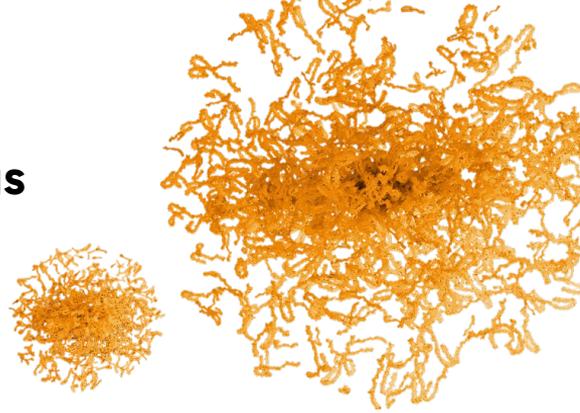


MASSBALANCE

We liberate therapeutics from gravity.

The problem: “unruly”* proteins block life-saving drugs



Protein based biologics are wonder drugs against diseases like cancer that will afflict 1 in 2 of us in our lifetimes (CRUK)

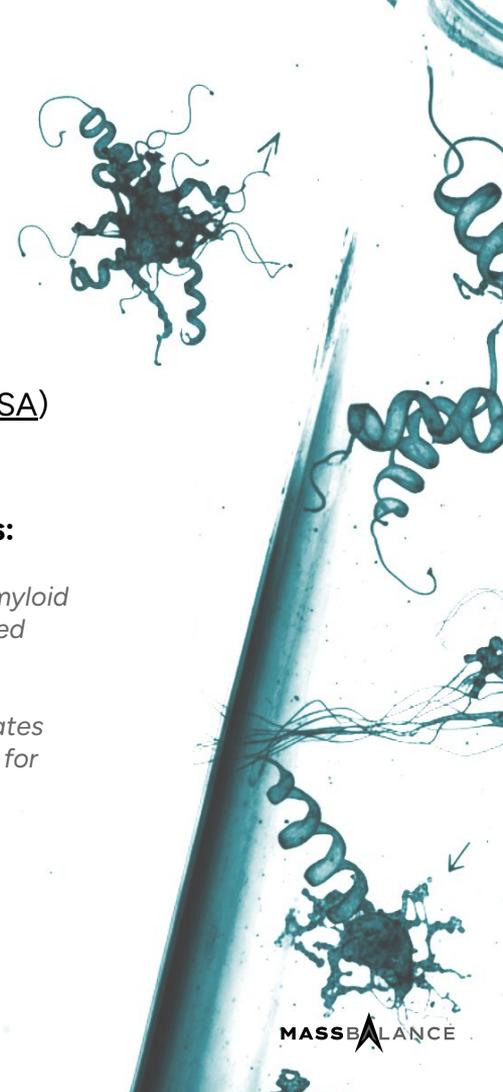
But despite modern techniques, **difficult-to-express protein biologics yields drop >10X (FEBS)**

And historically undruggable diseases remain elusive (Nature), with only 3% of human proteome targeted by drugs (ICR)

Contributing to **>90% of drugs failing to reach patients and market (Acta Pharm) & \$50-60Bn pa lost on failed oncology drugs alone (JAMA)**

*That misfold and aggregate, have low binding affinity or secretion issues, disordered regions, and structural instability.

Our solution: taming “unruly” proteins with microgravity



Microgravity creates profoundly quiescent fluid states that may significantly enhance drug development assays and manufacturing.

No sedimentation. No buoyancy.
No convection. Diffusion limited.
No impact from intrinsic weight. ([NASA](#))

Enhance manufacturability:

• Rescue failed biologics leads and programs ([IJBM](#)) suffering from structural stability and quality.

• Of fabricated nanoparticles for drug delivery from longer free particle orientation ([ISSNL](#)).

Accelerate cycle time:

• Reduce noise, eliminate false positives, increase resolution and predictive validity ([Drug](#)).

• Accelerated aging cell biology and gene expression stress response ([IJMS](#)).

Unlock new disease targets:

• Misfolding intermediates like amyloid proteins in Alzheimer's from slowed amorphous aggregation ([ACS](#)).

• Disordered protein transient states with altered topology navigation for protein folding ([Nat](#)).

Historically, biology + new physics = breakthroughs.

Our product: unlocking new design space for biologics in microgravity

➤ **Product & assay optimisation:**

Gravity is a variable on our high-throughput platform - MB-X series

➤ **Unique data and insights:**

The first microgravity protein expression database - HI-PROT

➤ **Models with an unfair advantage:**

Microgravity enhanced folding and stability AI prediction - SpaceFold

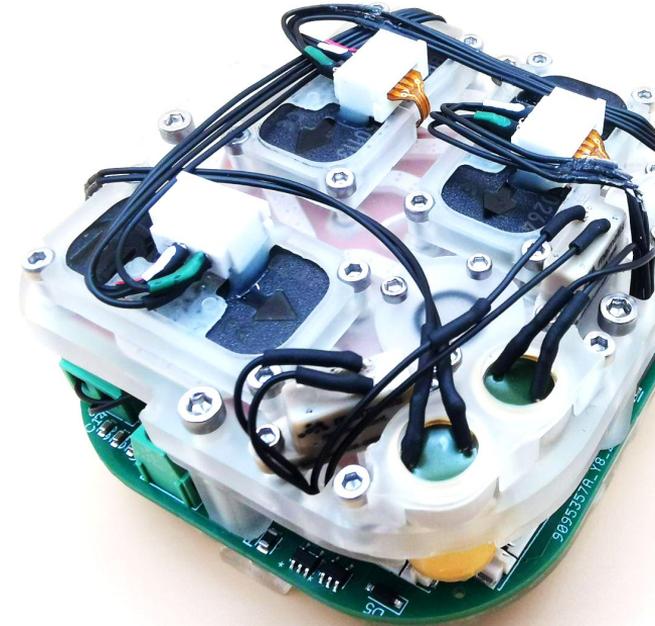


Image: MB-X1b POC

We're biologists who "get" space



Toby Call, PhD
Co-founder (CEO)

- Space-bio obsessed for >10 yrs
- Previous co-founder @ Hurdle
- Oxford | UCL | Cambridge
- International Space Uni '15
- UKSA Accelerator '24



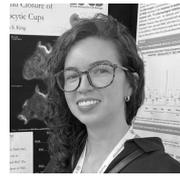
Vishnu Srinivasamurthy, PhD
Co-founder (CSO)

- Mission to challenge biology
- Developed multi- $\$$ Bn product
- FabricNano | Enzymicals AG
- 4x patents, 8x PCT and 5x pub
- RVCE | FAU | Greifswald



Ecem Badruk,
Commercial Lead

- Space-bio BD professional
- Bioconnexus Capital | NovoArc | Prometheus
- Austrian Space Forum
- Tissue eng. @ Vienna



Ana Paula Guevara-Cerdan, PhD
Research adviser

- Cell & Mol Bio @ Sheffield
- WGM NASA GeneLab
- American Society for Gravitational Research
- International Space Uni '25



Daniel Campbell
Adviser

- UK MD Space Pharma.
- Tech/space growth leader
- 20+ yrs in tech leadership
- Growth leader in multiple acquired companies



Dr. Rer Nat Habil Gilles Bailet
Adviser

- Lecturer in Space Tech, James Watt School of Engineering, Glasgow
- Leader in in-space manufacturing + bio payloads



Prof. Martin Braddock
FRSB, FRAS
Adviser

- Royal Society Fellow at University of Oxford
- >30 years in pharma bringing multiple drugs to market.
- Head of Disease Sciences at Glaxosmithkline
- Global Product Leader at AstraZeneca
- Adviser to Satellite Catapult



Values = We are 'kind killers'. Grounded in empathy, ruthless in execution.

We built our first payload in <3 months

Mission 1: MB-X1 - POC first whole cell biocatalysis in orbit



✓ Q3 25: MB-X1 Ideation to build in UK to integration in <3 months



✓ Q4 25: Bengaluru lab + cells engineered



✓ Q4 25: Bio-payload integration + testing in Delft



> Q2 26: launch on SpaceX Transporter 17. Test cell viability, growth, recombinant enzyme function, 3D printed millifluidics.

Mission partners:

Rapid Fluidics
Shaping the Future of Microfluidics

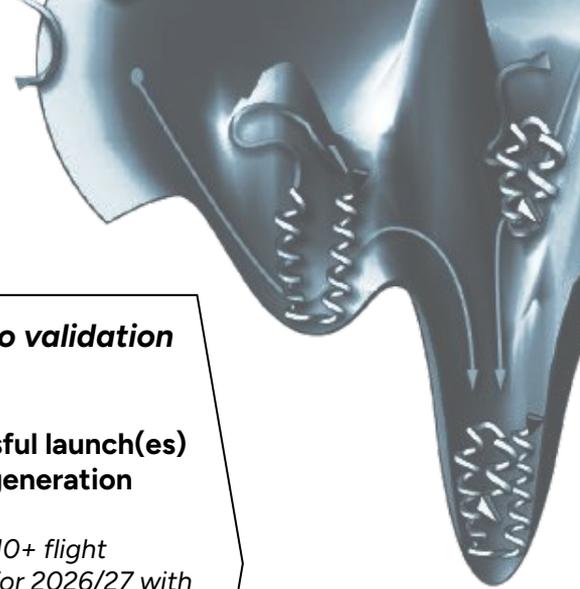
ATRIA UNIVERSITY

Enzymical
Enzymes | Chemicals | Solutions

TUMBLEWEED
µG

SPACEX **INNOVIAN SPACE**

We set the pace & proved a founding biotech team can build space hardware.



Now executing Mission 2

Mission 2: MB-X100 - Hi-throughput MVP demo + systematic biologics portfolio validation

Customer discovery under way

To design in-space analytics package & secure first customers

Intentionally select flight projects

Blend portfolio with high risk/reward + lower risk to value generation to unlock markets

Assemble bioprocess + space workflow

Design + build + test orbital platform, ground twins, ground bio process lab

Successful launch(es) + data generation

Already 10+ flight options for 2026/27 with freeflyer platforms and stations

Freeflyer/downmass and CLD partners in discussions:



TUMBLEWEED
µG



OUTPOST

ATMOS



reditus



ORBITAL
PARADIGM



genesis



symphony
space



starlab



VAST

In biopharma good data + solid science wins trust wins contracts wins the market.

Why now is the time to operationalise biologics in space

Building on >50 years of molecular sciences in space ([Frontiers](#))

Neural stem cells on the ISS
(NASA)

Miniaturised bioanalytical tech now available ([AnaChem](#))

Lab tech evolving from automation to autonomy ([GenEng](#))

10+ major biopharma known to have space programs ([DrugDev](#))

MERCK AMGEN AstraZeneca
Bristol Myers Squibb Eisai Lundbeck Lilly
GILEAD Johnson&Johnson >20K biopharma globally

Launch commoditised at \$2K-5K/kg and dropping +
freeflyer/downmass supply spike in 2-3 years ([FIS](#))

BLUE ORIGIN SPACE X isar aerospace ATMOS VAST
ORBITAL PARADIGM Reditus

FDA now engaging with space organisations seriously ([FDA](#))

Pembrolizumab protein crystals
grown on the ISS (right) vs
ground (left) (NASA)

Biologics IRR dropping to 4.1% in 2025 - biopharma must
innovate to cut cycle time & manufacturing ([ClinLead](#))

\$2.2Bn av. development costs



"Every biopharma company needs its space portfolio."

Professor, Astraeus Space Institute

TAM
\$350Bn

35% of next gen biologics (beyond mAbs)
estimate of global biologics market in 2032

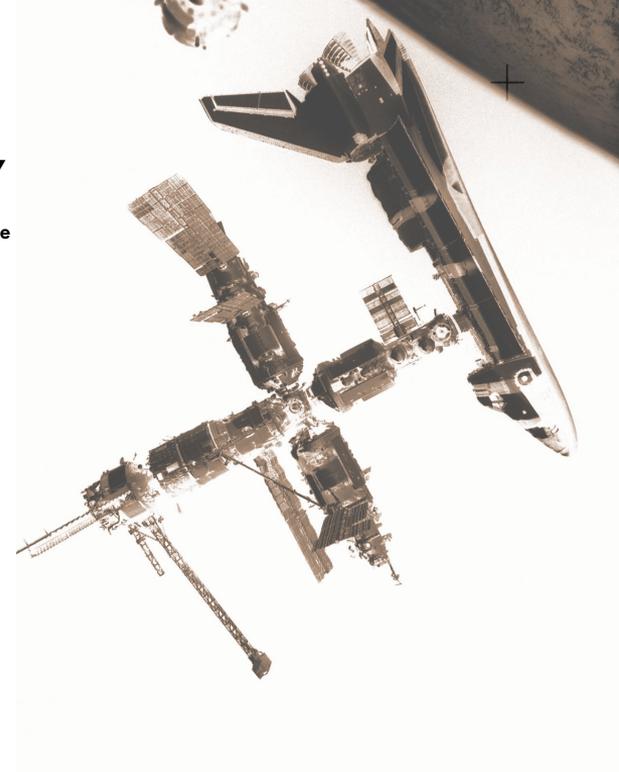
Global biologics market: \$412.38Bn
2023, CAGR of 10.49% to \$1Tn by 2032

SAM
\$21Bn

5000 biopharma customers
average \$4.2M each. Drug
discovery services market.

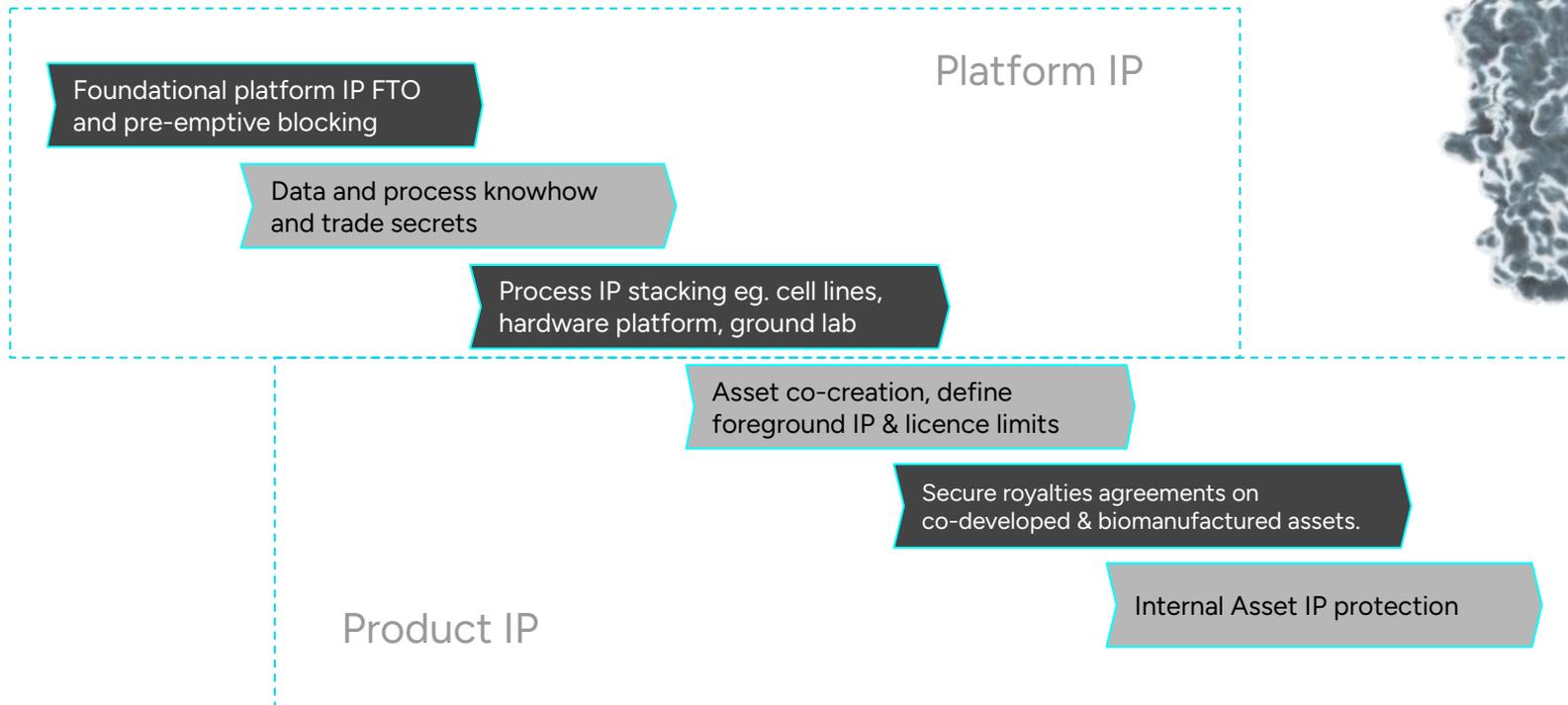
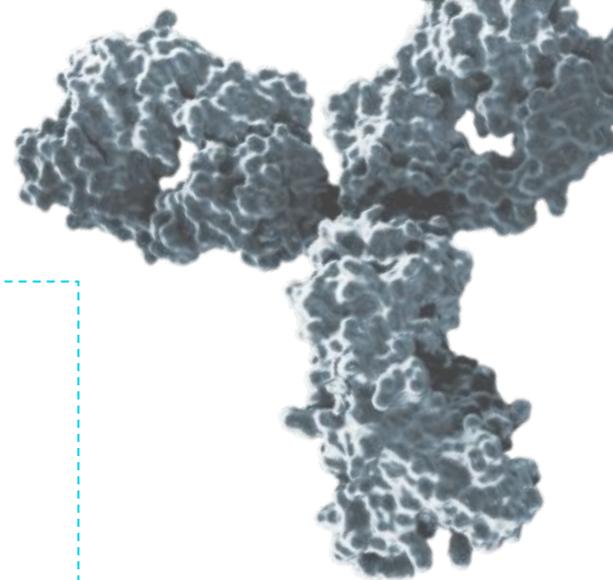
SOM
\$200Mn pa

Capturing est. 2% of value of
5 drugs to market at \$2Bn
each.

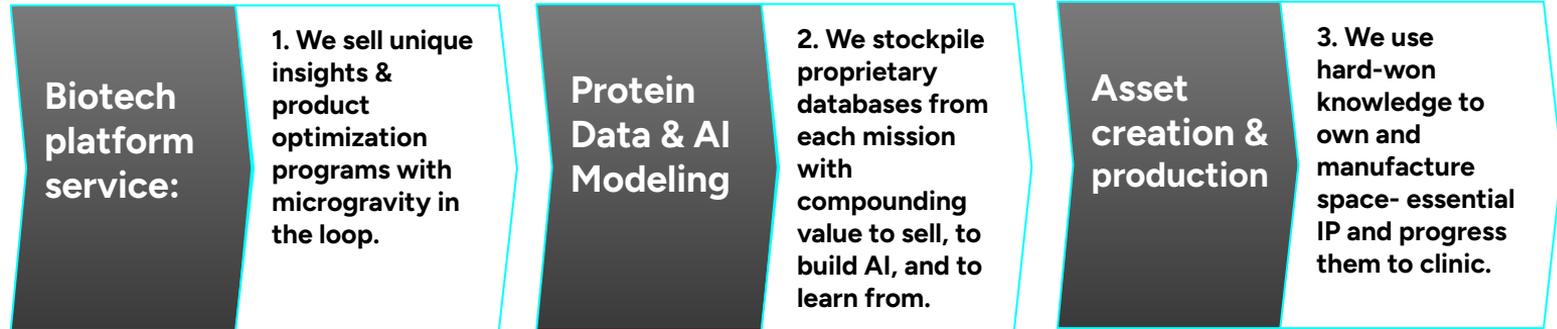


Space Shuttle Atlantis STS-71 docked with MIR on July 4th 1995. A golden age of space life sciences research underpinning industrialisation today. (NASA)

Our IP strategy covers space and biotech



Going to market platform-first unlocks data then manufacturing revenues



Validation partners:

UNIVERSITY OF CAMBRIDGE

PROTEOSTASISUK

Biotech SMEs:

eascra BIOTECH

AMINOVERSE ALL ABOUT ENZYMES

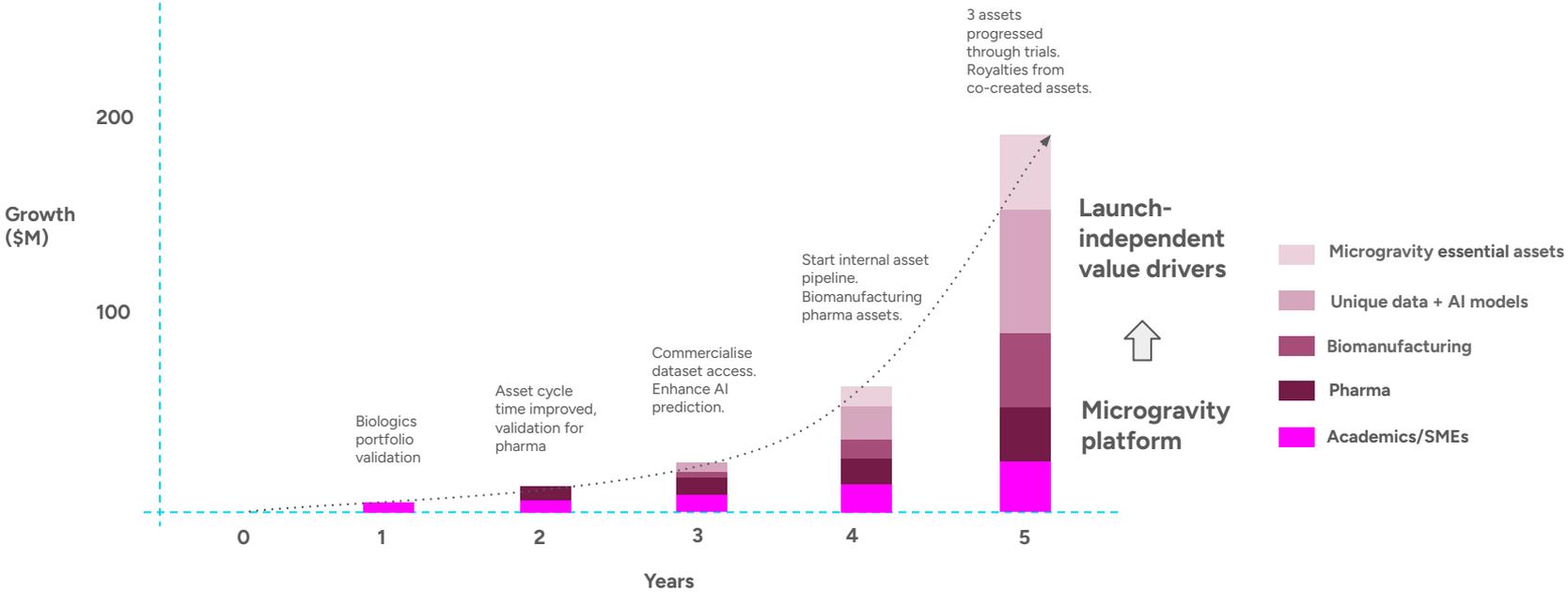
hephaistos bio

Industry partners:

ZETA

“We like that you are bioscientists, not satellite engineers trying to do biology.” - Mission 2 biologics portfolio partner

We see growth from compounding value generated on each flight



Our USP: we're biologists seeking deep biotech IP with space hardware

	Mass Balance	BioOrbit	Exobiosphere	LinkGevity
Microgravity application	✓ Upstream - discovery, protein expression, folding & stability	✓ Downstream formulation - protein crystallisation	✓ Drug screening assays, pre-clinical	✓ Accelerated aging screens for small molecules
Orbital hardware	✓ High-throughput cellular expression & biophysics platform	✓ Scale-up crystal manufacturing platform	✓ High-throughput in-vitro screening platform	✗
Team biotech heritage	✓	✗	✗	✓
Data/AI strategy for microgravity	✓	✗	✗	✗
Hit ID for challenging targets	✓	✗	✗	✗
Biomanufacturing optimisation (cell lines + proteins)	✓	✗	✗	✗

Why we win

We speak the same language as our market.

We've proven we move fast. For us success ∞ rate of compounding learning

We're creating value beyond a platform - we see far reaching potential for space biotech

Our ask

We are raising \$3.4M to move fast and complete Mission 2

- **Create the first microgravity protein expression & folding data packages**
- **Generate the first microgravity binding assays for misfolding & disordered targets**
- **Unlock pharma & AI customers by validating microgravity biologics portfolio**



Join us on our mission to elevate biology.

Contact: toby@massbalance.bio