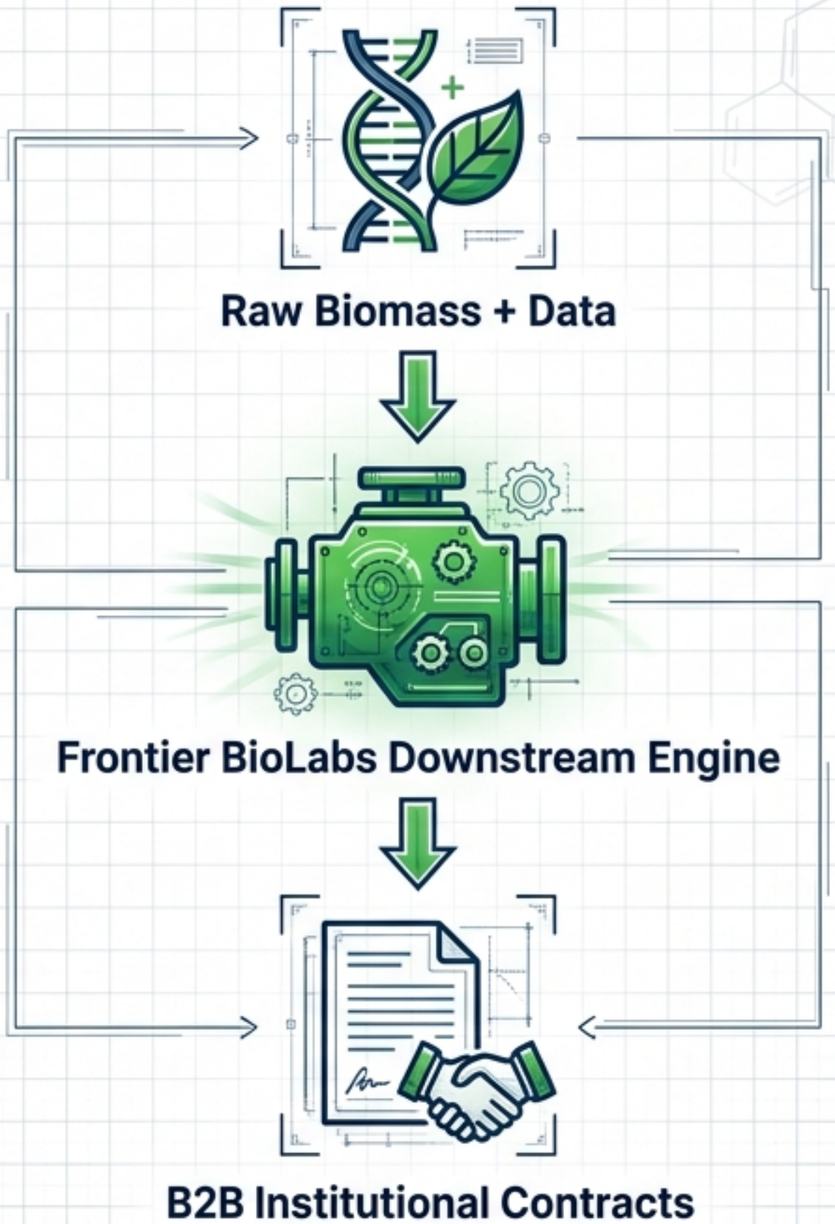
EXECUTIVE SUMMARY

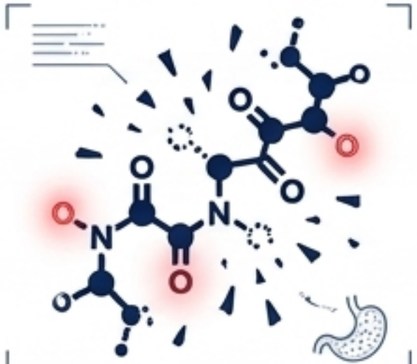
- **The Problem:** Biopharmaceutical developers face high barriers executing multi-agonist clinical trials due to gastric degradation, poor oral bioavailability, and prohibitive purification costs.

- **The Solution:** Frontier BioLabs engineers advanced downstream multi-peptide ratio matrices, transforming unpurified botanical yields into standardised, room-temperature stable oral capsules.

- **The Opportunity:** Raising £650,000 to finalise processing algorithms, establish independent HPLC quality control loops, and acquire initial B2B institutional clients under an asset-light framework.



SYSTEM FAILURE DIAGNOSTIC



GASTRIC DEGRADATION

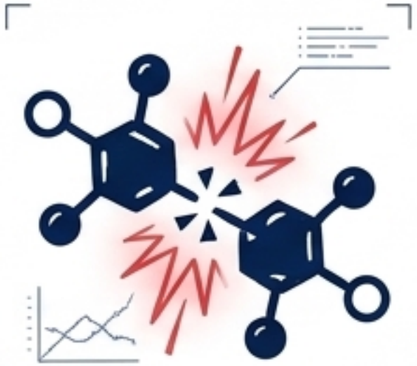
Standard linear peptides possess poor oral bioavailability, degrading rapidly in destructive stomach acids and protease enzymes.

FRAGILE COLD-CHAIN

Liquid injectable variants require continuous, uninterrupted refrigeration. Thermal drops cause rapid molecular denaturing and massive spoilage.

INDUSTRIAL PURIFICATION COSTS

Traditional chemical synthesis demands intensive column chromatography to remove host cell impurities—accounting for up to 80% of biological manufacturing costs.



CROSS-MOLECULE INSTABILITY

Combining distinct peptide sequences into a single liquid compound alters secondary structures, creating severe baseline drift and unstable dosing.

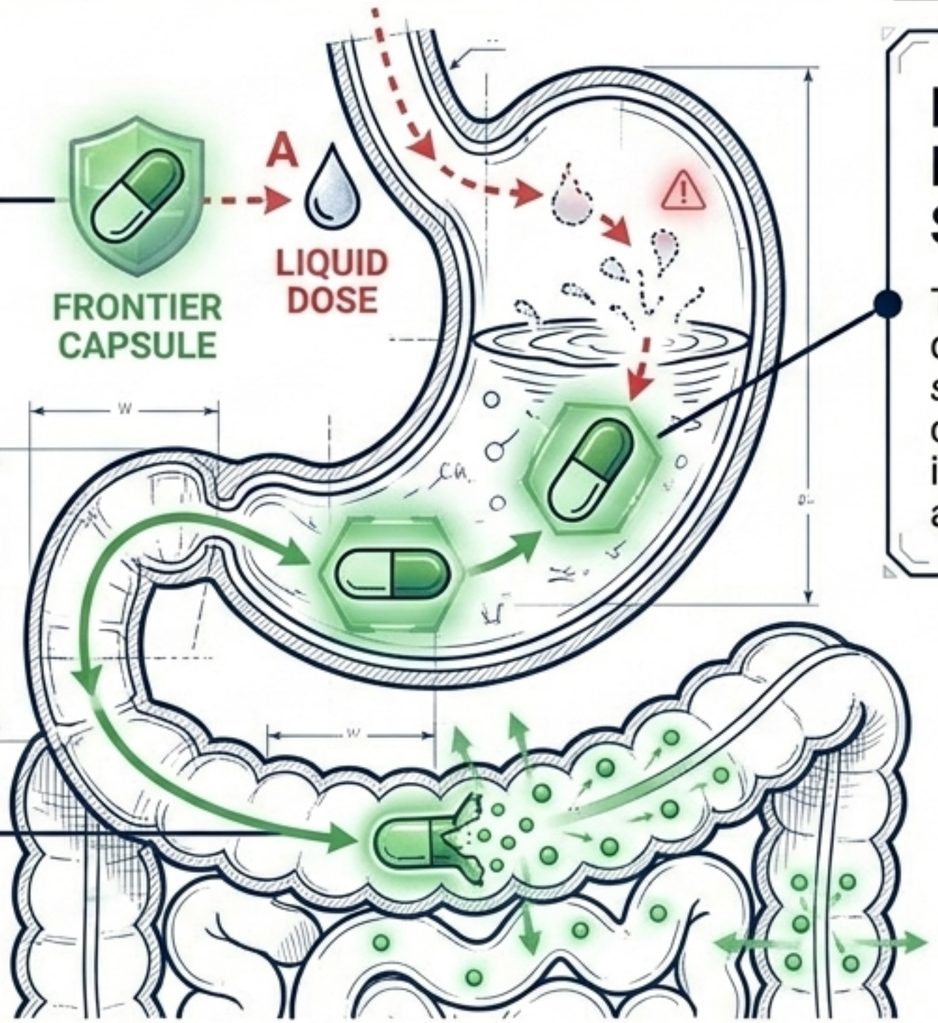
LEGACY VS. FRONTIER DIAGNOSTIC TABLE

	Traditional Custom Synthesis	Frontier BioLabs Platform
Delivery Format	Liquid Injectable	**Dry Oral Capsule** ✓
Temperature Tolerance	Fragile Cold-Chain Dependent ⚠	**Room-Temperature Stable** ✓
Purification Overhead	Intensive Chromagraphy Resins	**Zero-Purification Bioencapsulation** ✓
Multi-Molecule Stability	High Baseline Drift ⚠	**Blending Matrix Protected** ✓

THE GASTROINTESTINAL JOURNEY MAP

1 DOWNSTREAM ENGINEERING

Proprietary calibration matrices balance exact milligram distributions, eradicating cross-molecule degradation within the dose.



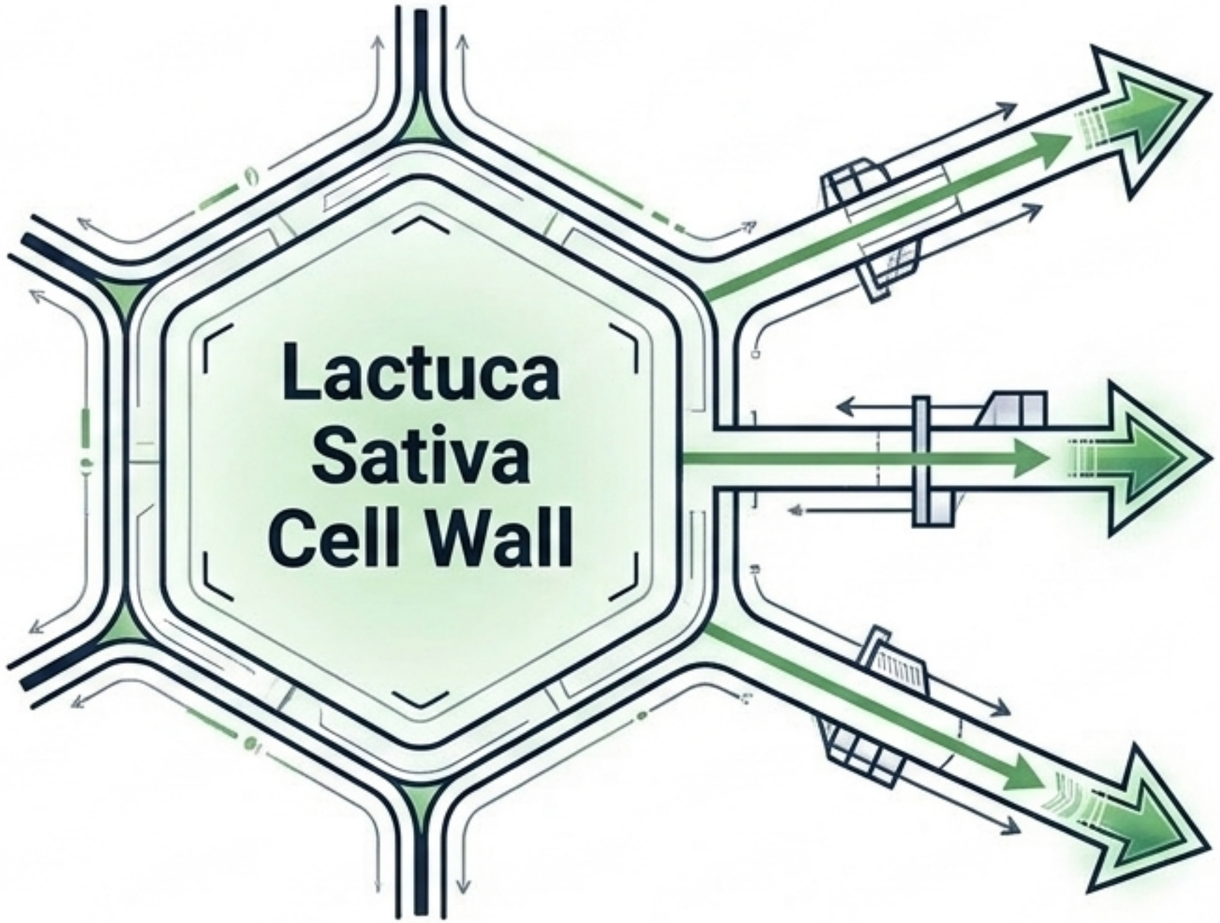
2 BOTANICAL BIOENCAPSULATION SHIELD

Target sequences are housed directly inside food-grade *Lactuca sativa* cellular structures. Natural cellulose cell walls act as an impenetrable micro-capsule against gastric acid.

3 DIRECT INTESTINAL DELIVERY

Intact plant cell walls traverse the stomach and safely release highly bioavailable molecules directly into the lower GI tract.

The Multiplier Effect of the Cellulose Shield



BIOCHEMISTRY VECTOR

Acts as a **natural enteric coating**, bypassing gastric breakdown without synthetic chemical additives.

LOGISTICS VECTOR

Shields the multi-peptide compound from environmental fluctuations, achieving **"True Cold-Chain Elimination"** for long-distance shipping.

UNIT ECONOMICS VECTOR

Uses a completely food-grade host free of tobacco alkaloids, fundamentally **bypassing the 80% industrial purification budget** traditional to legacy synthesis.

THE MANUFACTURING PIPELINE

Downstream Formulation Pipeline (Frontier BioLabs)

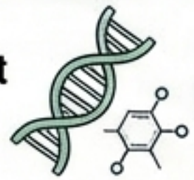
STEP 4:
Downstream Ratio Formulation (Fluid-cooled micro-milling).

STEP 5:
HPLC Calibration & Verification (Onboard analytical tracking).

STEP 6:
Encapsulation & Fulfillment (Mechanical tamping into Size-00 vegetarian units).

Upstream Expression Contract (Solaris Biolabs at WOSSP)

STEP 1:
Sequence Target Mapping (DNA vectors).

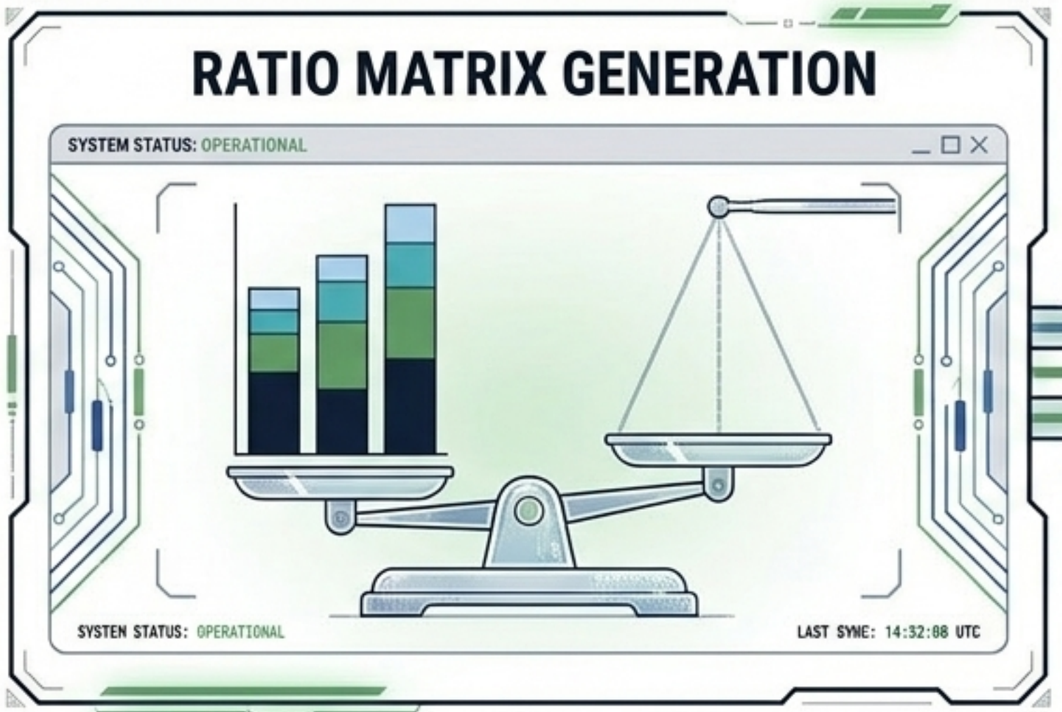


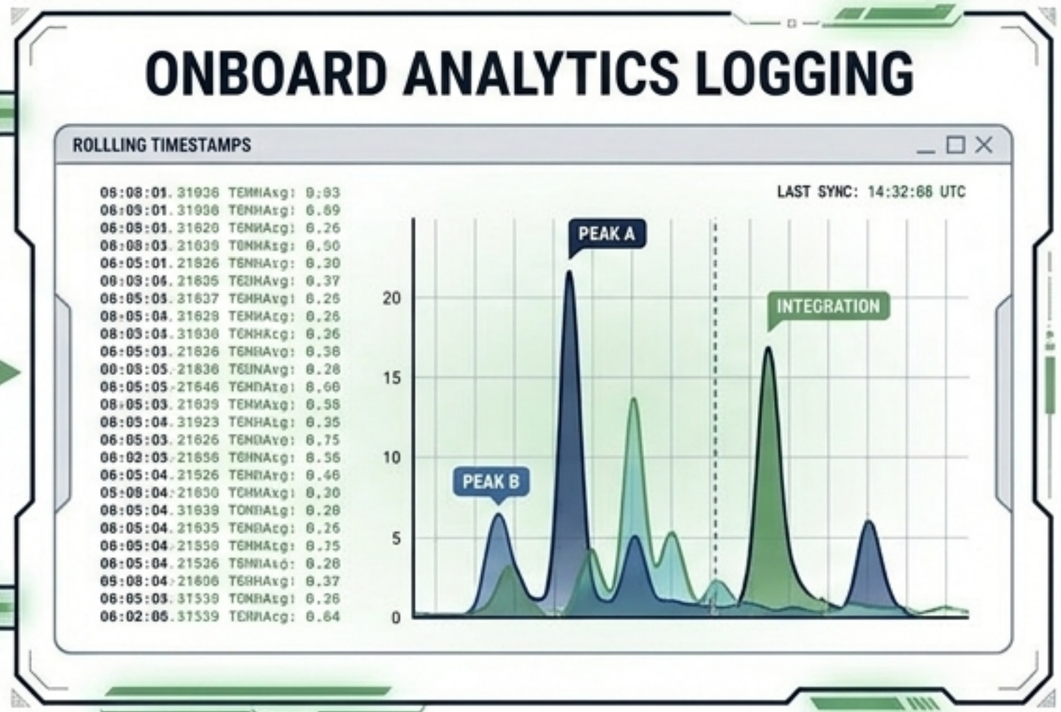
STEP 2:
Apoplastic Leaf Infiltration (Vertical cultivation of lettuce hosts).

STEP 3:
Low-Temperature Lyophilisation (Vacuum freeze-drying).

INSIGHT: Frontier maintains zero agricultural liability, operating purely as a downstream intellectual property and formulation vehicle.

THE BIOINFORMATIC PLATFORM INTERFACE





RATIO MATRIX GENERATION

Digital bioinformatic environment allowing institutional researchers to input custom target chains and generate mathematically balanced milligram distributions per unit.

ONBOARD ANALYTICS LOGGING

Integrated tracking systems physically connected to the in-house High-Performance Liquid Chromatography (HPLC) suite to standardize, record, and verify exact batch-by-batch dose metrics.

INSTITUTIONAL TARGET PROFILES

Contract Development & Manufacturing Organisations (CDMOs)

Profile:
Clinical-stage biotech firms and academic research consortiums.

Use Case:
Utilizing standardised oral capsules to accelerate preclinical validation profiles and compress multi-agonist development timelines.

International Procurement Networks & Public Health Groups

Profile:
Global health ministries and Non-Governmental Organisations (NGOs).

Use Case:
Securing room-temperature stable, needle-free therapeutic alternatives for remote or resource-limited field clinics.

REGULATORY & FINANCIAL ASSURANCE

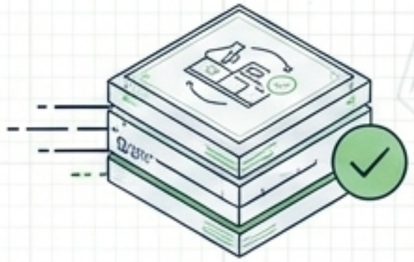
Seeking a maximum of **£650,000** under a combined SEIS/EIS share issue.

100% of proceeds deployed directly into active qualifying technology-led R&D trade under small companies regime.

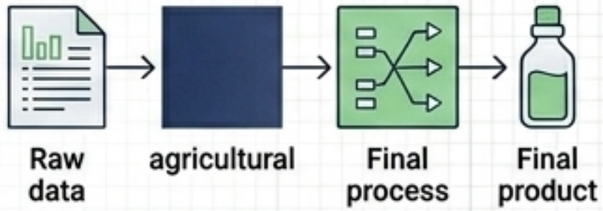
Ordinary, full-risk equity shares.

THE PARADIGM SHIFT

Zero Legacy Debt:
Structured as a highly lean, asset-light intellectual property vehicle.



100% Downstream Focus:
Bypassing agricultural overheads entirely to focus on formulation and data.



Commercializing Biology:
Replacing 80% industrial purification costs with natural, elegant botanical engineering.