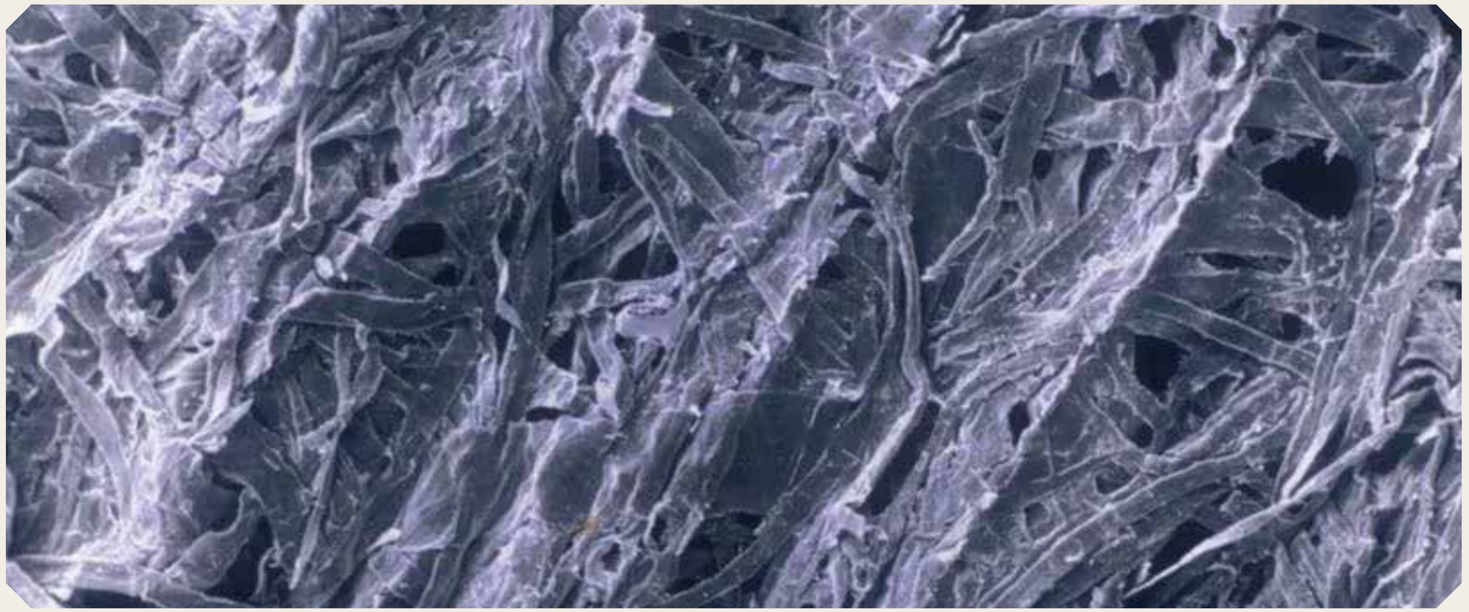
POLYBION

The new generation materials company - Revolutionary biomaterials for forward-thinkers

We are growing a better future one cell at a time

Cellulose is the most abundant organic compound on Earth: Nature's favorite biopolymer.



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Certain organisms from bacteria to plants and animals synthesize cellulose as an extracellular polymer for various biological functions.

We harness these organisms biosynthesis capabilities as a material creation platform.

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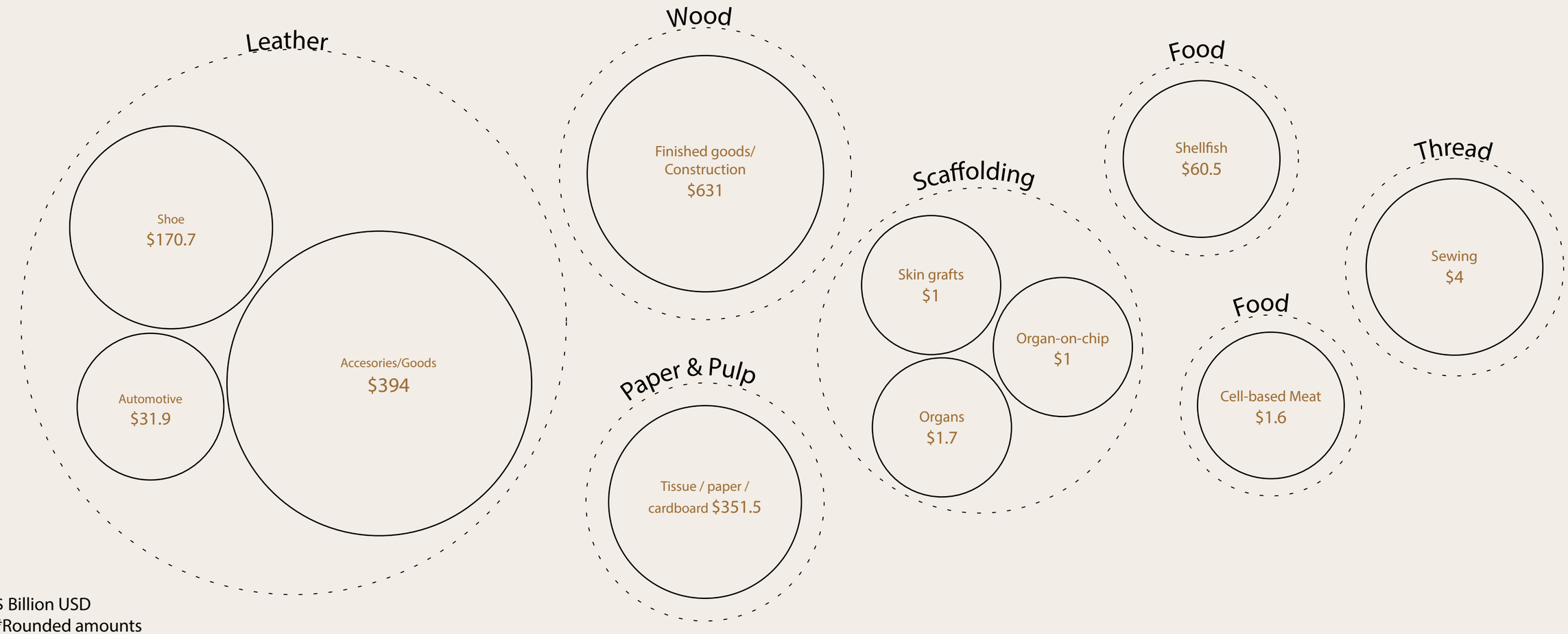
Bacterial nanocellulose has the potential to become a next generation commodity for a plethora of applications.



$ Billion USD
*Rounded amounts

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And we are starting with leather.

23 Billion sq.ft of leather & pleather
are produced every year globally.

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A $676B USD total addressable market

Segment	Market Size	Price-Points per sq.ft.	Application Examples
Exotic leathers	$6B	$20-200 USD	Bags, Accesories, Shoes, Watches.
Cowhide leathers	$120B	$4-20 USD	Bags, Tennis, Shoes, Watches, Door Panels.
Polyurethane pleathers	$150B	$2-4 USD	Bags, Tennis, Shoes, Watches, Door Panels, Car Interiors.
Performance materials	$400B	$1-8 USD	Bags, Tennis, Shoes, Watches, Door Panels, Car Interiors.

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But there is a huge problem across multiple leather-consuming industries.

Consumers now want cost-efficient, high-quality, non-animal, non-plastic materials for goods and there are none.

Animal leather is not sustainable and all “vegan leather” options are plastic: even hybrids.

Image from m0851 - Unsplash

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Using cutting-edge technology modeled on nature’s own design, Polybion™ grows premium, high-performance leather alternatives by feeding bacteria with agro-industrial fruit waste.

CELIUM

Our first product, is a premium alternative to animal-based leather and petroleum-derived synthetics, composed of bacterial cellulose.

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It can be customized by color, graining, embossing, and water resistance while preserving its exceptional strength.

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Test	Result
Thickness	1.2
Color Migration to Solvent - Color Change	4.0
Seam Strength	Length - 61.4 lbf Width - 75.4 lbf
Wick Test	Wales - 45 mm Courses - 41 mm
Rub Fastness (Crocking) - Dry	4-5
Rub Fastness (Crocking) - Wet	4-5
UV Light Xenon ARC	4.0
Bally Flex - Dry	>10.000
Bally Flex - Wet	>5.000
Dry Abrasion	>25.000 Color Change - 4.5
Wet Abrasion	>12.800 Color Change - 4.5
Phenolic Yellowing	4-5
Tear Strengh	Length - 13.6 lbf Width - 8.2 lbf
Breaking Force	Length - 133.8 lbf Width - 141.6 lbf
Elongation	Length - 70.4% Width - 77.8%
Staining to PVC	4.5

Performance meets possibility

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Celium™ Vertical Integrated Process

1. Agroindustrial Fruit Waste		In-House	* Delivered to our facility by local agro-industrial fruit packaging companies.
2. Cultivation		In-House	
3. Bio Assembly		In-House	
4. Harvesting		In-House	
5. Stabilization & Finishing		In-House	* Evaluating working with third-party animal leather international tanneries.
6. Product Making		Partners	* Top iconic global brands. * 3-4 weeks from waste to finished material ready for product-making.

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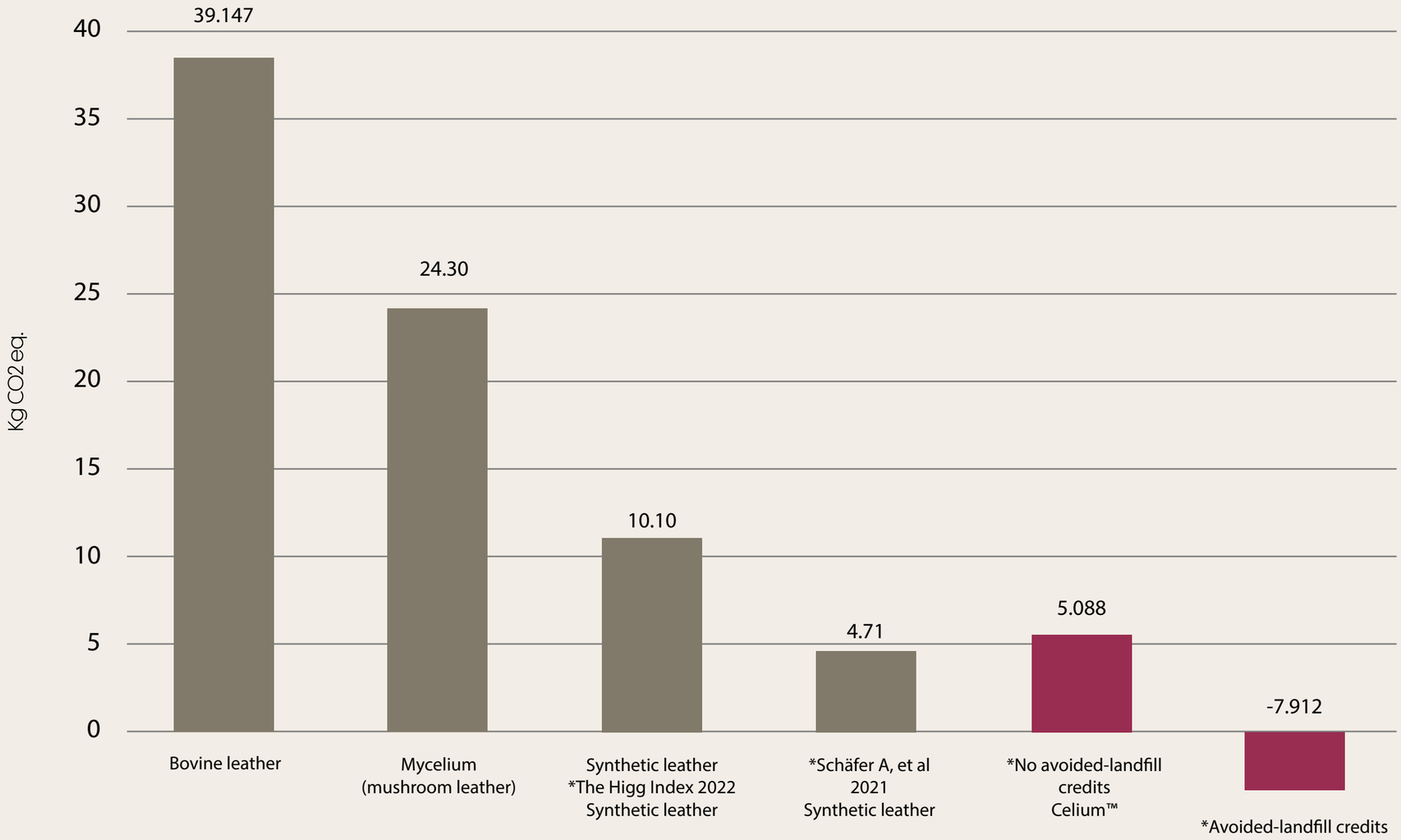
Stabilization & Finishing Process
ROADMAP TO
ZERO
REACH
COMPLIANT
EPA
United States
Environmental Protection
Agency

LCA Life Cycle Analysis



Comparasion: GWP of leathers (per 1m2)

*Performed by Simone Bründl as MSc Thesis in ETH Zurich
*Student ID number: 16-921-363
*Full LCA Report included in Data Room
*GWP - Global Warming Potential

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A versatile textile with endless design possibilities

CELIUM

Organic Vegan Circular

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Organic Non-Animal

Cost-Inefficient/
Low Volume

Reishi (Mycoworks)

Mylo (Bolt Threads)

Modern Meadow

Vitro Labs

Qorium

✳ CELIUM

Cost-Efficient/
High Volume

Piñatex

Desserto

Vegea

Vegan & Hybrid Leathers

Plastic

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POLYBION
The new generation materials company.

Repeatable process proven across multiple sites with multiple sizes

Demonstrated Scalability

During 2022, Polybion's 14,000 sq.ft. solar-powered manufacturing facility was built, this marks the third facility iteration in 4 years. The industrial process was optimized, and repeated hundreds of times to better understand it at current scale. At max capacity it will output 1,100,00 sq.ft per year. We are currently at 5% of the total capacity. We call this facility FOAK I; First-Of-A-Kind.

Precedent in Industry

The core of our manufacturing process shares similarities with existing large-scale fermentation operations, minimizing scale-up risk. Our process relies on traditional fermentation and animal leather tanning equipment.

In-House and Third party tanning scheme

Polybion has built an In-House tanning unit within the new facility, we also have tannery partners that could act as subcontractors, ensuring our ability to expand and execute to the standards of global brands.

38,000 sq.ft per-year
Current Production.
1.1M sq.ft per-year
Max Capacity.

We grow 16 sq.ft Celium™ sheets

2022 Celium™ sheet price $480 USD
2022 Celium™ sheet cost $64 USD

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We sell Celium™ by the square foot

Per-Square-Foot unit economics

$30
ASP* 2023 (Exotic)

$4
COGS* 2023 (370K sq.ft per year)
Direct Labor, Raw materials, Post-processing

86.6%
Gross margin 2022 (370K sq.ft per year)

$30
ASP* at Max 2024 Capacity (Exotic)

$2.3
COGS* at Max Capacity (1.1M sq.ft per year)
Direct Labor, Raw materials, Post-processing

91.7%
Gross margin at Max Capacity (1.1M sq.ft per year)

*ASP - Average Selling Price
*COGS - Cost Of Goods Sold

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Go-To-Market

2023

Global Brand
Co-Announcements

$30-$60
ASP sq.ft. (Exotic)

Segment
Ultra-Luxury
Bags, Tennis, Shoes, Watches

Industry
Fashion, Sportswear,
Accesories

2024-2025

Global Brand Collabs
& Direct Sales

$12-$30
ASP sq.ft (Premium Cowhide)

Segment
Premium
Bags, Tennis, Shoes, Watches, Door Panel

Industry
Fashion, Sportswear, Accesories,
Automotive

2026- ∞

Global Brand Collabs
Direct Sales & SPV's (Licensing)

$5 to $30
ASP sq.ft (From Standard Cowhyde to Exotic)

Segment
Mass Market
Bags, Tennis, Shoes, Watches, Car Interiors

Industry
Fashion, Sportswear, Accesories, Automotive

*ASP - Average Selling Price

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Uncapped traction from top global brands in ultra luxury, footwear and apparel sectors

+ $2M USD of projected revenue from 2023 to 2024 and a potential multi-million agreement with an iconic global sneakers company.

One of the fastest growing european sportswear brands has executed a JDA that includes a multi-million MOQ.

2 executed agreements with Top Global Brands in the Ultra Luxury and Sportsware segments. At least 5 more to be agreed and executed in Q2 2023.

+ 20 MTA's signed with Top Global Brands for material evaluation , JDA proposal and MOQ placing.

Over 500 RFQ's from top brands across multiple countries and sectors; luxury, fashion, footwear, accessories, automobile, etc.

Demand is virtually uncapped, this is a scaling challenge.

* MOQ - Minimum Order Quantity
* RFQ - Request for Quotation
* JDA - Joint Development Agreement
* MTA - Material Transfer Agreement

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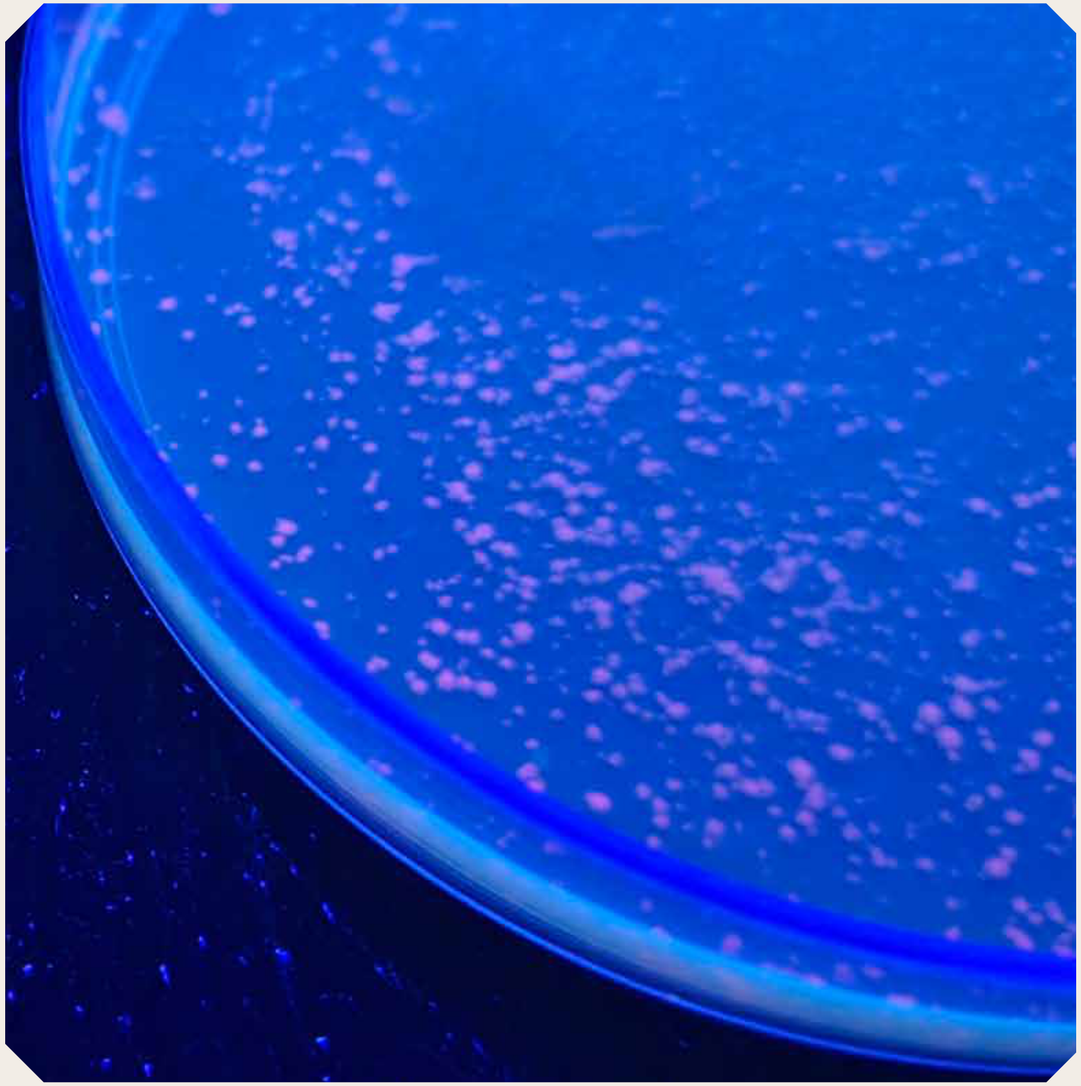
One cellular innovation. A civilizational impact.



We control Celium™'s fundamental properties as its grows, making it easy to tailor and we use genetic engineering to enhance its properties

Our proprietary cellular technology is the first step in our goal to develop a cost-efficient genetic engineering platform for novel materials creation.

Our materials will not only compete in the $276B leather & pleather market, but also in the $400B performance materials market.

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Team

Executive Team

Axel Gómez-Ortigoza
Co-Founder & CEO at Polybion™ | MIT Technology Review's Innovator Under 35
Experienced Research And Development Scientist with a demonstrated history of working in the biotechnology industry. Skilled in Bacterial Transformation, Bioinformatics, Mammalian Cell Culture, Murine Assays, Molecular Biology, and Origami. Strong research professional with a Biotechnology Engineering focused in Molecular Biology from Instituto Tecnológico y de Estudios Superiores de Monterrey / ITESM.

Alexis Gómez-Ortigoza
Co-Founder & CFO at Polybion™
A multi-skilled and value-driven entrepreneur with over 8 years of experience in Macro Research, Fundamental & Technical Analysis. Heavily involved in financial markets in multiple currencies, corporate finance, funding, marketing initiatives and Sales Strategy. Bachelor of Arts in Finance from Instituto Tecnológico y de Estudios Superiores de Monterrey / ITESM.

Diogo Frada
COO at Polybion™
15 Years' experience on Textiles and foams for Automotive Industry, being responsible for different areas such as, Research and Development, Production, Commercial, General Management and scale of new production sites Responsible for New Operations in different locations in Europe and North America. Production scale of Bio Assembled products and Implementation of Quality Management System and all related core tools.

PhD, José Manuel Aguilar
CSO at Polybion™ | MIT Technology Review's Innovator Under 35
Former academic with 23 years of experience in applied bioengineering from the private sector. Extensive experience in genetic engineering for the food and health industry. Awarded for his work on recombinant vaccines technology by MIT TR35 during Influenza pandemic. Member of the Mexican Federal Team of scientists selected by the Foreign Secretary to fight COVID-19.

PhD, Bárbara González Rolón
Head of Quality at Polybion™
Former research academic with 45 years of experience in material science. PhD in material science by Universidad Autonoma de Mexico UNAM. Extensive experience in materials development for the private sector.

Board of Advisors

Karl Schmieder - Communication & Bio Strategy
CEO at Messaging Lab | Biostrategist
MS/MFA, an award-winning writer and strategic communications professional.
MessagingLAB has provided marketing and communications strategies for private and public companies that have raised millions of dollars in investments. Clients have included Advanced Microbial Systems (renamed Agricen), Gambro BCT, Gen9, GenScript, Ginkgo Bioworks, IMS Health, K18 Hair,, Pivot Bio, Pfizer,SynBioBeta, among others.

Ariel Gómez-Ortigoza - Business Strategy
Managing Partner at Lantana Biosoft LP
MSc. in Finance as Dean List Scholar and MBA both from University of Southern California, bachelor in Biochemistry by ITESM; as a serial entrepreneur Gomez-Ortigoza founded and funded Startups in the computer and communications space both in Mexico and in the USA for three decades. On 2010 he was awarded a patent from USPTO and IMPI in Mexico. For the last ten years he has been an angel investor in Biofab and Smart IT startups world-wide.

José Luis Hernández - Engineering, Manufacturing & Scaling
Food Technology & Manufacturing Consultant
MSc in Food Science and Technology From University of California at Davis and BsD in Chemical Engineering from University of Guanajuato. Experience in the Food Processing Industry for more than three decades in Administration and Operation of Industrial plants and Design of Chemical process. Experience in design, Scale up and start up of food processing Plants as Operations Director and responsible of Capex Investment Plans for Latinamerica of an America´s based Company for more than 30 years.

Eduardo Parra - Finance
CEO at Afore Azteca "Mandatory Pension Fund with AUM of $5 billion USD"
Financial experience of more than 20 years as a Risk Manager, Trader and Asset Management. Working for Mexican Central Bank and different foreign and local Banks as Scotiabank, Barclays and Actinver. Master in Finance and Accountant by Instituto Tecnológico y de Estudios Superiores de Monterrey / ITESM. Teaching experience in financial topics.

Tanmay Annachhatre - VC
Principal at Blue Horizon Corporation
He previously worked at Santander InnoVentures, Santander Bank's venture capital fund, where he worked on early stage investments in the fintech space. He began his career at Cambridge Associates advising institutional investors on venture capital and growth equity investments. Tanmay holds an MBA from London Business School and BA in Economics (magna cum laude) from Carleton College (USA).

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