-fusion protein of 12.2 g/l or 1.7 g/l/d. Q1 2019 ✔
- Initiated internal research projects to explore the potential of C1 to produce a secondary metabolite and adeno-associated viral (AAV) vectors Q1 2019 ✔
- Continued progress on glycoengineering of C1 to impart human glycosylation to C1 expressed glycoproteins Q1-Q2 2019 ✔
- Two Sublicensing Agreements: LuinaBio/Novovet and Alphazyme Q2 2019 ✔
- Research and Commercialization collaboration with Serum Institute of India Pvt., Ltd. Q2 2019 ✔
- Demonstrated high expression level of a full-length monoclonal antibody (mAb) of 22 g/l in 7 days or 3/g/l/d Q2 2019 ✔
- Uplisted on the Nasdaq Capital Markets Q2 2019 ✔
- Dyadic stock was added to the Russell Microcap® Index Q2 2019 ✔
- Three new funded proof of concept research collaborations with top 25 pharmaceutical companies Q1-Q3 2019 ✔

Two US National Academy of Engineer Board of Directors & Experienced Management Team

- ***Dr. Arindam Bose***: 34 years at Pfizer, where for his last six years, served as Vice President of Bio Therapeutics Pharmaceutical Sciences External Affairs and Biosimilars Strategy.
- ***Dr. Barry Buckland:*** 29 years at Merck, where his last senior R&D leadership position was Vice President Bioprocess R&D, focusing on fermentation and bioprocess development and the commercial manufacturing of biologics.
- ***Mark Emalfarb, Founder, President & CEO:*** 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.
- ***Dr. Ronen Tchelet, VP of Research:*** More than 15 years of experience in research and pharmaceutical industry incl. 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.
- ***Matthew Jones, Chief Commercial Officer:*** More than 20 years' life science and BioPharma industry leadership as well as Private Equity deal making advisory experience incl. Concept Life Sciences, Lonza, Bain, Ricerca BioSciences, MDS Pharma Services, Alkermes and GlaxoSmithKline.
- ***Ping Rawson, Chief Financial Officer:*** More than 18 years' finance and accounting experience, incl. 7 years at Deloitte. MBA and MS in Accounting from SUNY Buffalo and CPA in New York State.