PLUG AND PLAY

May 19-21 2026

SILICON VALLEY SUMMIT

#PNPTCSiliconValley

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Food & beverage EXPO

SV SUMMIT

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Sv summit



OPENING REMARKS

Robert Grey

Director, Sustainable Future

Plug and Play

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Foodtech INVESTMENT THESIS

Portfolio Companies

Food as Medicine

Startups developing platforms that allow them to identify or create a range of functional ingredients that cause improvements to emotional, mental, and/or physical health.

kioga
lembas
BIOVIT TECHNOLOGIES
Ummino
Holobiome
Persephone
Rosalind Bioculture
mimio
infusd! nutrition

AI

Software-driven platforms with a solid fine-tuning in science-heavy markets and applications, where the improvement of foundational models only enhances their capabilities, without compromising their value proposition

BIOREACT
AI Bobby
innov8 NXT
Spore.Bio
NURITAS
protera
bioqore
shiru
Basetwo

SynBio

Startups whose product compete on price with their legacy alternatives and/or enabling technologies that improve the unit economics of the bioeconomy.

Melazyme
Novella
Oobli
Checkerspot
evolv
ARSENALE BIOYARDS
IZOTE BIOSCIENCES
POLOPO

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Focus Areas — Foodtech

Next-Gen Functional Ingredients for Whole Body Nutrition & Wellness

- Microbiome Modulation (Pre/Pro/Postbiotics, Synbiotics)
- Precision Delivery (Encapsulation, Taste Masking, Controlled Release)
- Clinically-Validated Bioactives (Metabolic, Immune, Cognitive)
- Ingredient Discovery Platforms

E-Commerce Enablement Technologies

- Personalization & Recommenders (AI Merchandising)
- Subscription, Loyalty & Retention (Lifecycle CRM)
- Fulfillment & Returns Automation (Last-Mile, Reverse Logistics)

Functional Ingredients for Healthy Aging

- Muscle Health (Protein Quality, Leucine, Creatine)
- Cognitive & Sleep (Nootropics, Adaptogens, Chrononutrition)
- Mobility & Joint (Collagen, Anti-Inflammatory Bioactives)

Bioprocessing Efficiency

- Enzymatic Reactions for Improved Bioavailability
- Enzymatic Reactions for Improved Functionality (Stability, Mouthfeel, etc.)
- Alternative Protein Production
- Scale Up Enablement

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Thank you partners!

MARS

pepsico

Glico

tridon

Glanbia

Coca-Cola

novonesis

empresas iansa

LESAFFRE

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Thank you Startups!

































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STARTUP PRESENTATION

NURITAS

See nature differently

Nuritas

See Nature Differently.

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NURITAS

Life-changing nutrition

Turning everyday foods into biologically relevant nutrition.

From AI-discovered peptides to foods people already love.

AI & DATA PEPTIDE DISCOVERY | BIOACTIVE PEPTIDES | CLINICALLY RELEVANT | MEANINGFUL IMPACT



CONSUMERS NO LONGER WANT INGREDIENTS. THEY WANT OUTCOMES.

The future of nutrition is shifting away from counting grams and toward measurable biological performance.

YESTERDAY'S FOOD INNOVATION

Protein grams. Calories. Macros. Ingredients.



20G PROTEIN

LOW SUGAR

CLEAN LABEL

ADDED VITAMINS

MORE INGREDIENTS

THE SHIFT:

Consumers want to know what food does for them.

TOMORROW'S FOOD INNOVATION

Measurable biological outcomes.



THE NEXT GENERATION OF FUNCTIONAL FOOD WILL BE **BUILT AROUND OUTCOMES**, NOT INGREDIENT LISTS.

THE MARKET IS READY FOR PEPTIDE-POWERED FOODS

NURITAS
See nature differently

Functional food demand is accelerating — and peptides already align with the benefits consumers want most.

$73B

U.S. FUNCTIONAL FOOD MARKET IN 2023

Projected to reach **$131B** by 2030 with a CAGR of 8.9%

78%

CONSUMERS ACTIVELY SEEKING OR OPEN TO FUNCTIONAL FOODS

52%

CONSUMERS FAMILIAR WITH PEPTIDES

Strong associations to **muscle growth**, **energy**, **weight management**, and **skin health**

71%

CONSUMERS LIKE PEPTISTRONG® AND ITS BENEFITS

Early adopters, health-driven consumers (26–45)

BENEFIT ALIGNMENT

- MUSCLE HEALTH
- ENERGY
- WEIGHT MANAGEMENT
- SKIN HEALTH
- HEALTHY AGING

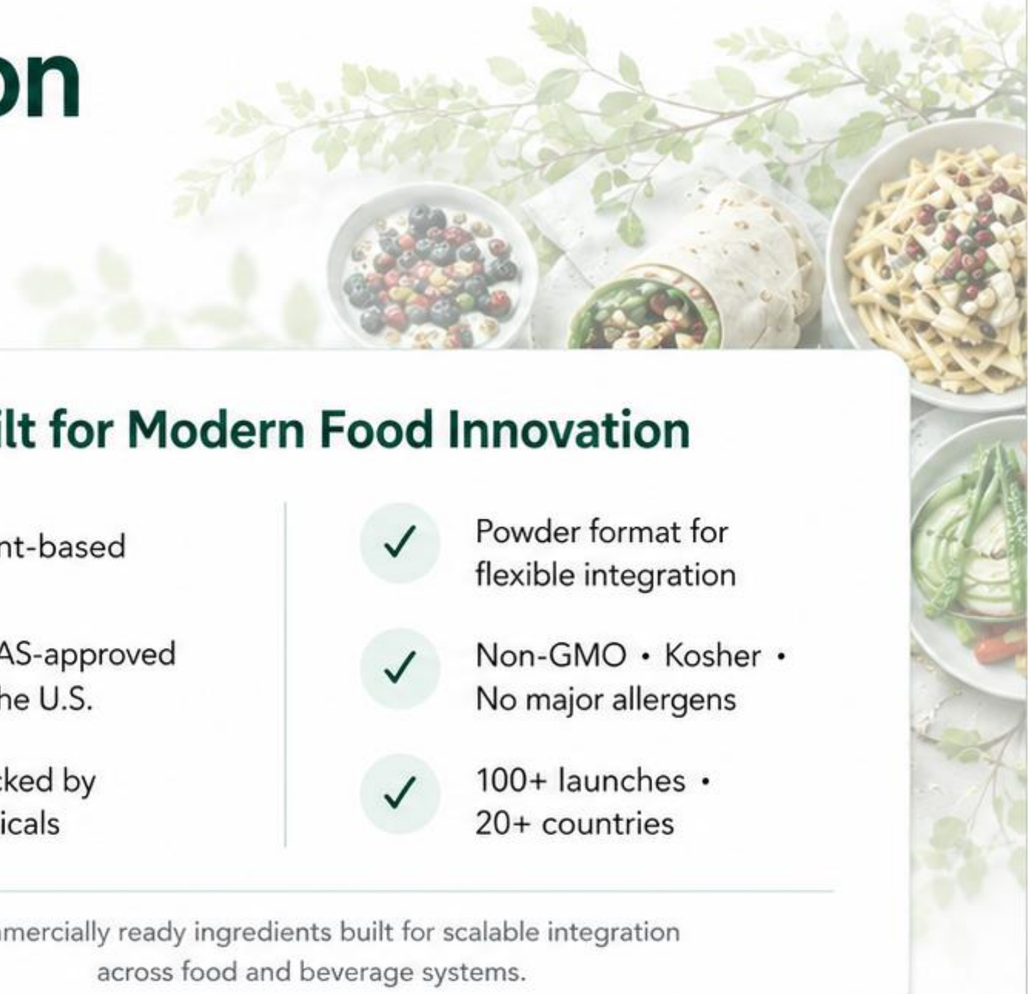
PEPTIDES ARE NOT A FUTURE CONSUMER EDUCATION PROBLEM — THEY ARE AN EMERGING FUNCTIONAL FOOD OPPORTUNITY.

Source: Huxly (Nuritas) Functional Food & Peptide Consumer Research 2025

NURITAS

Introducing Bioactive Nutrition

Plant-based, clinically backed ingredients from natural food sources designed to support specific biological pathways.



OLD WORLD

- Protein grams
- Calories
- Macros
- Commodity ingredients

NEW WORLD

- Biological signaling
- Functional outcomes
- Targeted wellness
- Clinically backed functionality

Built for Modern Food Innovation

- ✓ Plant-based
- ✓ GRAS-approved in the U.S.
- ✓ Backed by clinicals
- ✓ Powder format for flexible integration
- ✓ Non-GMO • Kosher • No major allergens
- ✓ 100+ launches • 20+ countries

Commercially ready ingredients built for scalable integration across food and beverage systems.

We are not replacing protein. We are making nutrition smarter.

NURITAS

Introducing PeptiStrong®

Plant-based bioactive peptides designed to support muscle health, strength, and recovery.

2.4 g daily serving

Discovered on Faba Bean

Clinically supported plant-based bioactive peptides

1 What it is

- Plant-based bioactive peptide ingredient
- Designed for biologically relevant muscle support
- Low-dose inclusion opportunity

2 Why it matters

- Supports muscle health, strength, and recovery
- Moves beyond protein quantity toward functional outcomes
- Helps translate nutrition into measurable performance support

3 Built for modern food innovation

- 2.4 g daily serving inclusion opportunity
- Powder format for flexible formulation
- Suitable for scalable food and beverage applications
- GRAS-approved in the U.S.

PeptiStrong® helps turn everyday foods into performance-supporting nutrition.

NURITAS

How PeptiStrong® Works

Mechanistically supports muscle health through targeted anabolic, anti-catabolic, and energy pathways.

2.4 g daily serving

3 published human clinical studies

2 new studies underway

1 Mechanistic pathways

Reduces muscle breakdown
by lowering myostatin and downstream protein degradation markers Atrogin-1 and MuRF1

Increases muscle protein synthesis
via the mTOR and phospho-S6 pathways

Supports energy production
through increased mitochondrial mass and activity

2 Clinical proof

- **148%** increase in strength recovery
- **54%** increase in muscle energy
- **47%** less muscle fatigue
- **17%** increase in strength

Meta-analysis protein alone:
9% strength gain

PeptiStrong® study:
17% strength gain

PeptiStrong® supports muscle health by working across protein synthesis, muscle preservation, and energy production pathways.

Traditional Protein Innovation Has Hit a Wall

NURITAS
See nature differently

More protein is not always a better answer — especially when the consumer wants an outcome.

1 More protein ≠ better results

Consumers are overloaded with high-protein products but still struggle to translate grams into performance.

2 Formulation tradeoffs

Texture density, chalkiness, instability, flavor masking, and cost can increase as protein loading rises.

3 Consumer fatigue

The market is moving beyond macros and toward functional outcomes consumers can understand.



Consumer translation

FROM

"High-protein product"

TO

"Performance-supporting nutrition"

2.4 g daily serving inclusion opportunity

PeptiStrong® is not a replacement for protein — it is a targeted, low-dose plant-based bioactive peptide ingredient designed to complement muscle health and recovery strategies.

THE OPPORTUNITY IS NOT MORE GRAMS. IT IS SMARTER BIOLOGICAL SIGNALING.

NURITAS

How PeptiSleep® Works

Clinically supported plant-based bioactive peptides designed to support deeper, better sleep and better mornings.

250 mg daily serving

Peptides from brown rice
Clinically supported sleep ingredient



Human clinical study

1 How it works



- Reduces cortisol, a hormone that keeps the body alert
- Helps shift the body from stress and alertness toward sleep readiness
- Supports healthier sleep architecture, including Deep and REM sleep
- Improves overnight recovery, reflected in heart rate variability

2 Clinical proof



- **+17%** increase in deep sleep
- **+40 min** increase in total sleep time
- **+32%** improvement in heart rate variability
- **+12%** improvement in perceived sleep quality

Sleep questionnaire:
7% easier awakening

Next-day benefit:
7% better behavior following wakefulness

PeptiSleep® helps turn everyday foods into deeper, more restorative sleep support.

Built for Cross-Category Innovation

Peptide-enabled functionality can move into real food systems consumers already buy.

Illustrative Product Concepts

Mainstream refrigerated and snack formats powered by bioactive peptides





Cultured dairy platform

- 15g protein + PeptiStrong®
- Supports muscle strength & recovery*

Savory extruded snack

- With PeptiStrong®
- Active lifestyle positioning*

Concepts for discussion only

Illustrative Product Concepts

Flexible meal and indulgent formats for peptide-enabled innavation



- Everyday wrap platform
- Plant-based bioactive peptides
- Supports active lifestyles*



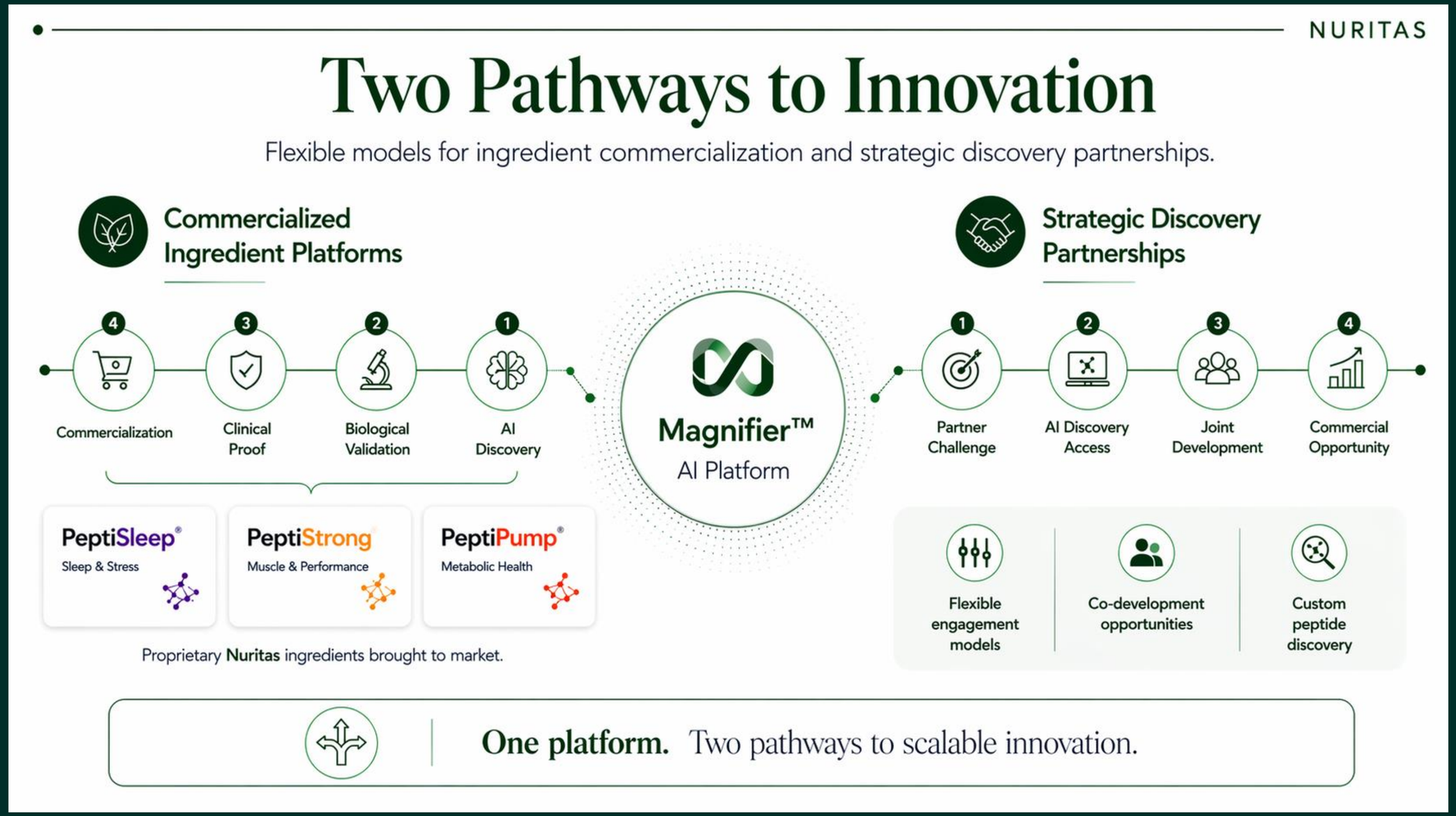
- Nighttime indulgence format
- Caffeine-free evening support
- PeptiSleep® + sleep-support minerals

Concepts for discussion only

Yogurt • Snacks • Wraps • Chocolate • Beverages • Frozen desserts • Pizza • Bars

The Future of Food Will Be Functional.

Let’s build the next generation of food together.



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STARTUP PRESENTATION

CarboCode

CarboCode

The power of complex lipids for health.

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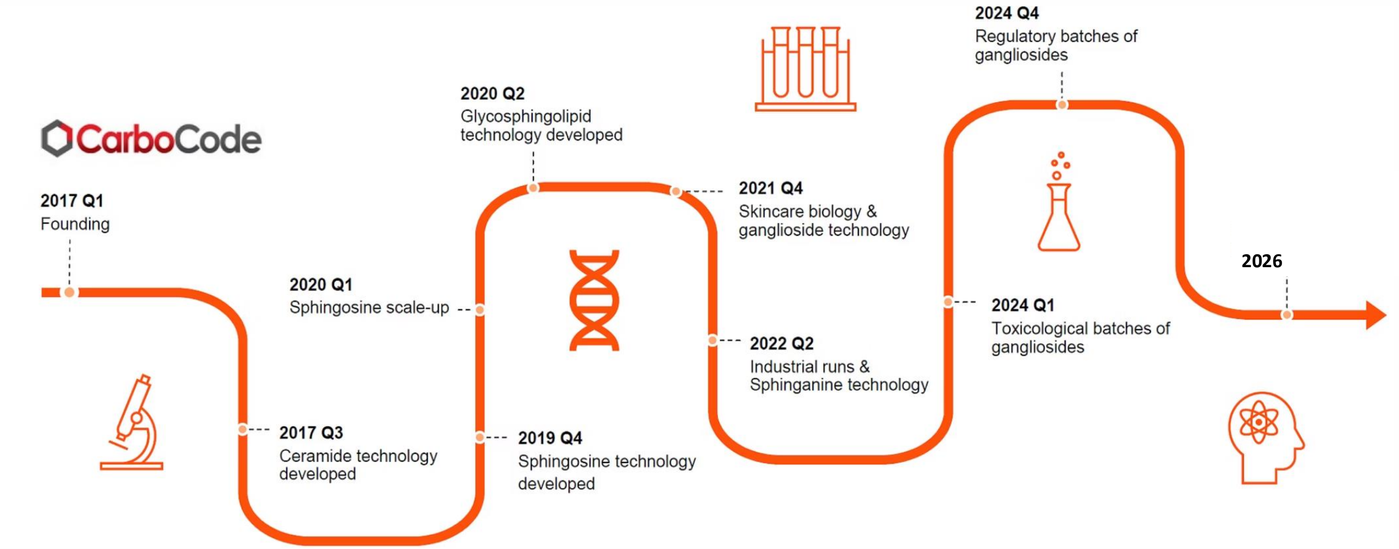
Leveraging the Power of Complex Lipids for Health

CarboCode pioneered the world's first commercially viable technology for producing human-identical sphingolipids—complex lipids that are fundamental to human health but have never before been available at industrial scale. This presentation outlines our unique technology platform, market opportunity, and path to transforming nutrition and therapeutic development.

CarboCode

THE COMPANY



Experienced Leadership Team

20+ years combined expertise from Glycom, DSM, Nestlé, and industrial production backgrounds



CarboCode

Founded in Portugal in 2017, CarboCode is a pioneering biotech company that harnesses advanced capabilities in biocatalysis, fermentation, protein and metabolic engineering, and chemistry to develop clinically proven product solutions. Our platform technology focuses on producing human-identical glycosphingolipids and gangliosides at industrial scale—compounds that unlock the powerful health benefits of sphingolipids naturally found in human biology. The company already attracted more than 55M€ investment.

Global Footprint

Development and scale-up facility in Portugal with a dedicated Research Center in Konstanz, Germany, combining European innovation excellence

Focus Areas

Currently targeting infant and adult nutrition markets with human lipid innovations that address critical unmet needs

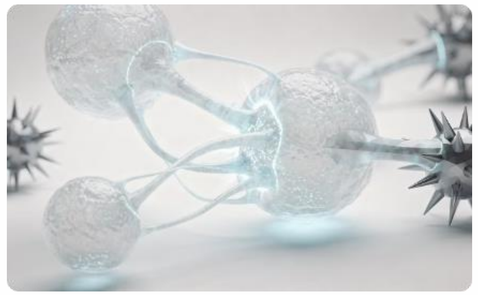
2026 Vision

Complete regulatory and clinical studies for GM3 and GD3, accelerate commercial partnerships, and finalize R&D to scale GM1 synthesis from bench to production

THE OPPORTUNITY

Sphingolipids Are Essential for Human Health, Yet No Human-Identical Ingredients Exist at Scale

Sphingolipids, particularly gangliosides – glycosphingolipids containing sialic acid, are bioactive molecules playing critical roles across multiple organ systems. Despite decades of research demonstrating their importance, the nutrition and pharmaceutical industries have lacked access to human-identical versions at commercial scale—until now.



Immune Function

Key to modulating immune response and controlling inflammation pathways throughout the body [1]



Brain Health

Each nerve cell contains ~10 million gangliosides—critical for neural signaling and cognitive function [2]



Gut & Microbiota

Maintain intestinal barrier integrity and actively modulate gut microbiota composition [3]



Metabolic Regulation

GM3 ganglioside regulates insulin signaling pathways, affecting glucose metabolism [4]

[1] Olivera et al 2021, J. Immunol; [2] Schnaar et al 2016, J. Mol Biol; [3] Lee et al 2021 J. Lipid Res; [4] Sjövall et al 2018, Sci Rep

CarboCode

TECHNOLOGY PLATFORM

Our Unique Four-Pillar Technology Platform Enables the Impossible

CarboCode's breakthrough lies in combining four complementary technologies into an integrated platform, enabling production of the full spectrum of human-identical sphingolipids at commercial scale. No other organization has assembled this complete technology stack.



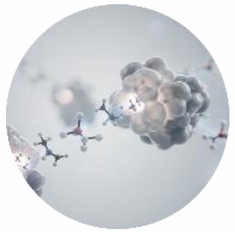
Fermentation

Produces sphingoid bases—fundamental building blocks for skincare and starting materials for complex molecules



Chemistry

Creates ceramides through precise chemical synthesis, establishing the lipid backbone structure for skincare markets



Biocatalysis

Utilizes carbohydrate processing enzymes in the synthesis of glycosphingolipids for skincare and infant nutrition



Purification

Produces gangliosides at required purity for infant nutrition, adult nutrition, and pharmaceutical applications with specifically tailored separation technologies

Strategic Platform Advantage: This integrated approach allows us to address multiple market opportunities with increasing complexity and value. Each technology pillar strengthens the others, creating synergies impossible for competitors developing individual components in isolation.

CarboCode

COMPETITIVE ADVANTAGE



No Man’s Land
We Operate in an Uncontested Market Space

The Technology Breakthrough That Changes Everything

Currently there is no commercially feasible way to produce human gangliosides, Scientific literature describes chemoenzymatic processes for ganglioside synthesis, but these remain impractical for commercial production. CarboCode has overcome every major barrier to industrialization through revolutionary process improvements.

10x
Efficiency Revolution

Our process achieves human-like sphingosine in only 2 steps instead of 20+ steps described in literature

1000x
Scale Transformation

Enzymatic steps work at hundreds of grams per liter, not milligrams per liter in published research

100kg
Industrial Reality

We operate at industrial scale with hundreds of kilograms versus gram quantities in literature

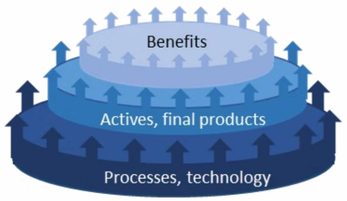
The Critical Difference: Unlike processes described in literature, our technology can be scaled, industrialized, and achieves affordable costs for the food industry. This transforms scientific potential into commercial opportunity.

Multi-Layered Intellectual Property Protection

Production Patents
- Compound profiles
- Novel compounds
- Breakthrough technologies
- Critical intermediates

Protection & Barrier Patents
- Alternative pathways
- Additional intermediates
- Adjacent technologies

Application Patents
- Consumer benefits
- Product formulations
- Novel applications
- Delivery systems



22+ patent families protect our technology, products, and applications

CarboCode



MARKET APPLICATIONS

Human-Identical Sphingolipids Offer Opportunities to Transform Health Across Multiple Segments

Infant Formula



Bridging the critical nutritional gap between formula and breast milk during the most important developmental window

Food & Beverages



Functional fortification for mainstream consumer products, enabling health benefits in everyday foods

Dietary Supplements



Targeted nutrition for brain health, immunity, and gut support in convenient supplement formats

Medical Foods



Specialized nutrition for clinical populations with specific therapeutic needs and dietary requirements

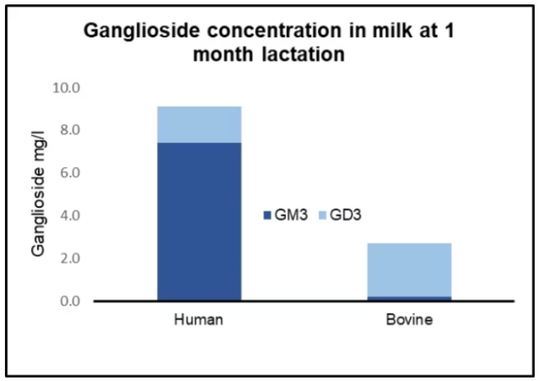
CarboCode

INFANT NUTRITION

The Critical Gap: Gangliosides Remain a Key Difference Between Formula and Breast Milk

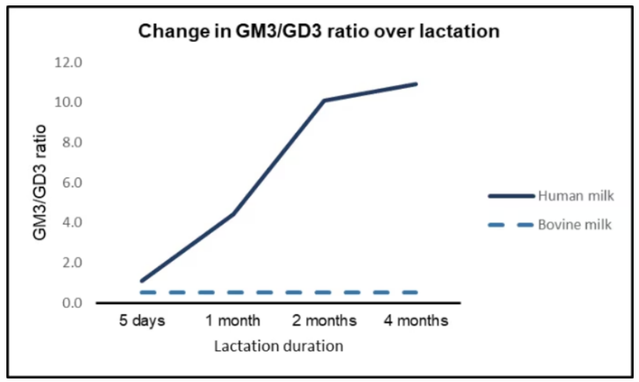
Despite decades of formula innovation, ganglioside content remains a critical nutritional gap. Current sourcing from bovine milk falls substantially short of replicating the human ganglioside profile, leaving infants with suboptimal nutrition during their most critical developmental period.

Lower Concentration



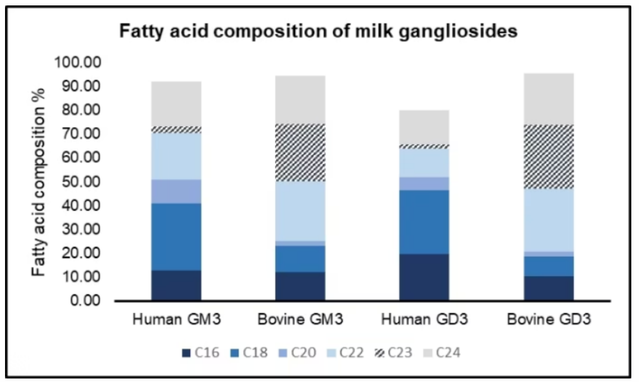
Bovine milk contains significantly reduced ganglioside levels compared to human breast milk

Different GM3/GD3 Ratios



The critical balance between ganglioside types differs substantially from human milk

Different Structures



Molecular architecture varies from human gangliosides, potentially affecting biological function

Plant-Based Formulas: Formulas based on plant lipids contain no gangliosides whatsoever, representing an even larger nutritional gap for infants fed these alternatives.

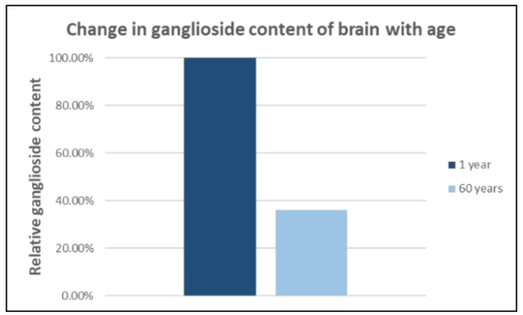
CarboCode

ADULT HEALTH

Gangliosides Play Critical Roles in Adult Brain Function and Gut Health

The importance of gangliosides extends far beyond infancy. Emerging research demonstrates critical roles in maintaining adult brain function and gastrointestinal health, with deficiencies linked to age-related cognitive decline and inflammatory conditions.

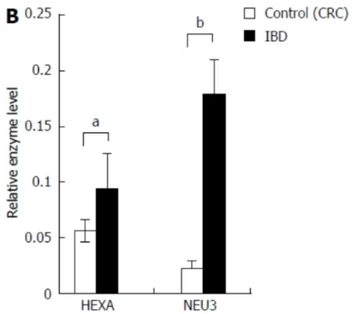
Brain Gangliosides Decline with Age [1,2]



By 2050, with aging populations, 1 in 6 people globally will have lost more than 60% of their brain ganglioside content

This dramatic age-related depletion correlates with cognitive decline and neurodegenerative conditions, creating urgent need for intervention.

Gut Gangliosides in IBD Patients [3]



Gut gangliosides are degraded in IBD patients, potentially leading to increased disease severity.

Restoring ganglioside levels may offer therapeutic benefits and support gut barrier function.

Clinical Precedent: Ganglioside therapies using animal-derived gangliosides have been extensively tested in Parkinson's disease, stroke, spinal cord injury, and head trauma. Human-identical gangliosides are likely significantly more effective with fewer side effects.

[1] Sipione 2020, Front Neuro; [2] Palmano 2015, Nutrients; [3] John J Miklavcic et al, 2015 World Journal of Gastroenterology

CarboCode

PRE-CLINICAL RESULTS

Gut Microbiota, Gut Barrier, Inflammation: Promising First Results

Our initial study on GM3 and GD3 impact on infant gut microbiota has delivered compelling results, demonstrating multiple mechanisms of benefit that align with established markers of infant health.

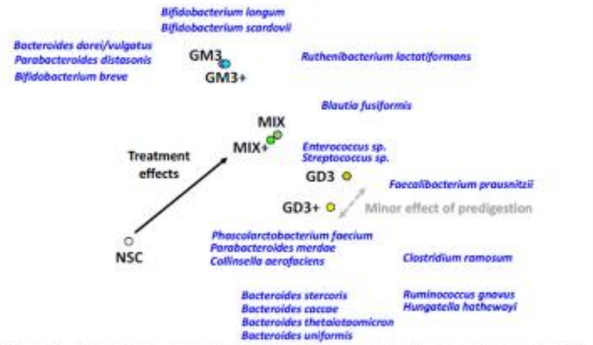
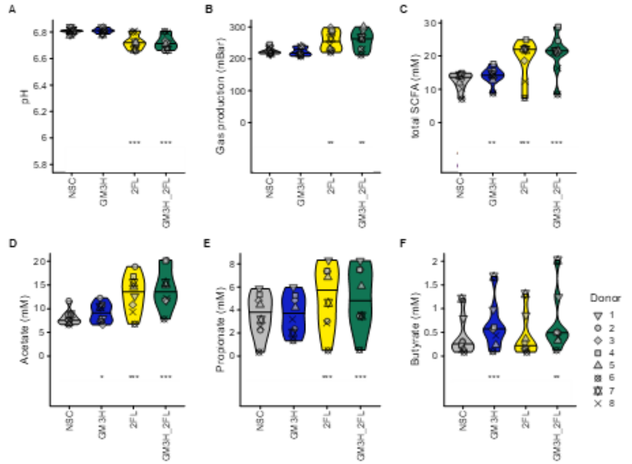
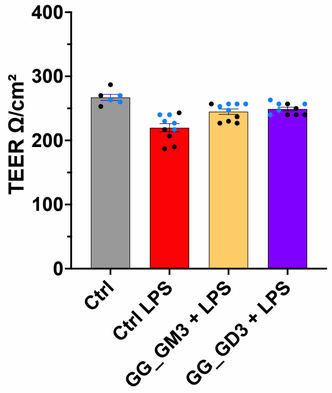


Figure 3. Principal component analysis (PCA) summarizing the impact on microbial composition of the healthy infant's gut microbiota (average across n = 6) for GD3, GM3 and the combination thereof (MIX), with (+) or without pre-digestion, as tested via the SIFR® technology.

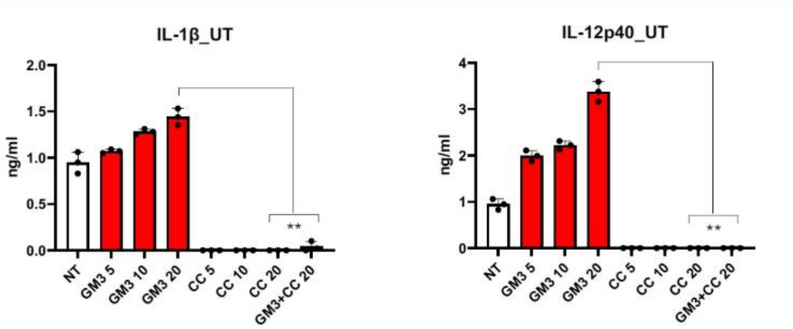
Demonstrated a complementary effect of human identical GM3 ganglioside and 2 fucosyllactose on the infant gut microbiota function.



In vitro studies using Caco-2 cells demonstrate that human-identical GM3 and bovine GD3 both protect gut barrier integrity under inflammatory conditions—a critical function for preventing intestinal damage and maintaining digestive health.



Head-to-head comparison reveals that CarboCode's human-identical GM3 delivers dramatically stronger anti-inflammatory effects compared to bovine GM3—validating the importance of structural fidelity to human biology.



ROBUST EXPANSION

Robust Pipeline: other GM3 Applications & Additional Gangliosides

Beyond first-generation GM3 gut health applications, we're systematically expanding our product portfolio across two critical dimensions: additional therapeutic applications for GM3 and development of structurally distinct ganglioside molecules.

GM3 Ganglioside Applications



Food Allergy

Modulating immune tolerance mechanisms



Liver Health

Supporting hepatic function and metabolic balance



Joint Health

Addressing inflammatory pathways



Brain Function

Cognitive support and neuroprotection



Post-Antibiotic Recovery

Restoring gut microbiome after disruption

Expanding Our Molecular Portfolio

1

GD3 Ganglioside

Status: Ready for upscaling to commercial production

2

GM1 Ganglioside

Status: Active research, process development ongoing

3

GD1a Ganglioside

Status: Active research, synthetic route optimization

4

GM4 Ganglioside

Status: Early research stage, pathway design

CarboCode

REGULATORY APPROVALS

Significantly de-risking regulatory failure

Function in Humans

Gangliosides are part of the human body with supported functions

Identical structure

Demonstrated by NMR and LC-MS

Safe production process

90-Day Subchronic Toxicity study with no adverse effects observed, establishing NOAEL.
(submitted in *Food and chemical Toxicology*)

Representative Process

Several batches produced without significant deviations including the 5 regulatory batches and 1 clinical batch

Stable Compounds

First results of the accelerated stability study of GM3 proves that the compound is extremely sable

CarboCode

PARTNERSHIP OPPORTUNITY

Join Us in Transforming Human Nutrition

What We Offer Strategic Partners

World's First Commercial Source

Exclusive access to human-identical gangliosides at industrial scale—a genuinely unoccupied market space

Proven Technology Platform

€55.75M invested, 7 years of development, comprehensive clinical validation, clear regulatory pathway

Strong Financial Trajectory

Revenue launch 2027, ~40% EBITDA margin by end of 2029, sustaining 50%+ margins thereafter

Flexible Partnership Models

Co-development partnerships, supply agreements, or custom structures aligned to your strategic objectives

> **Let's Discuss Your Needs:** Whether developing next-generation infant formula, creating functional foods for brain health, or pursuing clinical nutrition applications, CarboCode offers unique capabilities to differentiate your products and deliver meaningful consumer benefits.

CarboCode

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STARTUP PRESENTATION

Kresko RNA TECH

Kresko RNAtech

Kresko RNAtech pioneers bioactive RNA functional ingredients for use in supplements, beauty, and functional food & beverages.

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Kresko
RNA TECH

RNA-powered ingredients
for the future of wellness.





The white space in functional ingredients.

natural + proven + differentiated.

DIFFERENTIATION

SYNTHETIC

NATURAL / CLEAN LABEL

COMMODITIZATION

BIOACTIVE RNAs

NEUROACTIVE NOOTROPICS

SYNTHETIC PEPTIDES

SATIETY MODULATORS

NAD+ BOOSTERS

MITOCHONDRIAL OPTIMIZERS

CERAMIDES

MELATONIN

RETINOIDS

HYALURONIC ACID

SILICONES

CREATINE

VITAMINS

PROBIOTICS

POST-BIOTICS

OMEGA-3

BOTANICAL EXTRACTS*

L-THEANINE

COLLAGEN

WHEY PROTEIN

(ASHWAGANDHA, CHAMOMILE)



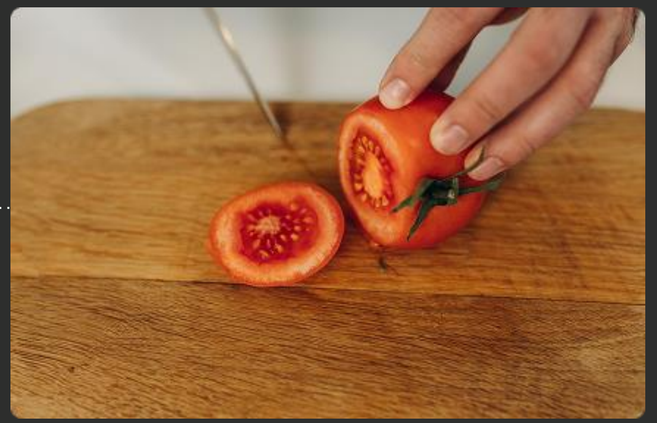
BIOACTIVE RNAs

Kresko RNA TECH

Industrialization: the enemy of bioactive RNAs







BIOACTIVE RNAs

Our breakthrough: making bioactive RNA’s manufacturable and shelf-stable

Bioactive RNA-based ingredients

100% NATURAL

SELF GRAS

SOLVENT FREE

GMO FREE

NO ARTIFICIAL ADDITIVES



Our B2B target industries



SUPPLEMENTS



BEAUTY



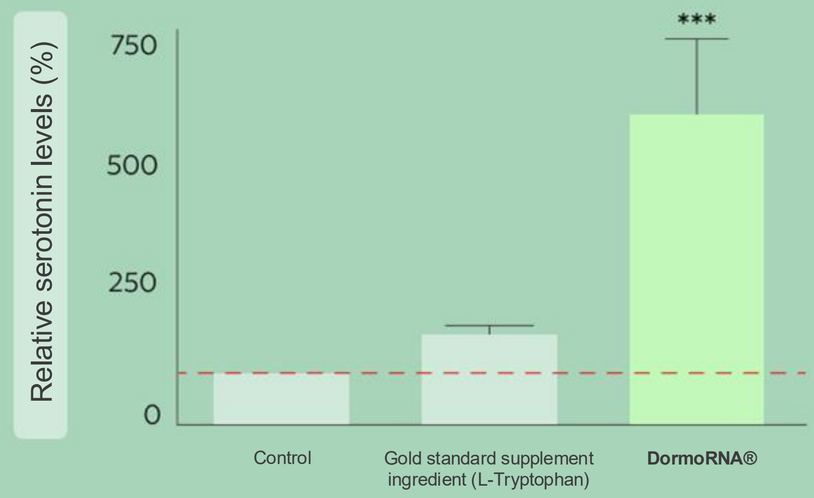
FOOD &
BEVERAGES

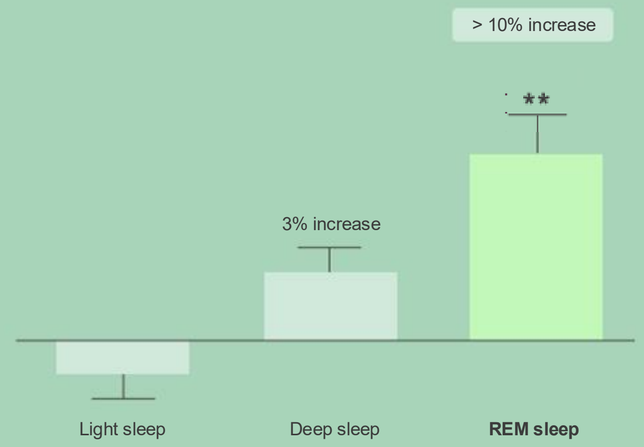


Lead ingredient: DORMO RNA® for sleep & stress improvement

DormoRNA®

Improves sleep quality by boosting serotonin production — up to 5X.





Patent Applic. PCT/US25/59864

From DORMO RNA®

to a portfolio of wellbeing areas



SLEEP



GUT HEALTH



IMMUNITY



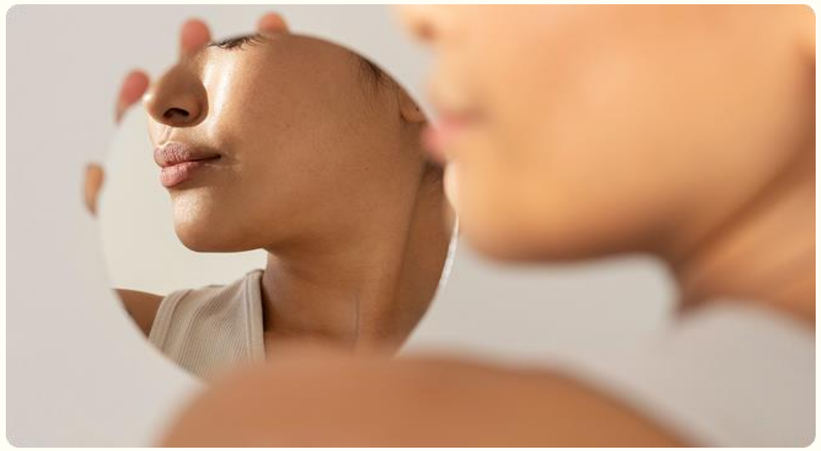
SKIN RENEWAL

Portfolio proof: JUNA RNA® + TIKA RNA®



JunaRNA®

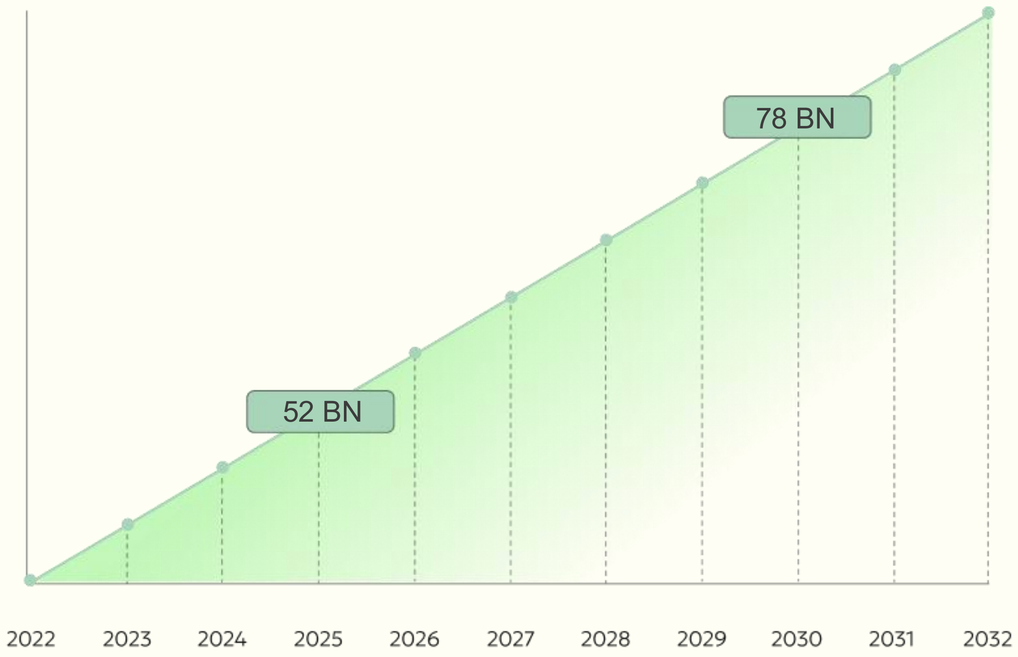
Promotes skin renewal by stimulating tissue regeneration — up to 3X.



TikaRNA®

Accelerates skin cell turnover and a healthy skin microbiome — up to 2X.

Massive market opportunity

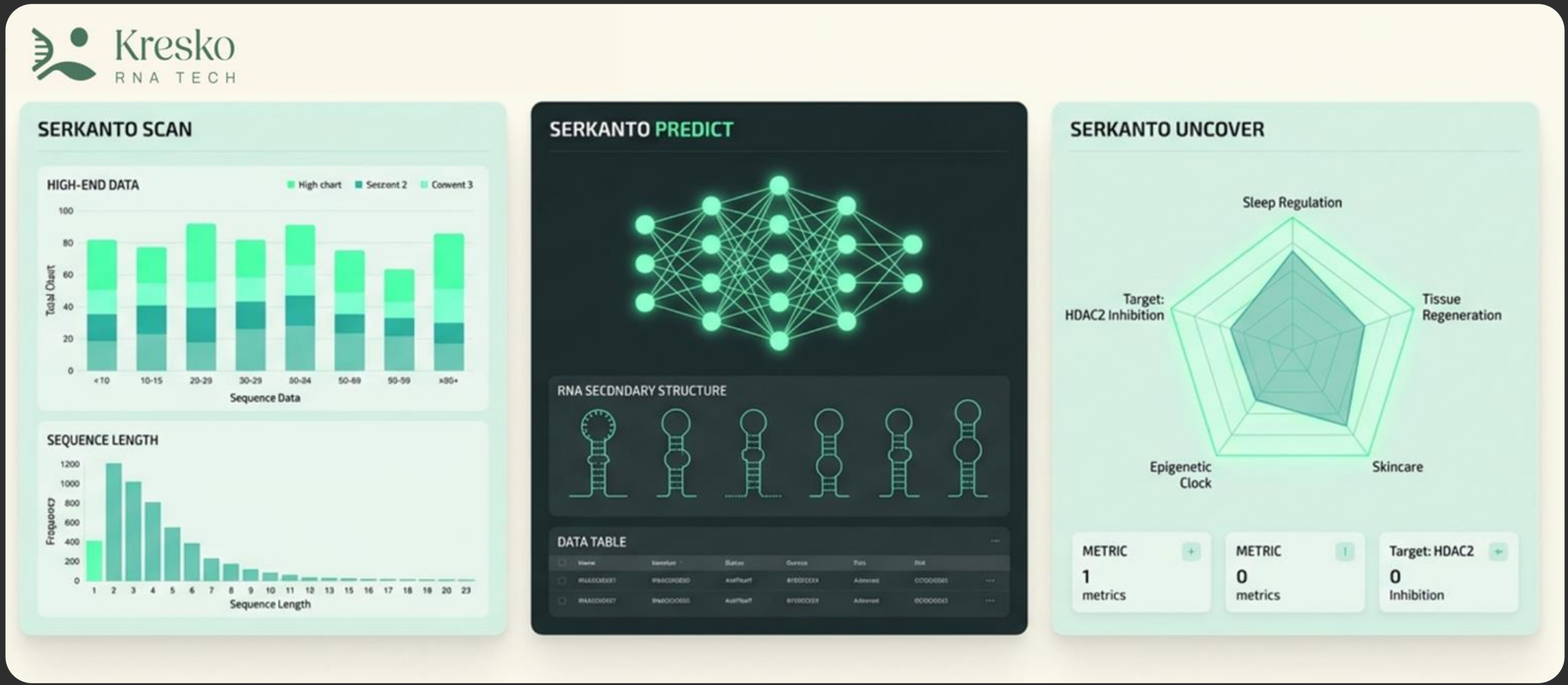


$52 BN

Bioactive ingredient global market

8.3 % CAGR

AI powered discovery engine



Proprietary database

Integrates **unique sRNA sequencing** data from food and botanicals.

Deep learning model

Identify and prioritize the RNAs most **likely to be bioactive.**

Machine learning algorithm

Predict the specific **health benefits** of these prioritized candidates.

From RNA-BASED ingredient development to market (in record time)

DormoRNA®
(sleep aid)



24 M

JunaRNA®
(skin regeneration)



10 M

TikaRNA®
(skin care)



2 M

12X FASTER

0 MONTHS

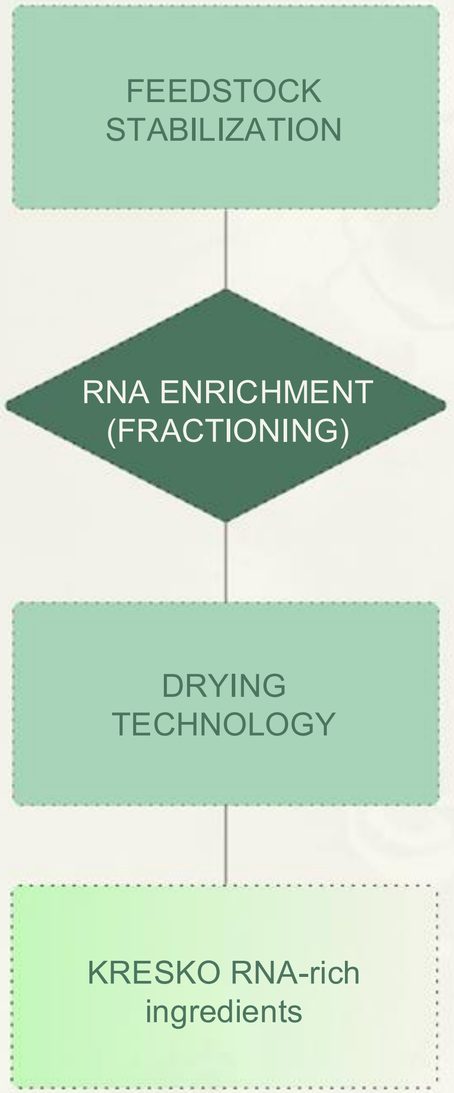
12 MONTHS

24 MONTHS

↑ Faster launches

↓ Lower R&D costs

↓ Shorter time to market



Projected Launch Price

USD $200 / kg

(1Kg = ~ 1000 servings)

80% GROSS MARGIN

One contract, multi million-dollar revenue

Revenue potential

Only DormoRNA®

1 ton/month

1 large global brand
or
4 medium companies

+$3M USD
/ YEAR

Validated demand

LOIs / B2B contracts

Large global brand

Medium sized companies

Small sized companies

Roadmap



Investors

SOSV GRIDX INDIE BIO

A uniquely complementary founding team



CSO and co-founder

Silvana Spinelli, PhD

RNA Biology Expert



CEO and co-founder

Carla Borini Etichetti, PhD

Biotech Entrepreneur | Science-to-Market



CTO and co-founder

Uciel Chorostecki, PhD

AI & RNA Bioinformatics Expert

Supported by

PLUG AND PLAY · Nestlé HealthScience · Madrid innovation · parallel18 · Impacta.vc · MANA TECH · endeavor · Tufts University · MC MASSCHALLENGE · GEORGE KAISER FAMILY FOUNDATION · S2M · vienna business agency · latam to Tulsa by Tulsa Local Ventures

Investment opportunity - fueling commercial traction

Raised to date	Raising now (50% already committed)	Q4 2026
USD $780 K	USD $500 K Commercial traction	SEED ROUND Scale up

SOSV GRIDX INDIE BIO MANA TECH S2M

Nature already built the next frontier of wellness,
we are making it accessible to the world.





Kresko
RNA TECH

CTO and co-founder

Uciel Chorostecki, PhD

chorostecki@kreskornatech.com





Kresko RNAtech ○ RNA powered ingredients ○ Pitch Deck 2026

PLUG AND PLAY

Sv summit

STARTUP PRESENTATION

Holobiome

Holobiome

Holobiome discovers and develops probiotics and prebiotics to modify the human gut microbiome with precision, so everyone can live optimized and healthy lives.

#PNPTCSiliconValley

Join us at pnptc.com

Holobiome

Mapping Food, the Gut Microbiome, and Human Health

Plug and Play – May 2026

Confidential – do not distribute

We are not human – we are an ecosystem



We each are one human and trillions of microbes – **our microbiome**

Most of our microbiome **lives in the gut**, and consists of **bacteria**

We have as many bacteria in our gut as us there are **stars in the Milky Way**

Our microbiome broadly impacts our health

Infectious disease

THE LANCET

ORIGINAL ARTICLE

SER-109, an Oral Microbiome Therapy for Recurrent *Clostridioides difficile* Infection

Paul Feuerstadt, M.D., Thomas J. Louie, M.D., Bret Lashner, M.D., Elaine E.L. Wang, M.D., Liyang Diao, Ph.D., Jessica A. Bryant, Ph.D., Matthew Sims, M.D., Ph.D., Colleen S. Kraft, M.D., Stuart H. Cohen, M.D., Charles S. Berenson, M.D., Louis Y. Korman, M.D., Christopher B. Ford, Ph.D., Kevin D. Litcofsky, Ph.D., Mary-Jane Lombardo, Ph.D., Jennifer R. Wortman, M.Sc., Henry Wu, Ph.D., John G. Auniņš, Ph.D., Christopher W.J. McChalicher, B.Ch.E., Jonathan A. Winkler, Ph.D., Barbara H. McGovern, M.D., Michele Trucksis, M.D., Ph.D., Matthew R. Henn, Ph.D., and Lisa von Moltke, M.D.

IBD

nature communications

Article | Open access | Published: 06 November 2023

Microbiome and metabolome features in inflammatory bowel disease via multi-omics integration analyses across cohorts

Lijun Ning, Yi-Lu Zhou, Han Sun, Youwei Zhang, Chaoqin Shen, Zhenhua Wang, Baoqin Xuan, Ying Zhao, Yanru Ma, Yuqing Yan, Tianying Tong, Xiaowen Huang, Muni Hu, Xiaoqiang Zhu, Jinmei Ding, Yue Zhang, Zhe Cui, Jing-Yuan Fang, Haoyan Chen & Jie Hong

Cancer

Science

CLINICAL TRIALS

Fecal microbiota transplant overcomes resistance to anti–PD-1 therapy in melanoma patients

Diwakar Davar[1]*, Amiran K. Dzutsev[2]*, John A. McCulloch[2], Richard R. Rodrigues[2,3], Joe-Marc Chauvin[1], Robert M. Morrison[1], Richelle N. Deblasio[1], Carmine Menna[1], Quanquan Ding[1], Ornella Pagliano[1], Bochra Zidi[2], Shuowen Zhang[1]†, Jonathan H. Badger[2], Marie Vetizou[2], Alicia M. Cole[2], Miriam R. Fernandes[2], Stephanie Prescott[2], Raquel G. F. Costa[2], Acharya K. Balaji[2], Andrey Morgun[4], Ivan Vujkovic-Cvijin[5], Hong Wang[6], Amir A. Borhani[7], Marc B. Schwartz[8], Howard M. Dubner[8], Scarlett J. Ernst[1], Amy Rose[1], Yana G. Najjar[1], Yasmine Belkaid[9], John M. Kirkwood[1], Giorgio Trinchieri[2]†§, Hassane M. Zarour[1,9]†§

Depression

nature communications

Gut microbiome-wide association study of depressive symptoms

Received: 28 May 2021

Accepted: 26 October 2022

Published online: 06 December 2022

Djawad Radjabzadeh[1], Jos A. Bosch[2,3], André G. Uitterlinden[1,4], Aeilko H. Zwinderman[5], M. Arfan Ikram[4], Joyce B. J. van Meurs[1], Annemarie I. Luik[4], Max Nieuwdorp[6], Anja Lok[7], Cornelia M. van Duijn[4,8], Robert Kraaij[1] & Najaf Amin[4,8]

Liver Disease

Cell Metabolism

Clinical and Translational Report

Gut Microbiome-Based Metagenomic Signature for Non-invasive Detection of Advanced Fibrosis in Human Nonalcoholic Fatty Liver Disease

Pain

Microbiota regulates visceral pain in the mouse

Pauline Luczynski[1†‡], Monica Tramullas[1†§], Maria Viola[1], Fergus Shanahan[1], Gerard Clarke[1,2], Siobhain O'Mahony[1,3], Timothy G Dinan[1,2], John F Cryan[1,3*]

Longevity/Healthy Aging

nature aging

Article | Published: 06 April 2023

Longevity of centenarians is reflected by the gut microbiome with youth-associated signatures

Shifu Pang, Xiaodong Chen, Zhilong Lu, Lili Meng, Yu Huang, Xiuqi Yu, Lianfei Huang, Pengpeng Ye, Xiaochun Chen, Jian Liang, Tao Peng, Weifei Luo & Shuai Wang

Obesity

nature medicine

Article | Published: 02 November 2023

Bacterial SNPs in the human gut microbiome associate with host BMI

Liron Zahavi, Amit Lavon, Lee Reicher, Saar Shoer, Anastasia Godneva, Sigal Leviatan, Michal Rein, Omer Weissbrod, Adina Weinberger & Eran Segal

And many more….

This gives hope of a new era of optimization through the microbiome



Probiotics
(deliver superhero bacteria)



Prebiotics
(feed existing heroes if present)



Synbiotics
(deliver superheroes + food)



Postbiotics
(deliver superpowers)

Holobiome

But this today we do not have the tools or knowledge to unlock the promise of the microbiome…

Holobiome

But this today we do not have the tools or knowledge to unlock the promise of the microbiome…

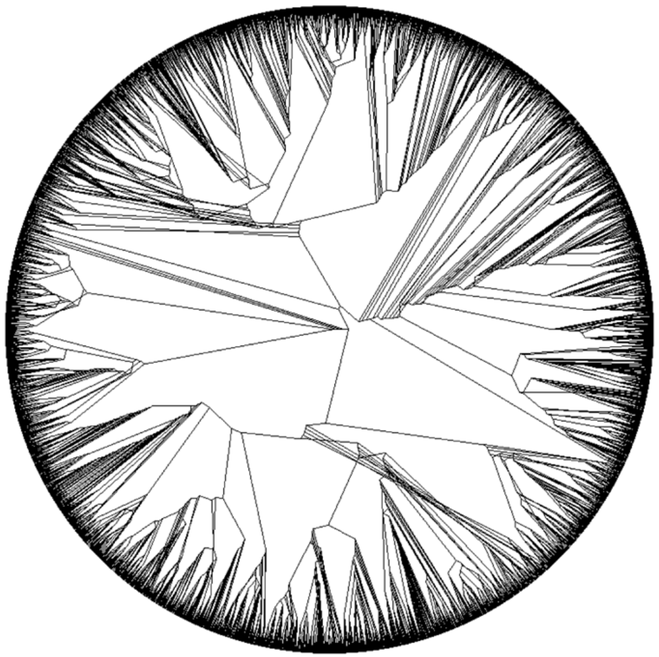
…so let us fix that

Step 1 (microbe) – we need the microbiome physically

Step 1 (microbe) – what exists in the human gut microbiome?

What exists in humans

(our database of 3,000,000 genomes)



Resource | Open access | Published: 20 July 2020

A unified catalog of 204,938 reference genomes from the human gut microbiome

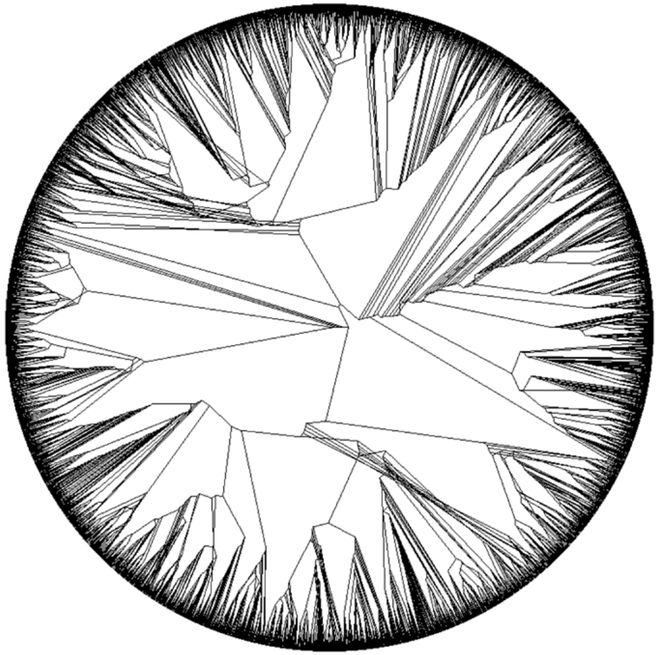
Alexandre Almeida, Stephen Nayfach, Miguel Boland, Francesco Strozzi, Martin Beracochea, Zhou Jason Shi, Katherine S. Pollard, Ekaterina Sakharova, Donovan H. Parks, Philip Hugenholtz, Nicola Segata, Nikos C. Kyrpides & Robert D. Finn

Nature Biotechnology **39**, 105–114 (2021) | Cite this article

Step 1 (microbe) – what can we buy today in products?

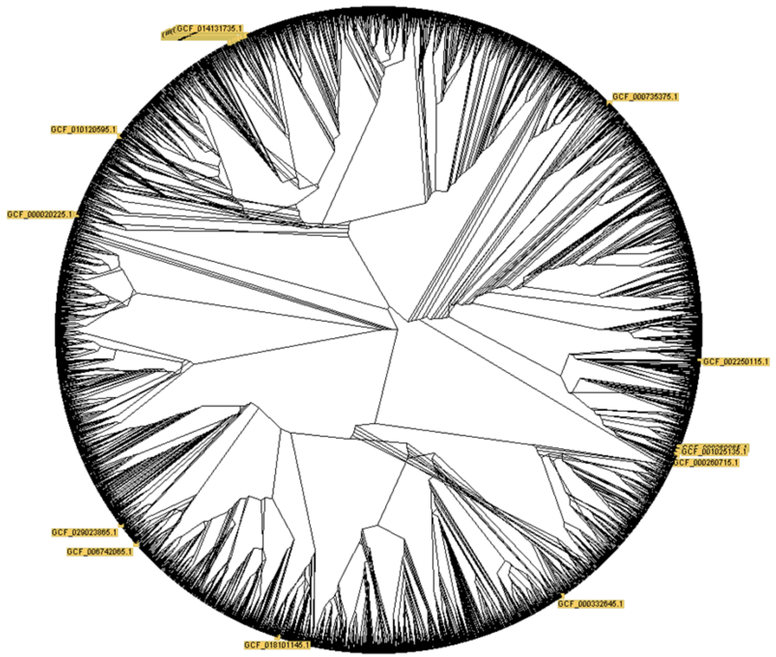
What exists in humans

(our database of 3,000,000 genomes)



What you can buy (<1%)

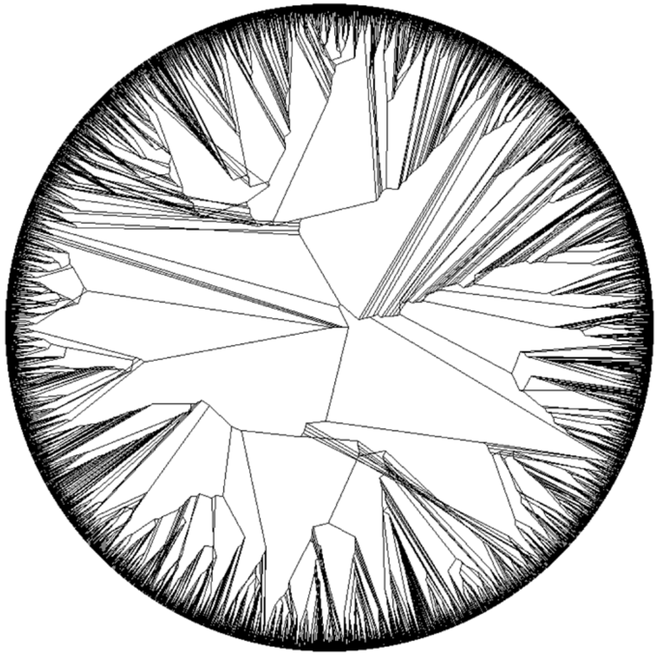
The ~$220B probiotic industry



Step 1 (microbe) – the future lives in Holobiome's Microbiome Vault

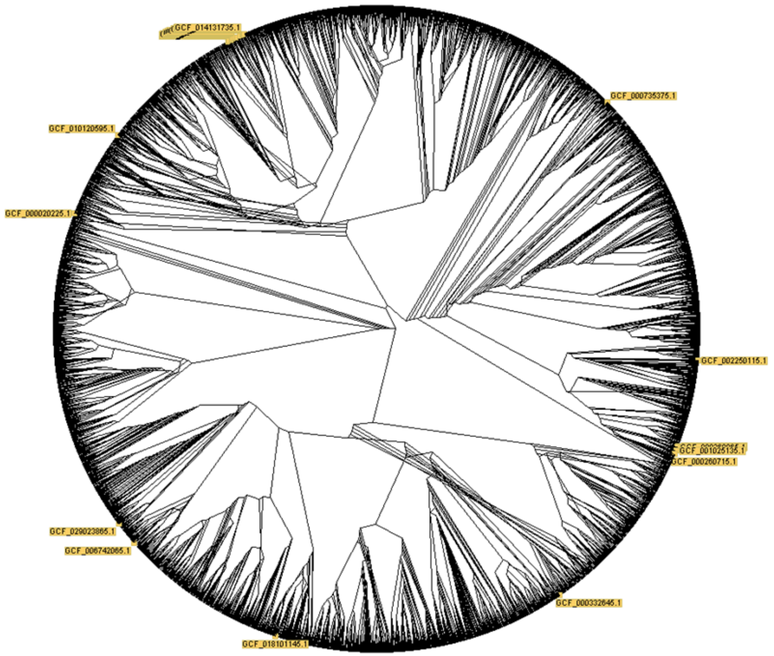
What exists in humans

(our database of 3,000,000 genomes)



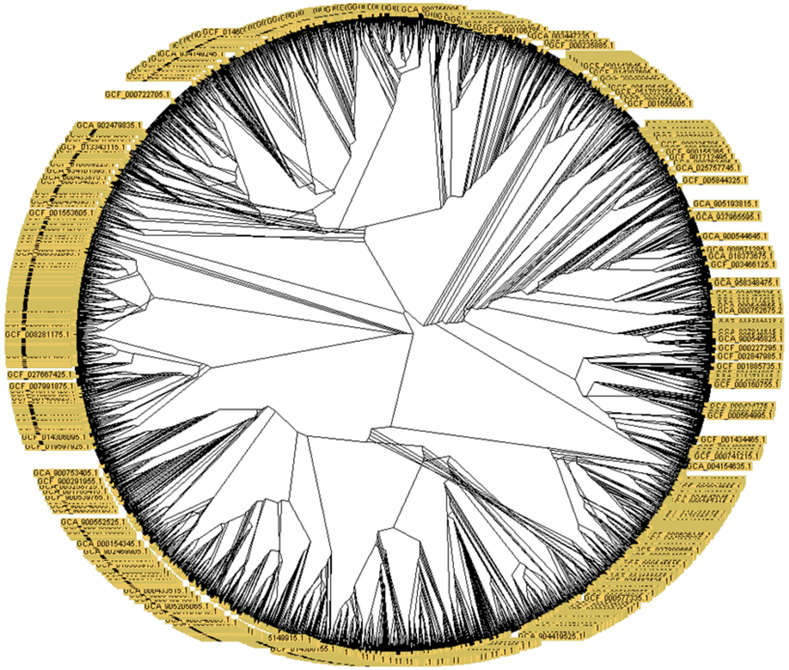
What you can buy (<1%)

The ~$220B probiotic industry



What Holobiome has

The most diverse collection in the world



Step 2 (human) – which bacteria (or functions) are potentially good?

Step 2a (human) – get a lot of human microbiome data



Human Cohorts

Holobiome M-Cloud
(100,000+ gut metagenomes)

Collaborator network
(70,000 people)

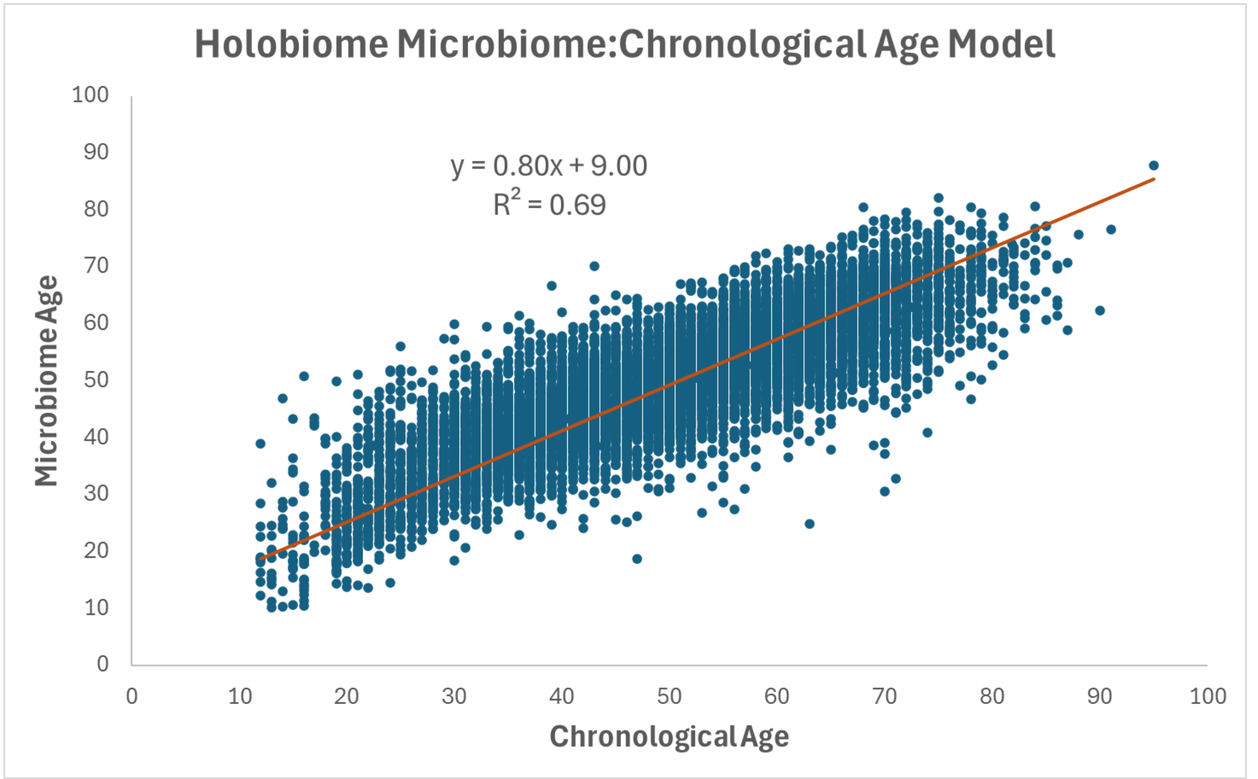
Step 2b (human) – build models using AI/ML



Human Cohorts

Holobiome M-Cloud
(100,000+ gut metagenomes)

Collaborator network
(70,000 people)



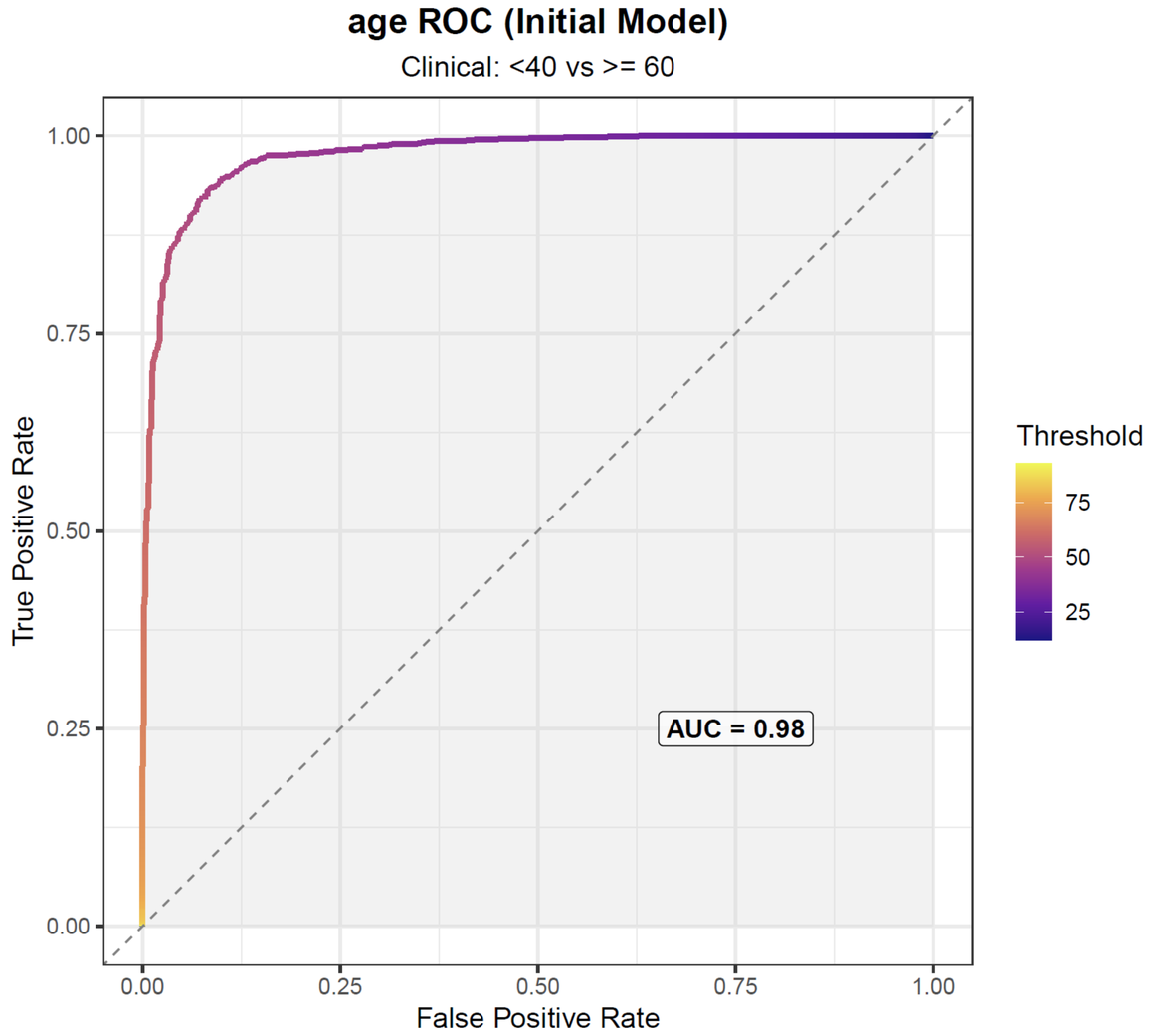
Step 2c (human) – build (understandable) models using AI/ML



Human Cohorts

Holobiome M-Cloud
(100,000+ gut metagenomes)

Collaborator network
(70,000 people)



These models **do not use a transformer**

(no "black box", we know what drives the signal)

Step 2d (human) – make a ranked list of all microbes for all health areas



Human Cohorts

Holobiome M-Cloud
(100,000+ gut metagenomes)

Collaborator network
(70,000 people)

GENUS	SPECIES	SOURCE	DIRECTION	CATEGORY ▲
None of these are available in any product…today			Health	Aging_Longevity
			Health	Aging_Longevity
			Health	Aging_Longevity
			Health	Aging_Longevity
			Health	Aging_Longevity
			Health	Aging_Longevity
			Health	Aging_Longevity
			Health	Aging_Longevity
			Health	Aging_Longevity
			Health	Aging_Longevity

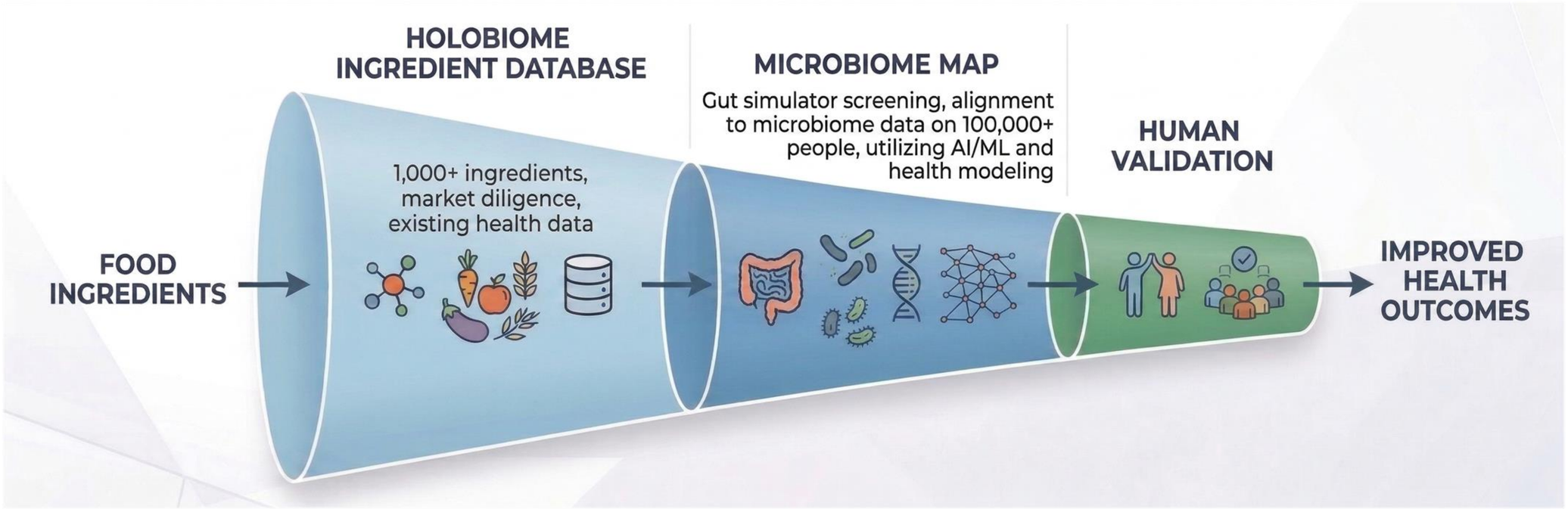
These models **do not use a transformer**

(no "black box", we know what drives the signal)

Step 3 (food) – understand how food and the microbiome interface

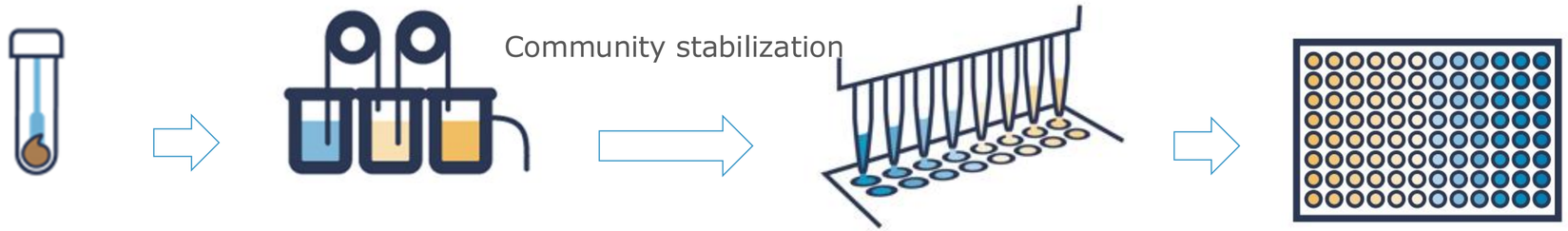
Step 3a (food) – the Holobiome Food Microbiome Atlas

- We are building the **Food Microbiome Atlas** – how food, the microbiome, and health interface
- This is a database of 1,800+ ingredients, including market sizes, key players, and current health-association data
    - Built using a mixture of our microbiome data and all available knowledge on ingredients and health



Step 3b (food) – build data which does not exist

- Holobiome has built a **Human Gut Simulator (HuGS),** which allows us to **grow up to 100 complex gut microbiomes**
- **This also allows us to understand how food ingredients impact the microbiome**



Holobiome Fecal Sample Bank

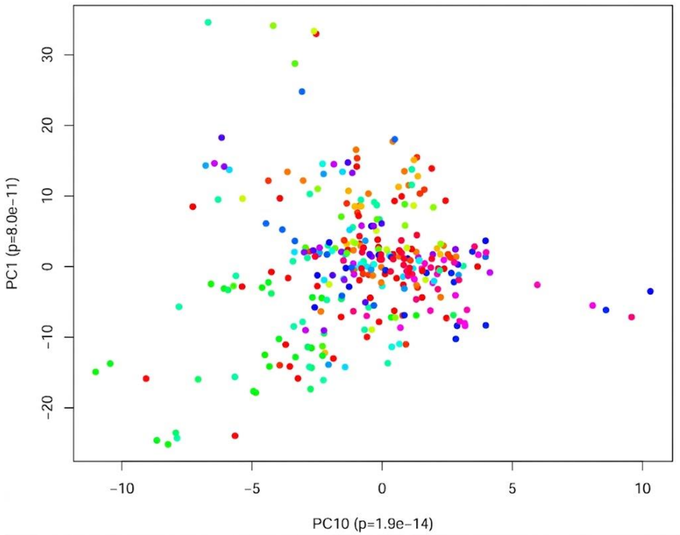
Gut simulator: HuGS

Immortalized Communities

Prebiotic/Probiotic profiling



Ingredient microbiome profiles in the Holobiome Human Gut Simulator



Step 4 (assets) – we develop probiotics, postbiotics, prebiotics

We **develop assets to inflection points**, then license them to partners (B2B)

We also form **partnerships around our platform**, to facilitate **discovery collaborations**

	Program	Formulation	Status			
			Discovery	Preclinical	CMC	Human
Internally developing	**HOLO-1** (depression)	Probiotic				2026
	HOLO-4 (stress/metabolic)	Prebiotic				2026
Partner Supported	**HOLO-3** (pain)	Probiotic				
	HOLO-2 (*confidential*)	*Confidential*				

Step 5 (validation) – large-scale human testing

We run human trials at the **scale needed** to **validate our science**

This summer we are launching a **6,000-person placebo-controlled cohort**

Primary outcome = stress; many other datapoints collected (e.g. 24,000 fecal samples)

Collaborating with **Radicle Science**, funded by **ARPA-H**



19 "food" interventions
(selected to modulate the MB differently)



6,000 people
(250 per arm + 1,250 in placebo)



Measurement
(microbiome, biobanking, and digital tools)



Deployable solutions
(and so much data to find many others)

Step 6 - Join us in building the microbial future we need

(seeking 1-2 more partners)

phil@holobiome.org

PLUG AND PLAY

Sv summit

STARTUP PRESENTATION



Fermelanta

Fermelanta builds sustainable, scalable biomanufacturing platforms to replace traditional plant extraction and petrochemical processes.

Fermelanta

Introduction to Fermelanta

Make essential compounds accessible to all

Fermelanta, Inc. 2026

Problem

Fermelanta

Nature was not built to keep up with Modern Demands



Cultivation Cycles (Years)



Low Quantities (1% or less)



Sustainability? (Land, Water, CO_2)

Industries deal with high costs, quality variation, and supply chain disruptions

Needs

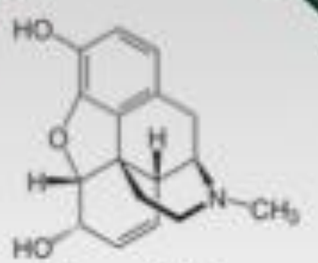
Rising Demand for Natural Ingredients

Fermelanta

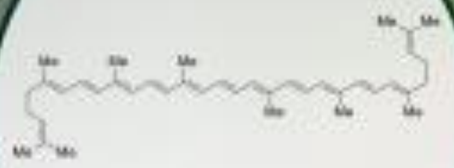
Essential Medicines
Nutraceuticals

Supplements
Flavors & Additives

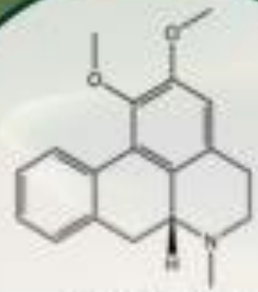
Cosmetics
Active Ingredients



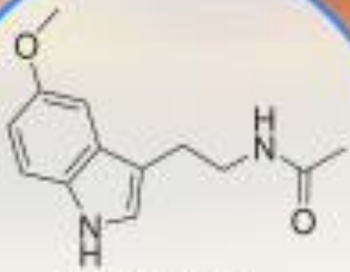
Morphine
(Severe Pain)



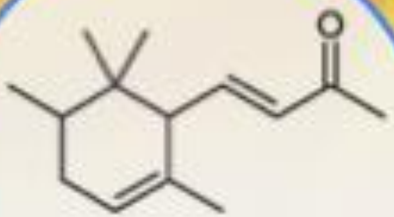
Lycopene
(Anti-Oxidant, Pigment)



Nuciferin
(Weight-Loss)



Melatonin
(Anti-Aging, Sleep)

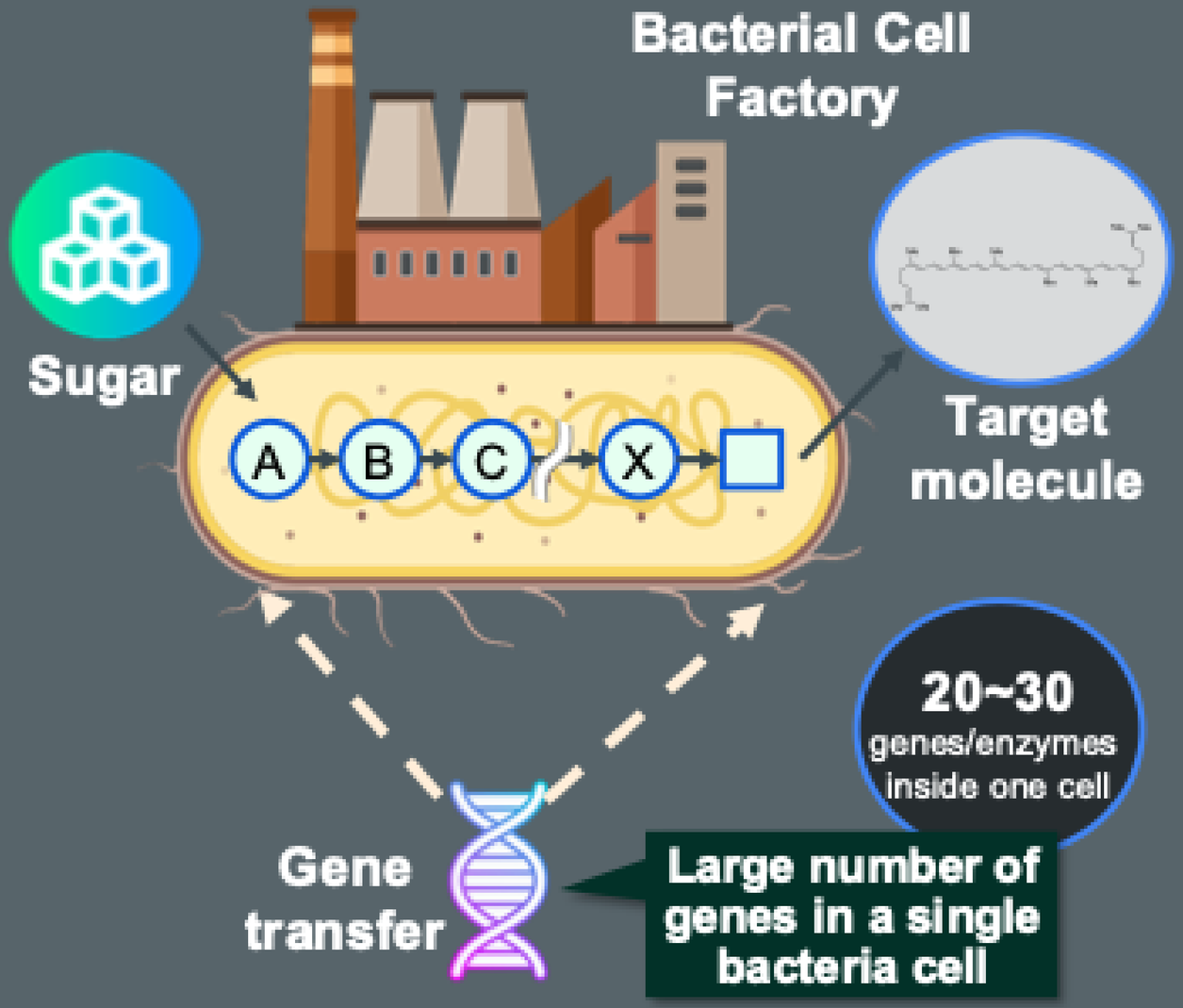


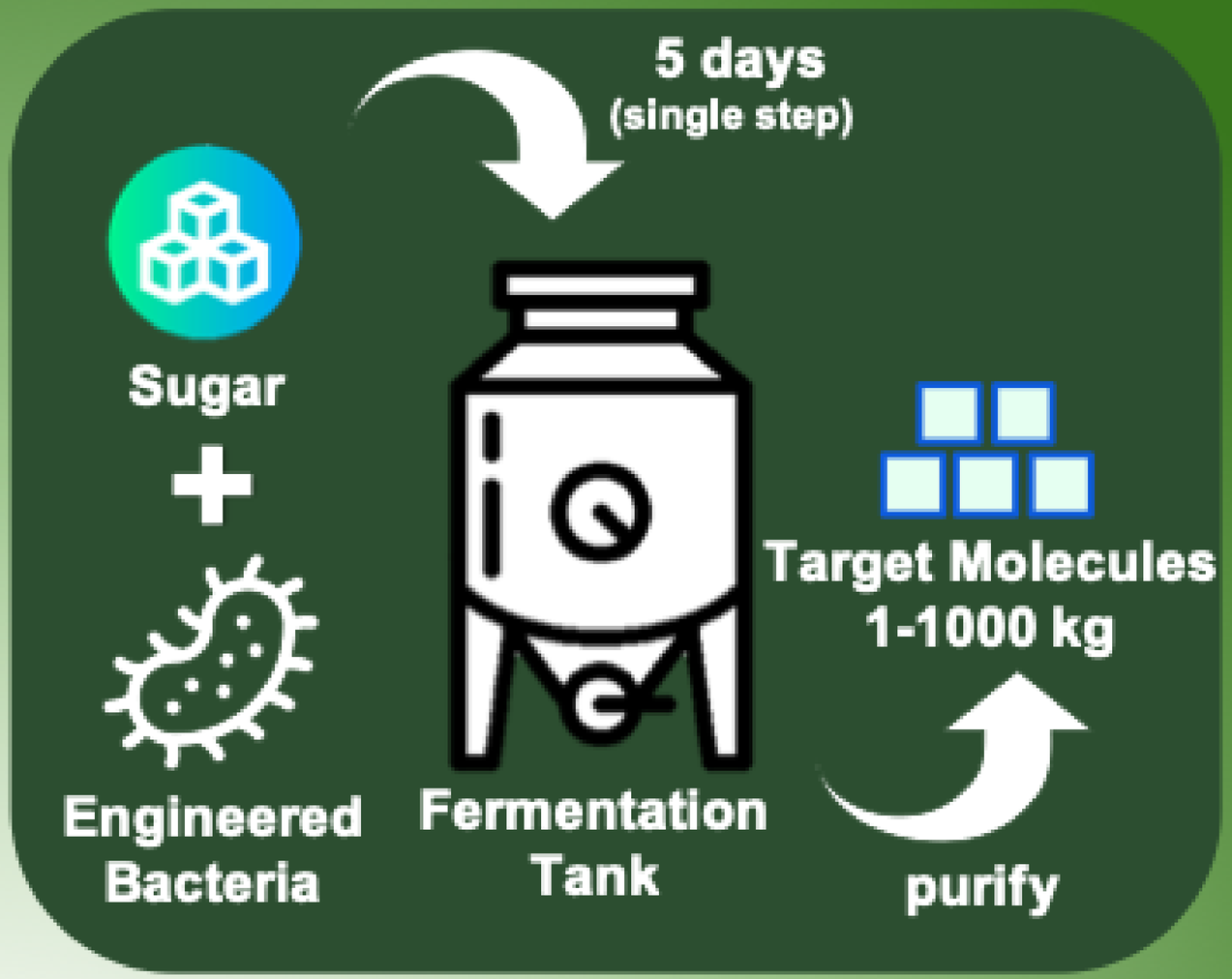
Alpha Irone
(Fragrance)

Synthetic Biology & Precision Fermentation

Fermelanta

Solution





Advantages

Flexible: Produce 1000s of different plant-based molecules
Scalable: Kg to tons anywhere in the world

What can our Cells produce?

High value plant secondary metabolites (PSMs) which can be used as raw ingredients for pharmaceuticals, cosmetics, and food supplements.

Sugar → Primary Metabolites

Secondary Metabolites

Secondary Metabolites		Use cases
Alkaloids		Pharmaceutical (Analgesic) Thebaine
Terpenoids		Nutraceutical (Antioxidant) Lycopene
Flavonoids		Supplement (Appetite suppressant) Naringin
Others		Pharmaceutical (Joint health) Hyaluronic Acid

Fermelanta

Our Solution VS Traditional Sourcing

50x
Reduction in time

2–20x
Reduction in cost

10,000x
Reduction in land use

60x
Reduction in CO_2

Faster, cheaper, and more sustainable than plant extraction

Practical pipelines: Food and Beverage

Alkaloids	Reticuline	Used in traditional-medicine-inspired functional foods.
	Thebaine	Strictly prohibited in standard food. Controlled alkaloid.
	Nuciferine	Used in weight-management teas or functional snacks targeting metabolism. Popular in the Asian 'dietary support' market.
Terpenoids	Lycopene	Natural red pigment in beverages, sauces, and confectionary. Also allows for 'heart-healthy" or "antioxidant-rich" marketing claims.
Flavonoids	Naringenin	Used as a flavor modifier in citrus-flavored beverages to enhance the "zest" profile without adding sugar.
	Taxifolin	Anti-aging actives in beverages. Stable at high temperatures so can be used for pasteurized drinks where other antioxidants might degrade.
	Luteolin	Active to produce 'brain-health.' Anti-inflabatory effects on the nervous system.
Others	Rosmarinic Acid	Natural Preservative. Used in high-fat foods (like dressings and oils) and meat products to prevent lipid oxidation and discoloration, often replacing synthetic BHA/BHT.
	Hyaluronic Acid	Used in 'Beauty-from-within" drinks. Used for skin hydration and elasticity.
	Heparin	Used in specialized medical nutrition.


Reticuline/Thebaine


Nuciferine


Lycopene


Naringenin


Taxifolin


Luteolin


Rosmarinic Acid


Hyaluronic Acid


Heparin

Fermelanta Solution VS Traditional Agriculture

Fermelanta

Land usage	Water usage	GHG Emissions	Fuel/Electricity Consumption	Biomass Volume
[m^2/kg]	[L/kg]	[$kgCO_2e$/kg]	[kWh/kg]	[kg/kg]
897 → 42	117,000 → 198	34,018 → 699	6,499 → 440	12,500 → 5
-95.2%	-99.9%	-97.9%	-93.2%	-99.9%



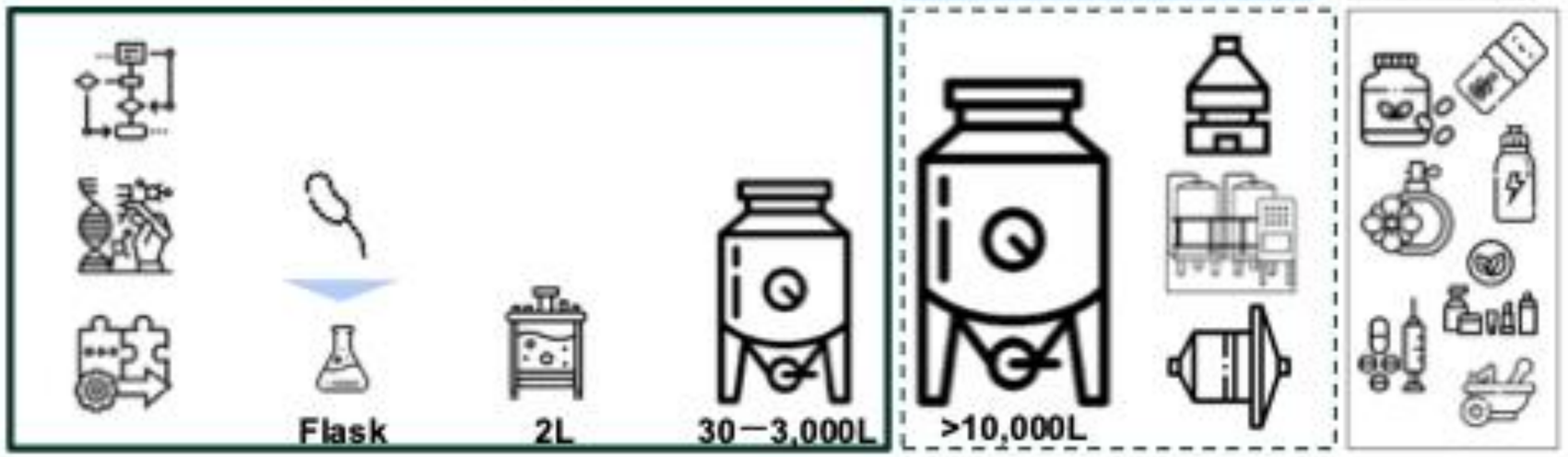
Natural Source



Our Source

(Lifecycle assessment of Lycopene produced by precision fermentation)

How we support Supply Chains



1 In-house Manufacturing → Ingredient Supplier

2 Contract Cell Development → License Out → Partners' Products

What we address:

- Costs
- Stability
- Quality
- Environment

Scaling up in Japan

2L Jar Fermenters



30L Jar Fermenter



From June 2026

3,500 L Pilot Plant



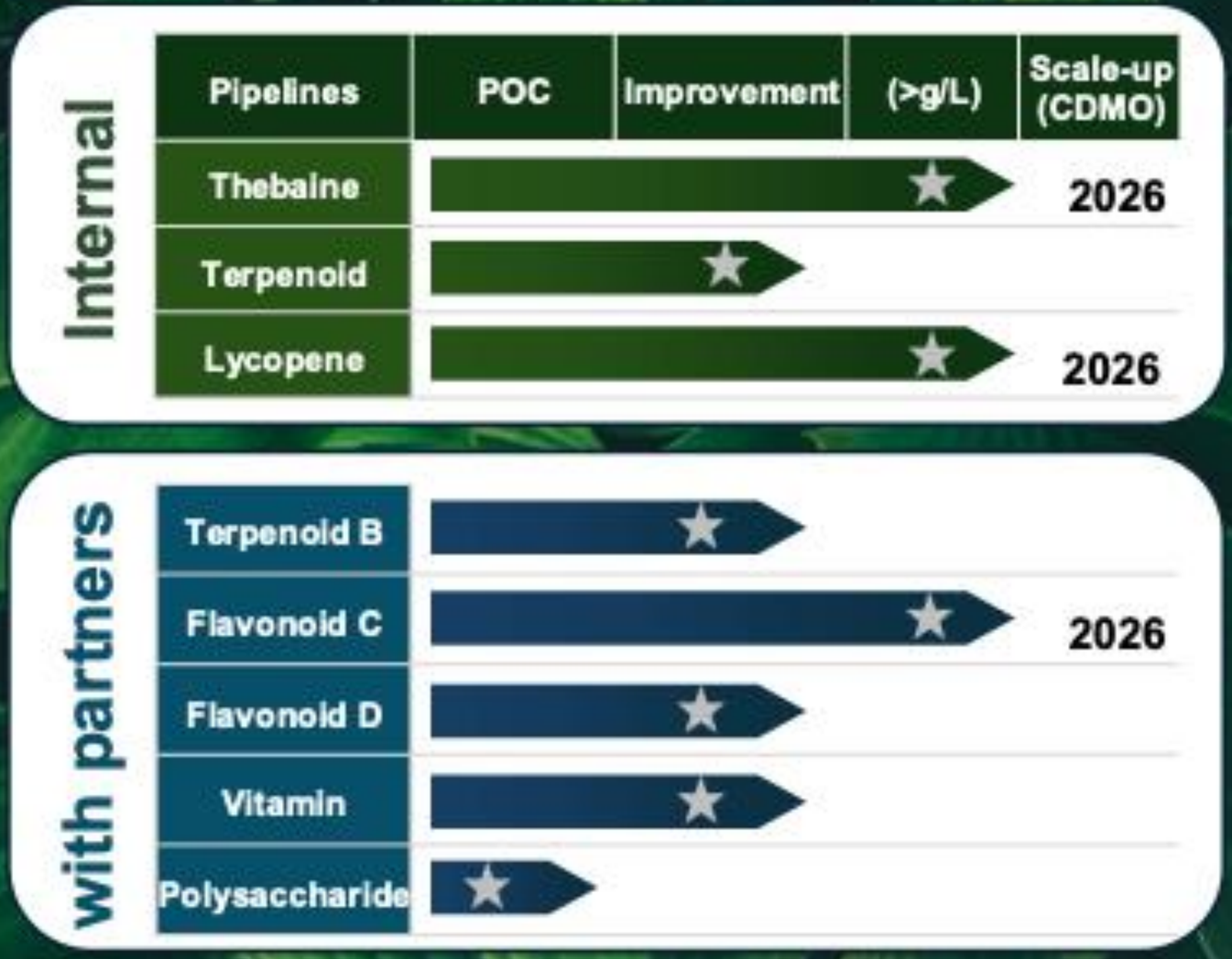




Traction and Technology Base

Platform to make high-value, nature derived ingredients throughout industries

15 POCs completed
10+ projects with **major Japanese Pharma** and **Chemical Companies**
Open for collaborations



Company Overview

Locations



Founders

Shogo Fukizaki CEO	Akira Nakagawa CTO	Hiromichi Minami CSO
		
BARCLAYS NEDO SSA THE UNIVERSITY OF TOKYO Deutsche Bank	石川県立大学 KYOWA KIRIN JAIST	石川県立大学 KYOTO UNIVERSITY
Corporate management & strategy Careers as M&A banker and mentor of startups	Synthetic biology pioneer with +15 years experience Professor at Ishikawa Prefectural University	Expert in molecular biology of bacteria Associate Professor at Ishikawa Prefectural Univ.

Employees

Total	57
Full time	36
Part time	21

Current stage

- Series A
- Series B (Dec 2026)

Company Overview

Funding and Revenue

Non-Dilutive (National Grants)	20.0 M USD
Seed Round	1.4 M USD
Series A	13.8 M USD

Shareholders

Beyond Next Ventures
KII
NORIN CHUKIN CAPITAL
Angel Bridge
PLUG AND PLAY JAPAN
MUFG
三菱UFJキャピタル
umi Universal Materials Incubator Co.,Ltd.
QB INVESTMENT
HED
MIYAKO CAPITAL
SMBC SMBCベンチャーキャピタル

Awards

Forbes JAPAN	"100 Japanese Startups to Watch in 2026"
JATES (2025)	The 12th Technology Management and Innovation Grand Prize Selection Committee Special Award
Toyokeizai	Selected for Toyo Keizai's "100 Amazing Ventures"
AgFunder/ JETRO	Japan AgriFoodTech Meetup 2023 Grand Prize

Business and Services

- Genetic and metabolic engineering service for contract cell development
- Manufacturing and sales of rare plant-based ingredients

Currently seeking international collaborators

We provide reliable, sustainable, affordable solutions to the growing demand for essential ingredients.

Fermelanta

Fermelanta

Scalable bacterial factory of valuable plant ingredients

Contact: Anthony Swain
anthony.swain@fermelanta.com

PLUGANDPLAY

Sv summit

Bioprocessing Panel



MODERATOR

Robert Grey

Director, Sustainable Future

Plug and Play



Massimo Merighi

CTO

CJ Bio



Cordell Hardy

VP, North America R&D

Cargill

PLUG AND PLAY

Sv summit

STARTUP PRESENTATION



Oleo

Transforming biomass waste into carbon negative feedstocks for the production of advanced fuels.



Oleo

Unlocking the future of fuel.

Oil Feedstocks are Bottlenecking Fuel Production



High Oil Costs

Account for 80% of fuel production costs.



Volatile Supply

Global instability creates supply risk



Under Utilized Refining Assets

30% under utilized capacity leaving billions on the table

Oleo Unlocks Under Utilized Fuel Assets by Lowering Cost & Stabilizing Supply

22% Structural Cost Advantage



22% cost reduction. selling for $130/bbl.

Price parity with crude + **improved profit** margins per barrel

Stable Supply



Local production with regionally available inputs.

Reduced dependence on global markets.

Oleo Transforms Biomass Waste into Oil Feedstocks for Sustainable Aviation Fuel & Renewable Diesel



Biomass Waste

Oleo's Proprietary Biomanufacturing Platform



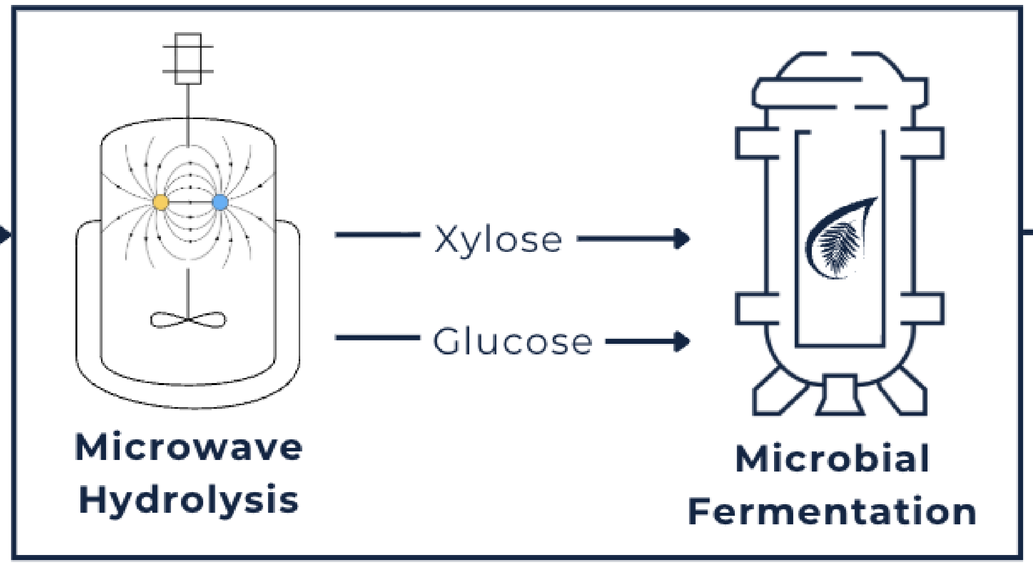
Carbon Negative Oil Feedstocks

Patent Pending
USPTO PCT/US24/28032

Oleo Transforms Biomass Waste into Oil Feedstocks for Sustainable Aviation Fuel & Renewable Diesel



Biomass Waste





Carbon Negative Oil Feedstocks

Patent Pending
USPTO PCT/US24/28032

Our Competitive Edge: Proprietary Biology and Process IP



Methods Patent:
End-to-End
Bioconversion

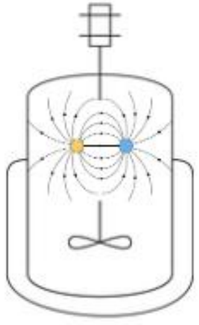


Methods Patent:
Pure C5 & C6 Sugar
from Biomass



Trade Secret:
Proprietary
Microorganism

Technical Advantages Unlock Scale & Profitability



Microwave Hydrolysis

Energy-Efficient

65%

More energy efficient than conventional biomass pretreatment methods.



Microbial Fermentation

High-Yield

2x

Oil yields when compared to repository strains on cellulosic hydrolysate.

Oleo's Biomfg Platform

Flexible

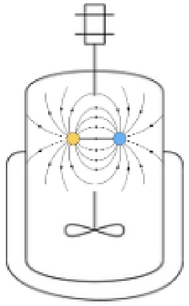
30

Validated on 30 different biomass sources offering unmatched scalability.

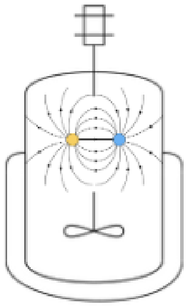
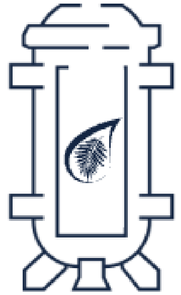


Core Technology Already De-Risked at Pilot Setting

2026 Pilot

8 kW Microwave Reactor	300 L Bioreactor
	

2027 Demo

100 kW Microwave Reactor	15,000L Bioreactor
	

2028

Commercial Licensing

Technology Licensing Unlocks $143M in ARR by 2033

Technology Licensee

Commodity Economics

$784M ARR

$176M Annual Profit

27% IRR

Recovers Licensing Fee in **4 Months** of Operation

Oleo

Licensing Economics

$23.5M ARR

$25M Upfront Licensing Fee

3% Royalty

8 Commercial Licenses Generates **$143M** in ARR

Biomass Supply Secured to Support a $4.8B Economic Opportunity

No. of Commercial Licenses:
8 - 2 x FOAK, 6 x NOAK

Scale:
4.1M Barrels of Oil per Year

Opportunity:
$4.8B in Annual Revenue



NSJV, California

Almond Byproducts
4 Million Tons/yr
$15-125/ton

GPX

Midwest

Soy Byproducts
130 Million Tons/yr
$15-130/ton

ADM

Pacific Northwest

Woody Biomass
15 Million Tons/yr
$15/ton

INTERFOR

Capturing 3% of the $21B Global Oil Feedstock Market by 2033

$21B TAM
Global Oil Feedstock Market RD & SAF

$7.8B SAM
Domestic Oil Feedstock Market

$726M SOM
Oil Revenue from 4M bbl oil /yr



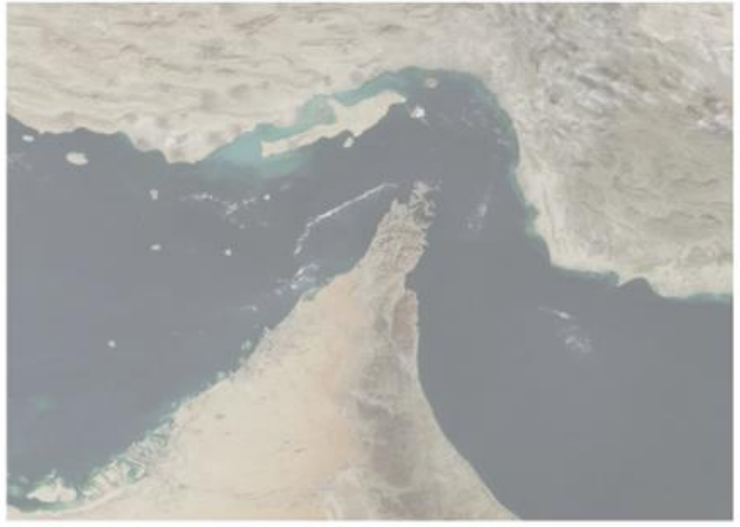
Domestic & international expansion from 4M bbl/yr to 400M bbl/yr.

The Industry Doesn't Need New Fuels, it Needs better Feedstocks

Infrastructure Already Deployed



Oil is Constrained



Economics are Now Favorable

Oleo: $33/bbl profit

Crude Oil: $30/bbl profit

Renewable Incumbent: -$68/bbl loss

Oleo has Developed Strategic Partnerships to Enable Commercialization

3x Commercial Contracts in Pipeline

Par Pacific (2x)

Jon Auerbach, Director Renewables

- DD for two commercial licenses
  - Hawaii facility directly with Par
  - PNW facility with FIX Infrastructure as the Project Developer

Marathon Petroleum Company (1x)

Sarah Tobe, Business Development Advisor

- LOC for oil testing through scale-up
- MOU in progress for offtake

Validated Fuel Demand

International Airline Group

Nisha Basson, Innovation Principal

- Selected for IAGi accelerator as future SAF enabler to maintain compliance with UK reg

Strategic Investment Interest

The Oleo Team

Founders



Gabriella Dweck
Co-CEO & CPO



Kelly Redmond,
Co-CEO & COO

Technical Team



Mairui Zhang, Ph.D
Lead Process Engineer
PhD, Bioprocess Engineering



Merhawi Mihreteab, Ph.D
Fermentation Engineer
PhD, Microbiology

Advisors



Dr. Derick Jiwan
Go-to-Market Advisor
Innovation & Business Development

Investors & Funders

G-FORCE. HELP THE PLANET
ALPINE
gener8tor
Activate
Stanford High Impact Technology Fund
TomKatCenter FOR SUSTAINABLE ENERGY

Partners

ABPDU ADVANCED BIOFUELS AND BIOPRODUCTS PROCESS DEVELOPMENT UNIT
cyclotronroad
BERKELEY LAB
MOLECULAR FOUNDRY
GPX
Malachite Technologies
StartX
C2M Cleantech to Market
IAG INTERNATIONAL AIRLINES GROUP

$6.5 Million Seed Unlocks Profitability & $143M ARR

Seed Milestones

- Achieve profitability.
- Generate $687,000 ARR.
- Secure technology licenses.
- Advance platform to TRL 7.

Round Status

Strategics & CVCs have **soft committed $5.5M-15M** to the round.



Currently **seeking lead investor** to set the terms.

Oleo

Unlocking the future of fuel.

Thank you!



Connect with me on LinkedIn!

kelly@oleospos.com

gabriella@oleospos.com

https://www.oleo.earth

717 Potter Street, Berkeley California, 94720

PLUG AND PLAY

Sv summit

STARTUP PRESENTATION

Differential Bio

Differential Bio

We work with you on making microbial growth predictable, scalable, and cost-effective through robotic lab automation and AI-driven insights.

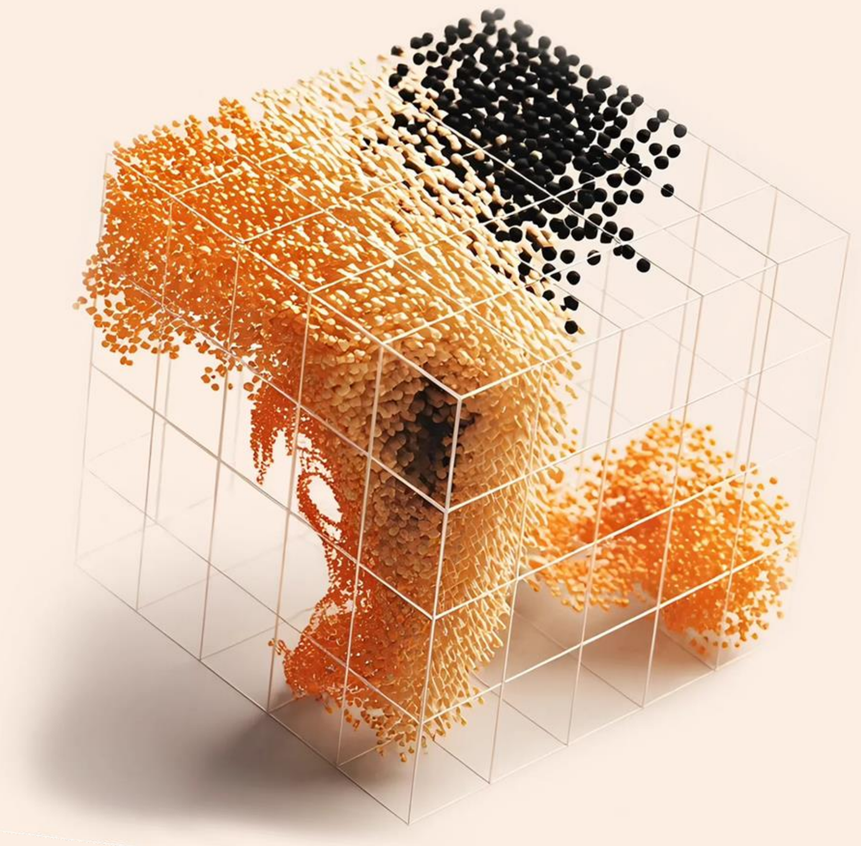
#PNPTCSiliconValley

Join us at pnptc.com

Differential Bio

Scale up with Confidence

AI-driven bioprocess optimization



May 2026

P&P Summit Presentation

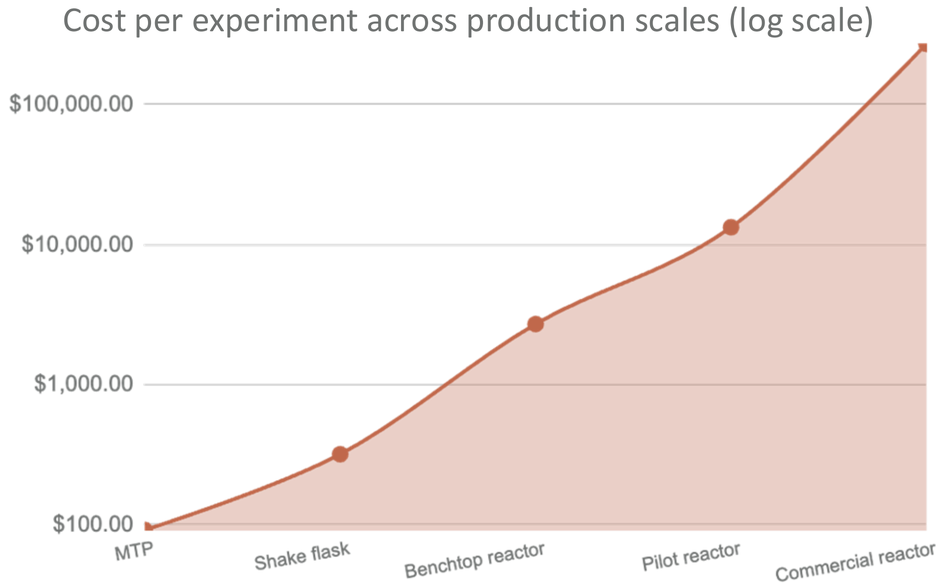
The problem

While 60% of all manufactured goods can be produced biologically, the $4tn bioeconomy is plagued by costly innovation and scale-up cycles

11 years until first product



$210m raised



It takes 5-10 years and $100-500m+ to develop a bio-based product

Full of costly trials, with experimental costs increasing exponentially

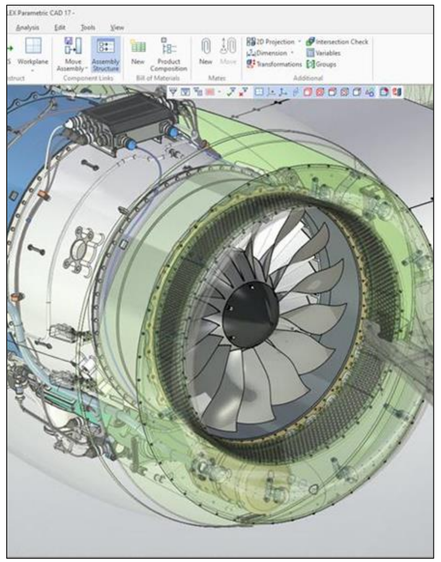
The solution

Drawing from solutions other industries have already mastered, esp. AI-driven/digital modeling before conducting test in the physical world



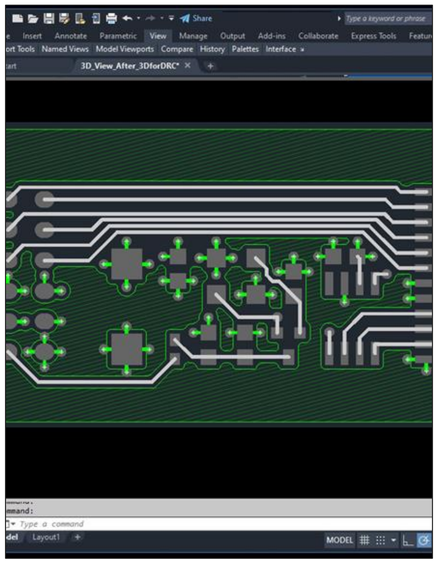
Automotive

SOLVED



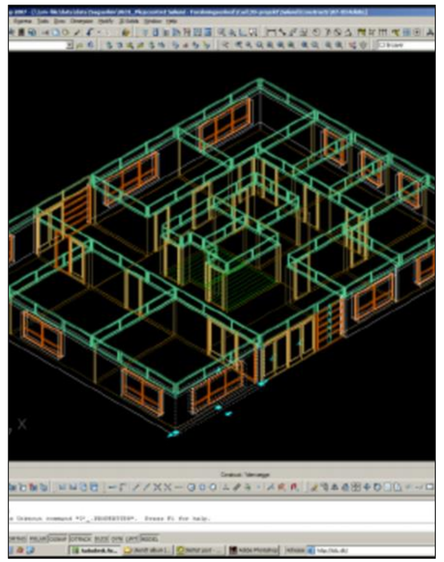
Aerospace

SOLVED



Semiconductors

SOLVED



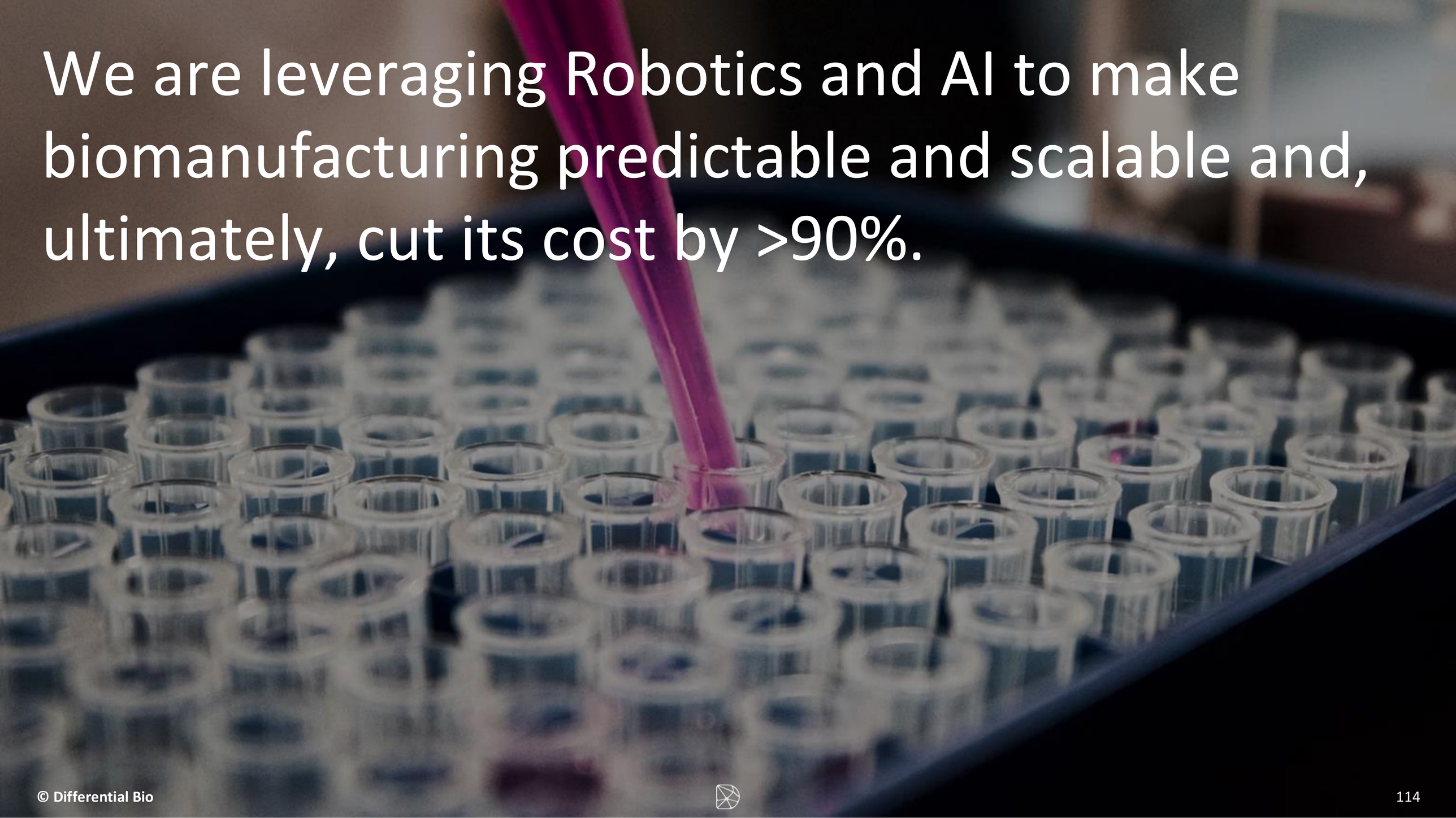
Construction

SOLVED



Biomanufacturing

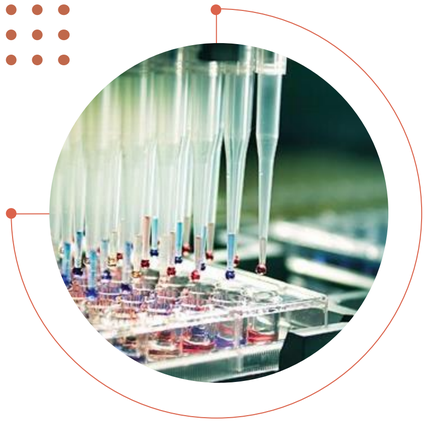
?



© Differential Bio

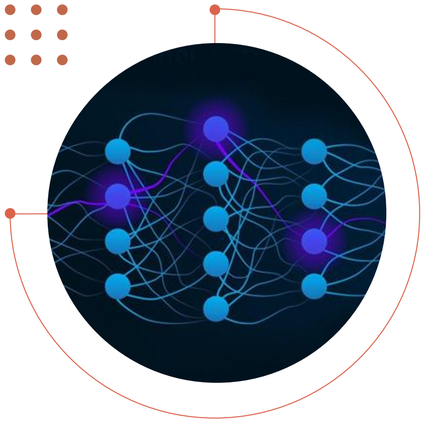
How we do it

Develop physical AI models, fed by purpose-built, scale-down datasets



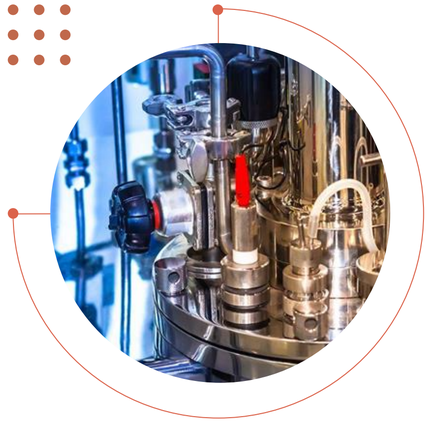
Robotic data acquisition

Mimic large-scale stress factors in microliter-scale environment to collect industrially relevant data as affordably as possible.



AI-driven modeling

Deploy specialized models to make predictions based on industrially relevant wet lab data, like biomass growth or protein expression.

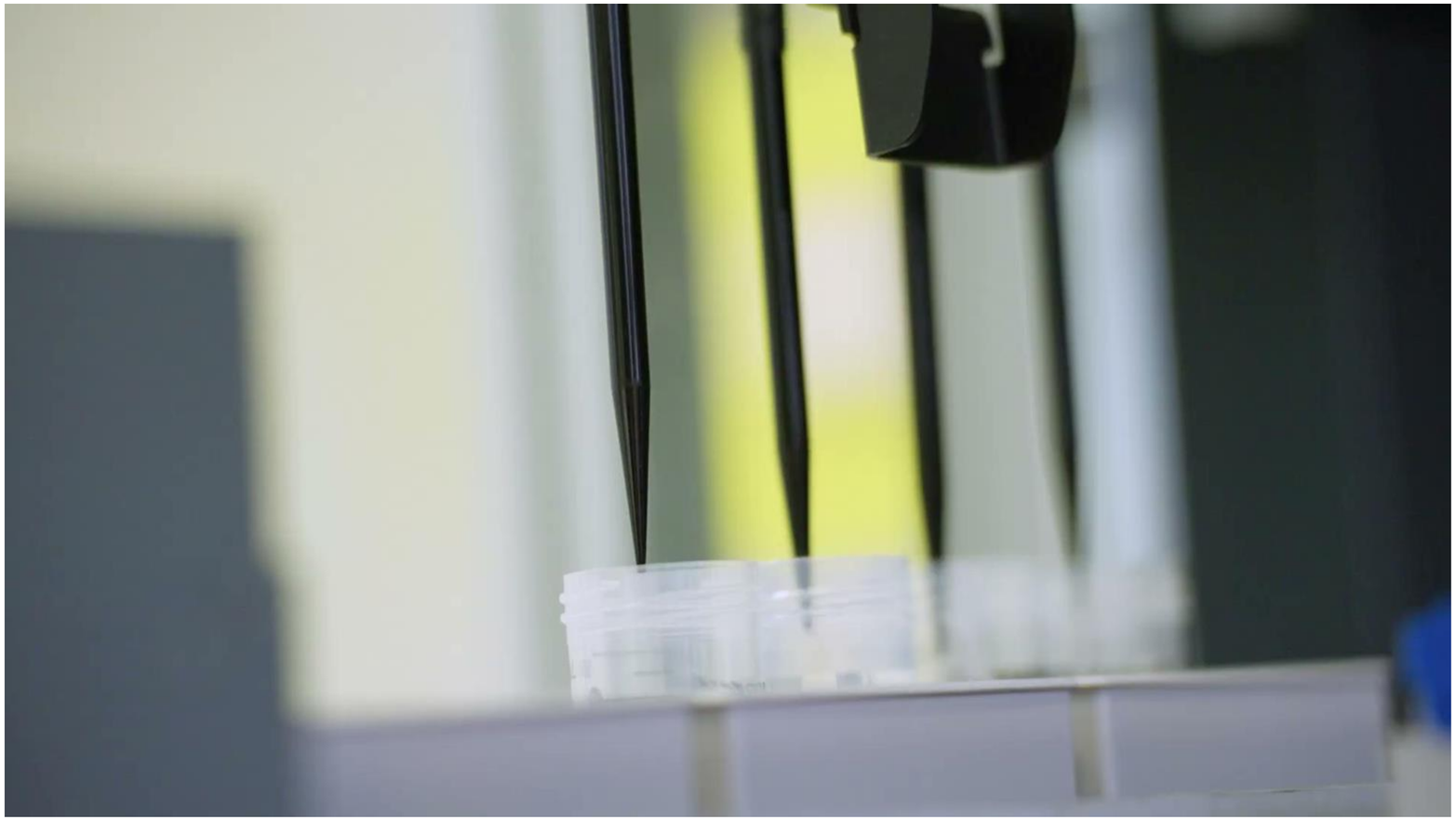


Bioprocess optimization

Drive fermentation outcomes through verticalized AI models. Incorporate them into R&D workflows like medium- or bioprocess optimization.

Our infrastructure

Across two Munich locations, we are building automated fermentation labs







Differential Bio

Registry

- Strains
- Settings

Cell Nutrition Lab

- Projects
- Experiments

dev@localhost

Latest Pipeline Outputs

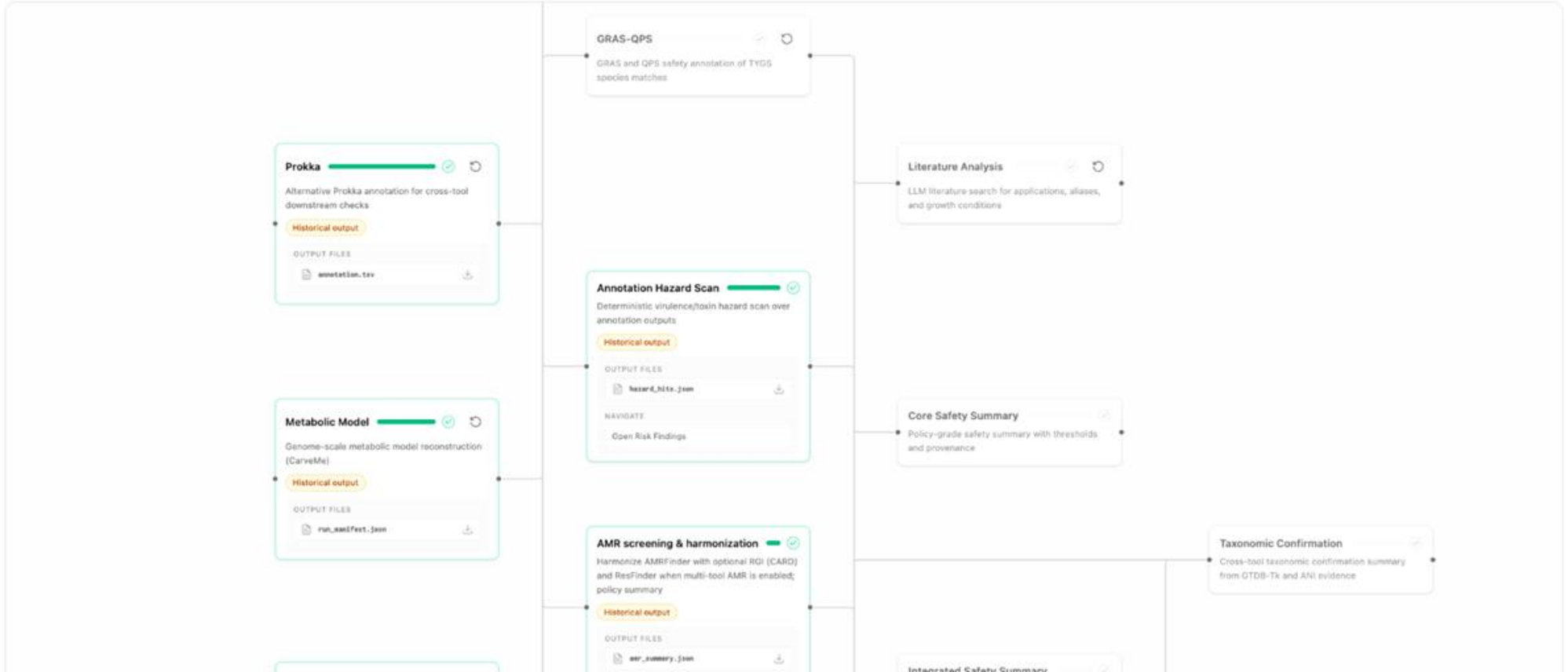
Most recent run for each step

Refresh | Run full pipeline

STEP	OUTPUT	STATUS	REQUESTED	WORKFLOW	TRIGGER	DEPLOYMENT VERSION	TOOL VERSION	DATABASE VERSION	MANIFEST
strains	Historical	Running	03/05/2026, 10:37:38 Running	quick-muskrat	initial	d618750	—	—	—

Pipeline Steps

10 of 24 complete



Registry
Strains
Settings
Cell Nutrition Lab
Projects
Experiments

Manage Filters

Columns

Lag Time | Max. OD | Inoculation Time | Plate | Growth Rate | Price

Run ID (Search run id...)	Lag Time	Max. OD	Growth Rate	Confidence	Batch	Replicate
8300822	11.69	1.43	0.34	1.0	data/raw	0
4832129	10.31	1.43	0.24	1.0	data/raw	0
9066787	13.91	1.22	0.43	1.0	data/raw	0
160434	11.40	1.40	0.25	1.0	data/raw	0
2706960	9.83	1.51	0.22	1.0	data/raw	0
3035203	9.94	1.64	0.25	1.0	data/raw	0
8879234	10.61	1.65	0.26	1.0	data/raw	0
35414	10.25	1.38	0.24	1.0	data/raw	0
1926112	10.74	1.53	0.26	1.0	data/raw	0
5519956	11.37	1.01	0.50	1.0	data/raw	0
7738183	13.71	1.06	0.33	1.0	data/raw	0

0 2

MnSO4 · H2O: Manga
Range: 0 - 2
Reset
0,10 $/g
0 2

Peptone (Soy)
Range: 0 - 40
Reset
0,10 $/g
0 40

Tween 80 [ml/L]
Range: 0 - 4
Reset
0,10 $/g
0 4

Yeast extract
Range: 0 - 40
Reset
0,10 $/g
0 40

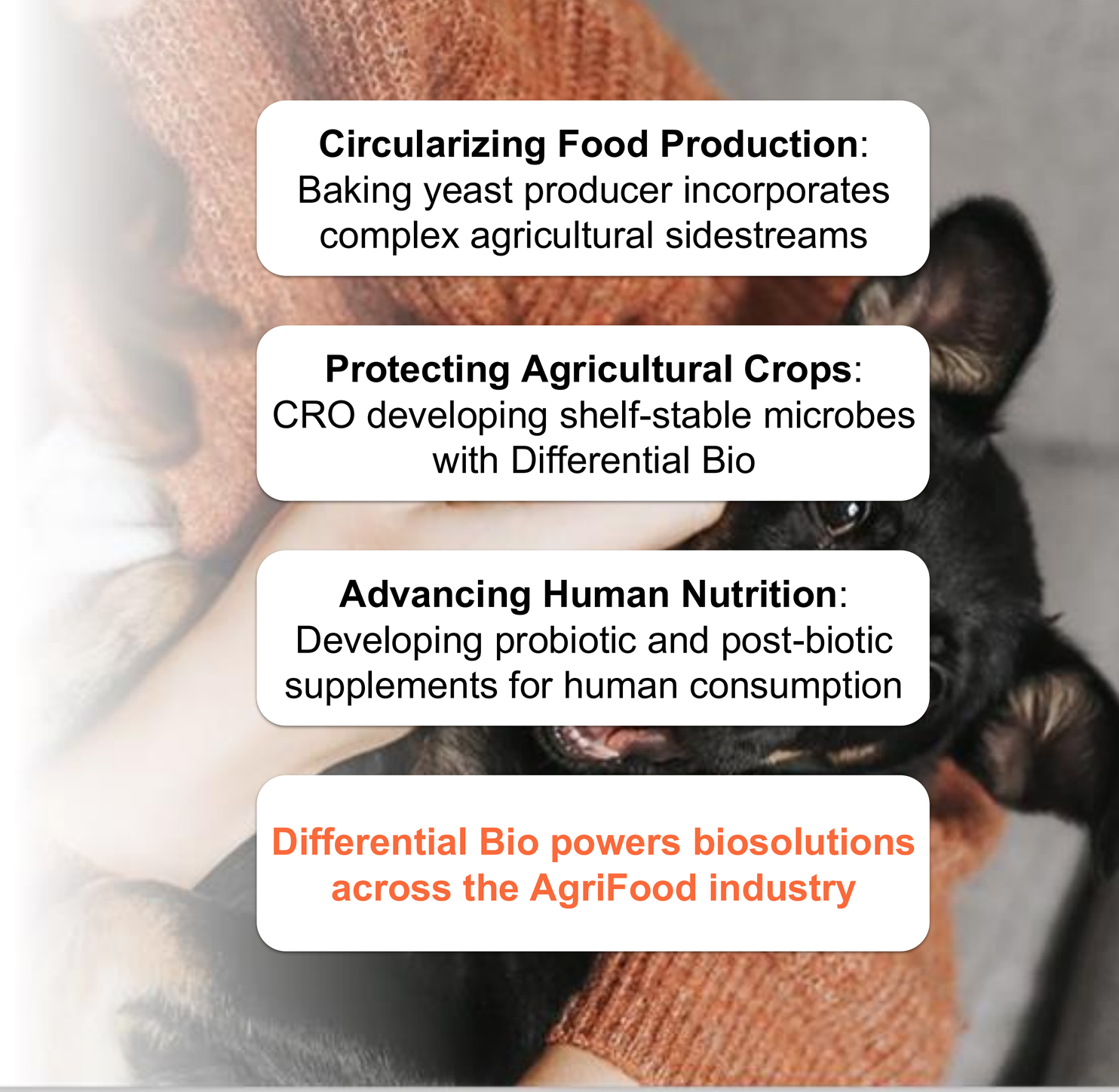
Ingredients for Animal Health:
Probiotic pet food supplier used Differential Bio to optimize scale-up productivity

34x

More experiments than status quo, enabled by closed-loop robotic lab automation

283%

ROI in first year of optimization investment, enabled by AI-driven bioprocess optimization



Circularizing Food Production:
Baking yeast producer incorporates complex agricultural sidestreams

Protecting Agricultural Crops:
CRO developing shelf-stable microbes with Differential Bio

Advancing Human Nutrition:
Developing probiotic and post-biotic supplements for human consumption

Differential Bio powers biosolutions across the AgriFood industry

© Differential Bio

Let’s go!

It is a unique moment in history to build an AI Scientist that solves Bio-manufacturing’s biggest challenge - Making biology predictable and scalable



Supported by

SPIN OFF TUM

TUM VENTURE LABS

Carbon13

Ananda Impact Ventures

ReGen ventures

better

XPRENEURS INCUBATOR

Federal Office for Agriculture and Food

eit Food

Featured in

AgFUNDERNEWS

techeu

BETTER BIOECONOMY

vegconomist – le magazine de l'économie végane –

Applied Microbiology International

BCG BOSTON CONSULTING GROUP

14 team members ~ Closed-loop AI system + corporate partnerships in place ~ Raising $6m this summer, get in touch now!

PLUG AND PLAY

Sv summit

STARTUP PRESENTATION

Bonafide

Bonafide

Bonafide is an agentic commerce enablement company that facilitates context exchange between brands and AI/LLM platforms to ensure accurate information for discovery, shopping, and purchase.



Context is Everything

© Bonafide 2026 Proprietary and Confidential

Bonafide enables brands to turn LLMs & AI Agents into their product advocate and experts

Bonafide is the AI Alignment platform

Alignment Problem:
AI Agents & LLMs are often wrong

32.7%
LLM Error Rate

LLMs answers are often inaccurate, incomplete or misrepresented (does not align with the brand's factual information)

Bonafide

The Challenge: Losing the Customer Conversation

Consumers are asking complex and specific questions to LLMs, which means **brands need to be the source of authority** to be part of purchase consideration.

According to LLMs Ingredients & Formulation is the most asked and most error prone

- Not understanding difference between products (Zero vs Diet)
- Consensus Trap (no true source of authority, between Reddit & brandi information)
- Formula Data Drift (Fragmented data by region, historical data, etc)

Bonafide

Change from Search to LLMs

“Users are asking much longer and much more complex questions….Google's AI mode represents a real end-to-end reimagination of a conversational experience designed for users who need to go beyond a simple answer". ***-Google***

Google

“Search, Seek and Retrive”

LLMs & AI Agents

“Ask and Expect Response”

Enterprise Data & Content Does Not Speak AI

- Created for humans
- Organized for search
- Relies on legacy, structured data
- Managed by fragmented technology

Today's models and agents are misaligned to enterprise data.

Legacy Commerce (Human + Search)
Optimized for pages, queries, and catalogs.



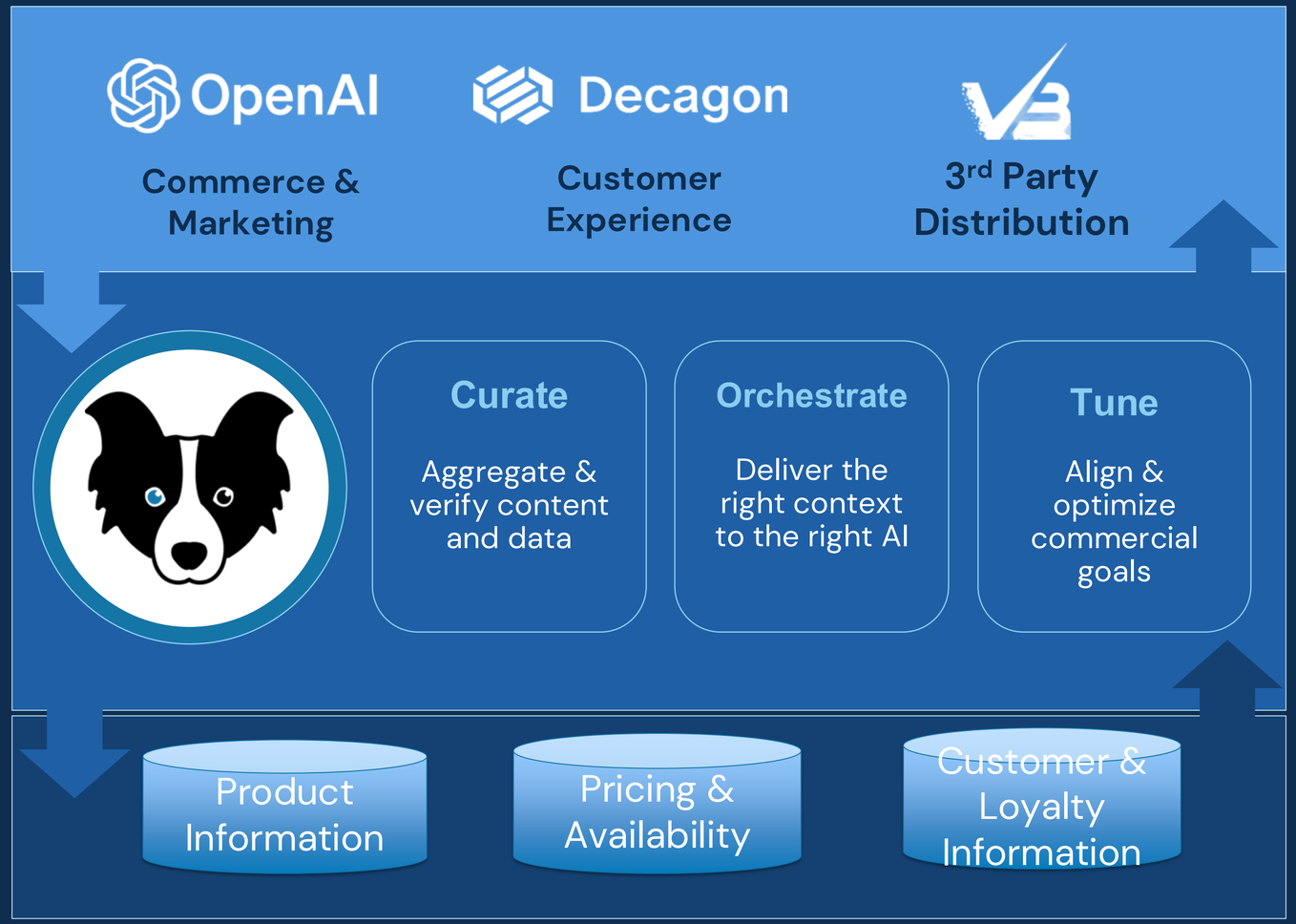
AI Commerce (Agent + Model)
Optimized for reasoning, retrieval, and actions.

Bonafide

AI Alignment enables brands to create context layer that aligns AI to enterprise data and content across AI systems to ensure facilitation of accurate information for discovery, shopping, purchase and customer engagement.

Bonafide

Bonafide is AI Alignment Platform



Enterprise Data/Content Connections

Seamless Integration to existing content & data sources

Verification & transformation of content & data to AI

Distribution of content & data to the right AI Channel

“Automated through AI and supervised by human”

Bonafide

Path to AI Authority

1

Website Alignment

Is website' content being read and reflected correctly by LLMs?

Step 1

2

LLM Accuracy

Are LLMs giving correct answers about brand's products?

Step 2

3

Citation Percentage

When LLMs cite sources, is brand.com showing up?

Step 3

4

Direct Engagement

Users trust AI answers and go directly to brand.com to transact.

Goal

Bonafide

Case Study: Misinformation Abounds

Who:
Large US Metropolitan DMO

The Problem:
A lack of an authority voice on the destination and its attractions lead to a vacuum filled by outdated blogs and social sites. Online misinformation clouded the reputation, positioning the city unfavorable in the LLMs.

Solution:
Bonafide fought the information with deep and clearly orchestrated facts through numerous channels and endpoints.

Outcome: Recommendation Score grew from 52% in April 2025 to 74.27% by February 2026 —

43%

improvement

Bonafide

Thank You

Contact:
Layton Han, CEO
layton@bonafide.ai



PLUG AND PLAY

Sv summit

STARTUP PRESENTATION

LIVEX.AI

LiveX AI

LiveX AI delivers one human-like AI agent that connects digital, voice, and physical environments into a single, unified customer experience.

LIVEX.AI

The Future of B2C Customer Experience

Human-like AI agents that bridge chat, voice, video avatar and the physical store — built for the world's leading B2C enterprises.

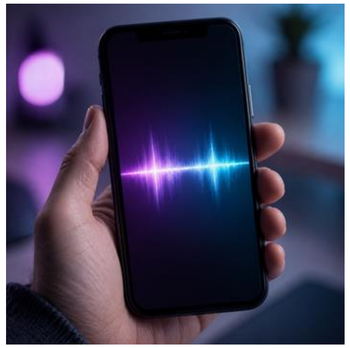
90%+	5×	25%
Self-resolution	Conversions	Retention lift



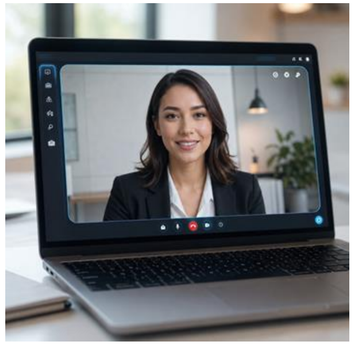
LIVEX.AI Will Take You Into the Future



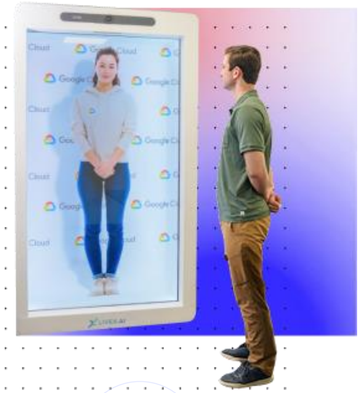
Chat
Text-first interfaces
2015 →



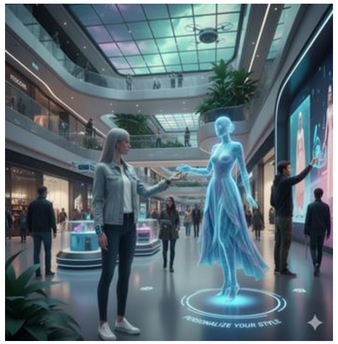
Voice
Real-time speech AI
2020 →



Video Avatar
Multimodal presence
2023 →



Physical World
In-store interaction
2025 →



Immersive World
Holographic, ambient
NEAR FUTURE

LiveX is the only company in the world with active deployments across all of these channels

LiveX AI Physical Devices are the Gateway to the digital feedback loop

Our holograms and kiosks allow customers to:

- Place orders
- Learn about products
- Escalate to human staff
- Interact in 140 languages
- Create social media content
- Onboard into loyalty programs
- Connect the eComm & in-person experience



The LiveX AI platform has already served 1B+ customers across digital channels

Businesses can use the LiveX AI Platform for:

- Live marketing activations with holograms
- Customer Support - AI Voice contact center
- Launching AI experiences via QR code
- Bridging any language barrier in any channel
- Connecting the store, app, and website
- Connecting the data feedback loop across all channels



And the results are staggering

Serving global brands across Retail, SaaS, Hospitality, Sports, eCommerce, and more…



"If you're a CX leader looking to digitize, reduce ticket volume, or boost sales, LiveX is the way to go. It's lightyears ahead in terms of product maturity, ease of use, and real AI functionality"

Kieron Wilson

Head of Customer Service @ Feit Electric

5x
Conversion On Sales

25%
Subscription Retention

90%+
Support Self-Resolution Rate

For marketing activations: LiveX Holographic AI Agents are proven on the world's biggest stages



Super Bowl LX

20+ Holograms in front of 100k+ football fans



NVIDIA GTC

20 Holograms in front of 30k+ AI experts



Puma Las Vegas Flagship Store

World's First Physical AI Concierge



San Jose Airport

Featuring Mayor Matt Mahan and Sharks President Jonathan Becher


LIVEX.AI
Take a Selfie
Breakfast Information
23
ARMAD

Thank you!



Book time to speak with
us @ LiveX.AI

PLUG AND PLAY

Sv summit

STARTUP PRESENTATION



CRWD

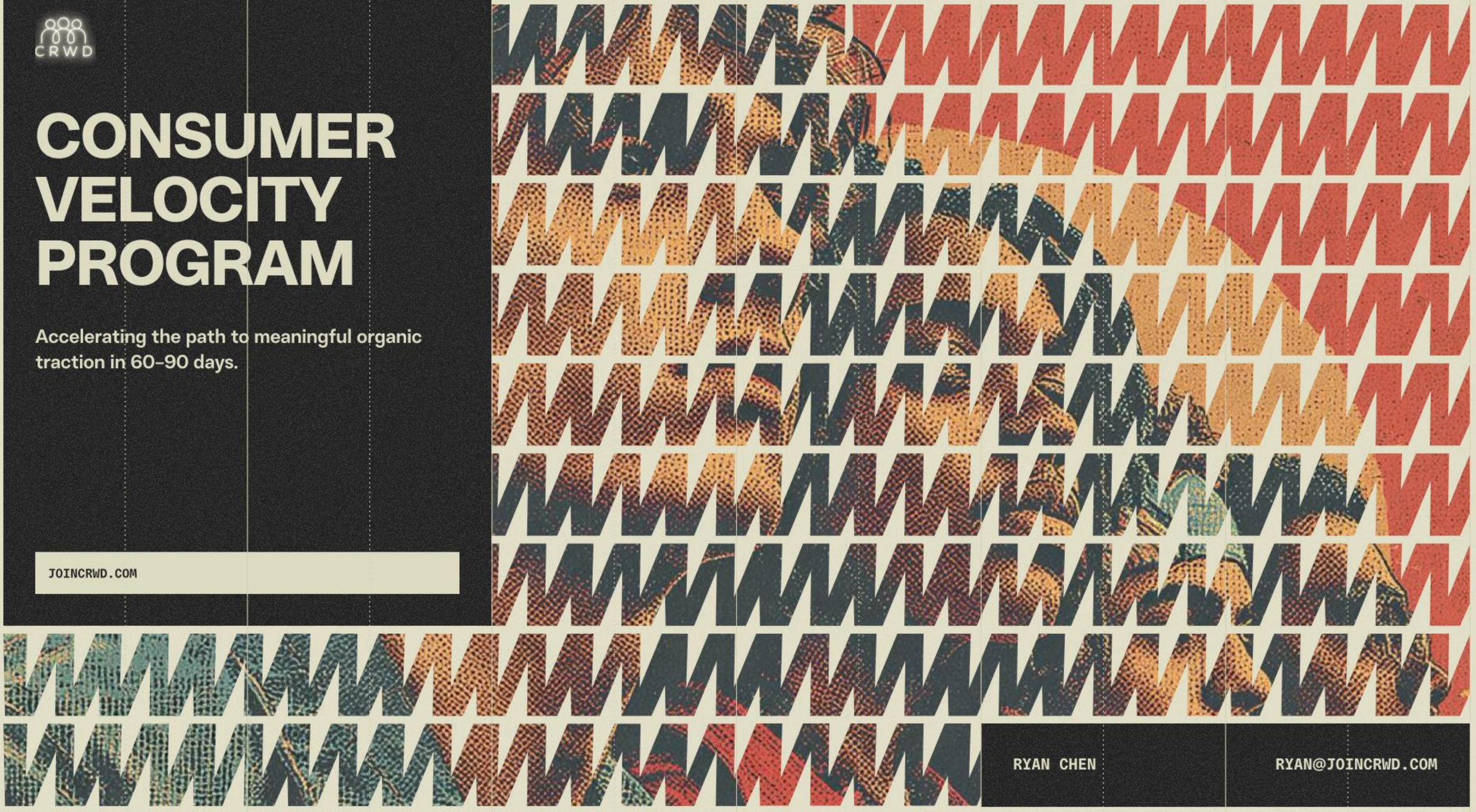
CRWD helps brands launch faster, spark buzz, and scale smarter with AI-powered consumer groups.

CRWD

CONSUMER VELOCITY PROGRAM

Accelerating the path to meaningful organic traction in 60–90 days.

JOINCRWD.COM



RYAN CHEN

RYAN@JOINCRWD.COM

ACTIVATE *REAL* CROWDS

The next-gen platform for mobilizing real consumers — driving sales, reviews, foot traffic, and authentic content at scale.

POWERED BY BY THE WORLD'S BIGGEST BRANDS AND RETAILERS

amazon · TARGET · BEST BUY · COSTCO WHOLESALE · ULTA BEAUTY · Kalshi · ATLANTIC · iHeart RADIO · WHOLE FOODS MARKET · TRUE RELIGION



CRWD

THE FUTURE OF ACTIVATION

THE SHIFT IS HERE

The gig economy is evolving. CRWD transforms how brands activate real consumers at scale.



PRECISION TARGETING

Target by zip code, demographics, age groups, and behavior to perfectly align with your brand.

BRAND SAFETY

Verified users and compliance-first approach ensures quality and trust in every activation.

REAL PERFORMANCE

Track verified purchases, reviews, foot traffic, and engagement in real-time with our portal.

3-5X
SALES VELOCITY



40%
REPEAT CUSTOMERS



500K
ACTIVE CONSUMERS

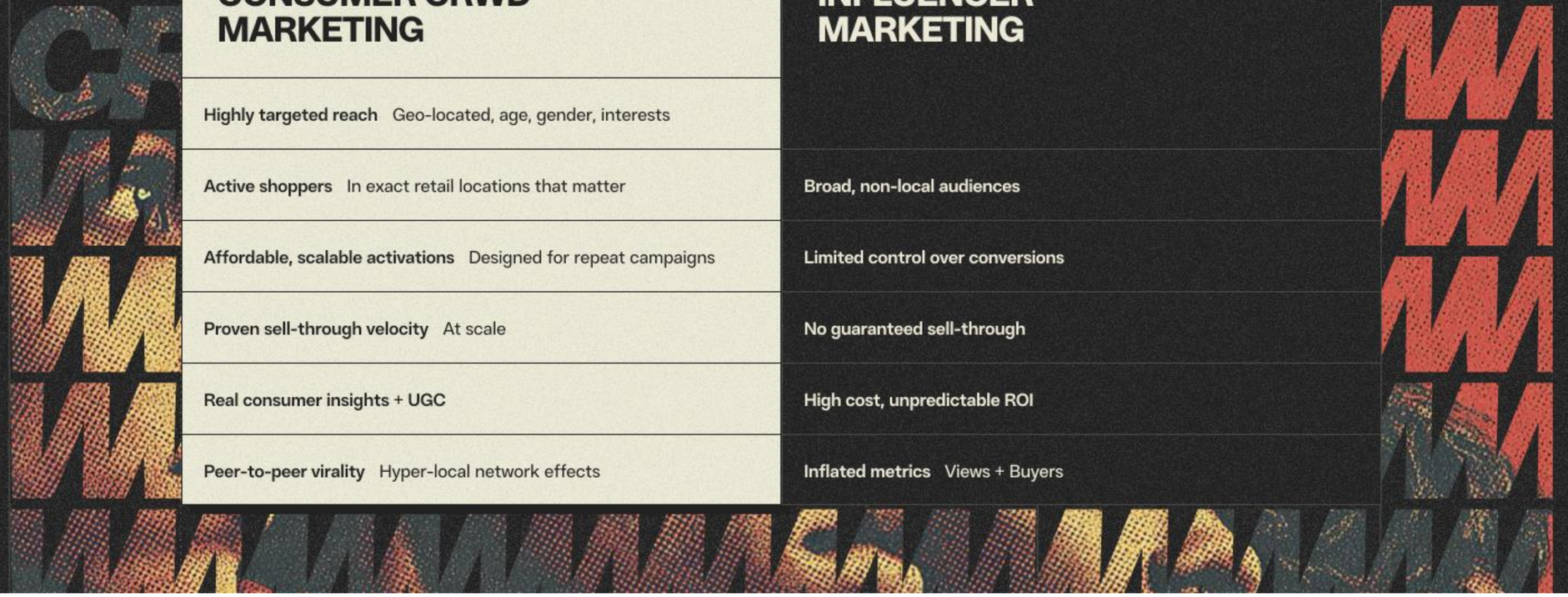


500+
LOCAL MARKETS

WHAT WE OFFER

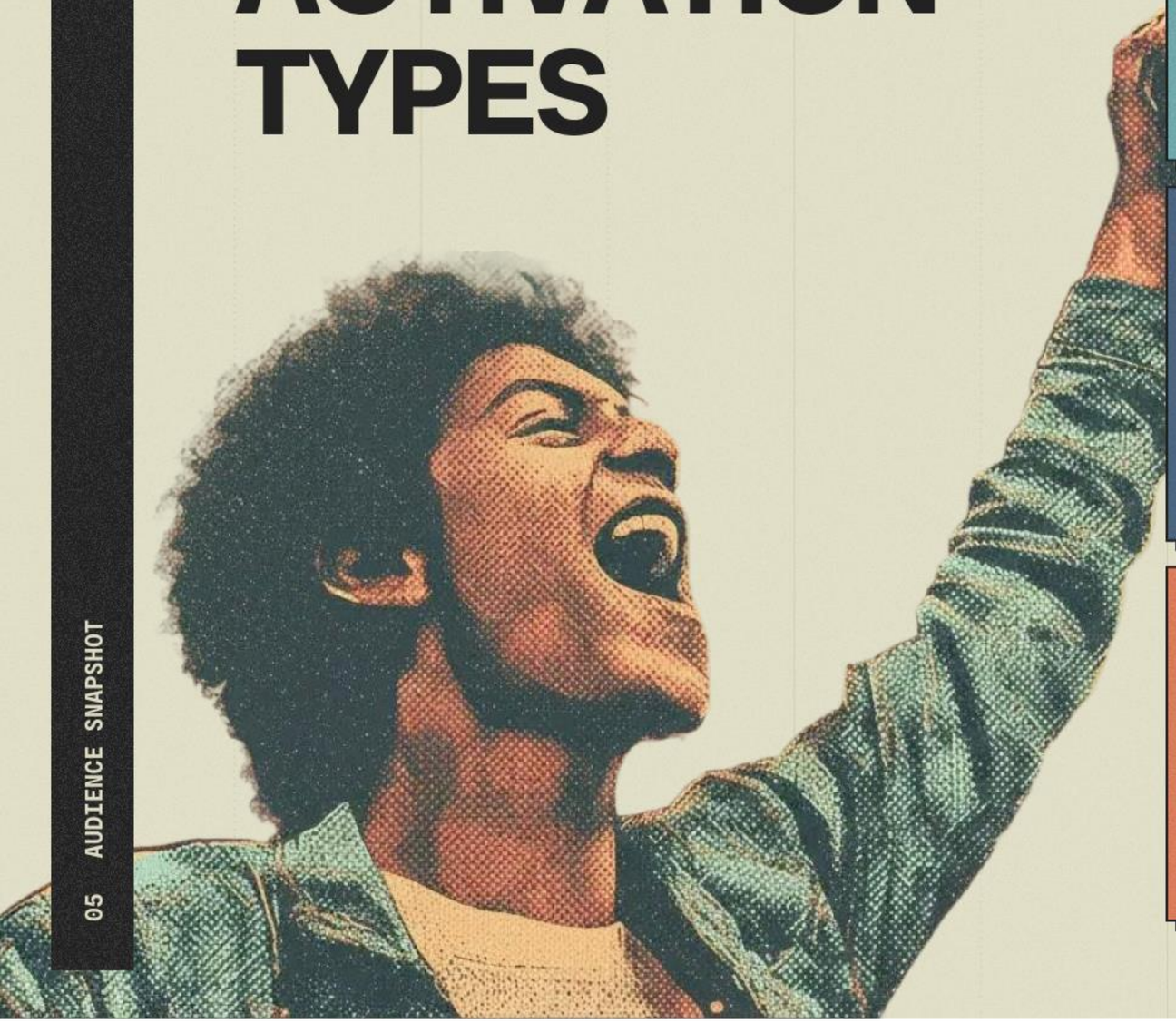
WHERE REACH TURNS INTO REVENUE

IN	OUT
CONSUMER CRWD MARKETING	**INFLUENCER MARKETING**
Highly targeted reach Geo-located, age, gender, interests	
Active shoppers In exact retail locations that matter	**Broad, non-local audiences**
Affordable, scalable activations Designed for repeat campaigns	**Limited control over conversions**
Proven sell-through velocity At scale	**No guaranteed sell-through**
Real consumer insights + UGC	**High cost, unpredictable ROI**
Peer-to-peer virality Hyper-local network effects	**Inflated metrics** Views + Buyers



WHAT WE OFFER

ACTIVATION TYPES





VERIFIED SELL THROUGH

Purchases & reviews across Amazon, TikTok Shop & DTC



REVIEW VELOCITY

Authentic reviews to boost credibility and conversions



LOCAL FOOT TRAFFIC

Real-world buzz for store launches and events.



IN-STORE SELL OUT

Drive POS data, shelf velocity, and unit movement



SOCIAL BUZZ & UGC

1,000+ micro-creators across TikTok, Instagram, Shorts.



MARKET RESEARCH

Real customer insights to validate products.

AUDIENCE SNAPSHOT

MEET THE CRWD

CRWD delivers the right audience in the right places — highly engaged consumers where purchase influence is strongest.

25%

GEN Z 16-28

Trend-driven, social first

10%

GEN X 45-60

High intent & buying power

65%

MILLENNIALS 29-44

Core purchase decision makers

80% FEMALE

20% MALE

CRWD FOR CPG & D2C

Drive sales and visibility for consumer goods by activating targeted groups within your ideal demographic to purchase, review, and create authentic content.

Transform everyday consumers into brand advocates. Thousands of real people engaging with your products in key markets — delivering measurable, verified results.

















amazon GROWTH

ACCELERATE ORGANIC GROWTH CYCLES

Accelerating the path to meaningful organic traction in 60–90 days

UP TO
40%
INCREASE IN SALES VELOCITY



2-6X
IMPROVEMENT IN CONVERSION VELOCITY



60-90
DAY ACTIVATION CYCLES



SIGNIFICANT GROWTH POTENTIAL ACROSS CAMPAIGNS

- COMPRESS ORGANIC GROWTH TIMELINES
- CONSUMER ENGAGEMENT DRIVES REVENUE
- **FAST ROI**
  2-6 month payback
- IMPROVED CATEGORY POSITIONING
- SCALABLE GROWTH STRATEGY

REAL WORLD IMPACT

IRL ACTIVATIONS

The next-gen platform for mobilizing real consumers — driving sales, reviews, foot traffic, and authentic content at scale.

- Engage local CRWDs to visit your store, purchase products, attend events, or try new services
- Schedule activation, select demographics, launch — track in real time
- Review performance and rehire top-performing CRWDs
- Rate activations, build your preferred CRWD network



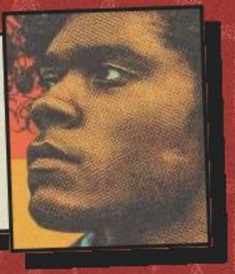
SOPHIA R.

In Austin just sampled [craft energy drink]



DEREK T.

In Brooklyn just grabbed [free concert tickets]



PRIYA S.

In LA just reviewed [vegan protein bar]



NINA K.

In Chicago just dowloaded [New Dating App]

NUTCASE

THE WEST COAST LAUNCH PLAY

CRWD activated a targeted audience of Whole Foods shoppers and non-dairy consumers across the West Coast to power the retail launch of Ninja's new almond milk line. Thousands of verified shoppers were deployed into Whole Foods locations, driving early shelf velocity, trial, and strong retail momentum during the brand's critical launch phase.



Kalshi

FROM FLYERS TO FRONT PAGE NEWS

Kalshi partnered with CRWD to ignite one of the most talked-about street activations in New York City. With less than 24 hours to mobilize, CRWD deployed thousands of flyers across the Lower East Side promoting a free $50 grocery giveaway. By the next morning, the campaign exploded across social media, drew more than 4,500 people to the activation, and generated national news coverage. What started as a grassroots flyer drop became a viral cultural moment that turned city buzz into real-world turnout at massive scale.





juni
for a happy mind

CREATOR ENERGY MEETS RETAIL GROWTH

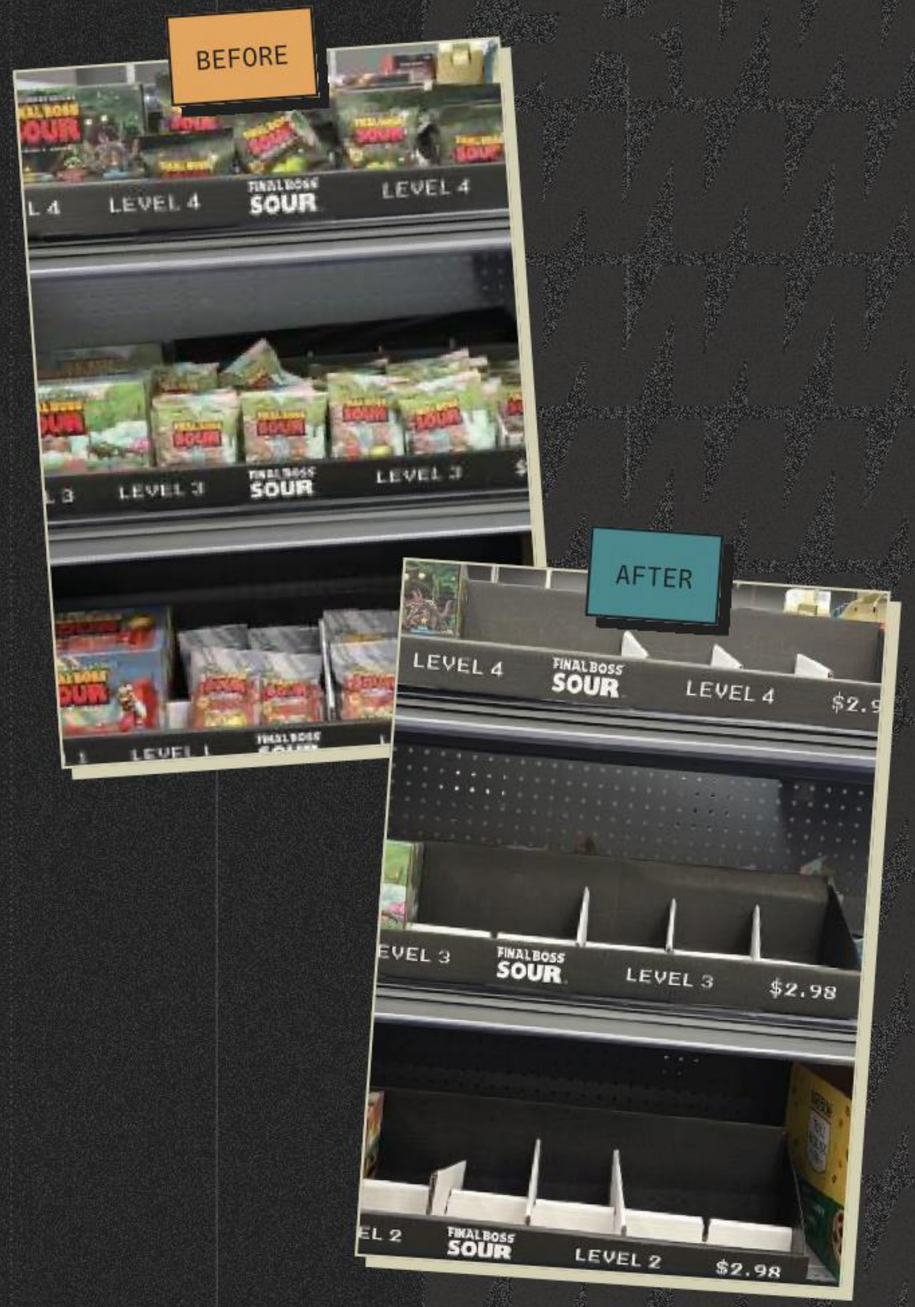
CRWD partnered with Jay Shetty's wellness brand Juni to fuel rapid retail expansion across Sprouts and Target locations nationwide. By activating health-focused consumers and creator communities, the campaign drove product discovery, in-store purchases, and strong retail traction across key markets.



FINAL BOSS SOUR

FROM TIKTOK HYPE TO WALMART SHELVES

After helping Final Boss Sour become the #1 sour candy brand on TikTok, CRWD mobilized thousands of sour candy fans nationwide to drive demand inside Walmart locations. The activation converted viral social buzz into real-world purchases, accelerating sell-through and establishing national retail momentum.



JOINCRWD.COM

READY TO SCALE?

Join leading CPG brands and enterprise marketers who trust CRWD for verified sell-through and real performance.



RYAN CHEN

RYAN@JOINCRWD.COM

PLUG AND PLAY

Sv summit



CLOSING REMARKS

Robert Grey

Director, Sustainable Future

Plug and Play

#PNPTCSiliconValley

Join us at pnptc.com

PLUG AND PLAY

Upcoming Events

Topeka Pitch and Putt Tournament & Expo
May 27-28 | *Topeka*

Selection Day & Batch Kickoff
August 25-26 | *Minneapolis*

Mining Roundtable
September | *Phoenix*

INX Innovation Day
October 19 | *Chicago*

Join us at pnptc.com

PLUGANDPLAY

Sv summit

Brand & Retail EXPO!

The Future of Agentic Commerce

How AI is Changing the Consumer Journey

Changing Build vs Buy Dynamics



SPEAKER

Terrence Cush

VP of Corporate Development

Revolve

PLUGANDPLAY

Sv summit



CLOSING REMARKS

Saeed Amidi

Founder & CEO

Plug and Play Tech Center

#PNPTCSiliconValley

Join us at pnptc.com

PLUGANDPLAY

Sv summit

Saeed’s innovators award



Sameer Talsania

Food & Beverage

For your support and partnership working with Plug and Play over the years.

PLUG AND PLAY

Sv summit

THANK YOU FOR ATTENDING

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PLUG AND PLAY

Sv summit

Lunch

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