



Dyadic International, Inc.

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Shares Outstanding (as of 4/17/2020): ~27.4M
Stock Price (as of 4/17/2020): \$5.71
Market Capitalization (as of 4/17/2020): ~\$156M
Cash & Liquid Investments (as of 12/31/2019): ~\$36.0M

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.

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

- Israel Institute for Biological Research (IIBR): Achieved C1 expression of Fc-fusion enzyme to counter biological attacks. Expanded collaboration to explore the potential of C1 to express gene sequences and targets developed by IIBR into both an rVaccine candidate and monoclonal antibodies for COVID-19.
- Several on-going COVID-19 research collaborations: To express multiple candidates and gene sequences from C1 gene expression platform to enable COVID-19 vaccine and drug, as well as HA flu vaccine development.
- Sanofi-Aventis Deutschland GmbH: Funded collaboration to use C1 to produce multiple types of biologic vaccines and drugs of interest for human health indications.
- Serum Institute of India Pvt., Ltd: Research and commercialization collaboration to develop and manufacture up to twelve antibodies and vaccines using C1 for human health indications.
- Three Leading Animal Health Companies: Fully funded collaborations with three of the top four animal health companies to demonstrate the C1 technology for expression and production of therapeutic proteins for companion and farm animals.
- Zoonoses Anticipation and Preparedness Initiative (ZAPI) Vaccination Program: C1 demonstrated high productivity 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. Preliminary results from the animal studies indicated that Dyadic's C1 antigen demonstrated very strong performance in protecting both cattle and mice from the Schmallenberg virus (SBV). Received additional funding from the ZAPI consortium in support of production of the two additional targets.
- Multiple nonexclusive research licenses, incl. Wuxi Biologics and a key supplier to the life science industry: To evaluate the C1 technology for future commercial opportunities for themselves and their customers.
- 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 and 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.
- 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.
- 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.



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 enzymes and other proteins, 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.

Scientific and Business Development Milestones/Corporate Events

- Six proof of concept research collaborations for human and animal health applications, including Sanofi-Aventis, and three research licenses with IIBR, Structural Genomics Consortium (part of the U. of Oxford) and the Fraunhofer USA Center for Molecular Biotechnology 2018 ✓
- 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 ✓
- Initiated internal research to use C1 to produce a secondary metabolite and adeno-associated viral (AAV) vectors Q1 2019 ✓
- Two Sublicensing Agreements: LuinaBio/Novovet and Alphazyme Q2 2019 ✓
- Research and Commercialization collaboration with Serum Institute of India Pvt., Ltd. Q2 2019 ✓
- Uplisted on the Nasdaq Capital Markets and Dyadic stock was added to the Russell Microcap® Index Q2 2019 ✓
- Key milestone achieved – G0 human like glycan structure at high level ~95% Q4 2019 ✓
- Demonstrated high expression level of a full-length monoclonal antibody (mAb) of 24.5 g/l in 7 days or 3.5/g/l/d Q4 2019 ✓
- IIBR collaboration achieved expression of Fc-fusion enzyme to counter biological attacks Q4 2019 ✓
- Six funded research collaborations, expanded ZAPI program, and two research licenses with a leading pharmaceutical company and University of Iowa 2019 ✓
- New milestone as G2 human-like glycosylation reached - further extends biologic market opportunities Q1 2020 ✓
- Research license agreement with Wuxi Biologics to validate the C1 gene expression platform Q1 2020 ✓
- Two new fully funded collaborations, incl the third fully funded with a top tier animal health company Q1 2020 ✓
- COVID-19 initiatives with IIBR, Ufovax, and EU Consortium; HA vaccine program with U of Oslo Q1 2020 ✓

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. 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 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 advisory experience incl. Concept Life Sciences, Lonza, Bain, Ricerca BioSciences, MDS Pharma Services, Alkermes and GlaxoSmithKline.
- ✚ **Ping Rawson, Chief Financial Officer:** More than 20 years' finance and accounting experience, incl. 7 years at Deloitte. MBA and MS in Accounting from SUNY Buffalo and CPA in New York State.

Safe Harbor Regarding Forward-Looking Statements: This fact sheet release contains 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.