



Precision engineered
recombinant protein
production that **redefines**
performance, scalability,
and economy

NASDAQ: DYAI



Safe harbor statement

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From platform to profit: Dyadic's commercial growth story



Proven platforms with industrial validation

- Experienced protein engineering since 1990's
- \$75M DuPont exit validates platform
- Scale-up confirms industrial readiness



High-value dual platforms: C1 and Dapibus™

- Scalable, flexible expression systems
- Completely animal-free protein production
- High-yield, cost-effective manufacturing



Non-therapeutic focus = Near-term revenue

- Lower regulatory threshold
- Reduced development & production costs
- Faster commercialization & revenue timelines



Expanding product pipeline in massive markets

- Recombinant proteins expected to launch 2025–2027
- ~\$25B+ market opportunity in key segments:
Life Sciences, Food/Nutrition, Bio Industrial



Inflection point: Commercial engines online

- Corporate evolution complete from R&D to revenue growth
- First revenue streams active (e.g., Proliant, Inzymes, Fermbox)
- Positioned for rapid revenue growth





Strategic partnerships & revenue traction

- Active partners across core verticals
- Active revenue models: direct/OEM sales, licensing/milestones
- Growing portfolio in target markets (cell media, DNA/RNA)

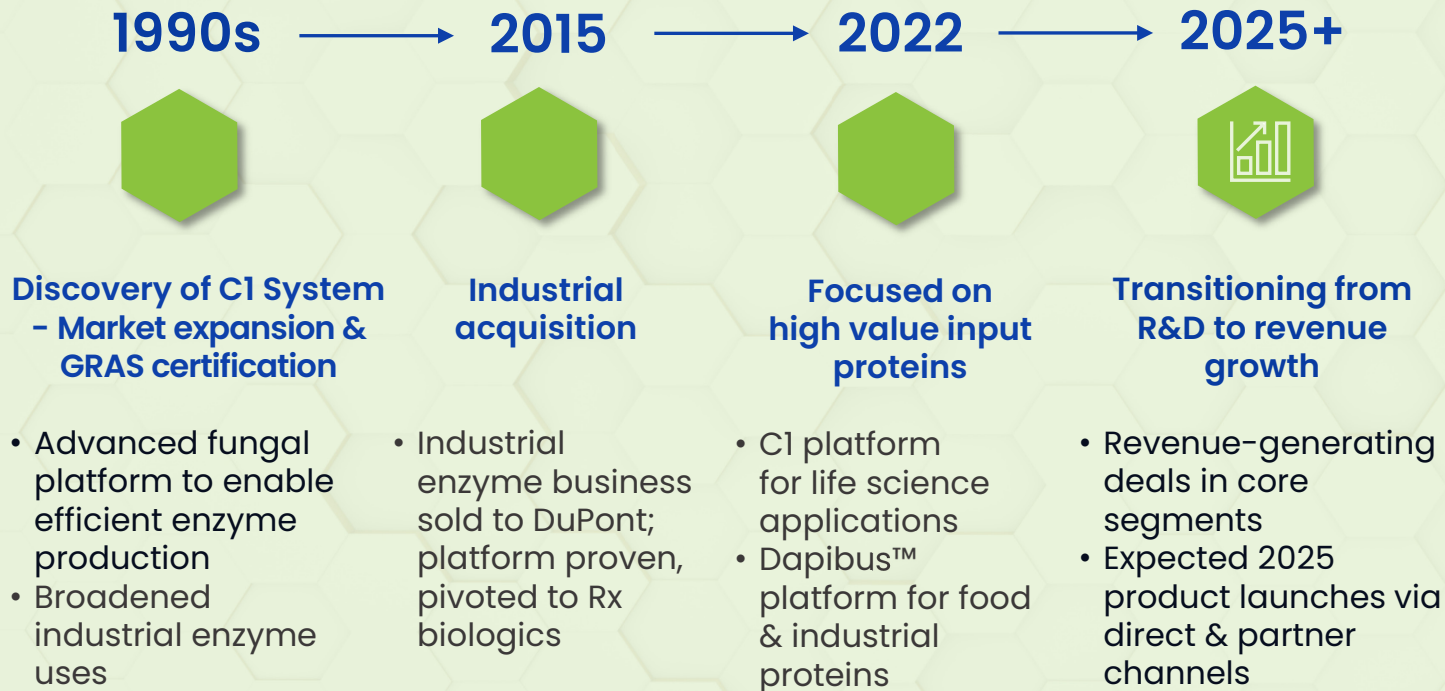
Our engines of growth

Dyadic's fungal expression technology

Platform Highlights	 C1 Platform (1990's–Present)	 Dapibus™ Platform (2021–Present)
Core Strength	High-yield, GMP-ready recombinant expression	GRAS, food-grade production at industrial scale
Applications	Biologics, intermediates, and ingredients for human & animal research, development & manufacturing	Proteins and enzymes for use food, beverage, nutrition, and industrial bioprocessing
Target Markets	Cell culture media, molecular biology reagents	Non-animal dairy; food/nutrition proteins; bio-industrial products
Expected Time to Market	Research-grade 2025, GMP in 2027	Research-grade active, food-grade 2026–27
Strategic Advantage	Higher yields and lower COGS vs. standard platforms – Higher productivity to address margin sensitivities	
Go-to-market strategy	Platform/strain licensing, strategic partnerships, and a hybrid sales model – combining direct-to-customer sales with 3rd-party distributors and OEM channels for scalability.	

Decades of innovation, now driving scalable growth

A platform with proven market validation



Evolving customer demands...

- ✓ Food/Supply chain safety & security
- ✓ Ethical concerns – animal free
- ✓ Health and safety
- ✓ Environmental sustainability

... align with recombinant advantages

- ✓ Consistency and quality
- ✓ Scalability and availability
- ✓ Contaminant & animal free
- ✓ Customizable and efficient



Unlocking the power of recombinant proteins



\$10 billion market¹

Life Sciences

Market Drivers

Applications

- Cell and gene therapy media
- Diagnostics and reagents
- Therapeutic protein development, e.g., antigens & monoclonal antibodies

Product & Use Examples

- Recombinant transferrin for serum-free stem cell media
- CGT media, reagents, CDMO use



\$11 billion market¹

Food & Nutrition

Applications

- Nutritional ingredients
- Enzyme guided processing
- Animal-free dairy and meat alternatives

- Recombinant human α -lactalbumin for infant formula & media supplement
- Infant nutrition, alt. meat & dairy



\$6 billion market¹

Bio-Industrial

Applications

- Biomass conversion enzymes
- Bioprocessing aids for pulp & paper, textiles, detergents
- Biocatalysts for green chemistry

- Recombinant enzymes for biomass processing
- Biofuels, cosmetics, pulp/paper

¹ Estimated Total Addressable Market

Why now?

Dyadic's inflection point

"The heavy lifting is complete"
– positioned to scale revenue rapidly

A pivotal transition: R&D to commercial execution

- Rebrand as **Dyadic Applied BioSolutions** to reflect commercial focus
- Transition from legacy licensing to **revenue-focused bioprocessing platform** company
- Internal shift completed – infrastructure, technology, and talent in place

Commercial engines are live

- Platforms (C1 and Dapibus™) validated across **life sciences, food & nutrition, and bio-industrial markets**
- Revenue from commercial partnerships realized (e.g., Inzymes milestone payment)
- Multiple **non-therapeutic protein products** expected to launch over next 12–36 months

Non-Therapeutic Focus = Near Term Revenue

- Avoids high regulatory burdens of therapeutic biologics
- Shorter time to market + scalable manufacturing = **faster revenue generation**

Legacy wins provide tailwind

- Active, **externally funded partnerships** (e.g., Gates Foundation \$3M grant, CEPI \$4.5M grant) maintain R&D continuity without capital drain

Revenue inflection over next 3 years

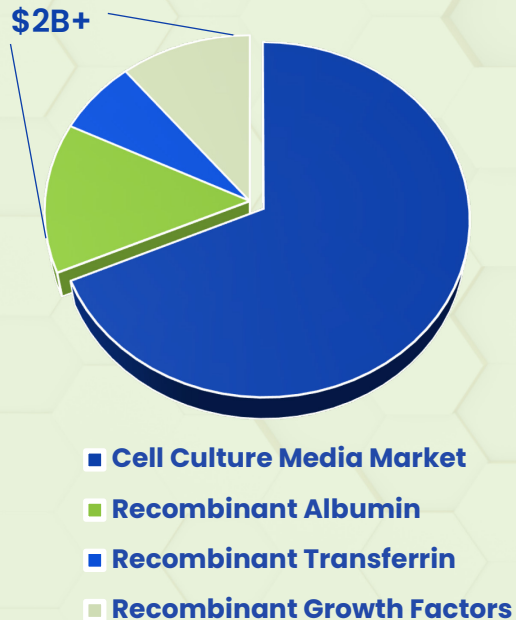
- Forecasting a **step-change in commercial revenue growth** beginning late 2025



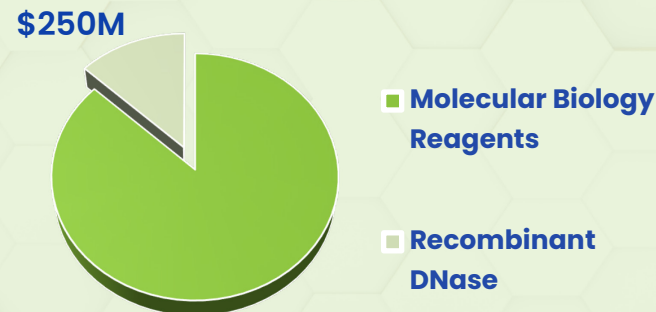
Target markets

Advancing high-margin inputs in cell culture and molecular reagents

Cell Culture Media Market ~\$5B
TAM Estimate (2025)



Molecular Biology Reagents ~\$2B
TAM Estimate (2025)



Life Sciences

Cell Culture Media

- **Market size¹:** ~\$5B+ (growing with CGT & biologics)
- **Target customers:** CDMOs, CGT manufacturers, media suppliers
- **Revenue model:** Strain/platform licensing, direct sales (e.g., transferrin, albumin, FGF)
- **Proof point:** Strategic partnership with Proliant – \$1M in revenue; profit sharing expected in late 2025
- **Expected timing:** RUO launches underway; GMP-grade products in 2026–2027

DNA/RNA Technologies

- **Market size²:** ~\$2B+ in enzymes/reagents; growth driven by synthetic biology, diagnostics, vaccines
- **Target customers:** PCR/RT-PCR kit makers, LNP & mRNA therapy developers
- **Revenue model:** Direct sales (DNase I, ligases, RNase inhibitors), OEM supply agreements
- **Launch prep:** DNase I (RNAs entering production scale-up for direct channel readiness)
- **Expected timing:** Initial RUO enzyme sales in 2025; broader portfolio by 2026–2027

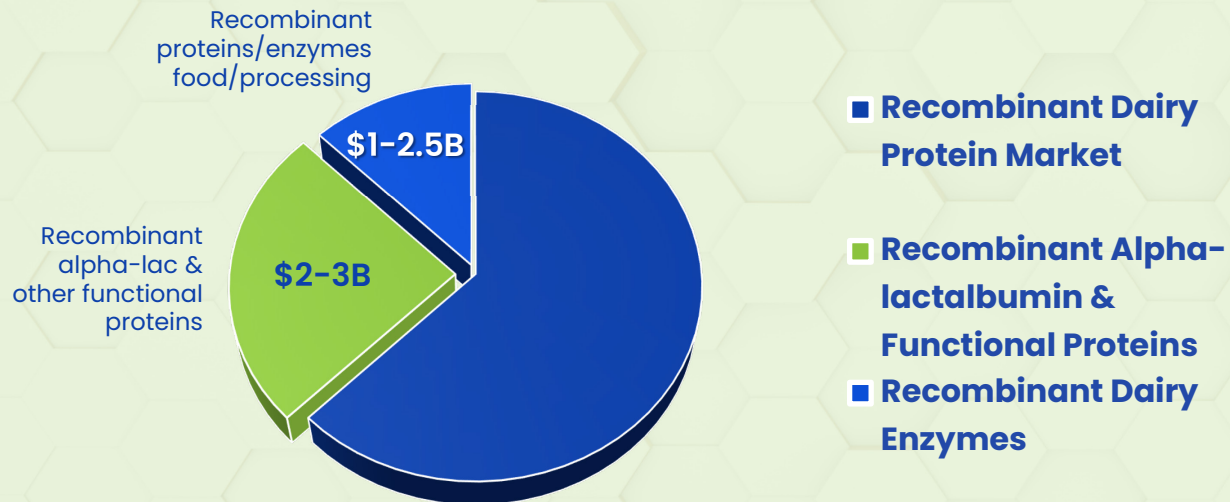
¹Management assumption based on recombinant protein share in bioproduction and CGT markets
<https://www.marketsandmarkets.com/Market-Reports/recombinant-albumin-market-170146653.html>; <https://www.bccresearch.com/partners/ys/iron-supplements-market.html>; <https://www.grandviewresearch.com/industry-analysis/cell-growth-factors-market>

²Management assumption from recombinant adoption trends and reagent segment estimates
<https://www.marketsandmarkets.com/Market-Reports/molecular-biology-enzymes-kits-reagents-market-164131709.html>
<https://www.synbiobeta.com/news/synthetic-biology-market-update-2024>

Target markets (cont.)

Positioned to capture value in the recombinant food & nutrition revolution

Recombinant Food & Nutrition - ~\$11B (2025 TAM Estimate)



Food & Nutrition

Non-Animal Proteins & Functional Ingredients

- **Market size¹:** ~\$11B+ alternative dairy, functional food, wellness
- **Target customers:** Ingredient suppliers, food & beverage companies, alt-dairy brands
- **Revenue model:** Product sales (e.g., recombinant α -lactalbumin), strain licensing
- **Proof point:** Inzymes non-animal dairy enzyme, already received \$1.2M in upfront milestones, launching in late 2025
- **Launch prep:** alpha-lac currently being characterized and negotiations underway with multiple parties
- **Expected timing:** Research-grade sales active; food-grade launches planned in 2027

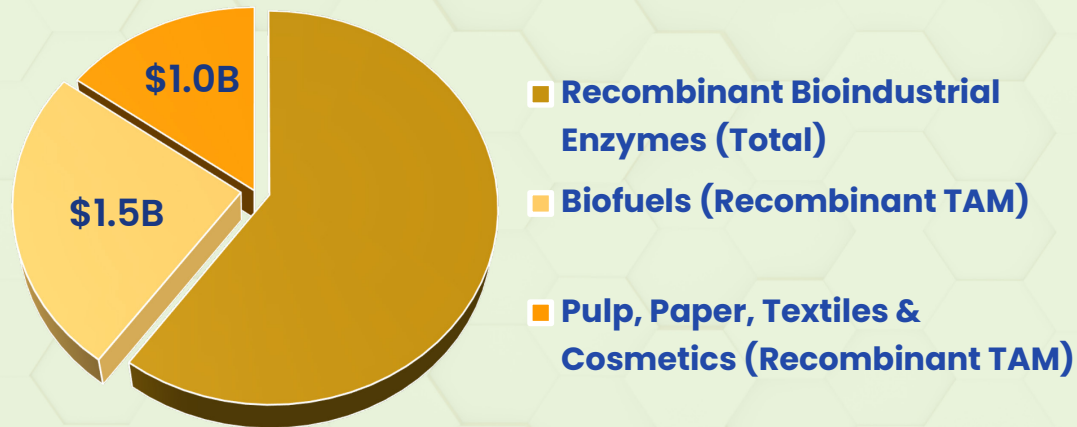
¹ Management assumption based from the food enzyme/protein segment totals
<https://www.alliedmarketresearch.com/functional-protein-market>; BCC Research; lactoferrin and alpha-lactalbumin pricing × estimated global volume
[Verified Market Research, Microbial Chymosin Market, 2024](#), [Coherent Market Insights, Precision Fermentation Market, 2024](#), [Grand View Research, Precision Fermentation Market Report, 2024](#), and [GlobeNewswire via Precedence Research, Precision Fermentation Market Size, Dec 2024](#).

Target markets (cont.)

Driving sustainable growth in bio-industrial inputs through proven enzyme solutions

Recombinant

Bio-industrial Enzymes – ~\$6B
(2025 TAM Estimate)



¹ Management assumption based on data across major industrial sectors
<https://www.grandviewresearch.com/industry-analysis/industrial-enzymes-market>
<https://www.researchandmarkets.com/reports/5139731/industrial-enzymes-market-growth-trends>



Bio-industrial

Non-Animal Proteins & Functional Ingredients

- **Market size¹:** ~\$6B+ enzyme and biomass processing input market
- **Target customers:** Pulp & paper, renewable fuels, biogas,
- **Revenue model:** Bulk enzyme product sales 3rd-party distribution
- **Proof point:** Fermbox Bio
- **Launch plan:** Cellulosic scale-up
- **Expected timing:** Initial contracts secured; scale-up and new launches through 2026

Commercialization strategy

“One strain, multiple ways to monetize – built-in flexibility for sustainable growth”

Turning engineered strains into scalable revenue streams

Step 1: Engineered Strains

- Platform: C1/Dapibus™
- Value: Rapid strain development, high yield, animal-free
- Output: Custom, high-performance microbial strains

Step 2: Monetization Channels

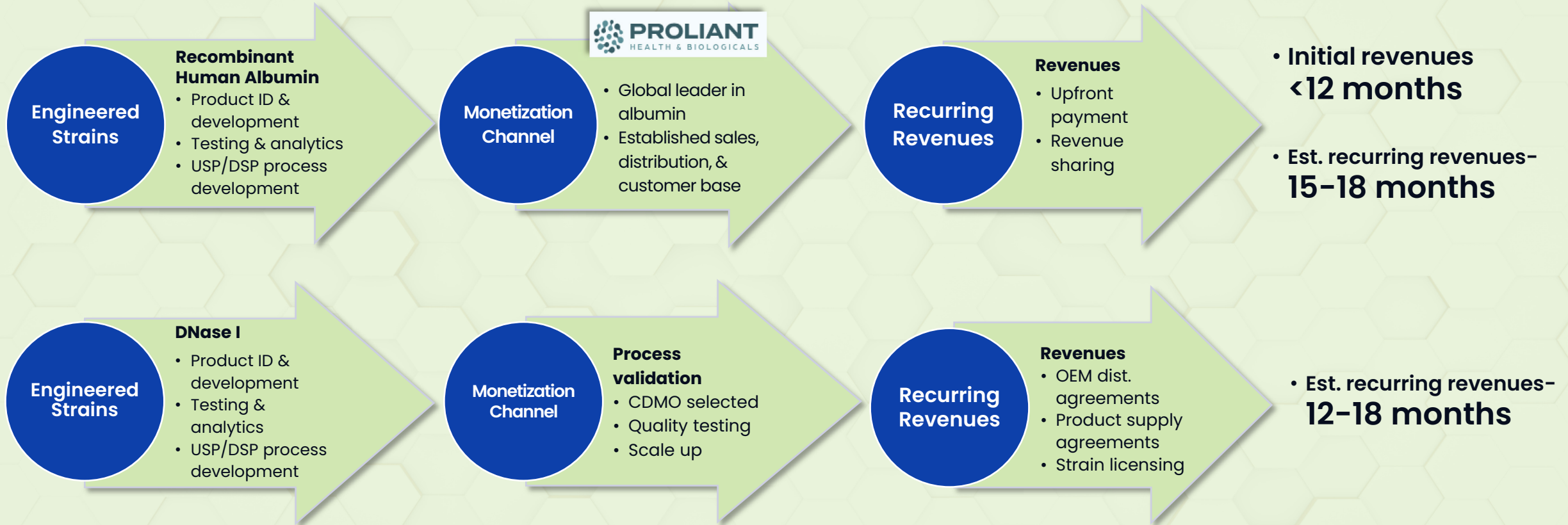
Three revenue pathways:

- **Strain Licensing**
 - ✓ Example: **Proliant** – recombinant albumin
 - ✓ Revenue via license fees + royalties
- **Strategic Partnerships**
 - ✓ Example: **Fermbox** (cellulosic enzymes), **Inzymes** (non-animal dairy enzymes)
 - ✓ Revenue via milestones + co-development + bulk supply
- **Direct Product Sales**
 - ✓ Example: **DNase I**, **TdT** – RUO enzymes for cell/gene therapy tools
 - ✓ Revenue via direct bulk and OEM sales

Step 3: Recurring Revenue

- Scalable revenue streams with growing gross margin
- Shorter time-to-market than therapeutics
- Embedded in partners' manufacturing and supply chains

Execution for near-term revenues



Revenue acceleration examples

Targeted entry into high-value protein markets

Molecular biology reagents¹

(Blended price per gram)

DNase I	\$47/gram
TdT Terminal Transferase	\$94/gram
T4 DNA Ligase	\$78/gram
T7 RNA Polymerase	\$67/gram
RNA Inhibitor	\$57/gram
Molecular Biology Blended Avg.	\$68.44/gram

Estimated market size

~29,000 kg sold per year – all grades

\$2.0 Billion

% Penetration	Kilograms Sold	Estimated Revenue
5.0%	1,461 kg	\$100M
10.0%	2,992 kg	\$200M
25.0%	7306 kg	\$500M

Cell culture media²

(Blended price per gram)

Albumin	\$31/gram
Transferrin	\$55/gram
Growth Factors	\$123/gram
Cell Culture Blended Avg.	\$51.13/gram

Estimated market size

~97,000 kg sold per year – all grades

\$5.0 Billion

% Penetration	Kilograms Sold	Estimated Revenue
5.0%	4,889 kg	\$250M
10.0%	9,779 kg	\$500M
25.0%	4,447 kg	\$1.25B

Expected revenue growth driven by increased commercialization efforts and expanding portfolio

¹ Blended price per gram assumes volume distribution (RUO: 65%, GMP: 25%, Higher-grade: 10%) and is based on estimated pricing from NEB, Thermo Fisher, Promega, Dyadic modeling, and BioProcess International. Includes representative enzymes such as DNase I, TdT, T4 DNA Ligase, T7 RNA Polymerase, and RNA inhibitors.

² Blended price per gram based on estimated volume distribution (RUO: 65%, GMP: 25%, Higher-grade: 10%) and pricing benchmarks from Thermo Fisher, Sigma-Aldrich, InVitria, PeproTech, and BioProcess International. Source assumptions reflect catalog data and market trends from BioPlan Associates and Grand View Research (2024–2025)

Near-term product pipeline:

High-value launches by segment

C1 Platform



Life Sciences¹

Product Name	Channel	Expected Launch Status	2025	2026	2027
Human Albumin	Proliant	licensed	→		
DNase I	OEM/Direct	2025	→		
Transferrin	Direct/License	2026	→	→	
FGF	Direct/License	2026	→	→	
TdT, Ligases, RNase Inh.	OEM/Direct	2026	→	→	
Human Lactoferrin	Direct/License	2027	→	→	→
Human α-Lactalbumin	Direct/License	2027	→	→	→

¹ Based on management estimates as of July 23, 2025 for biologics, intermediates, and ingredients for human & animal research, development & manufacturing

Near-term product pipeline:

High-value launches by segment

Dapibus™ Platform



Food & Nutrition¹

Product Name	Channel	Expected Launch Status	2025	2026	2027
Non-animal dairy enzymes	Partnered - Inzymes	2025	→		
Bovine transferrin	Direct/License, food-grade	2025	→		
Bovine α-Lactalbumin	Direct/License, food-grade	2027		→	
Human α-Lactalbumin	Direct/License food-grade	2027		→	



Bio-Industrial¹

Product Name	Channel	Expected Launch Status	2025	2026	2027
Cellulosic enzyme cocktail	Partnered - Fermbox	2025	→		
Pulp/paper enzyme cocktail	Direct Sales/License	2026		→	
Hyaluronidase	OEM/Direct/License	2027		→	

¹ Based on management estimates as of July 23, 2025

Legacy R&D programs expected to fuel strategic momentum

Advancing Dyadic's platform while
reinforcing its commercial credibility

**Gates
Foundation**

European
Vaccines Hub
for Pandemic
Preparedness

CEPI



RUBIC
ONE HEALTH

FBS | Fondazione
Biotechnopolo
di Siena

Legacy programs aid platform innovation

- **Non-dilutive funding, strategic validation, global visibility**
- **Global health collaborations drive strategic value**
 - Gates Foundation: \$3M grant → \$1.5M milestone in 2025
 - European Vaccine Hub (EVH): €170M¹ initiative
→ Dyadic contributing to Discovery pillar (Rappuoli-led)
 - Additional fully funded partners: CEPI, FBS, Rubic, Israel Institute for Biological Research
- **Partner-funded advancements accelerate platform value**
 - All legacy R&D fully externally funded
 - Enhancing C1 for advanced biologics: mAbs, VLPs, ferritin nanoparticles, antigens
 - Boosting visibility and credibility in global health and vaccine innovation

¹ Total initial funding, not all available to Dyadic

Legacy R&D keeps Dyadic front-of-mind for future therapeutics – without
impacting commercial focus

Key investment highlights

- ✓ **Proven platforms with industrial validation**
Experienced protein engineering since 1990's
- ✓ **High-value dual platforms: C1 and Dapibus™**
Scalable, flexible expression systems
- ✓ **Non-therapeutic focus = near-term revenue**
Lower regulatory threshold
- ✓ **Expanding product pipeline in massive markets**
Recombinant proteins launching 2025–2027
\$25B+ market opportunity in key segments
- ✓ **Inflection point: Commercial engines online**
Corporate evolution from R&D to first revenue streams
- ✓ **Strategic partnerships & revenue traction**
Active partners/revenue models across core verticals
 - Life Sciences: **Proliant**
 - Food/Nutrition: **Inzymes**
 - Bio Industrial: **Fermbox**

Market capitalization	\$30.09M (as of 7/21/25)
Cash & Investment-grade securities (including accrued interest)	~ \$7.4M (as of 3/31/25)
Shares outstanding	~ 30.09M (as of 5/13/25)
Debt and warrants	\$5.1 M; No warrants
Insider ownership	~ 30.1%
R&D revenue 2024	~ \$1.6M
License revenue 2024	~ \$1.9M

NASDAQ: **DYAI**
Founded: **1979**
Headquarters: **Jupiter, Florida**
Research locations: **Finland and Spain**



Veteran leadership with diverse pharma and industrial experience



Mark Emalfarb, Founder/CEO

Entrepreneur, inventor 25+ U.S. and foreign biotechnology patents, filamentous fungal enzyme product commercialization



Joe Hazelton, President/COO

25 Years in pharmaceutical Industry, commercialization, regulatory, business and clinical development



Deloitte.

Ping Rawson, CFO

20+ years of finance, accounting & international trade and business development experience



Ronen Tchelet, CSO

20+ years in biopharmaceutical industry & recombinant product commercialization

Board Chairman



Patrick Lucy, Chairman of the Board

20 years of bioprocess biotech and business development experience

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Thank you!