



Working to build a sustainable future  
with **continuous bioprocesses**





## uFraction8 *overview*

uFraction8 developed an industrially scalable bio-separation instrument that **helps to produce more biomass from the same infrastructure, with less energy and cost** and to solve the problems with harvesting and processing of cell cultures, starting with microalgae and cultivated meat and developing into other cell-based productions such as precision fermentation, cellular agriculture and bio-pharma.

uFraction8's technology is ready for final tests and commercialisation.

# Problem ○

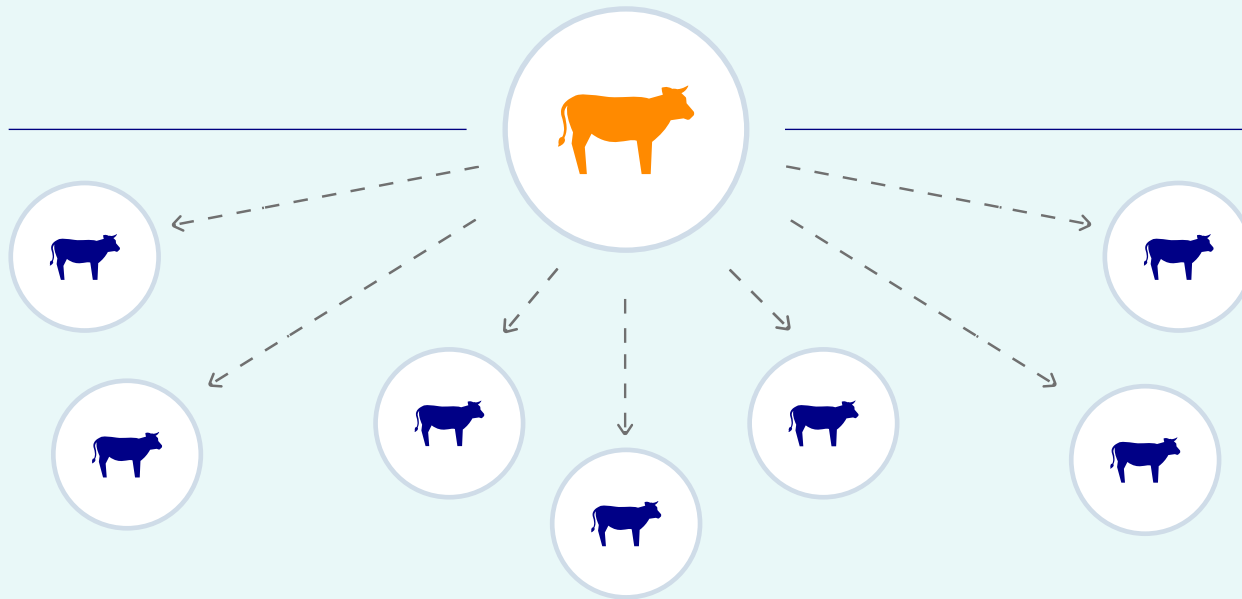
More food is needed to feed world's growing population.

Cattle farming takes up **half of the land** in the U.S.

Livestock already causes **14.5% of greenhouse gas** emissions.

The **world needs an alternative** to feed the world, **sustainably**.

Cultivated meat is an **excellent solution** but **doesn't scale** economically.



*Although there are dozens of cultivated meat companies around the world, none have yet reached commercial-level production in terms of scale or cost”\**



*“Production costs for cultivated meat today remain well above those of conventional animal protein.”\*\**

McKinsey  
& Company

\*Good Food Institute Cultivated Meat Overview, accessed March 2023: <https://gfi.org/cultivated/>

\*\* “Cultivated meat: Out of the lab, into the frying pan”, McKinsey & Company Report 2021

## Problem <sup>o</sup>

Lab-grown  
meat offers\*

**96%**

less water use

**87%**

fewer greenhouse  
gas emissions

**90%**

less land use

BUT

The cost is currently prohibitive, both for media and production.

Many companies are focusing on lowering the media cost.

**But only one has focused on developing the technology enabling companies to dramatically intensify their lab-grown meat production.**

\*Environmental Impacts of Cultured Meat Production, Hanna L. Tuomisto and M. Joost Teixeira de Mattos  
Environmental Science & Technology 2011 45 (14), 6117-6123, DOI: 10.1021/es200130u

**uFraction8<sup>o</sup>**

## Continuous production:

the Holy Grail of the cultivated meat industry

### Continuous production

Continuous Perfusion filters in pharma deliver up to 10x more biomass but max out at 500L



uFraction8 can deliver up to 10x more biomass at 10,000+ litre scale by enabling continuous manufacturing



Lab

Industrial

Cultivated meat companies are currently proving their products in small-scale batches



Current fed-batch approach has reached limits of scale



Batch



## Introducing **uFraction8**

uFraction8  
technology enables  
cost-effective scale-up

### Continuous production

uFraction8 delivers up to **10x biomass output** on the same equipment in the same time\*

### Unlocking scale

uFraction8 can **increase production volume by 20x** from 500L to over 10,000L.

### Cost reduction

The potential for unlocking scale and continuous mode results in substantial increase in capex efficiency and hence cost reduction

\* Bruno D. Fernandes, Andre Mota, Jose A. Teixeira, Antonio A. Vicente, "Continuous cultivation of photosynthetic microorganisms: Approaches, applications and future trends", *Biotechnology Advances* 33 (2015) 1228–1245; Jason Walther, Jiuyi Lu, Myles Hollenbach, Marcella Yu, Chris Hwang, Jean McLarty, and Kevin Brower, "Perfusion Cell Culture Decreases Process and Product Heterogeneity in a Head-to-Head Comparison With Fed-Batch", *Biotechnology Journal* 2019 Bioreactor Image credit: Good Food Institute (GFI) Media Kit



## Introducing **uFraction8**

uFraction8  
technology enables  
cost-effective scale-up

### **Proof of concept**

uFraction8 has developed this technology alongside industry partners, and is **already testing with cultivated meat companies.**

### **Market leaders**

**uFraction8** is the only technology company innovating to enable large scale continuous perfusion culture

**45 days** continuous operation

**1000's** of litres of culture

**Viability** of mammalian cells

**Selective capture** of cell aggregates demonstrated

## Patented technologies

1. To separate spent media from cellular biomass, we use **patented microfluidics technology** that is used only in laboratories.
2. We've **proven it can work at scale** with real biomass at the industrial scale, harvesting 2000L from batch culture.
3. Our **patented parallelisation method** allows us to scale this technology from laboratory to **industrial scale**.
4. We're now scaling up to the **entry-level product**.

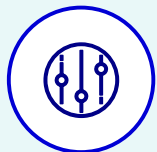


# uFraction8 vs *the competition*

We replace expensive ineffective disposable filters with robust high-throughput equipment

	Best in class solution on market: Hollow fibre filters	Ufraction8
Capacity	max 500L reactor volume	No max capacity
Selective capture?	✗	✓
Aggregates Regulation?	✗	uFraction8's technology discretely separates aggregates from single cells
Lifecycle	Single use	Multiple use (5-year lifecycle); sterilisable
Cell viability	Detectable, low, viability losses	No detectable loss of viability
Permeability loss	Loses permeability over time	Maintains permeability over time (45+ days)
Clogging?	Tendency to clog up (conversations with CDMO users)	No clogging even at extreme cell density (220M cells/ml)
Pricing	prohibitive	cost effective

One time limited CAPEX vs. recurrent high replacement OPEX costs.



# Experienced leadership team



## Executive team



**Dr Monika Tomecka:**  
Founder / Bio / Commercial

STEM background  
Business development  
Customer acquisition  
Investment strategy



**Dr Brian Miller:**  
Founder / Tech / Operations

High throughput  
microfluidics engineer  
Tech development  
Managing  
company operations



**Thomas Nagy:**  
Executive Chair

15+ years at Novozymes  
Experienced board member  
Strategy and  
Business Development  
Commercial Advisor

# Our *market strategy*

## Continue ongoing interactions with microalgae market

Expand uFraction8's datasets collected from demonstrations with microalgae producers

Demonstrate uFraction8's scale up with 10,000L of microalgae biomass

Enable continuous manufacturing for microalgae biomass (first industrial demonstration planned for Q4 2023)

## Develop alongside cultivated meat industry

Working with leaders in the cultivated meat space

Integrate into their process from the beginning, locking in tech

Target new clients after scaling alongside first movers

## License technology to biopharma in parallel

Opportunity to replicate process for mammalian cells

Bigger upside, longer term potential

Now, technology moving from pharma to cultivated meat: project reversal of trend

# Funding, development and achievements to date

2017-

**Ufraction8 Ltd incorporated**

- First module prototype
- Pre-seed investment £120k
- Scottish Edge Higgs £100k

2019 -

**Ufraction8 PL Sp. z o.o. incorporated**

- EIT FAN Winners €100k
- Incorporated uFraction8 PL
- Manifold manufacture optimisation
- NPL viability and protein adsorbance tests

2018 -

**Smart grant £100k**

- First multi-module unit (5 modules)

2021 -

**Seed investment round**

- Delivered follow-on Innovate UK projects
- Kicked off the scale up project
- Progressed through customer demos

2020 -

**ESGCF Award £200K  
InnovateUK Awards**

- Demonstrated with Smallfood Inc.
- Proved high cell density tolerance
- Implemented 2<sup>nd</sup> device design in stackable format
- Continued to deliver through COVID

2023 -

**Proven perfusion capability**

- Proven selective capture with partners including Meatable.
- 45 continuous days perfusion
- CIIMAR & BlueBioValue

2022 -

**Proven unit economics for  
"single cell" size modules and  
integration of multiple modules**

- Demonstrated industrial scale rackable system

# Exit *potentials* ○



Vibrant M&A in the  
bio-separation space

Active “Buy and  
build” strategies

**Thermo**  
SCIENTIFIC

 GE HealthCare

**M**

**GEA** Engineering  
for a better  
world.

**BIO RAD**

**SARTORIUS**

**AsahiKASEI**  
BIOPROCESS

**KKR**

 **Tetra Laval**

**ALFA  
LAVAL**

 **cytiva**

**Astrea**  
Bioseparations

 **EVONIK**  
INDUSTRIES

 **REPLIGEN**  
INSPIRING ADVANCES IN BIOPROCESSING

uFraction8<sup>o</sup>

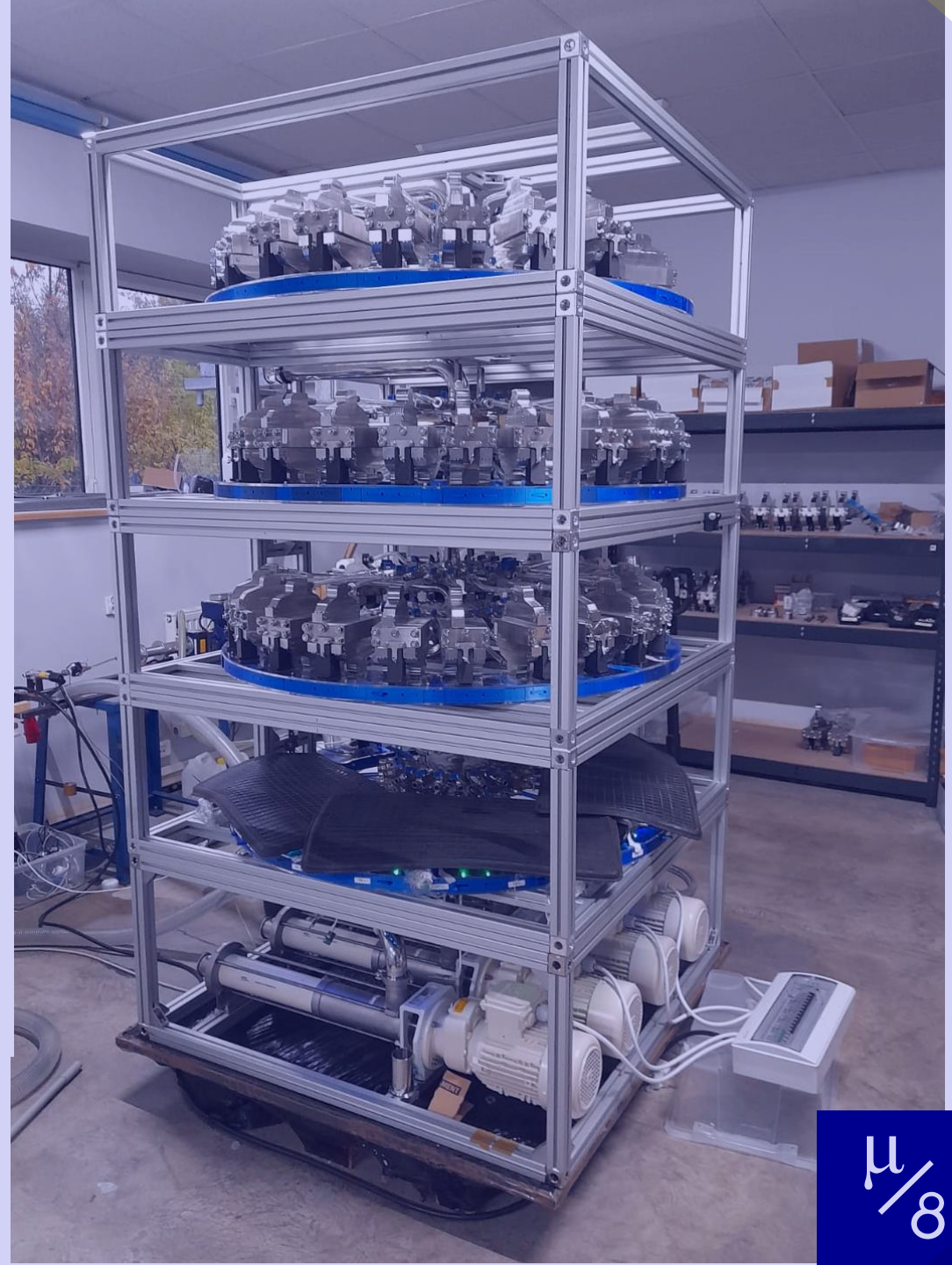
## Funding Requirement

We're looking to raise

**£2.1 Million**

With this funding we will...

Work to build a sustainable future with **industrial continuous bioprocesses**



Discover more about *our journey...* 

... and how you can join our mission, working to build a sustainable future

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