



LYRIC

Complex Human Therapeutics Manufacturing



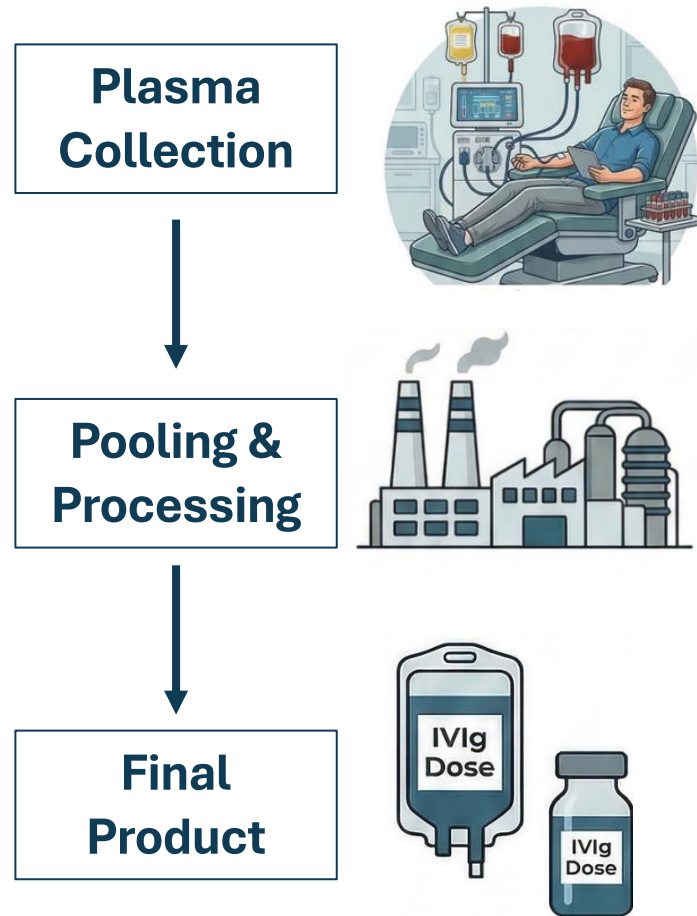
Lyric Bio spun out of Prellis Biologics in 2025 to revolutionize human donor derived therapeutics market with novel biomanufacturing

Executive Summary

- Lyric is developing bioreactors culturing tissue (vs. cells in suspension) to massively scale efficiency and capabilities of biomanufacturing.
- Lyric's first bioreactors mimic lymph node tissue, allowing for high-density B cell culture (1-2 B cells/mL) and kilograms of protein from a 150 mL bioreactor.
- These B cells can be stimulated to produce large quantities of diverse antibodies for a cost-efficient Ivlg product, currently a \$15B market completely reliant on human donors.
- Lyric's process will alleviate dependence on donors ~10,000-fold, increase supply, reduce costs 10-100x, and improve quality of Ig therapeutics.
- Lyric Bio spun out of Prellis Biologics with an exclusive license to apply their proprietary tissue engineering technology to develop high-density bioreactors.



IVIg Has Been Produced The Same Way Since the 1940s



Used to treat **100+ Different Diseases**

\$20B Supply constrained market

~290 Metric Tons of IVIg used annual

50M donors annually

8 straight years of shortages with no solution

64 lots recalled in the last decade

**adjustments and additions to primary methods have been introduced as late as the 1990s*

This Impacts REAL People Everyday

Immunoglobulin Shortages Pressure Hospitals and Manufacturers While Patients Suffer

August 9, 2019 | 4 min read | Mark Terry



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Human normal immunoglobulins - supply shortage

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Drug Shortage Leaves Patients Without Immune-Disorder Treatment

A shortage of immune globulin has forced hospitals to ration treatments. 'For the patients affected, it's been very significant'

Dealing with a critical national shortage—Approaches to triaging immune globulin supply in pediatric hematology and oncology

[Holly J Edington](#)^{1,2}, [Kathryn S Sutton](#)^{1,2}, [Carolyn Bennett](#)^{1,2}, [Shanmuganathan Chandrakasan](#)^{1,2}, [Jennifer Sterner-Allison](#)³, [Sharon M Castellino](#)^{1,2}

Nationwide IVIG shortage leaves patients in need of treatment

National Shortage of IVIG and SCIG Drugs

November 21, 2019

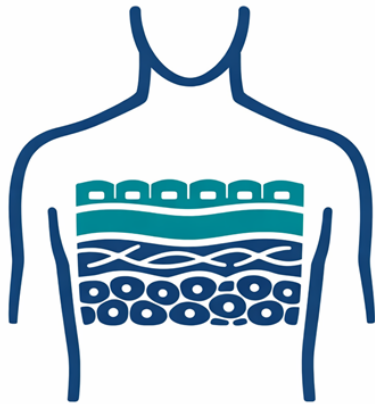
The U.S. Food and Drug Administration (FDA) **announced** on August 12, 2019 that the demand for Immune Globulin (IG) products has increased

Shortage Of Life-Saving Infusion Strains Hospitals And Leaves Patients In Limbo

Human B Cells Can Produce IVIg

BUT current bioreactors are not efficient enough

Human Tissue



3-5 B cells/mL in
tissue niches

Vat Bioreactors



10M cells/mL in
suspension

 LYRIC



1-2 B cells/mL in
tunable scaffolds

Using Prellis Tech LYRIC BIO Is Building High Density Bioreactors

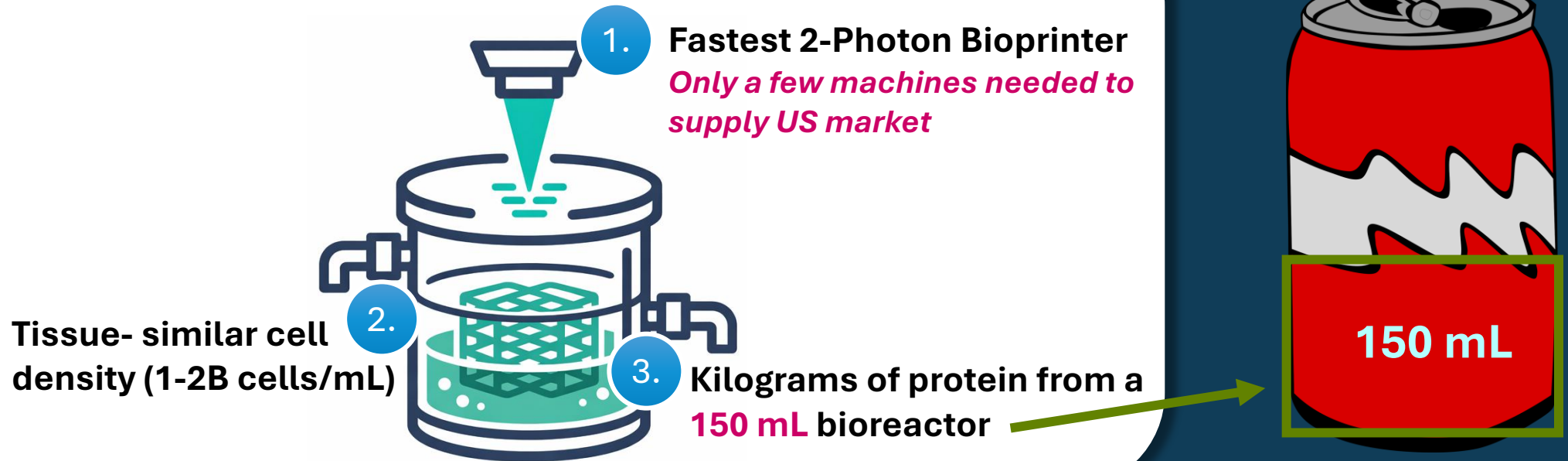
Our Revolutionary Approach is Based on Human Tissue

Handheld Sized
Commercial Bioreactors

10-100x Greater
Efficiency

Manufacture Donor
Derived Therapies

Lyric Proprietary High-Density Bioreactors



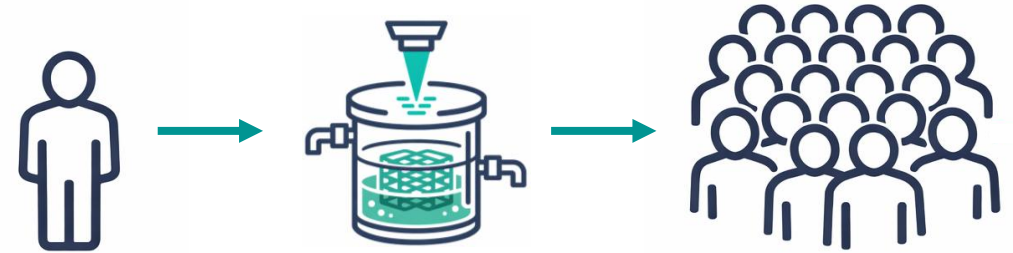
Reimagining IVIg: A \$20B+ Supply Constrained Market

Current Process



7-10 Donors per IVIg dose

LYRIC Process



~1,000 IVIg Doses per B Cell Source

~10,000-Fold Fewer Donors

~10-100x Lower Cost

Greater Quality Control

Validating the World's First In-Vitro Manufactured IVIg

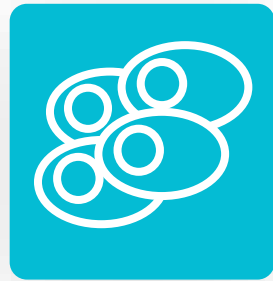
Demonstrated at Prellis

Developed At Lyric Bio

Demonstrated in Literature



B cells
(one donor)



Expand B cell
populations



Seed and expand
in a **150 mL**
bioreactor



Stimulate B cells
to produce
immunoglobulin



Collect Ig
(est. >1,000 doses)

Senior Team



Kayj Shannon
Co-Founder & CEO
10 years at large Pharma
and start-up companies



Melanie Matheu, PhD
Co-Founder & CSO
Prellis Biologics, Inc. Founder
and CTO



University of California
San Francisco

Advisors



Marty Pollak
CFO B Positive Plasma,
(>\$500M revenue,
acq. Takeda)



Matthew Hotchko, PhD
President at Marketing
Research Bureau,
(leading market
intelligence firm for
plasma products)

Partners





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