

Dyadic International, Inc.**(DYAI - NASDAQ)*****Don't Put All Your Eggs in One Basket***

Based on our DCF model and a 15% discount rate, we value Dyadic International at approximately \$10.00 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 (2/18/2022) **\$3.85**
Valuation \$10.00

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 will begin a Phase I trial evaluating the effectiveness of its COVID vaccine in 2H:21.

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

SUMMARY DATA

52-Week High **8.78**
 52-Week Low **3.15**
 One-Year Return (%) **-35.7**
 Beta **0.24**
 Average Daily Volume (sh) **130,722**

Shares Outstanding (mil) **28.1**
 Market Capitalization (\$mil) **108**
 Short Interest Ratio (days) **9.62**
 Institutional Ownership (%) **13.7**
 Insider Ownership (%) **28.7**

Annual Cash Dividend **\$0.00**
 Dividend Yield (%) **0.00**

5-Yr. Historical Growth Rates
 Sales (%) **N/A**
 Earnings Per Share (%) **N/A**
 Dividend (%) **N/A**

P/E using TTM EPS **N/A**
 P/E using 2021 Estimate **N/A**
 P/E using 2022 Estimate **N/A**

Zacks Rank **N/A**

Risk Level **Above Average**
 Type of Stock **Small-Growth**
 Industry **Med-Biomed/Gene**

ZACKS ESTIMATES**Revenue**

(In millions of USD)

	Q1	Q2	Q3	Q4	Year
	(Mar)	(Jun)	(Sep)	(Dec)	(Dec)
2020	\$0.3 A	\$0.5 A	\$0.4 A	\$0.3 A	\$1.6 A
2021	\$0.5 A	\$0.9 A	\$0.7 A	\$0.8 E	\$2.9 E
2022					\$3.9 E
2023					\$4.2 E

Earnings per Share

	Q1	Q2	Q3	Q4	Year
2020	-\$0.08 A	-\$0.10 A	-\$0.09 A	-\$0.07 A	-\$0.34 A
2021	-\$0.12 A	-\$0.14 A	-\$0.06 A	-\$0.07 E	-\$0.38 E
2022					-\$0.31 E
2023					-\$0.32 E

WHAT'S NEW

Since Our Last Update

Since our last [update](#), Dyadic International Inc. (NASDAQ: DYAI) announced receipt of the NIIMBL coronavirus grant, early proof-of-concept of C1 producing cannabinoids and an exclusive license agreement with Phibro.

Recent highlights:

- NIIMBL coronavirus grant - December 2021
- C1 engineered to demonstrate the potential to produce cannabinoids - January 2022
- Phibro exclusive license agreement for animal health vaccine - February 2022

NIIMBL Coronavirus Grant

On December 22nd, 2021, Dyadic [announced](#) receipt of a National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL) coronavirus grant under the White House's American Rescue Plan (ARP). Dyadic's grant was one of 32 project grants awarded by NIIMBL and through the grant, Dyadic will receive up to \$690,000 in funding to support its development of C1 production of two different antibodies. The grant is intended to benchmark the rate of the C1 manufacturing platform against current state of the art methods, within the context of producing medical countermeasures and vaccines in response to future pandemics.

C1 Successfully Engineered to Produce Cannabinoids

On January 20, 2022, Dyadic [revealed](#) that it has engineered C1 to produce cannabis compounds including cannabidiol (CBD). C1 has the potential to synthesize pure cannabinoids for commercial use at less cost and more efficiently compared to sourcing directly from the *Cannabis sativa* plant. C1 cell factories should require less energy and be more environmentally friendly than commercial agriculture operations, especially in terms of harvesting and isolation of the desired cannabinoids from plant matter. Chemical synthesis of these compounds can utilize costly, environmentally concerning reactants. C1 could represent a high-quality and low-cost option to produce consumer product with applications in pain, multiple sclerosis, cancer-associated nausea and vomiting, weight loss, appetite loss and spasticity among others. The press release continued on to summarize a recent peer-reviewed [publication](#) which found that two cannabinoid acids CBGA and CBDA had micromolar binding affinity for the coronavirus spike protein, which could have prophylactic properties preventing infection. The compounds were also reported to be equally effective against two SARS-CoV-2 variants, and could be effective against future mutant strains.

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

Summary

Since our last update, Dyadic has made several announcements regarding the NIIMBL coronavirus grant, early proof-of-concept of C1 producing cannabinoids, and an exclusive license agreement with Phibro. Dyadic will receive up to \$690,000 to support the development of two different C1-expressed antibodies, and C1 will be benchmarked for its manufacturing rate. Dyadic also successfully engineered C1 to produce cannabinoids. Finally, Dyadic entered into an exclusive license agreement with Phibro for the development and commercialization of a poultry vaccine. There is substantial value in Dyadic's broad portfolio of options and in its exciting technology that can revolutionize the protein expression industry. Future favorable catalysts include the addition of more collaborators, achieving output milestones and launching the planned clinical trial. We maintain our target price of \$10.00 per share.

¹ Poultry Vaccine Market Size, Share | Global Industry Report, 2019-2026 ([grandviewresearch.com](https://www.grandviewresearch.com))

Research Collaboration Summary

We've updated our collaboration list to include the recent agreement with Phibro.

Exhibit I – Summary of Dyadic Collaborations²

Collaborator	Deal	Ownership	Description	Date
Phibro Animal Health	Exclusive License Agreement		Poultry vaccine	10-Feb-22
Janssen	Fnded 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 collaboration		COVID Vaccine Clin Trials	July'21
Syngene International	Co-development research collaboration		COVID Vaccine	May'21
IDBiologics, Inc	Expansion/Fully funded collaboration	0.4%	mAbs for infectious disease	April '21
Unnamed Collaborator	Fully funded R&D collaboration		Viral antigen	11-Mar-21
CR20	Fully funded R&D collaboration		COVID antibody	22-Apr-21
Medytox	Vaccine co-development collaboration		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-May-19
Luina Bio/Novovet	Sublicense, Milestone, Royalties	20.0%	Animal Health	26-Apr-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

² 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

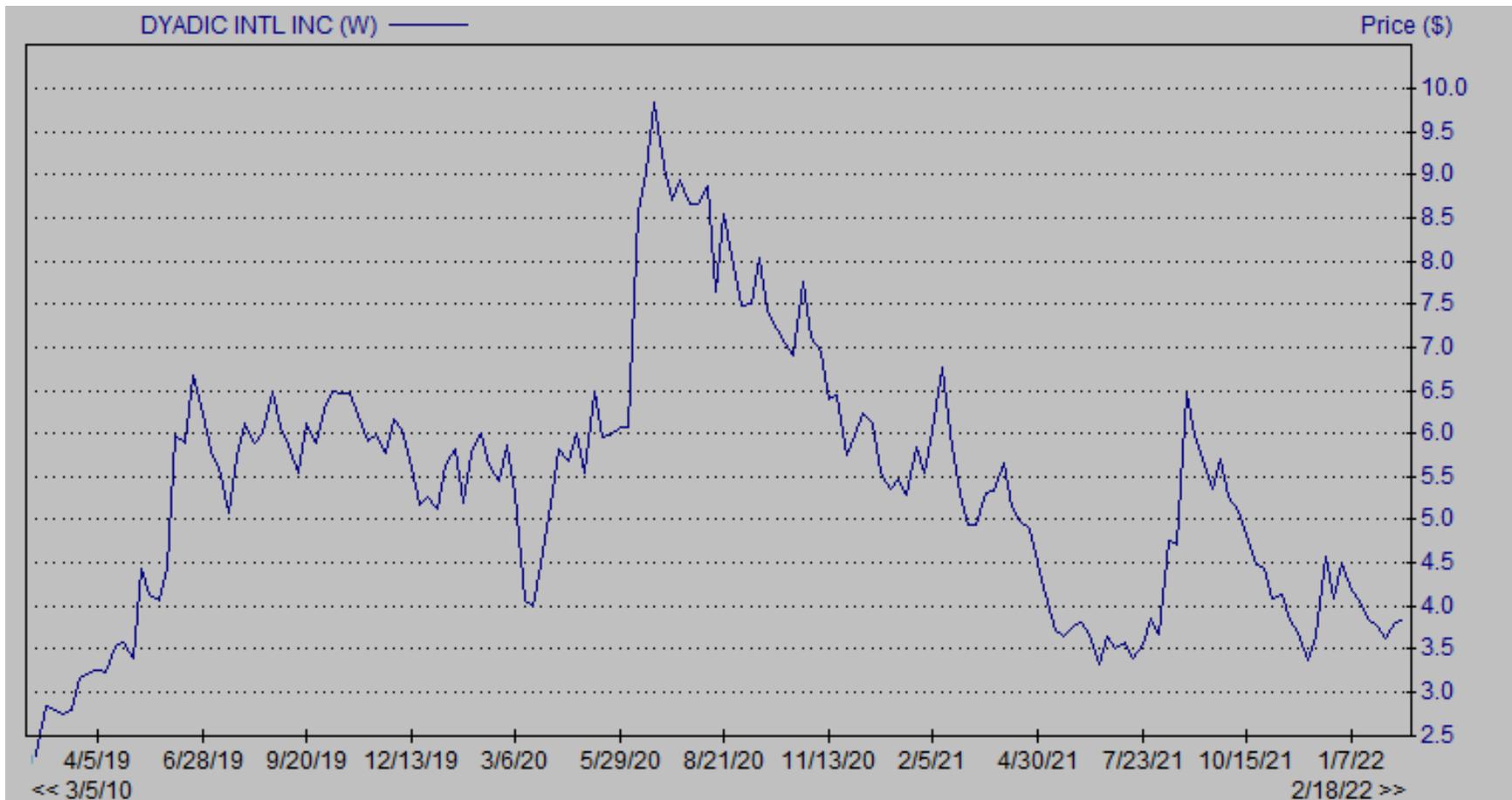
Dyadic International, Inc. - Income Statement

Dyadic International, Inc.	2020 A	Q1 A	Q2 A	Q3 A	Q4 E	2021 E	2022 E	2023 E
Total Revenues	\$1.6	\$0.5	\$0.9	\$0.7	\$0.8	\$2.9	\$3.9	\$4.2
<i>YOY Growth</i>	-5%	46%	79%	66%	131%	80%	35%	8%
Cost of R&D Revenue	\$1.4	\$0.4	\$0.8	\$0.4	\$0.5	\$2.1	\$2.6	\$3.2
R&D	\$3.9	\$1.8	\$2.2	\$1.9	\$1.0	\$6.9	\$6.2	\$5.5
R&D Related Party	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
G&A	\$6.1	\$1.6	\$1.7	\$1.7	\$1.4	\$6.4	\$4.8	\$4.8
Foreign Currency Exchange	\$0.1	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Income from operations	(\$10.0)	(\$3.3)	(\$3.9)	(\$3.3)	(\$2.1)	(\$12.5)	(\$9.7)	(\$9.3)
<i>Operating Margin</i>	-626%	-721%	-413%	-480%	-260%	-433%	-250%	-221%
Interest Income	\$0.4	\$0.0	\$0.0	\$0.0	\$0.2	\$0.2	\$0.5	\$0.5
Other	\$0.3	\$0.0	\$0.0	\$1.6	\$0.0	\$1.6	\$0.0	\$0.0
Pre-Tax Income	(\$9.3)	(\$3.3)	(\$3.8)	(\$1.7)	(\$1.9)	(\$10.7)	(\$9.2)	(\$8.8)
Provision for Income Tax	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$1.0
<i>Tax Rate</i>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Net Income	(\$9.3)	(\$3.3)	(\$3.8)	(\$1.7)	(\$1.9)	(\$10.7)	(\$9.2)	(\$9.8)
<i>Net Margin</i>	-582%	-715%	-410%	-248%	-240%	-370%	-237%	-233%
Reported EPS	(\$0.34)	(\$0.12)	(\$0.14)	(\$0.06)	(\$0.07)	(\$0.38)	(\$0.31)	(\$0.32)
Shares Outstanding	27.47	27.53	27.65	28.08	28.00	27.81	30.00	31.00

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

HISTORICAL STOCK PRICE

Dyadic International, Inc. – Share Price Chart



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