



**VITROSCOPE IS TO  
PHENOTYPING  
WHAT ILLUMINA IS TO  
GENOTYPING**

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04-26  
Teaser  
[vitroscope.com](http://vitroscope.com)

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## Vitroscope is the core technology at the frontier of drug R&D.

3 of the top 15 PharmaCos + decacorn deciding on USD 180k-500k pilot studies

Two Nobel Prize laboratories amongst customers

Paying customers include global top 3 universities & global top 10 hospitals.

Unique founding team of 3 PhDs covering hardware, software, cancer tissue from top universities.

**ETH** zürich



Karolinska  
Institutet



The **future of life science** is built on Vitroscope.



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## The Dual Crisis in Modern Medicine

### THE EFFICACY GAP

**<25% of patients  
respond to top-10 drugs**

[Personalized medicine: Time for one-person trials \(Nature, 2015\)](#)

**90% of cancer patient  
mortality is linked to  
drug resistance**

[Drug Resistance in Cancer: Mechanisms and Models](#)

### THE R&D BOTTLENECK

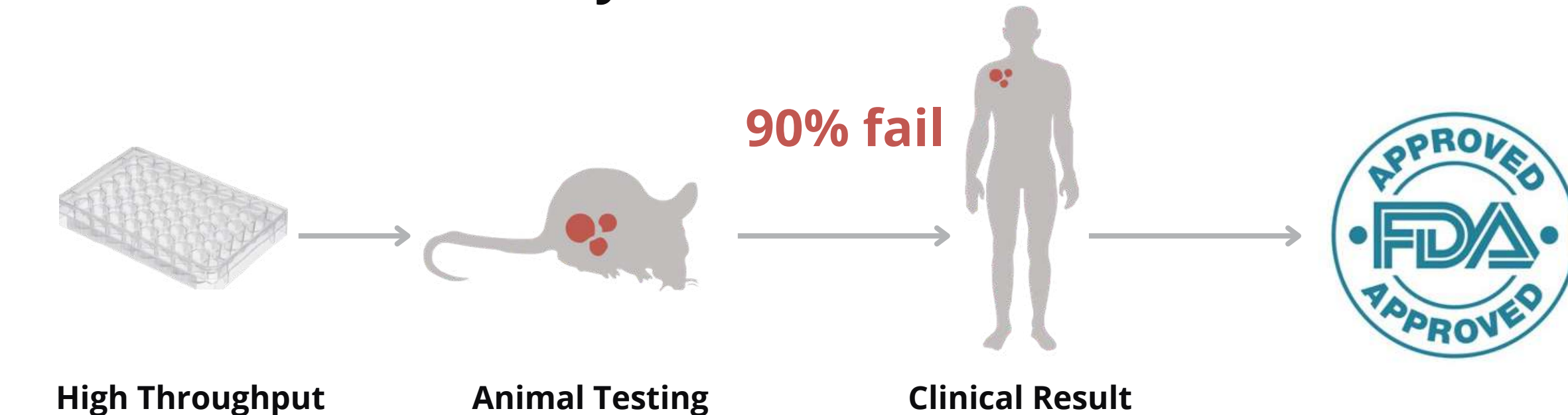


**> 12 years / > 2bn USD / Drug**

The \$100bn Problem: drug R&D is a gamble because early testing is >90% wrong

**Well plates are at the limit as far as humanized cell models go.**

**Animals are really bad humans.**



**High Throughput  
Screening / Discovery /  
Optimization**

**Animal Testing**

**Clinical Result**

Most AI models are trained on this noise.

**INACCURACY**

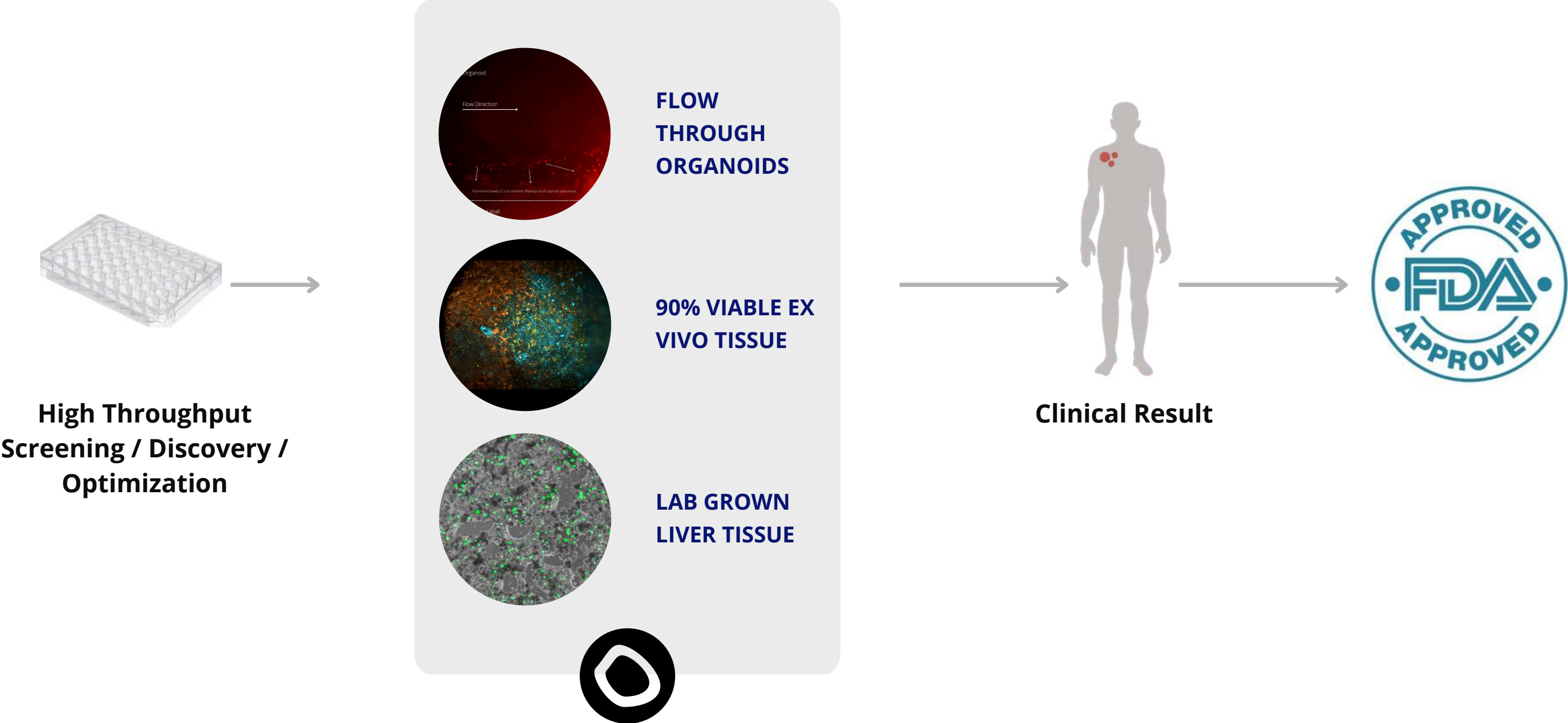
**< 10% DRUG R&D SUCCESS**

**>12 years >2bn USD average  
per approved drug.**

**1 week late = 200m USD  
revenue lost.**

Our solution: unlocking insights nobody else can see

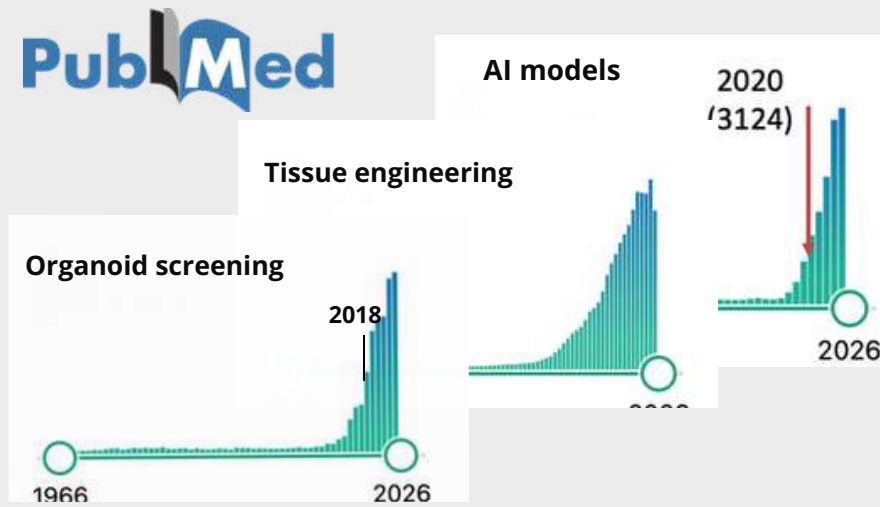
# We make human architecture accessible at scale in the laboratory.



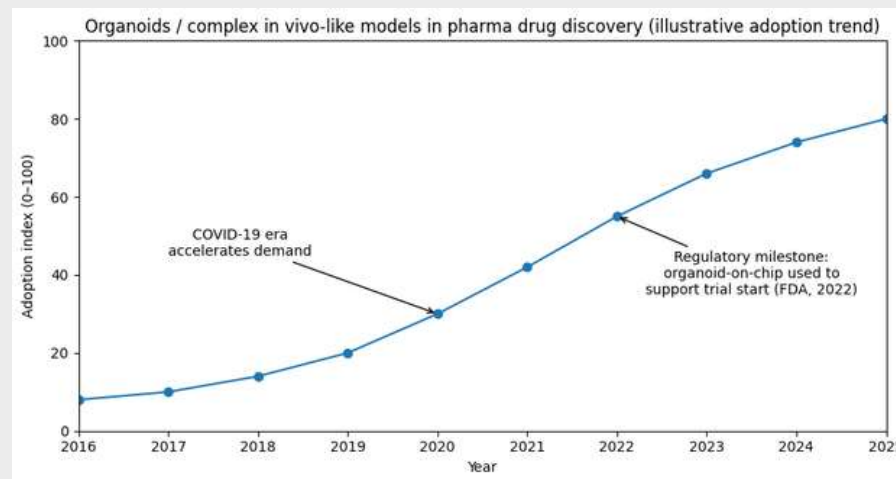
# WHY NOW?

Past 10 years:

## Complex models



## Pharma adaptation to organoids



## Regulatory changes

2022 - 2026



Modernization Act 2.0/3.0



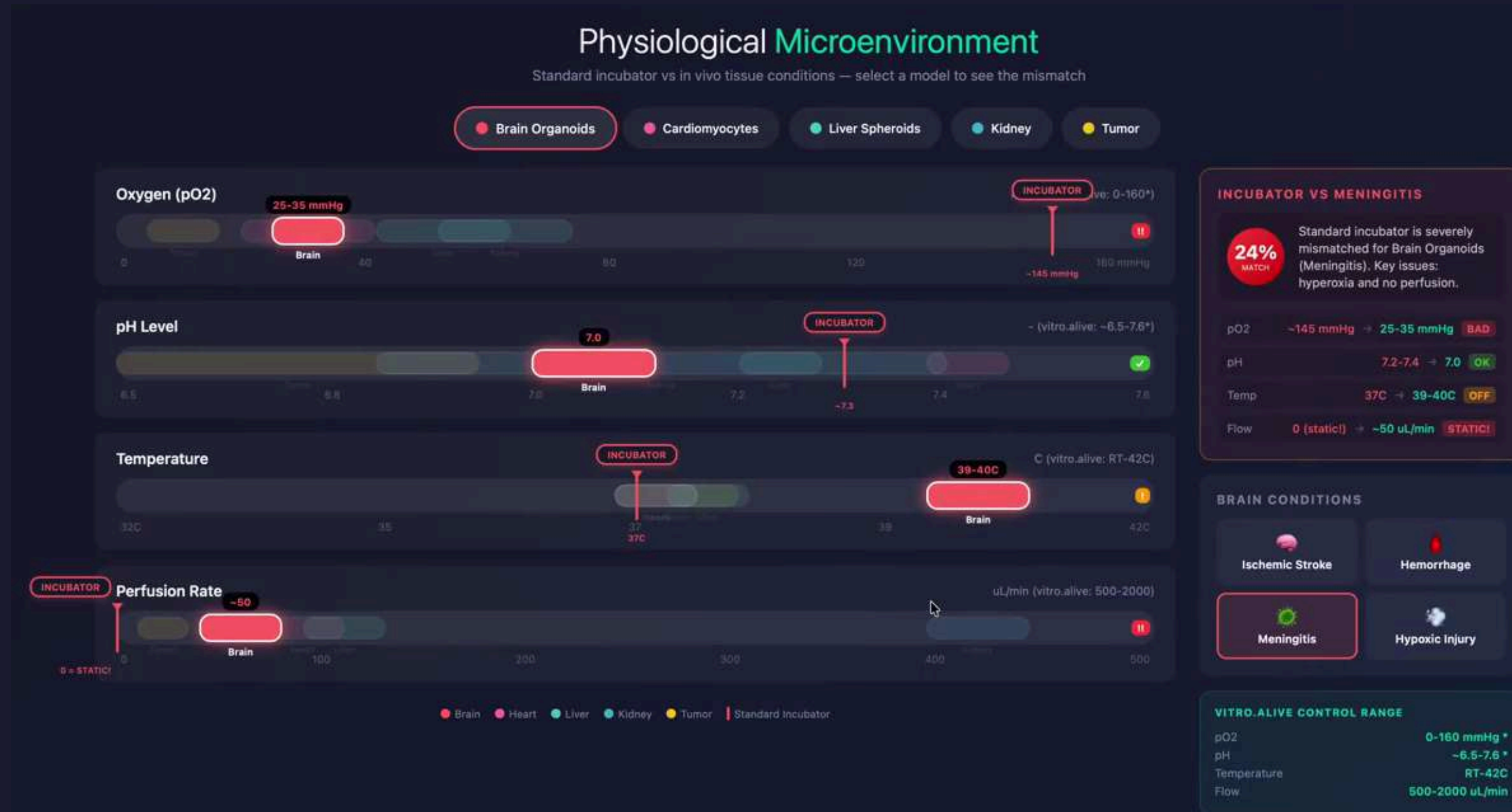
National Institutes of Health

\$87M: Standardized Organoid Modeling Center



UK roadmap to phase out animal testing

# Software: Apply Organ- and Disease-specific Culture Conditions Impossible in Standard Incubators.



## How we do it: Hardware



**Patented (US12195717B2)**



**Mimics blood flow**



**Real-time control of culture medium**



**long-term, structured sensor data**



**Organ- and Patient-specific testing**



**Cloud controlled, AI-native**



**“We scouted all of SLAS and you are the only ones who understand how Pharma works”**

• Principal Scientist, High Content Imaging



## Team-Market Fit

Vitroscope has the combined power of top performing founders, world-class researchers, and industry leaders.



in

**CARLO KRIESI, PhD**  
Co-Founder / CEO  
Biomedical Engineering  
ETH Zurich / NTNU  
R&D at CERN, CORE.



in

**HEIKKI SJÖMAN, PhD**  
Co-Founder / CTO  
IoT / Mechatronics  
Aalto / Stanford / NTNU  
Co-founder of Ainone,  
creator of Slush'D



in

**SANDRA JERNSTRÖM, PhD**  
CBDO  
PostDoc in Tissue / oncology  
research  
Co-Founder and ex-CSO of  
Okomera



## Key Advisors



in

**DJ KLEINBAUM**, Co-  
Founder & CEO of  
Emerald Cloud Labs and  
Emerald Therapeutics.



in

**JULIA SCHÜLER**,  
Therapeutic Area Lead  
Oncology, Charles River  
Laboratories



tw

**MARCO FRITZSCHE**,  
Prof. for biophysical  
immunology at the  
University of Oxford;  
Scientific Director of  
Oxford-ZEISS Centre of  
Excellence.



in

**DARRYL KIRSH**  
20+ years business  
consulting at KPMG /  
CRO.  
Fiddlehead Ventures.

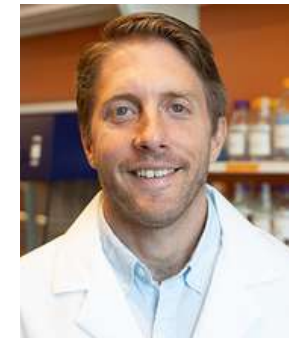


# With Vitroscope our customers can **finally perfuse** their **vascularised organoids**.

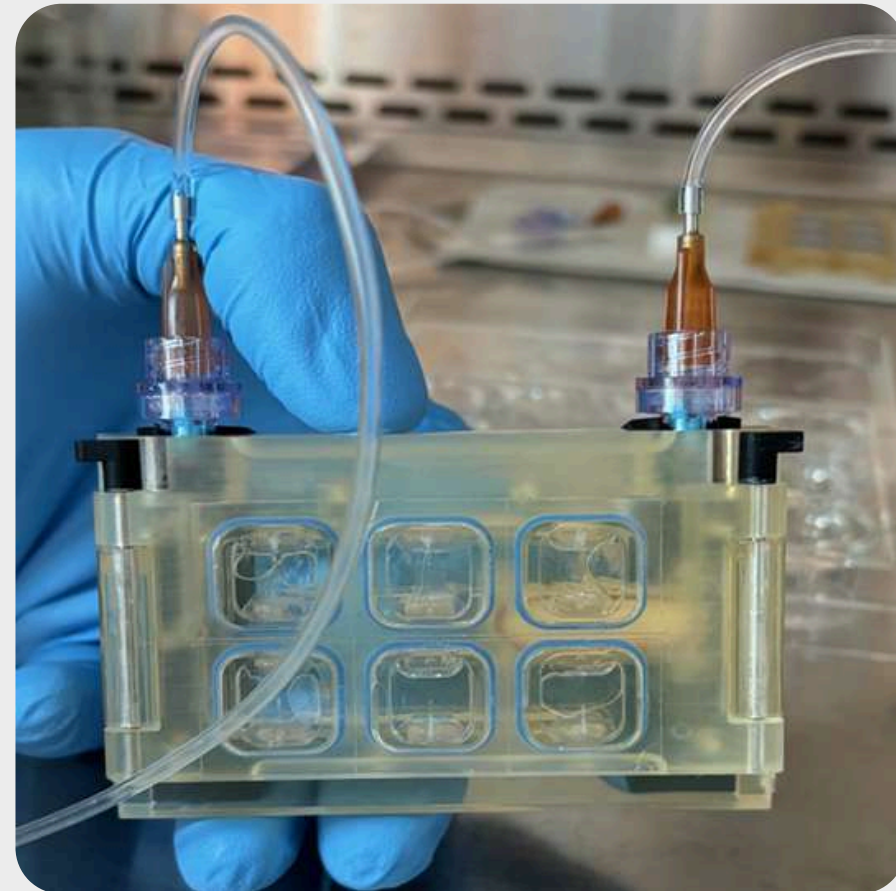
*PATENT SUBMITTED*

**“The easiest perfusion system we have ever tested”**

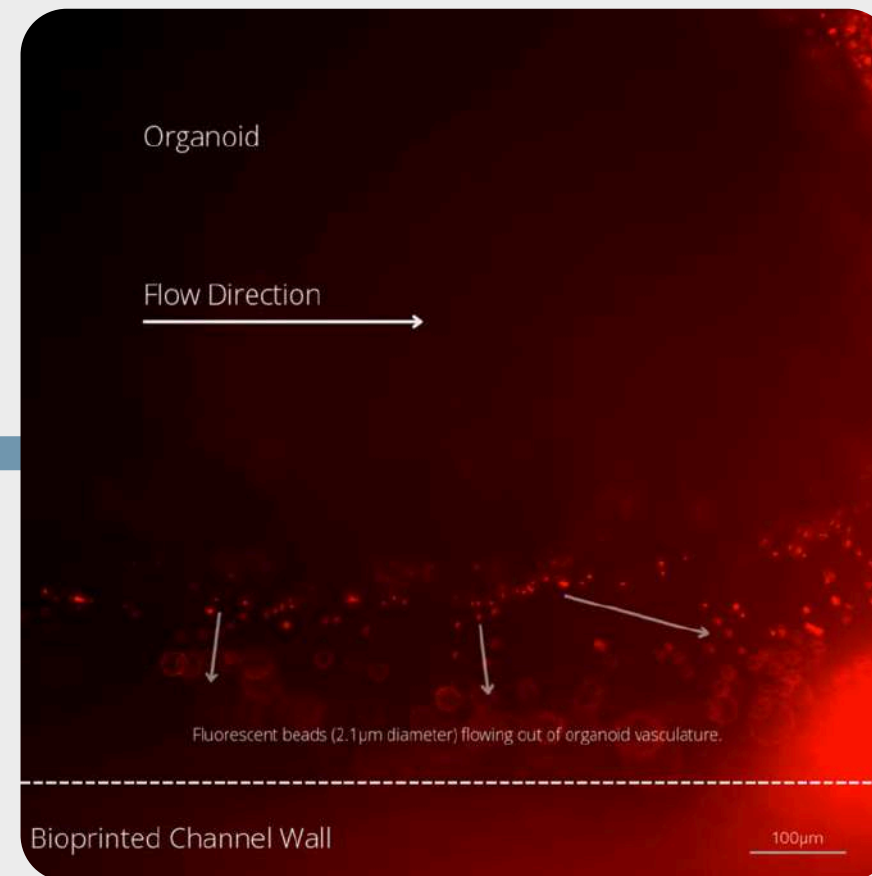
**Prof. Peter Galie**  
Professor for biomedical engineering



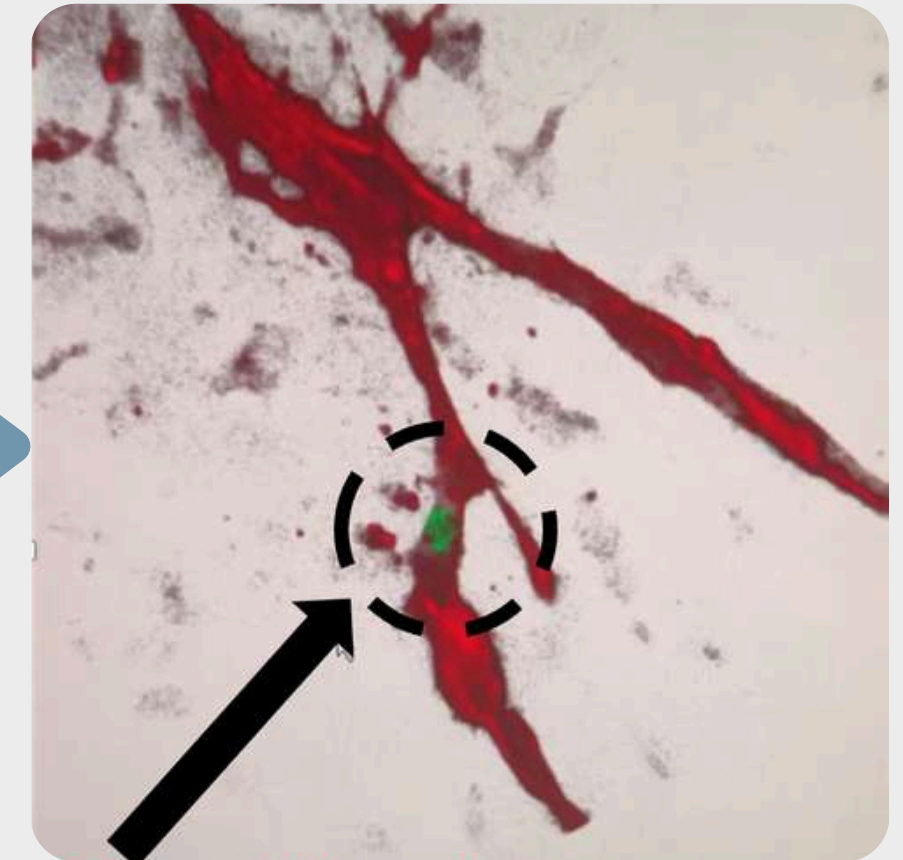
RowanUniversity



Printed inserts with leak-proof click-in connection.



Fluorescent beads flowing out of a vascularised brain organoid.

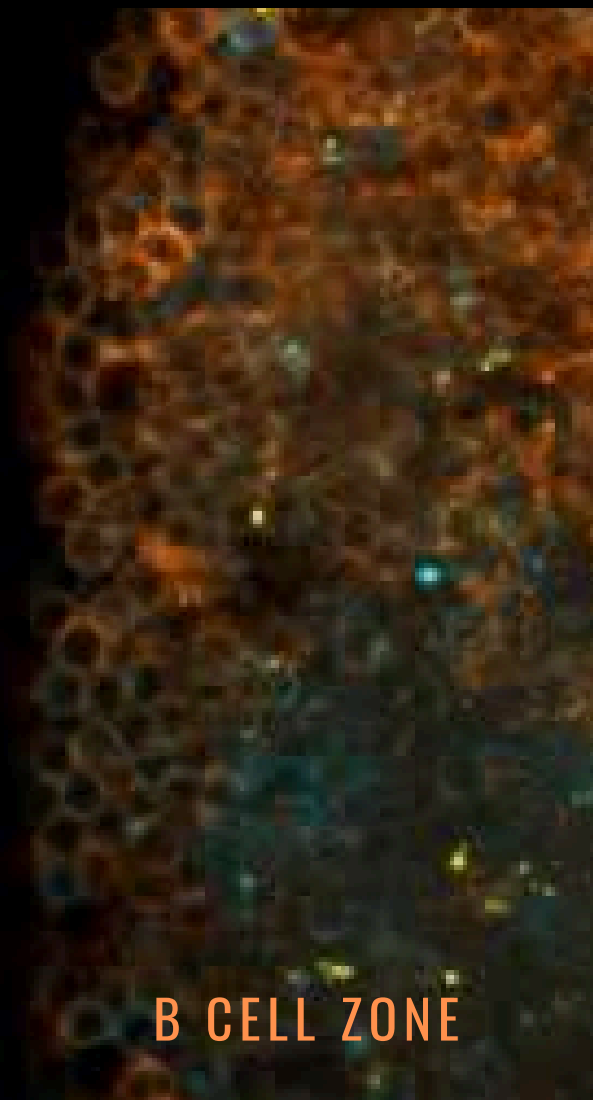
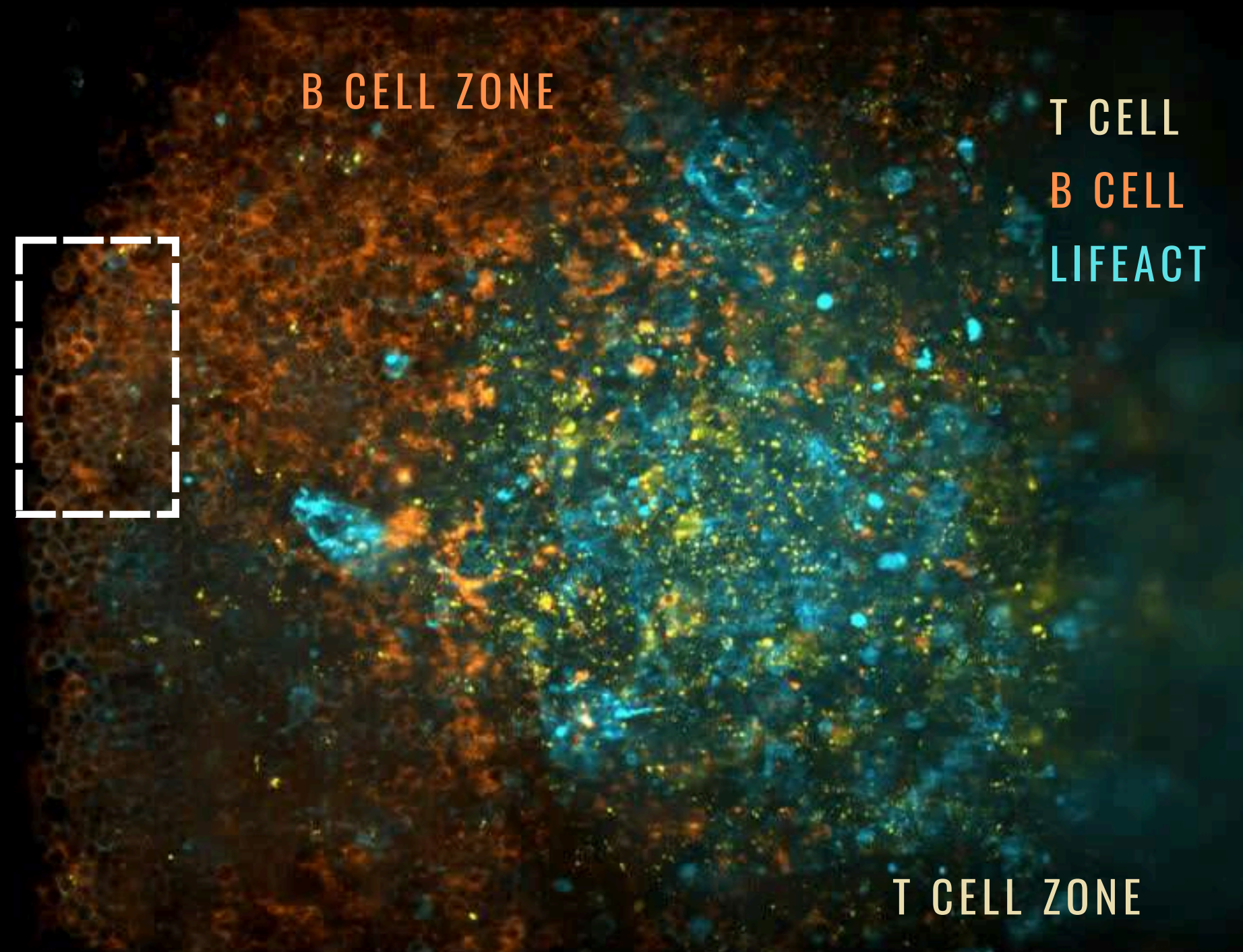


A fluorescent bead (green) made its way deep into the vasculature (red) of a brain organoid (see-through), proving perfusion of the vasculature.



With Vitroscope our customers can **finally** develop on a **complete immune system in living tissue** for >3 days.

*PATENT SUBMITTED*



**"90% ex vivo tissue viability at 72h culture"**

(compared to <50% after 24h with other methods.)



**Prof. Marco Fritzsche**

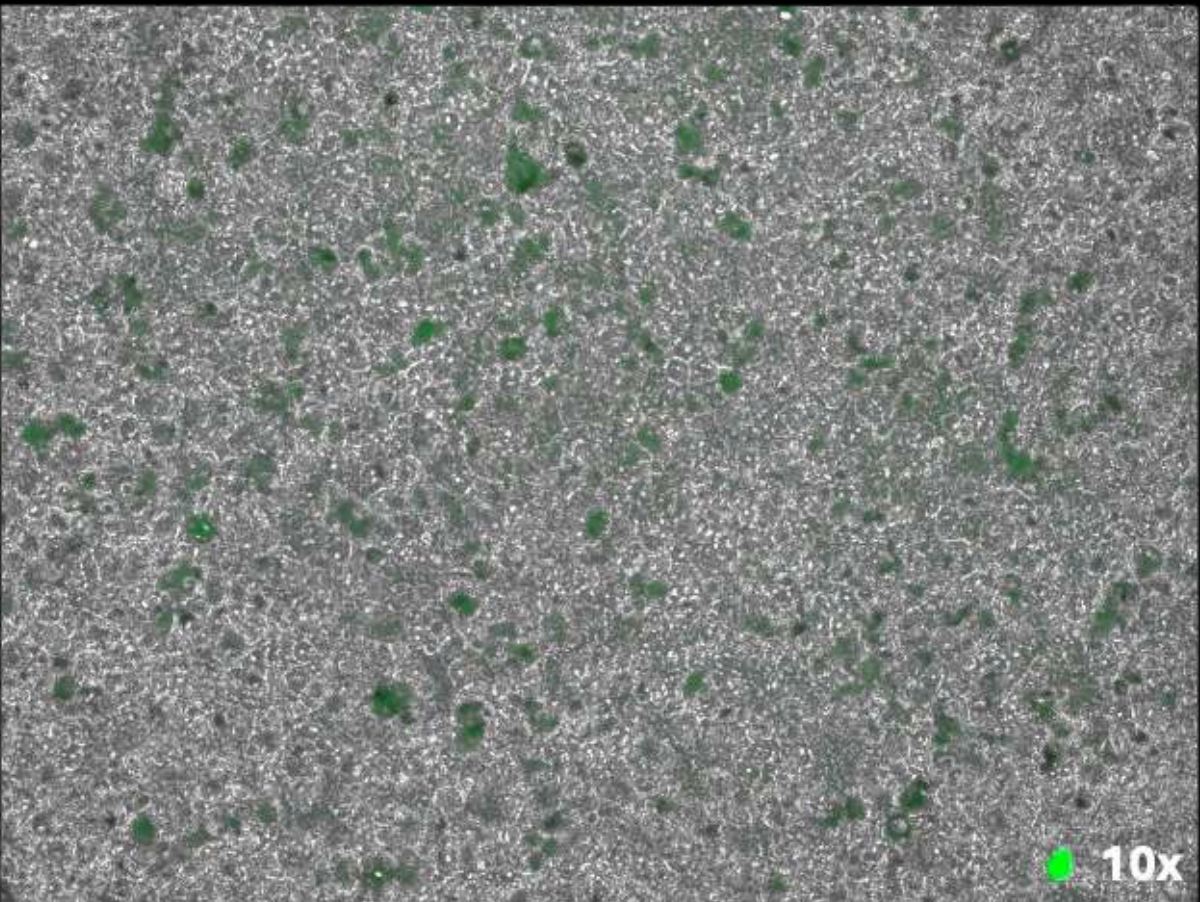
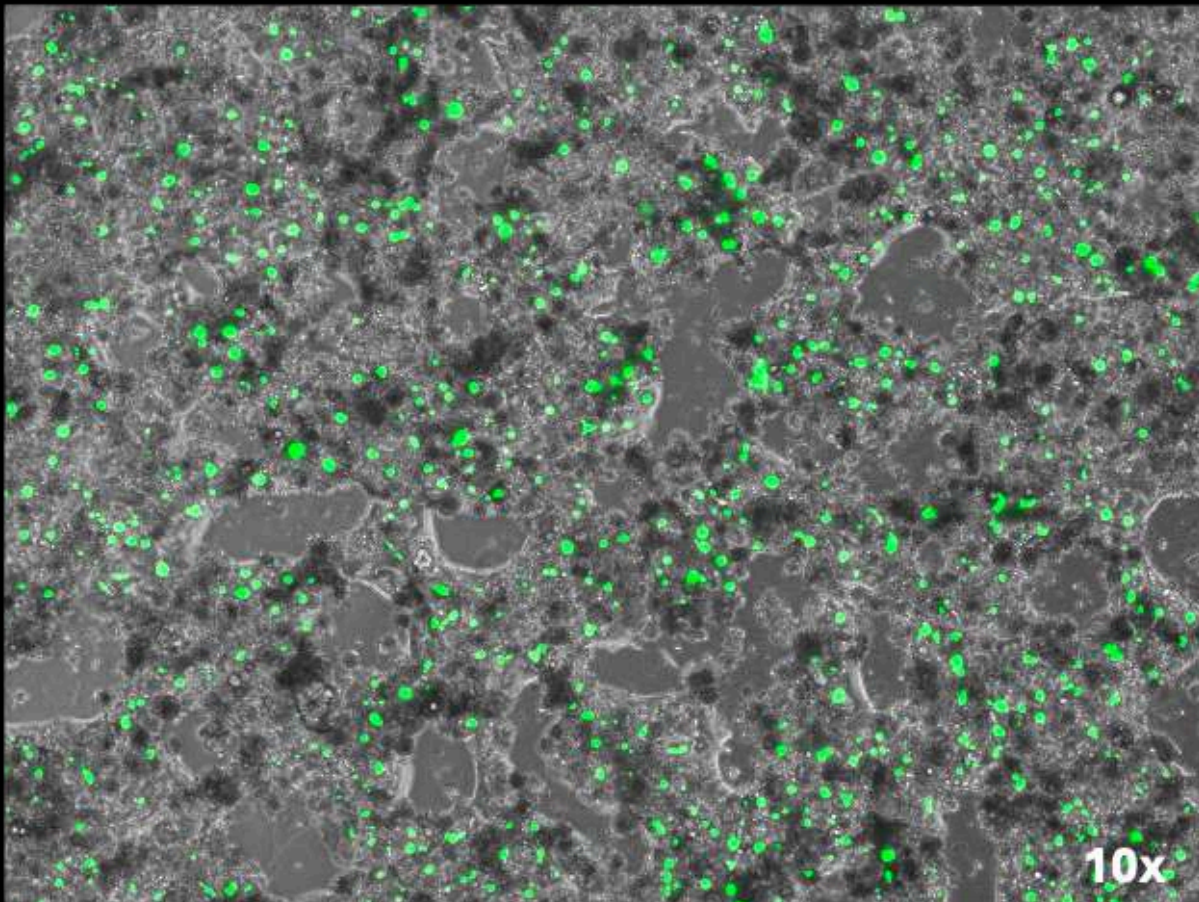
Prof. for biophysical immunology at the University of Oxford; Scientific Director of Oxford-ZEISS Centre of Excellence.



With Vitroscope our customers can **finally** grow **functioning human liver tissue** in the laboratory.



VITRO.ALIVE - 7 DAYS • **BILIARY CANALICULUS** CONTROL: WELL PLATE - 7 DAYS



**“mRNA medicine design on human cells in the laboratory”**

Unachievable in a well plate or animal model.



Prof. Drew Weissman  
Nobel Laureate 2023



Prof. Alex Soto-Gutierrez



## Business Model

**Hardware revenue at software margins.**

+ software.

+ consumables.

### CONSUMABLE KITS

- **Chambers**
- **Reagents**

### SELL AND LICENSE HARDWARE

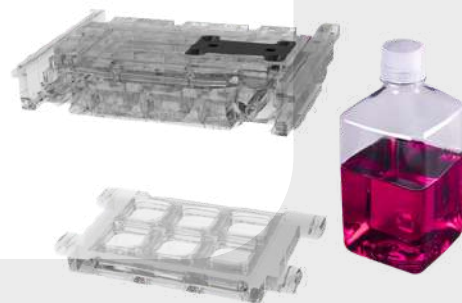
- **vitro.alive:** 90% profit margin
- **vitro.scale**

### LICENSE SOFTWARE ELEMENTS

- **vitro.cloud - the life science OS:** Experiment scheduling and planning, process monitoring;
- **AI-platform**

#### CONSUMABLE

##### tissue host

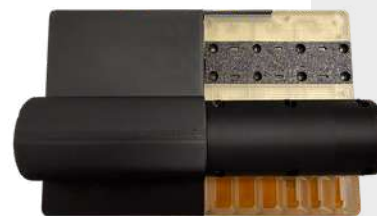


CHAMBER  
Hosting 6 samples

PLACED WITHIN

#### HARDWARE

##### vitro.alive



LAB BENCH  
Runs 6 experiments

##### vitro.scale



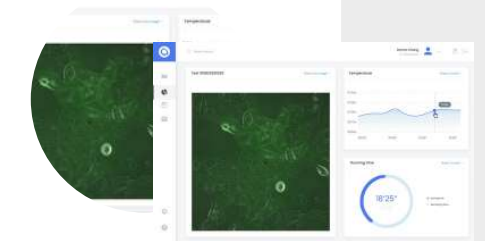
INDUSTRIAL  
Runs 96 experiments (6 x 16)

SENDS DATA

SENDS INSTRUCTIONS

#### SOFTWARE

##### vitro.cloud



CONTROL & ANALYTICS  
Aggregates all experiments.

## Market opportunities

### **HORIZON 1: Beachhead**

**TAM: ~\$25Bn Preclinical R&D**

**SAM: ~\$6Bn High-Fidelity Screening**

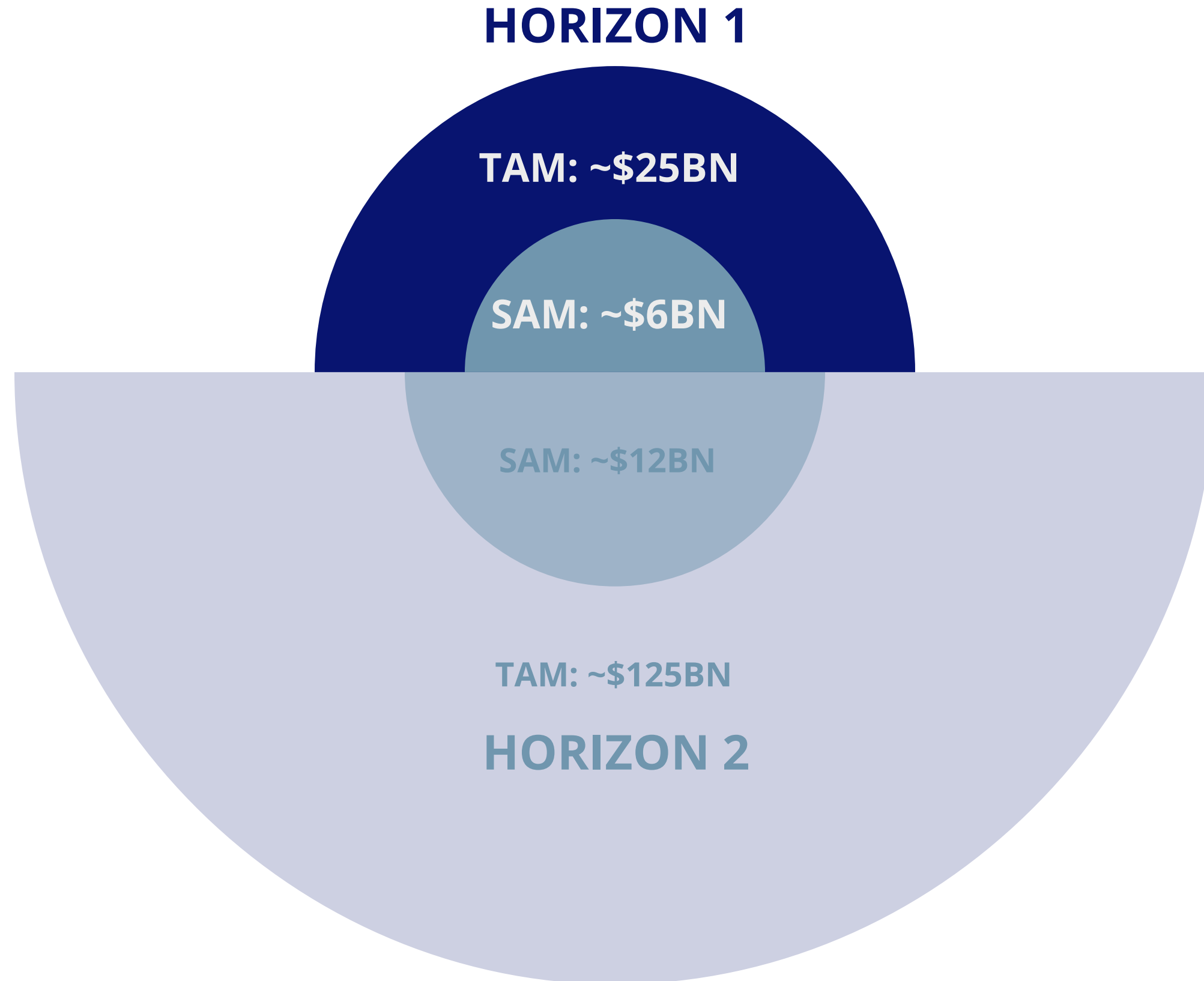
**Initial target:**

High-value tissue & organoid applications  
(oncology, CAR-T, immunology)

### **HORIZON 2:**

**Additional TAM: ~\$100Bn Precision Medicine**

**Additional SAM: ~\$6Bn Clinical biopsy (e.g. clinical trial stratification) + AI Data Market (model validation data)**



High Content Screening (\$1.6B): Fortune Business Insights (2025)

3D Cell Culture (\$2.1B): Precedence Research (2025)

Organ-on-Chip (\$210M): Fortune Business Insights (2025)

AI in Drug Discovery (\$2.35B): Grand View Research (2025)

Precision Oncology (\$106B): ResearchAndMarkets (2025)

<https://www.precedenceresearch.com/precision-medicine-market>

<https://www.grandviewresearch.com/industry-analysis/organ-on-a-chip-market-report> <https://www.wellbeingintlstudiesrepository.org/cgi/viewcontent.cgi?article=1013&context=bioamres>

<https://www.mckinsey.com/featured-insights/sustainable-inclusive-growth/charts/pharmas-rx-for-r-and-d> <https://www.mordorintelligence.com/industry-reports/organs-on-chips->

Customer Highlights

**KOL**



**Nobel Laureate**



**Quoted**

colossal®



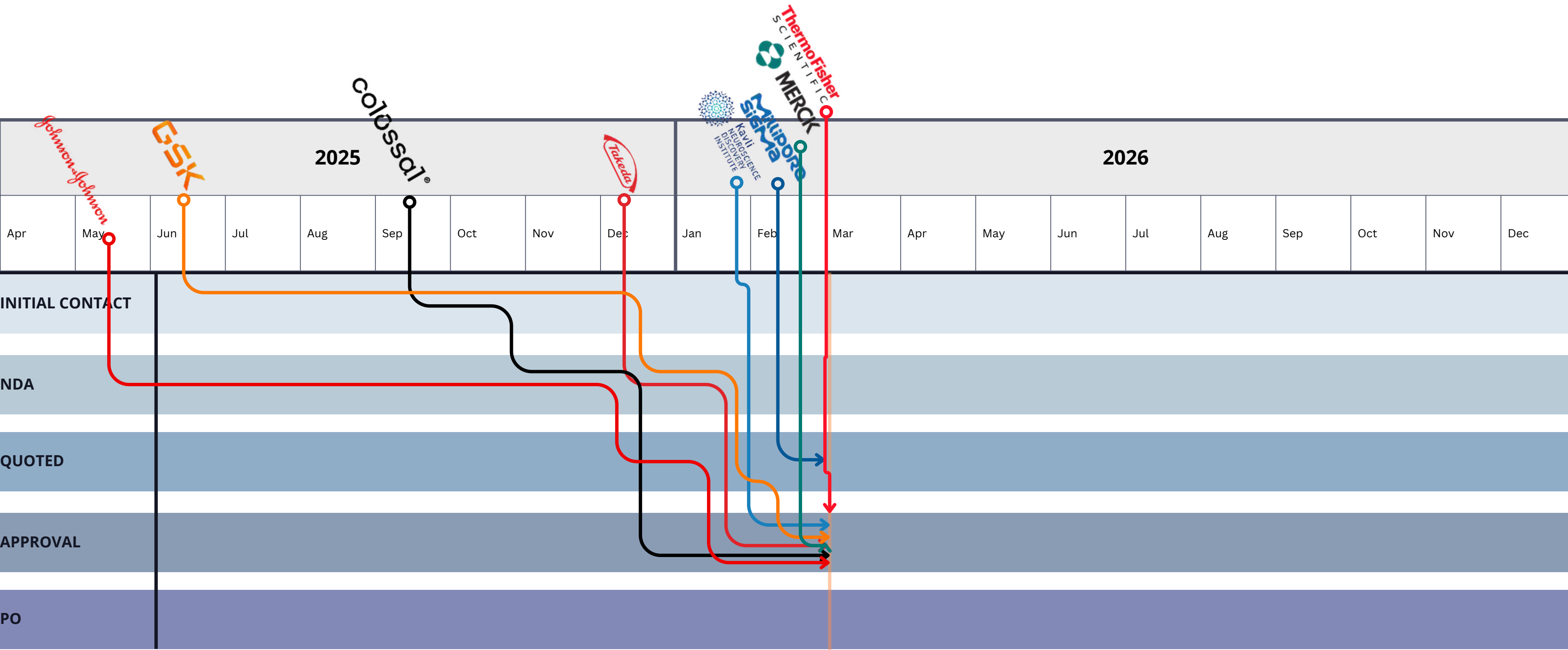
**Nobel Laureate**



**PoC / Pilot stage**



Momentum is Changing: Contact to quotation went *from quarters to days*.



S T A T U S

INITIAL CONTACT

NDA

QUOTED

APPROVAL

PO

2025

2026

Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Johnson & Johnson

GSK

Colossal

Takeda

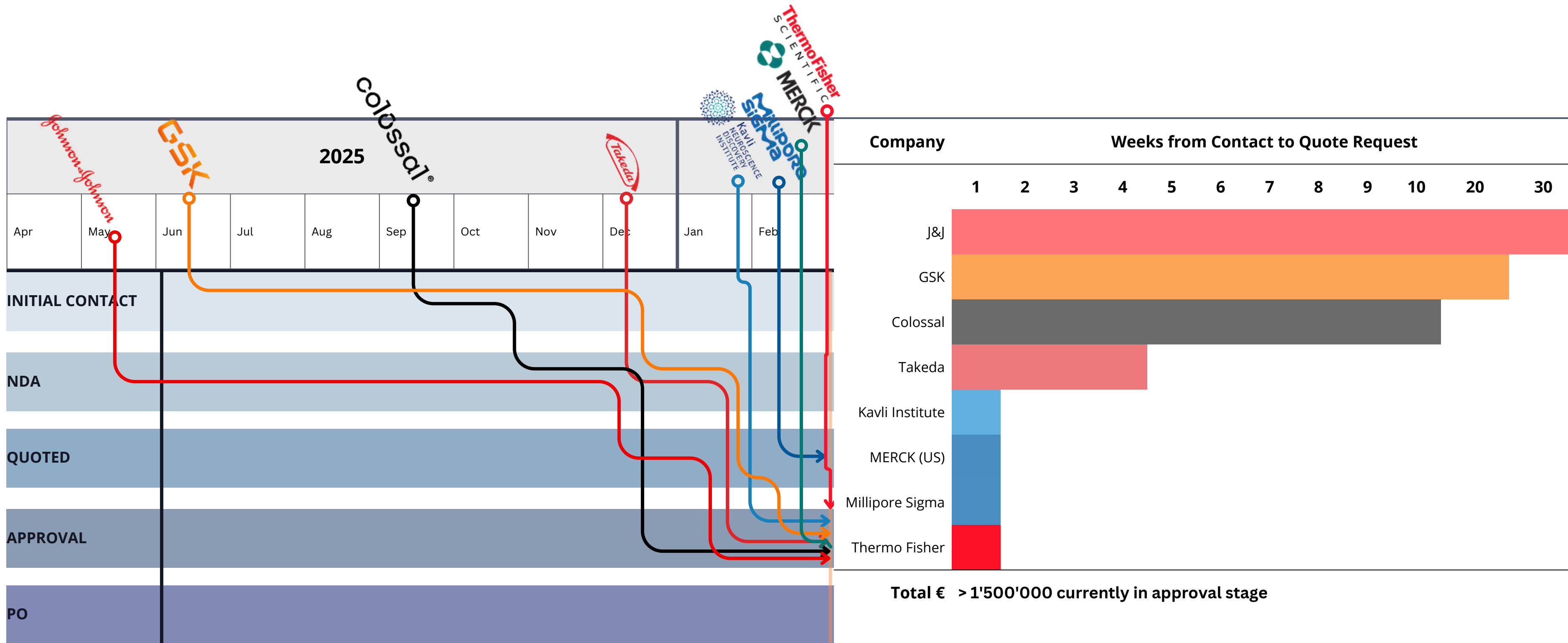
Kavi Neuroscience Discovery Institute

Milipore

MERCK

ThermoFisher Scientific

Momentum is Changing: Contact to quotation went *from quarters to days*.



# Uniquely positioned for AI driven drug R&D

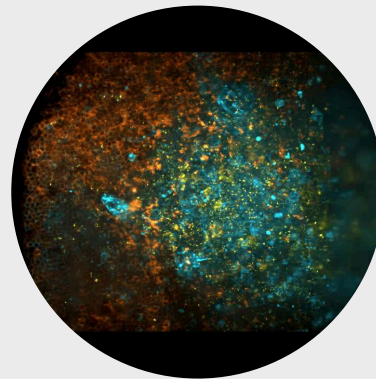
## ONE SYSTEM

2x Patent



## UNLOCKING A RANGE OF NOVEL CELL MODELS

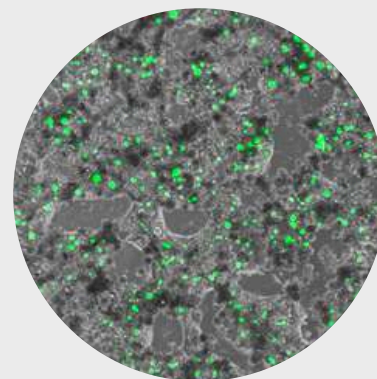
2x Patent



90% VIABLE  
TISSUE SLICES  
FOR 3+ DAYS IN  
EXPERIMENTS



FLOW THROUGH  
ORGANOIDS



PRIMARY CELLS  
GROWN LIVER  
TISSUE THAT  
BEHAVES LIKE IN  
A HUMAN

## ENABLING HUMAN-LIKE DISEASE MODELS WITHOUT RISK

3x Patent

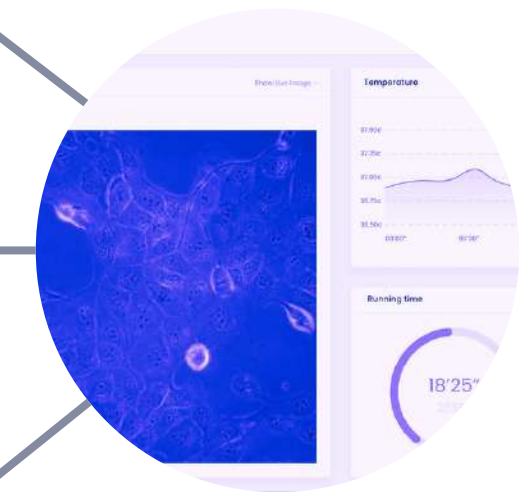
IMMUNO-ONCOLOGY  
PERSONALISED MEDICINE  
MULTI-ORGAN MODELS

ALZHEIMER'S DISEASE  
NEUROLOGY  
BLOOD-BRAIN-BARRIER  
3D BIOPRINTS

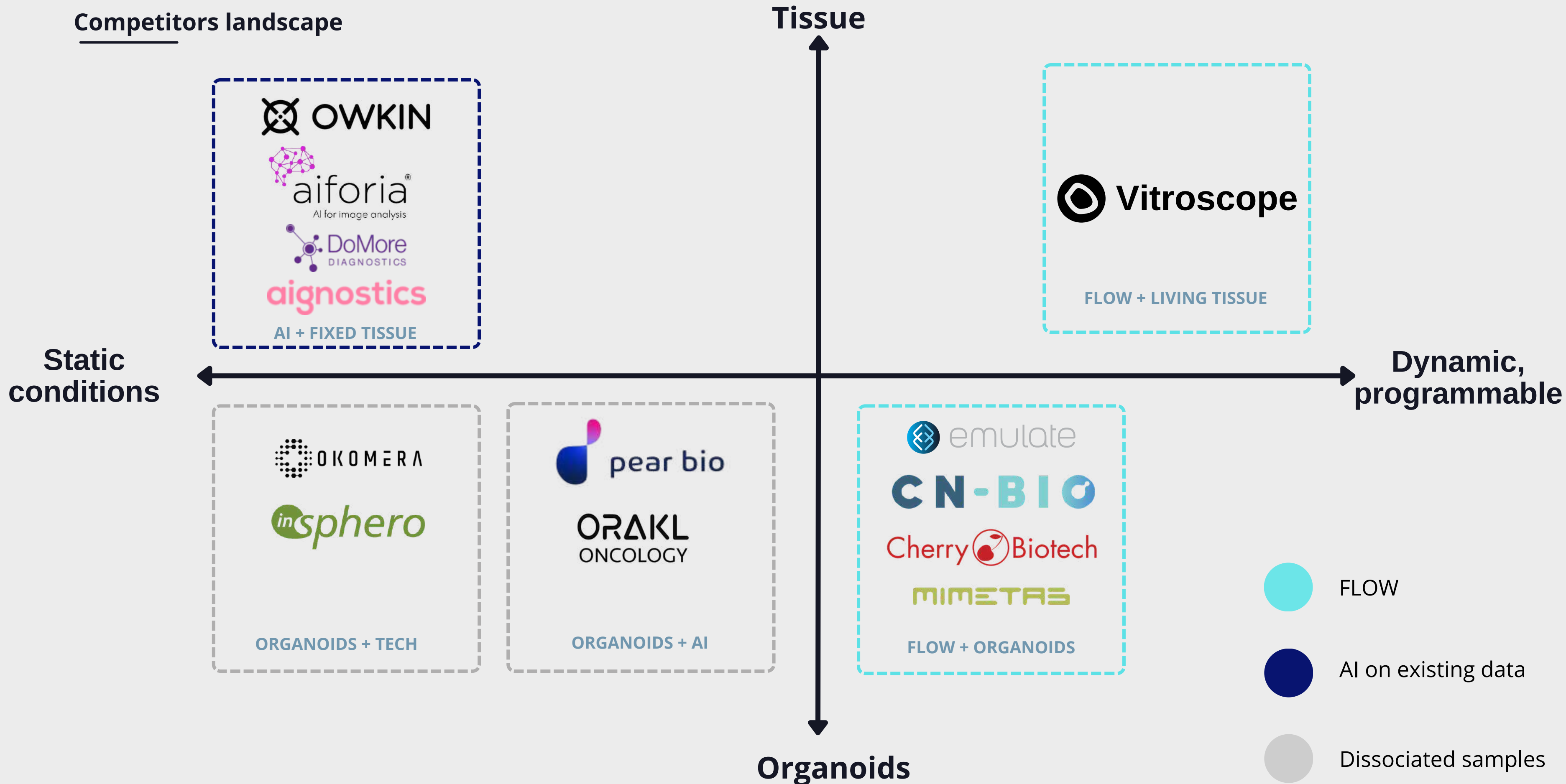
mRNA MEDICINE  
DESIGN  
TOXICITY

## ACCUMULATED DATA FOR TRAINING BIO-AI

1x Patent



Competitors landscape



Ask

## € 5m seed round:

- Focus on speed to deliver next generation product to market
  - R&D + Marketing / Sales
- € 3m equity + € 2m approved non-dilutive funding
- 24+ months runway
- Past: € 900k equity + € .5m non-dilutive

INVESTMENT  
€ 3 M



NON-DILUTIVE  
€ 2 M



STARTUP  
LAB



Moonstone



## USP at a glance

**Only** platform for:

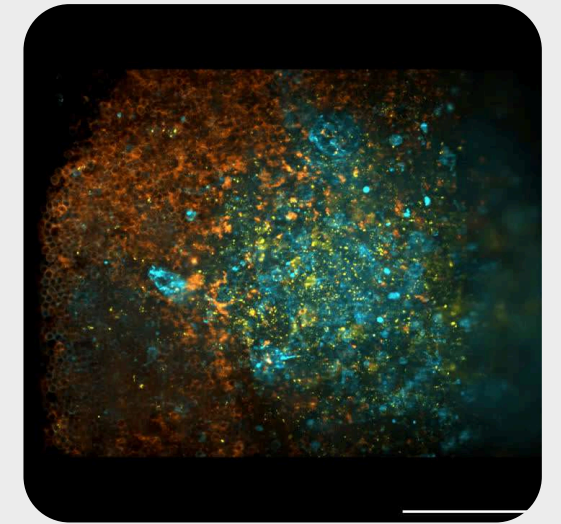
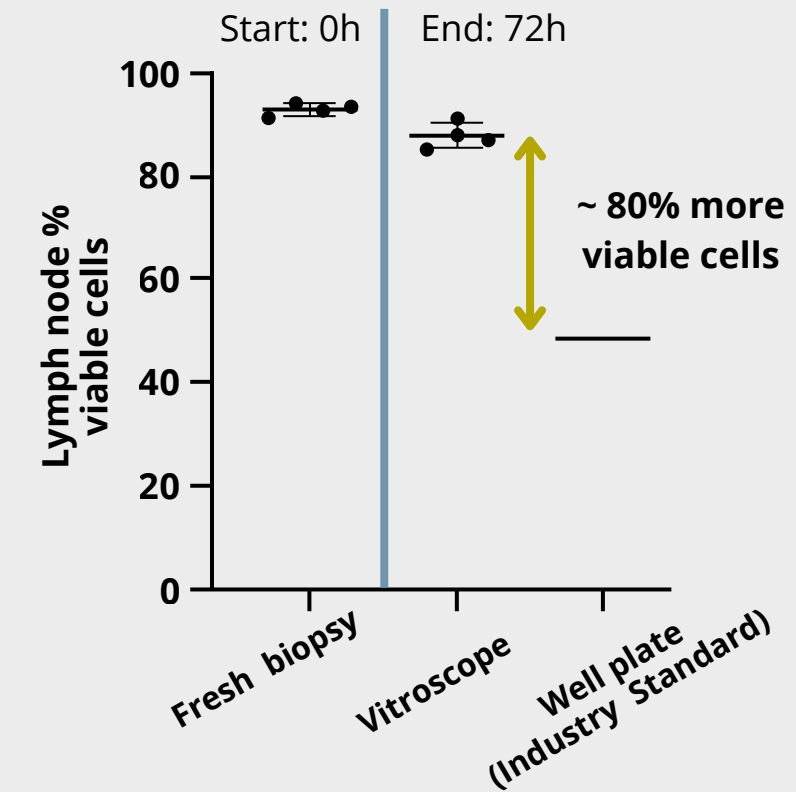
- **Tissue samples >90% alive for days;**
- **Perfuse** vascularised **organoids;**
- Testing **mRNA medicine** in the laboratory;
- Coming: embryo culture.

**Customer value:**

- User-friendly - **2h from delivery to first experiment;**
- **Reproducibility** due to continuous **supernatant monitoring;**
- **Compatible** with any **upstream and downstream protocols;**
- **Automated, scalable data** production and **raw data access to longitudinal high-power imaging + sensor readings.**

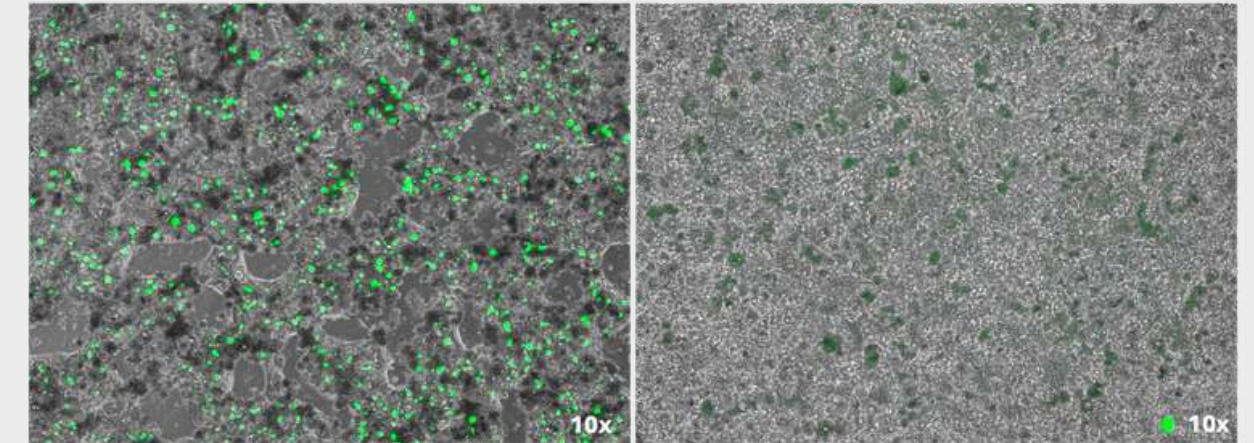
**IP:**

- **8 patents** (1 granted, 7 submitted)
  - 2 System patents
  - 6 Method patents

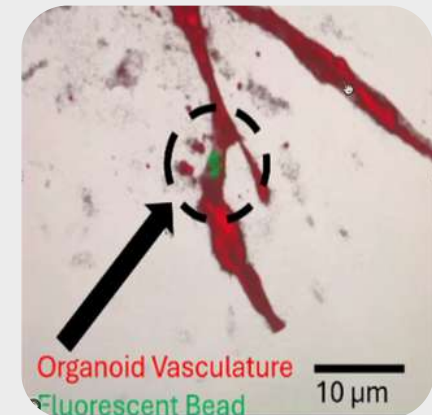
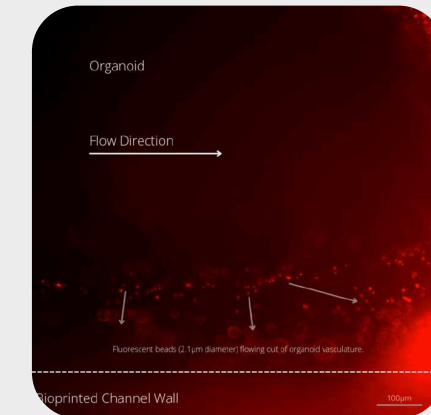
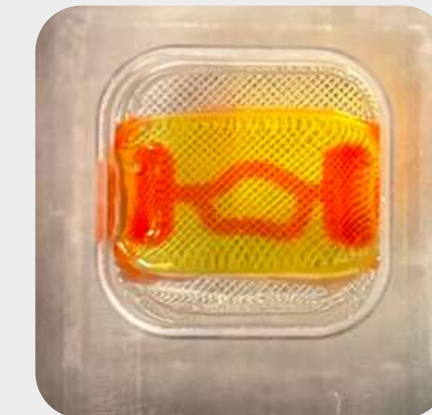


Timelapse observation

## ● BILARY CANALICULUS



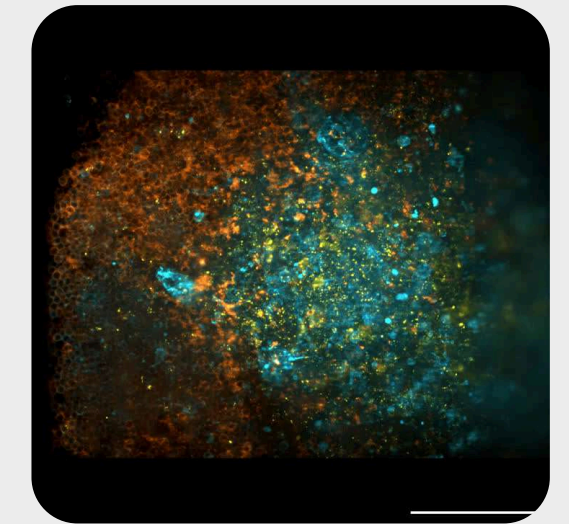
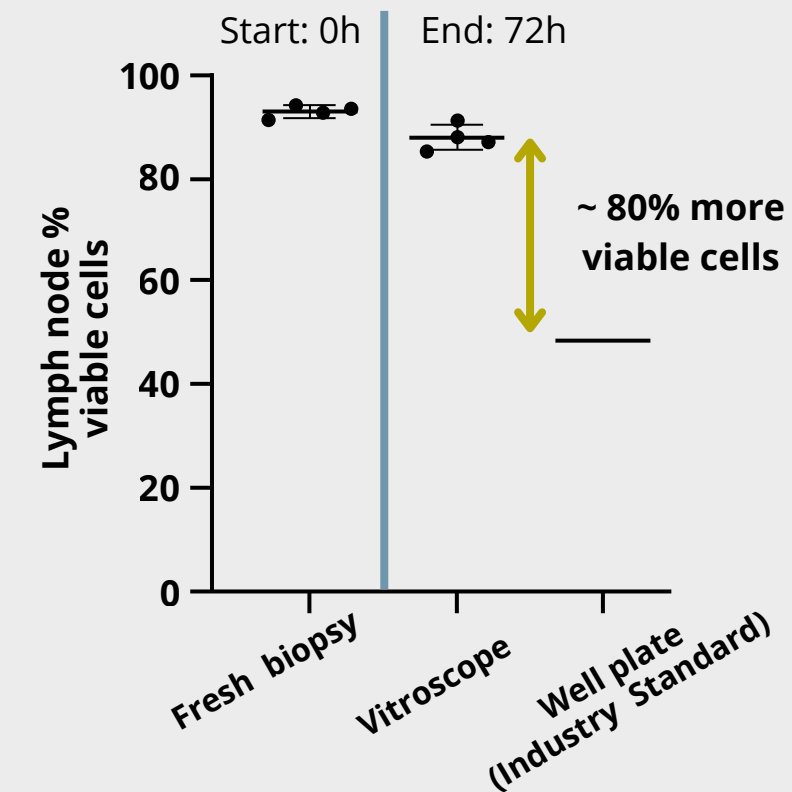
Primary human hepatocytes: polarised tissue formation on vitro.alive (left), not visible in multiwell plate (right), 7 days culture.



Perfused 3D bioprinted blood vessels & organoids.

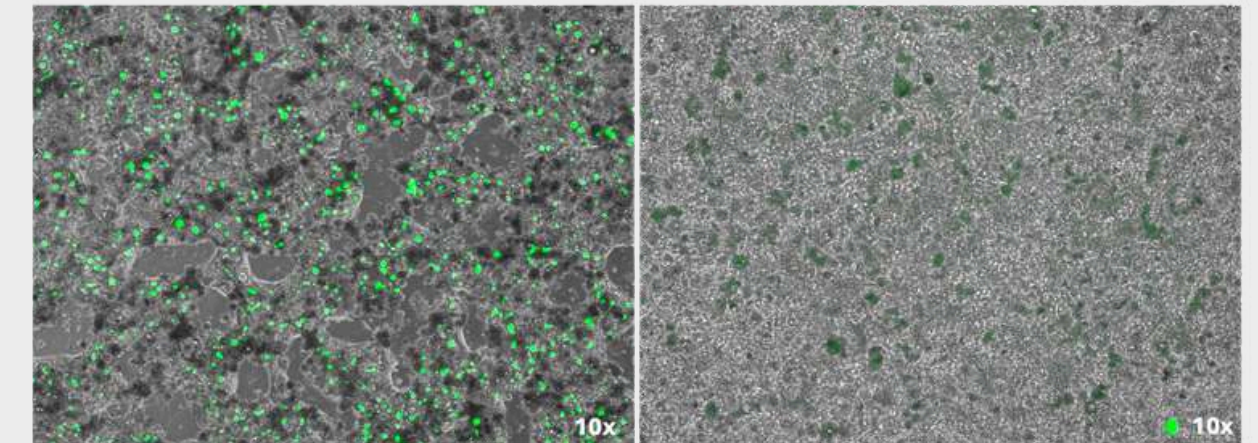
## Scientific Differentiator

- vitro.scale and vitro.alive **mimic dynamic blood perfusion** on cell models:
  - **controlling** temperature, O<sub>2</sub>, pH, and perfusion rate;
  - **delivering** compounds, reagents, and samples.
- Vitroscope **repeatably achieves 80-90% viability** within liver and lymph node tissue slices from mouse and non-human primate at 72h culture.
- **Timelapse** by high-power microscope.
- **Future proof** - next gen applications (**vascularised organoid perfusion**).
- **Open system**, full access to data, supernatants and tissue for **down-stream analysis and AI integration**.
- **Selected publications:**
  - Underlying research from pre-Vitroscope: [Nature Comms 2012](#), [Biomaterials 2013](#)
  - Underlying tech validation: [Frontiers In 2019](#)
  - Sensor extended Imaging: [Nature Comms 2024](#)
  - Nephrotic Kidney: [JASN 2025](#)
  - Aggressive Cancer Subtype selection: [MPS Summit 2025](#)

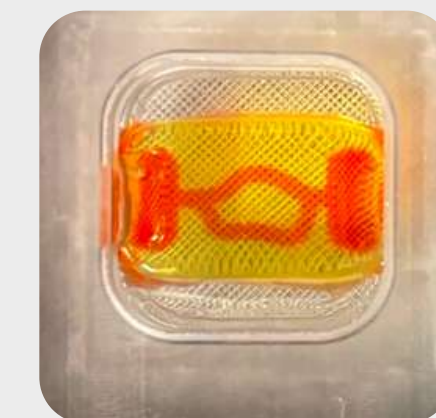


Timelapse observation

## ● BILARY CANALICULUS



Primary human hepatocytes: polarised tissue formation on vitro.alive (left), not visible in multiwell plate (right), 7 days culture.



Perfused 3D bioprinted blood vessels & organoids.