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Dyadic International, Inc.

Say Cheese! 1Q:22 Snapshot

Based on our DCF model and a 15% discount rate, we value Dyadic International at approximately \$9.00 per share. We assume a 22.5% probability of ultimate success for C1, based on historical drug approval rates and number of projects in the pipeline. The model assumes revenue contributions from sources worldwide.

| Current Price (5/12/2022) | \$2.08 |
|---------------------------|--------|
| Valuation | \$9.00 |

(DYAI: NASDAQ)

OUTLOOK

Dyadic has developed C1, its proprietary fungal expression system that can produce a variety of recombinant proteins. C1 has been commercialized in industrial applications and is in development for production of pharmaceutical grade proteins. C1 exhibits potential to economically produce biologic vaccines, virus like particles, antibodies, Fc-fusion, enzymes, AAVs and other biopharmaceuticals.

In 2015, the company sold its industrial business to DuPont for \$75 million and retained the exclusive right to sublicense C1 for use in animal and human pharmaceutical applications. Proceeds from the DuPont sale provided cash for share repurchase and further development of the C1 platform for production of biologics. Additional R&D funding is provided by partners. Dyadic is currently working with several biopharmaceutical companies and government organizations to validate the technology and expects to begin a Phase I trial evaluating the effectiveness of its COVID vaccine in 2022.

In the near term, we expect growing R&D revenue as additional partners are added with a material contribution from Janssen Biotech.

SUMMARY DATA

| 52-Week High 52-Week Low One-Year Return (%) Beta Average Daily Volume (sh) | 6.89 1.74 -45.3 0.24 62,978 | Risk Level Type of Stock Industry | | | | Above Average Small-Growth Med-Biomed/Gene | | |
|--|---|---|---|-------------------------------------|--|--|--|--|
| Shares Outstanding (mil) Market Capitalization (\$mil) Short Interest Ratio (days) Institutional Ownership (%) Insider Ownership (%) Annual Cash Dividend Dividend Yield (%) | 28.3 58.9 6.1 13.6 29.6 \$0.00 0.00 | Reven | S ESTIMA ue is of USD) Q1 (Mar) \$0.5 A \$0.6 A | Q2 (Jun) \$0.9 A \$0.8 E | Q3 (Sep) \$0.7 A \$0.8 E | Q4 (Dec) \$0.3 A \$0.9 E | Year (Dec) \$2.4 A \$3.9 E \$3.3 E \$2.8 E | |
| 5-Yr. Historical Growth Rates Sales (%) Earnings Per Share (%) Dividend (%) P/E using TTM EPS P/E using 2022 Estimate | N/A N/A N/A N/A | 2021 2022 2023 2024 | Q1 -\$0.12 A -\$0.09 A | Q2 -\$0.14 A -\$0.10 E | Q3 -\$0.06 A -\$0.11 E | Q4 -\$0.15 A -\$0.10 E | Year -\$0.47 A -\$0.38 E -\$0.43 E -\$0.40 E | |
| P/E using 2023 Estimate Zacks Rank | N/A N/A | | | | | | | |

WHAT'S NEW

First Quarter 2022 Operational & Financial Results

Dyadic International Inc. (NASDAQ: DYAI) released 2021 operational and financial results in a press release on May 12, 2022, subsequently filing its 10-Q with the SEC and hosting a conference call with investors.

Highlights for the first quarter and to-date include:

- Exclusive animal health license agreement with Phibro February 2022
- Presentations at multiple conferences April 2022
- Government funding granted for Epygen to advance C1 COVID vaccine in clinical trials April 2022
- Publication of DYAI-100 toxicology data in journal May 2022
- Collaboration agreement with cheese producing global foods company May 2022

Financial results for the quarter ending March 31, 2022, compared to the quarter ending March 31, 2021:

- Revenues were \$0.6 million, up 41% from \$0.5 million and cost of revenues were \$0.4 million in both periods. The increase in revenue and cost of research and development revenue was due to a number of larger research collaborations conducted during 2021;
- Research and development expenses totaled \$1.3 million, down 26% from \$1.8 million. The decrease was attributable to slowing activity levels by Dyadic's contract research organization and pharmaceutical quality and regulatory consultants for pre-clinical and clinical development work. The decline also reflected a reduction in cGMP manufacturing costs;
- ➤ General and administrative expenses were \$1.7 million, up 7% from \$1.6 million. Higher expenses were attributable to an increase in insurance, business development and investor relation expenses;
- Net loss amounted to (\$2.5) million compared to (\$3.3) million. On a per average share balance, net loss was (\$0.09) and (\$0.12), respectively.

As of March 31, 2022, cash, equivalents and short-term securities totaled \$17.4 million compared to \$20.3 million at the end of fiscal year 2021. Cash burn was (\$2.9) million compared with (\$1.9) million in 1Q:21. Financing cash flows were minimal. Dyadic holds no debt on its balance sheet.

New Collaboration with Mozzarella Manufacturer Leprino Foods

A day prior to the earnings release, Dyadic <u>announced</u> a new collaboration with <u>Leprino Foods Company</u> to develop and manufacture a number of animal free ingredient products. The project is funded by Leprino for up to €3.6 million which will be allocated to developing proprietary production cell lines for manufacture of animal free food products. If certain productivity and activity thresholds are achieved, Dyadic will receive success fees. Commercialization fees will in the low eight figures will be paid upon commercialization and a royalties in the low single digits based on sales will be paid. Additional information related to the agreement is provided in the <u>Form 8-K filing</u>.

While the core focus of Dyadic is for development of its C1 platform in developing and manufacturing biopharmaceuticals, the company will take advantage of other opportunities that arise to enhance value to shareholders.

Leprino Foods started in 1950 in Denver, Colorado and matured to be a mozzarella cheese manufacturer with national and later global reach. The company was recognized as the largest supplier of cheese for pizzas in the United States in the 1990s. In recent years the company has further expanded into Asia and Latin America. With the shift away from animal-based foods and success from other animal-free products such as Beyond Meat we hypothesize that the collaboration intends to develop an animal-free cheese product.

Epygen Biotech COVID Funding

In mid-April, Dyadic announced that its partner Epygen Biotech, which had originally become a partner in October 2020, was granted government funding to support Phase I and II clinical trials of Epygen's COVID vaccine candidate. The Indian government's Department of Biotechnology has selected Epygen's vaccine, which uses Dyadic's C1 protein production platform, for funding to support clinical trials. The efforts are expected to develop vaccines

that can address new COVID variants and produce 100 million doses per year at a cost of \$2 per dose. Additional funding will be needed to support pivotal studies and Epygen is seeking to raise \$26 million to support a Phase III trial.

Publication of DYAI-100 Toxicology Data

Toxicology data for Dyadic's DYAI-100 was published in the journal "Toxicology Pathology" as reported in a May 9th press release. The data demonstrated a favorable safety profile and support further use in human trials. The study, entitled "Toxicity and Local Tolerance of a Novel Spike Protein RBD Vaccine Against SARS-CoV-2, Produced Using the C1 Thermothelomyces Heterothallica Protein Expression Platform" was published in Toxicologic Pathology. It summarized the toxicological evaluation of DYAI-100 conducted in the New Zealand White rabbit animal model. No signs of toxicity were observed, including the lack of injection site reactions. Thirteen days post-injection, ELISA studies revealed SARS-CoV-2 specific IgG antibodies were further elevated in the sera of the animals vaccinated. Histopathology evaluation and immunohistochemistry (IHC) staining revealed follicular hyperplasia, consisting of B-cell type, in the spleen and inguinal lymph nodes of the treated animals that were sustained throughout the recovery phase. One of the scientists working on the project, Dr. Abraham Nyska, finds that the observations in the model show a sustained immunogenic response against RBD. See link here for the original published article.

Phibro Exclusive License Agreement

On February 10, 2022, Dyadic announced an exclusive license agreement with Phibro Animal Health (NASDAQ: PAHC) to develop and commercialize an animal health vaccine for a Phibro targeted disease. Phibro is a leading global animal health and mineral nutrition company. The agreement was realized after previous proof of concept development work between the two companies. Under the terms of the agreement, Dyadic granted Phibro exclusive license to C1 to produce specific targeted antigens for a poultry vaccine in a disease of Phibro's choice. Development work to find and develop additional vaccine candidates using C1 will continue. Phibro offers more than 25 poultry vaccines including Infectious Bursal Disease, Infectious Bronchitis and Newcastle Disease. Poultry vaccines are estimated to be a ~\$2 billion market.¹

C1 Successfully Engineered to Produce Cannabinoids

On January 20, 2022, Dyadic revealed that it had successfully engineered C1 to demonstrate the potential to produce cannabis compounds including cannabidiol (CBD). C1 has the potential to synthesize pure cannabinoids for commercial use cheaper and more effectively as compared to sourcing directly from the *Cannabis sativa* plant. C1 cell factories are expected to require less energy and be more environmentally friendly than commercial grow operations, especially in terms of harvesting and isolation of the desired cannabinoids from plant matter. Chemical synthesis of these compounds can utilize costly and environmentally concerning reactants. C1 could represent a high-quality and low-cost option to consumers with applications in pain, multiple sclerosis, cancer-associated nausea and vomiting, weight loss, appetite loss, spasticity among others. In a recent peer-reviewed publication, it was found that two cannabinoid acids CBGA and CBDA had binding affinity for the coronavirus spike protein, which could have applications in preventing infection. The compounds were also reported to be equally effective against two SARS-CoV-2 variants.

Research, License, and Collaboration Agreement with Janssen

On December 17, 2021, Dyadic released news that the company had entered into a research, license, and collaboration agreement with Janssen Biotech, Inc. one of the Janssen Pharmaceutical Companies of Johnson & Johnson (NYSE: JNJ). The agreement was facilitated by Johnson & Johnson Innovation. Details of the structure of the Janssen agreement are provided in filed Form 8-K; however, parameter specifics, including strategic targets and payment amounts, have been redacted. One of the therapeutic proteins that Dyadic is helping Janssen to produce is a **monoclonal antibody**, which was mentioned in the addendum to the 8-K that Dyadic supplied to the SEC and confirmed in the earnings call. The antibody target(s), however, remain undisclosed, but the partnership is a testament to the abilities for Dyadic's C1, fungal-based technology, to produce complex therapeutic proteins. As of March 2022, the \$500,000 upfront payment has been received.

¹ Poultry Vaccine Market Size, Share | Global Industry Report, 2019-2026 (grandviewresearch.com)

Under the terms of the agreement:

- Dyadic will receive \$500,000 upfront payment for non-exclusive rights to utilize the C1 platform to develop C1 production cell lines for the manufacturing of Janssen's therapeutic protein candidates against several biologic targets;
- Janssen will provide R&D funding of up to \$1.8 million² to develop and assess C1 production cell lines for its candidates;
- Janssen has option to pay mid-seven figure payment for exclusive license to use C1 for manufacturing of therapeutic proteins directed to a single, specific target;
- Janssen also has the option to obtain the following rights from Dyadic:
 - In exchange for milestone payment of mid-seven figures, Janssen will have the right to add additional, non-exclusive targets to the collaboration;
 - o In exchange for milestone payment of low-seven figures, Janssen will receive complete C1 platform technology transfer fully enabling internal development of C1 cell lines against licensed targets;
- For each product candidate, Dyadic could receive development and regulatory milestones in the mid-seven figures;
- Dyadic could receive commercial milestone payments in the low-nine figures per product, subject to limit on number of products, and will depend on cumulative amount of active pharmaceutical ingredient produced by Janssen for each product using the C1 platform.

In this agreement, Janssen will provide the financial support for Dyadic to conduct preliminary feasibility work to produce Janssen's protein of interest using Dyadic's C1 platform. If successful, Janssen has the option to secure exclusive license to use C1 for manufacturing of said proteins for a single, specific target, in exchange for a midseven figure payment to Dyadic. Janssen will also have the options to add additional, non-exclusive targets to the collaboration for mid-seven figures, and to receive complete C1 technology transfer to develop C1 cell lines against licensed targets. Each product candidate could yield mid-seven figures to Dyadic, and Dyadic could receive commercial milestone payments in the low-nine figures per product. Naturally, the deal, and resulting cashflows, will progress in stepwise fashion as milestones are met, but the deal could represent as much as several hundred million dollars to Dyadic for each product that is eventually commercialized.

Summary

Dyadic released provided 1Q:22 operational and financial results on May 12, 2022. Highlights for 2022 include two new collaborations including an animal health company and a global food company. Partner Epygen was awarded funding from the Indian government to begin COVID trials using a C1 produced vaccine and toxicology data demonstrated the safety of the C1-produced DYAI-100.

Dyadic generated \$0.6 million in R&D revenues and expended \$3.4 million in operational costs. Net loss amounted to (\$2.5) million, or (\$0.09) per share. Cash, equivalents and short-term securities totaled \$17.4 million at the end of the quarter and cash burn during the three months was (\$2.9) million.

We adjust our model and estimate costs for 2022 and beyond. Higher levels of inflation are reflected which result in a modification of our share price to \$9 per share. We continue to see substantial value in Dyadic's broad portfolio of options as evidenced by additional fully funded partnerships in a variety of life science and now food production verticals. Future favorable catalysts include the addition of more collaborators, achieving output milestones and launching the planned clinical trial.

² Dyadic stated that it would receive 1.6 million EUR, which we have approximated as of 12/18/21 to be 1.8 million USD

Research Collaboration Summary

Exhibit I – Summary of Dyadic Collaborations³

| Collaborator | Deal | Ownersh <u>i</u> p | Description | Date |
|-----------------------------------|--------------------------------------|--------------------|----------------------------------|-----------|
| Leprino Foods | Funded R&D collab & license agmt | | Animal free proteins | 11-May-22 |
| Phibro Animal Health | Exclusive License Agreement | | Poultry vaccine | 10-Feb-22 |
| Janssen | Funded R&D collab & license agmt | | Therapeutic proteins/mAb | Dec '21 |
| Undisclosed academic collaborator | Fully funded R&D collaboration | | Pharmaceutical / antibody | Nov '21 |
| Undisclosed industry collaborator | Fully funded R&D collaboration | | Non-pharma protein | Nov '21 |
| Sorrento Therapeutics | Licensing agreement | | COVID vaccine & therapeutics | Aug'21 |
| Rubic Consortium | Co-development research collaborati | on | COVID Vaccine Clin Trials | July'21 |
| Syngene International | Co-development research collaborati | on | COVID Vaccine | May'21 |
| IDBiologics, Inc | Expansion/Fully funded collaboration | n 0.4% | mAbs for infectious disease | April '21 |
| Unnamed Collaborator | Fully funded R&D collaboration | | Viral antigen | 11-Mar-21 |
| CR2O | Fully funded R&D collaboration | | COVID antibody | 22-Apr-21 |
| Medytox | Vaccine co-development collaboratio | n | C1 enabled COVID+variant vaccine | 22-Mar-21 |
| TurtleTree Scientific | Fully funded R&D collaboration | | Recomb protein growth factor | 2-Feb-21 |
| Top tier global pharma | Fully funded R&D collaboration | | Express 2 molecules | 12-Nov-20 |
| Pharma 1 (same as below) | PoC, Research funding | | Express new protein class | 12-Nov-20 |
| Epygen Biotech | Non exclusive license agreement | | COVID vaccine-India | 12-Oct-20 |
| Jiangsu Hengrui Medicine | Fully funded R&D collaboration | | Biologic drug development | 17-Sep-20 |
| Top 5 Human Health | Fully funded R&D collaboration | | Top 5 with 2 proteins | 15-Jul-20 |
| Animal Health Co. | Funded feasibility study | | Top 4 | 8-Jul-20 |
| WuXi Biologics | Nonexclusive research license | | Vaccine, drug, biologics | 30-Mar-20 |
| Animal Health Co. | Funded feasibility study | | Two proteins | 30-Mar-20 |
| University of Oslo | Feasibility Study | | Influenza antigens | 17-Mar-20 |
| Leading Animal Health Co. | Research funding, full | | 3 Protein Types | 28-Oct-19 |
| Top Tier Pharma | Proof of Concept (PoC) | | 3 Protein Classes | 13-Aug-19 |
| Microbial division | Fermentation evaluation | | Microbial division | 3Q:19 |
| Affiliate | Evaluate & experiment with C1 | | C1 commercialization goal | 4Q:19 |
| Alphazyme | Sublicense, Milestone, Royalties | 2.0% | Molecular Enzymes | 5-Ma y-19 |
| Sanofi Aventis | PoC, Research funding | | Biologics & Vaccines | Sep-18 |
| Pharma 1 | PoC, Research funding | | undisclosed proteins | Dec-18 |
| Pharma 3 | PoC, Research funding | | undisclosed proteins | Apr-19 |
| Pharma 5 | PoC, Research funding | | undisclosed protein | 4Q:19 |
| University of Iowa | Partner in-house research | | Undisclosed protein | 2Q:19 |
| Structural Genomics/Oxford | Partner in-house research | | Undisclosed proteins | 3Q:18 |
| Fraunhofer/Molecular Biotech | Partner in-house research | | Undisclosed vaccines | 4Q:18 |
| VTT/Internal | CRO | | Metabolites/Nivolumab | 2015 |

³ Source: Zacks Research, Dyadic corporate filings and Dyadic Press Releases. Green highlight indicates animal health collaboration. Blue highlight indicates academic collaborator, orange indicates a follow-on project with a previous partner.

PROJECTED FINANCIALS

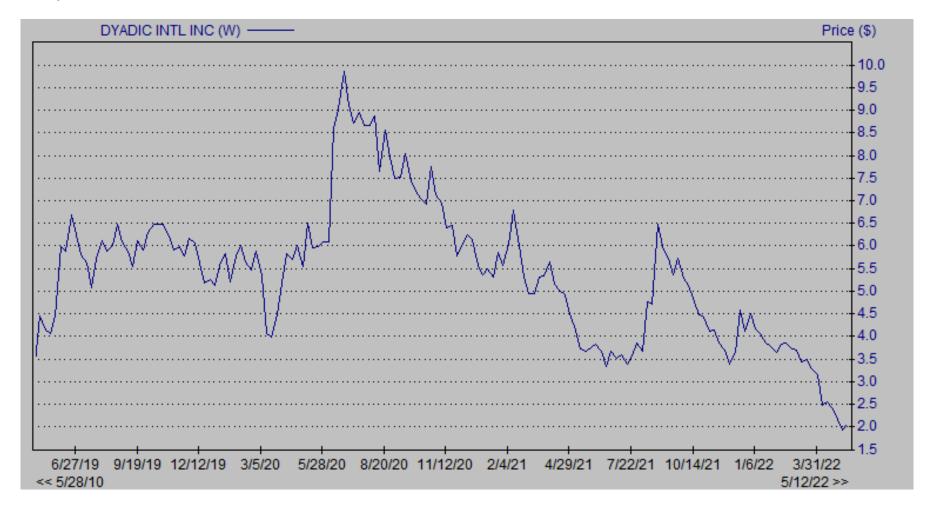
Dyadic International, Inc. - Income Statement

| Dyadic International, Inc. | 2021 A | Q1 A | Q2 E | Q3 E | Q4 E | 2022 E | 2023 E | 2024 E |
|----------------------------|----------|----------|----------|----------|----------|----------|----------|----------|
| Total Revenues | \$2.4 | \$0.6 | \$0.8 | \$0.8 | \$0.9 | \$3.1 | \$3.3 | \$2.8 |
| YOY Growth | 50% | 4 1% | -15% | 15% | 187% | 3 1% | 5% | 2 11% |
| Cost of R&D Revenue | \$1.9 | \$0.4 | \$0.6 | \$0.7 | \$0.7 | \$2.4 | \$2.6 | \$2.2 |
| R&D | \$8.4 | \$1.3 | \$1.6 | \$1.7 | \$1.6 | \$6.2 | \$5.5 | \$5.5 |
| R&D Related Party | \$0.0 | \$0.0 | \$0.0 | \$0.0 | \$0.0 | \$0.0 | \$0.0 | \$0.0 |
| G&A | \$6.7 | \$1.7 | \$1.7 | \$1.7 | \$1.7 | \$6.8 | \$7.0 | \$7.5 |
| Foreign Currency Exchange | \$0.1 | (\$0.0) | \$0.0 | \$0.0 | \$0.0 | (\$0.0) | \$0.0 | \$0.0 |
| Income from operations | (\$14.7) | (\$2.7) | (\$3.1) | (\$3.3) | (\$3.1) | (\$12.2) | (\$11.9) | (\$12.4) |
| Operating Margin | -613% | -423% | -388% | -413% | -344% | -389% | -360% | -443% |
| Interest Income | \$0.1 | \$0.3 | \$0.3 | \$0.2 | \$0.2 | \$1.0 | \$0.5 | \$0.5 |
| Other | \$1.6 | \$0.0 | \$0.0 | \$0.0 | \$0.0 | \$0.0 | \$0.0 | \$0.0 |
| Pre-Tax Income | (\$13.1) | (\$2.5) | (\$2.8) | (\$3.1) | (\$2.9) | (\$11.3) | (\$11.4) | (\$11.9) |
| Provision for Income Tax | \$0.0 | \$0.0 | \$0.0 | \$0.0 | \$0.0 | \$0.0 | \$1.0 | \$2.0 |
| Tax Rate | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 100.0% | 200.0% |
| Net Income | (\$13.1) | (\$2.5) | (\$2.8) | (\$3.1) | (\$2.9) | (\$11.3) | (\$12.4) | (\$13.9) |
| Net Margin | -544% | -384% | -350% | -388% | -322% | -359% | -375% | -496% |
| Reported EPS | (\$0.47) | (\$0.09) | (\$0.10) | (\$0.11) | (\$0.10) | (\$0.38) | (\$0.43) | (\$0.40) |
| Shares Outstanding | | 28.25 | 28.30 | 28.35 | 28.45 | 30.00 | 28.62 | 34.34 |

Source: Company Filing // Zacks Investment Research, Inc. Estimates

HISTORICAL STOCK PRICE

Dyadic International, Inc. – Share Price Chart



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