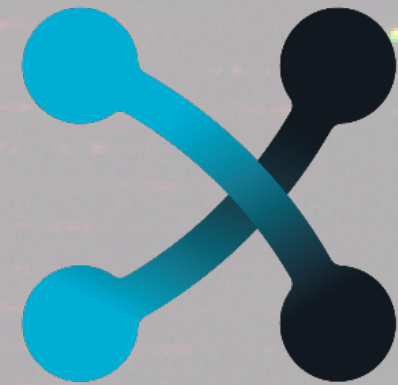


# Brain-on-chip devices, integration of different technologies into the same chip

Thibault HONEGGER, CEO & Co-Founder

Alternatives to animal experimentation - ADEBIOTECH



NETRI

# NETRI, Who we are

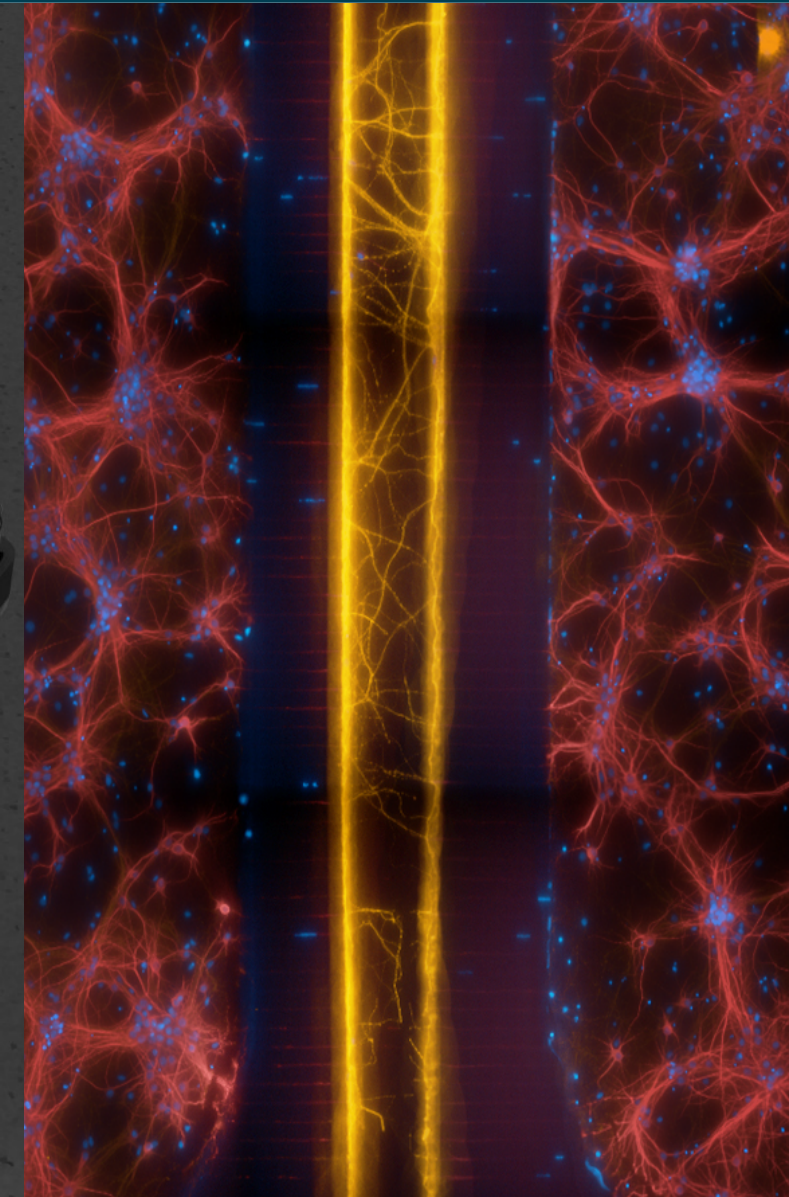
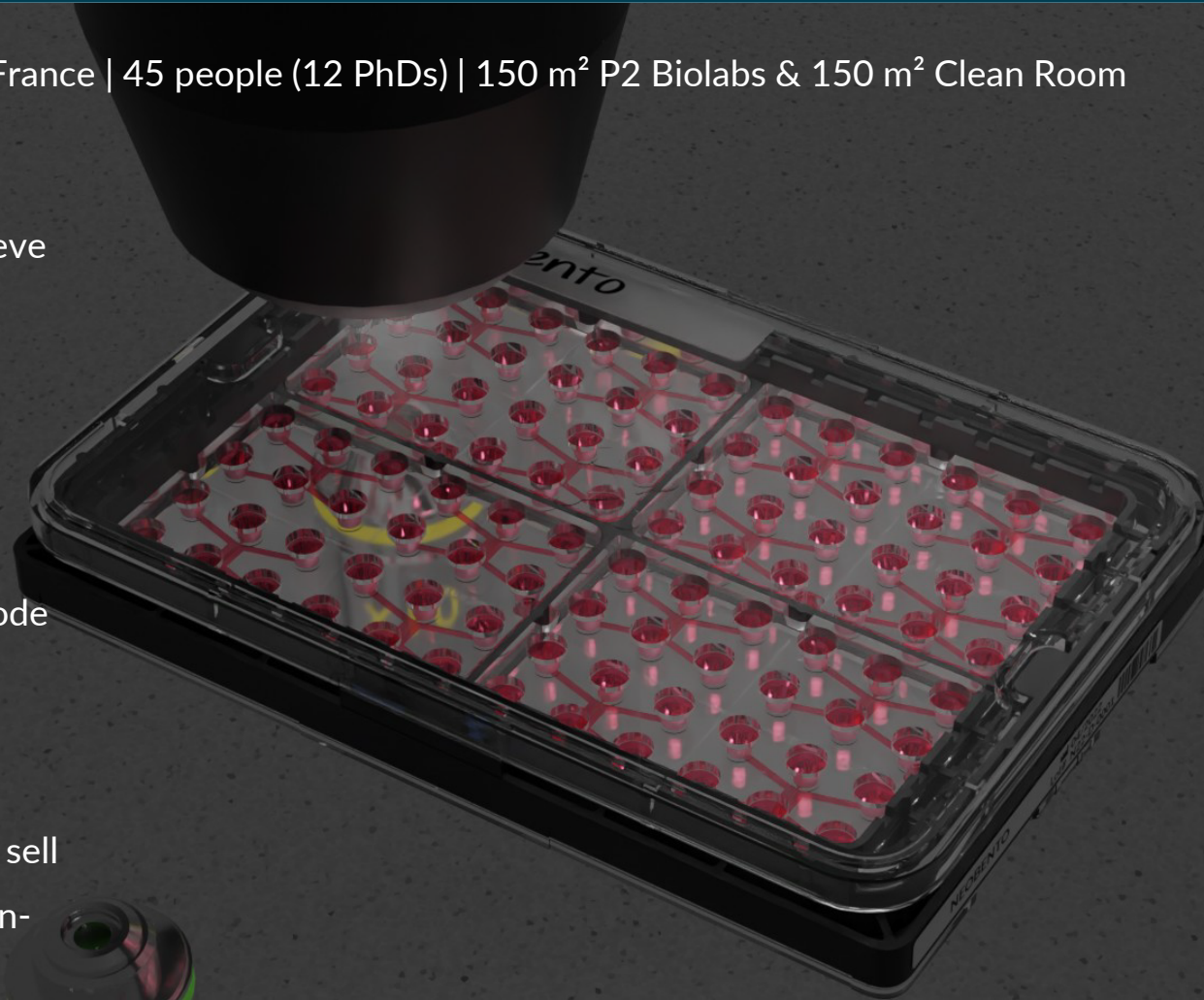


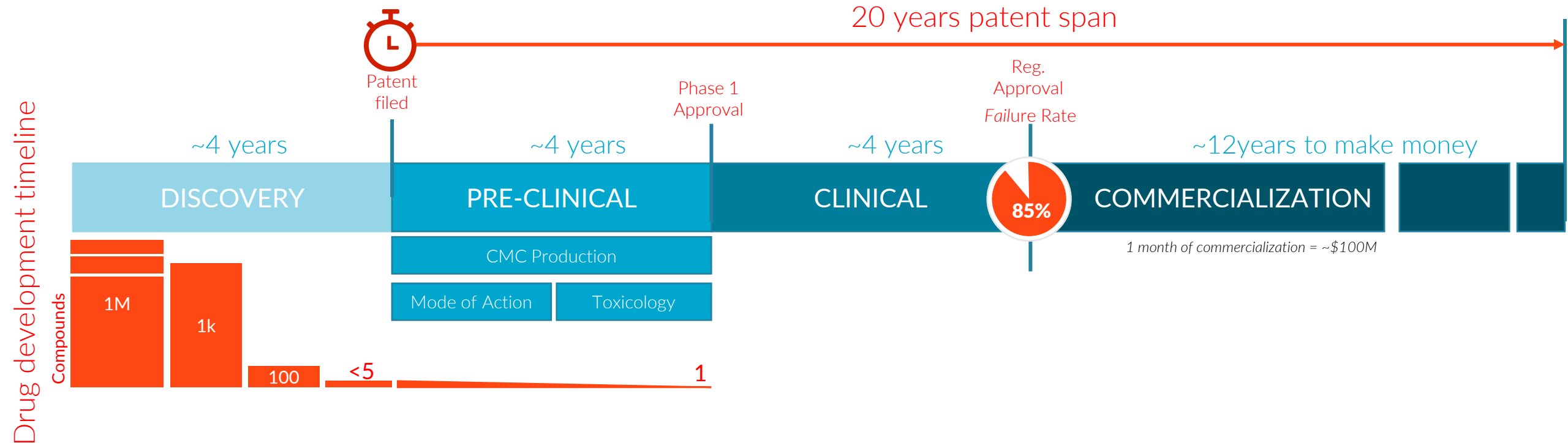
Since 2018 | Based in Lyon, France | 45 people (12 PhDs) | 150 m<sup>2</sup> P2 Biolabs & 150 m<sup>2</sup> Clean Room

In everything we do, we believe  
in challenging the way we  
discover new treatments

We use neural activity at the  
network level to translate mode  
of action of any drugs

We design, manufacture and sell  
standardized neuro organs-on-  
chip



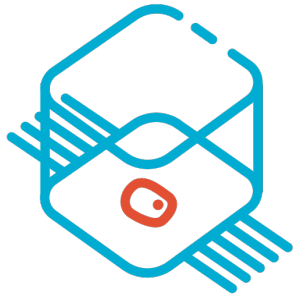


The market is already looking to :

- **Speed up pre-clinical phases**
- **Diminish clinical failure rate**
- **Minimize animal testing**

To address this, we believe the future of pre-clinical research will be about **larger, faster and more predictive datasets, generated animal-free**

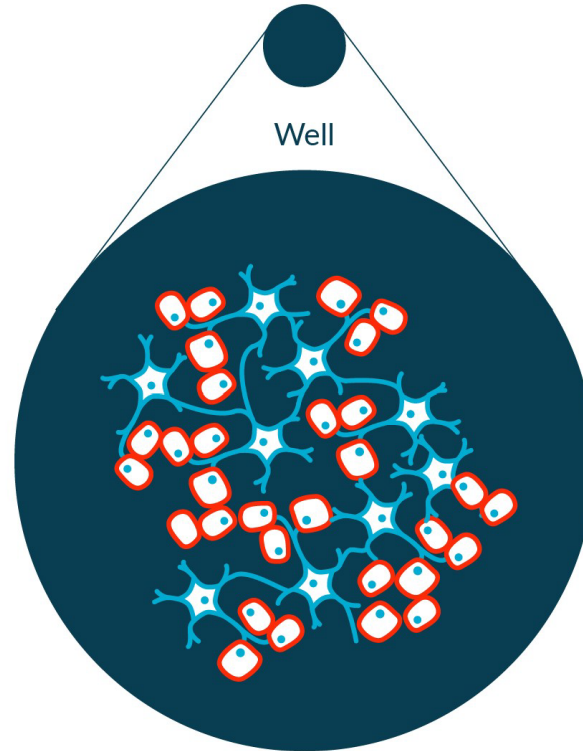




- Organs-on-chip, an in-vitro model closer to anatomy
- Ability to chose different cell types and differentiate them independently
- Architectures can be independent of culture type, making them modular in nature

## STANDARD METHODS

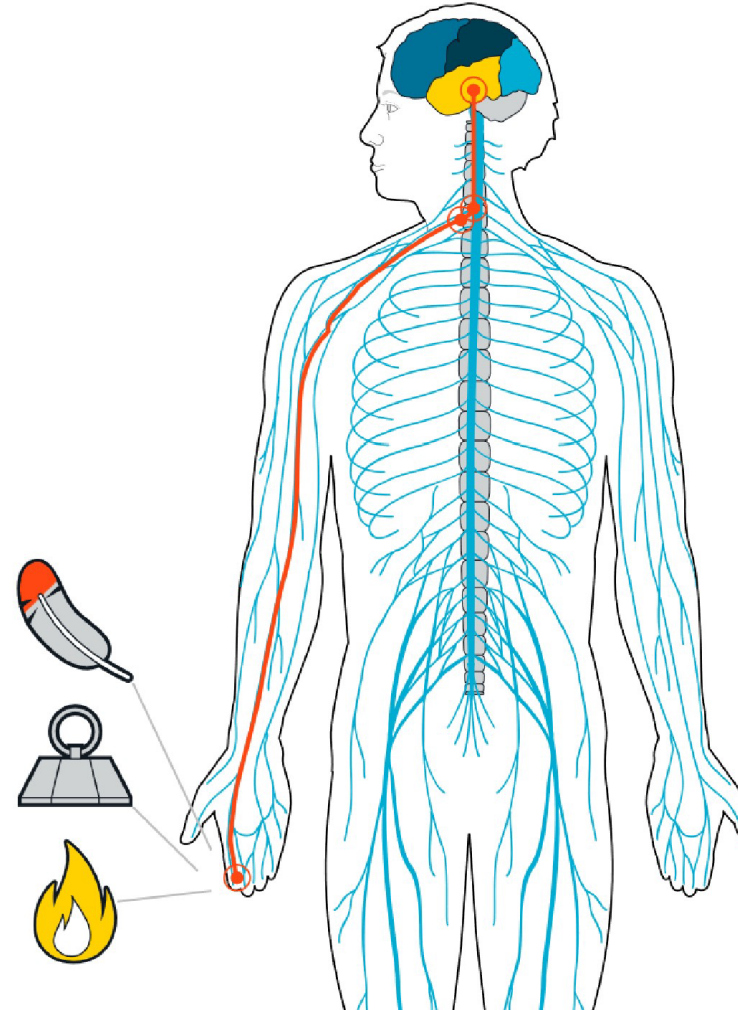
No Compartmentalization



Mixed Cell Types

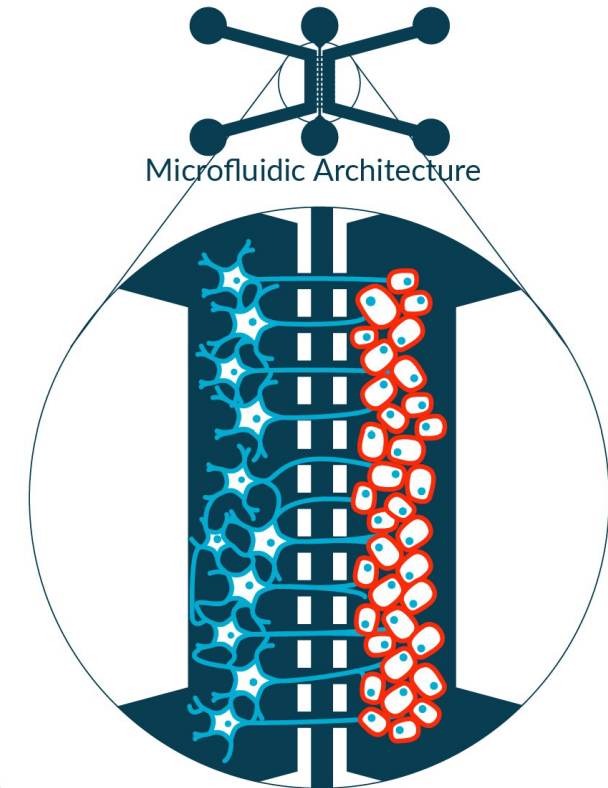
## ANATOMY

Natural Compartmentalization



## ORGANS-ON-CHIP

Compartmentalization



Cell Type 1 | Cell Type 2



The market is already looking to :

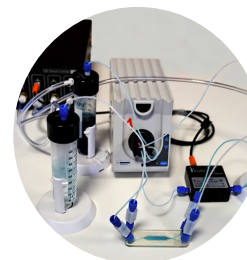
- Speed up pre-clinical phases
- Diminish clinical failure rate
- Minimize animal testing

Pre-clinical research will be about **larger, faster and more predictive datasets, generated animal-free**

Therefore, the future of OoC will be about **increasing relevance (and complexity) while maintaining high throughput capability,** by

- **Democratizing OoCs**
- **Leveraging existing equipment**
- **Standardizing datasets** through Digital Libraries of compounds
- **Preserving & Improving Relevance**

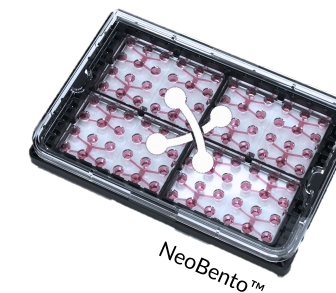
LOW THROUGHPUT



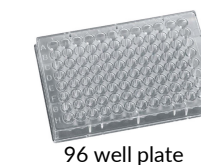
HIGH RELEVANCE  
*(high complexity)*

HIGH THROUGHPUT

THE FUTURE OF PRECLINICAL RESEARCH



LOW RELEVANCE  
*(low complexity)*



96 well plate

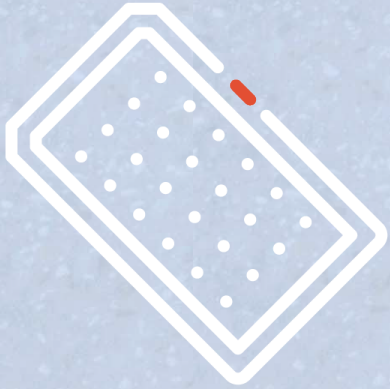


384 well plate

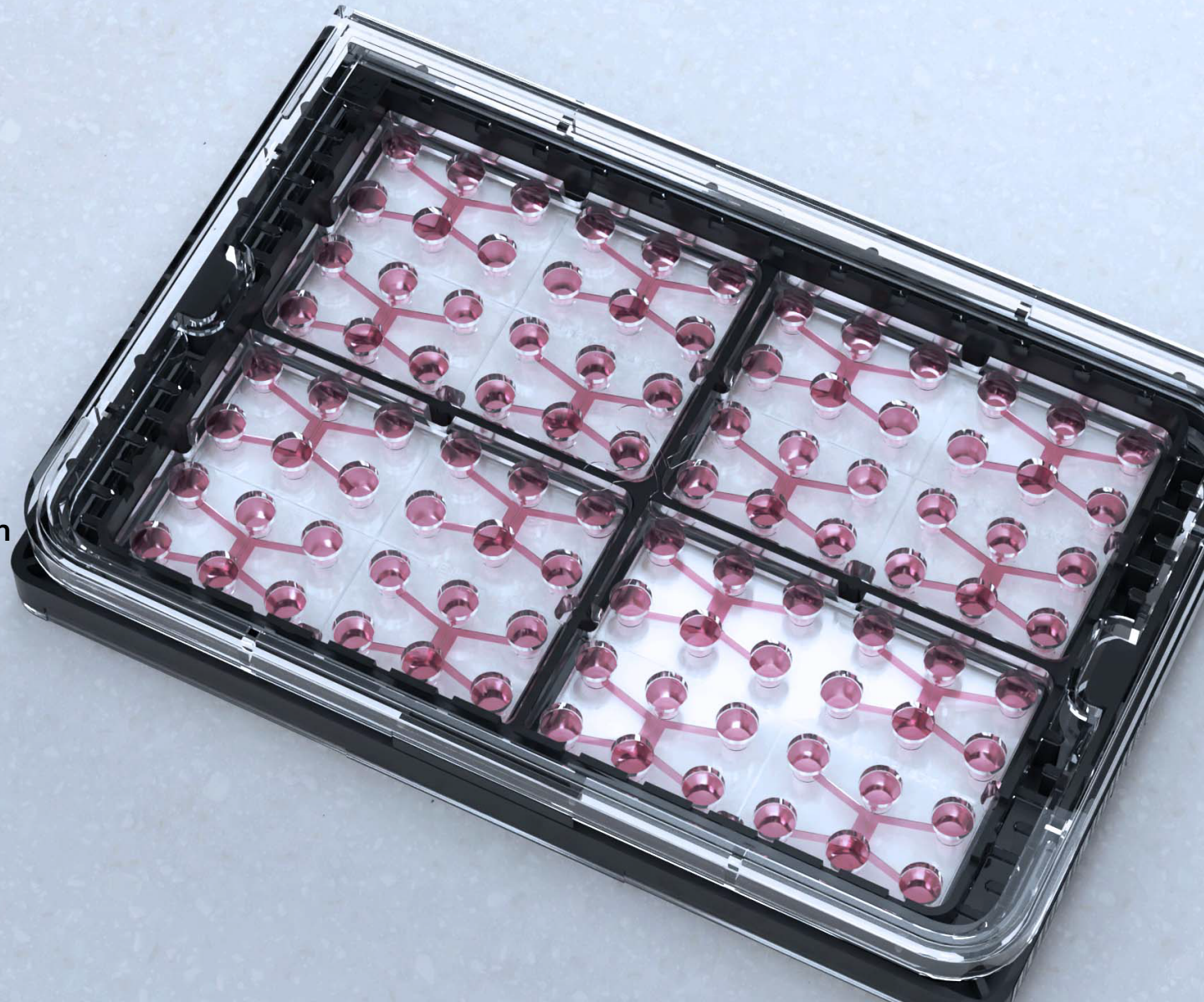


# NETRI's interoperable high throughput neuro-OoC platform



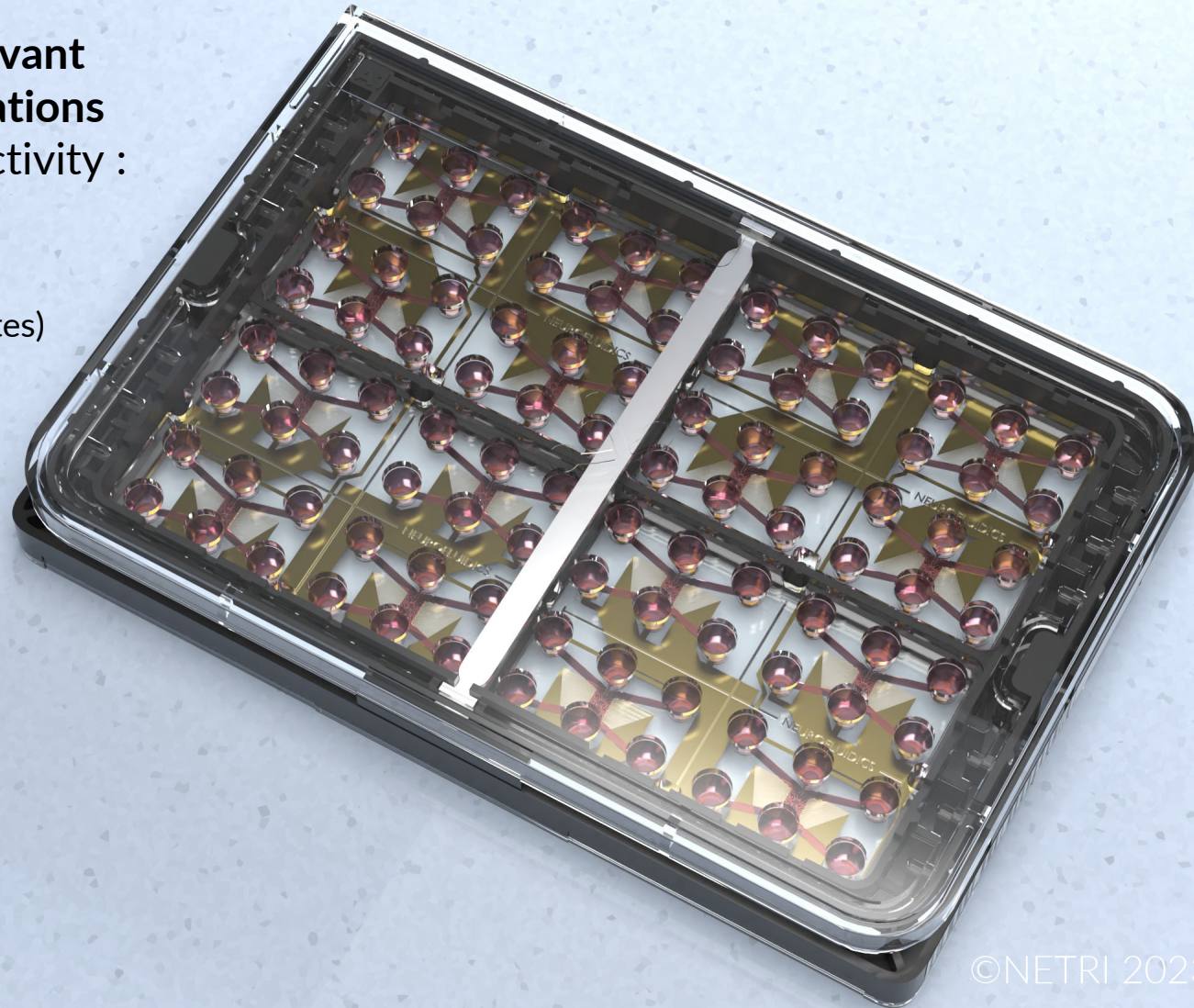


- Standard **SBS alignment** on **96-well plates** format
- Compatible with **liquid handling equipments** and **imaging equipments** with available access paths and mapping
- Compatible with **routing control imaging** and **high magnification imaging**
- **Flexibility** and **optimization** of the experimental planning
- **No up-front equipment**
- **Easy humidification**
- **Cellular viability**
- **Example :**  
Compatibility with industrial high throughput equipment



**Recreate physiologically relevant compartments of cell populations & monitor their functional activity :**

- Neuron to Neuron CNS
- Neuron to Neuron PNS
- Neuron to Skin (Keratynocytes)
- Neuron to muscle
- Neuron to X
- ...



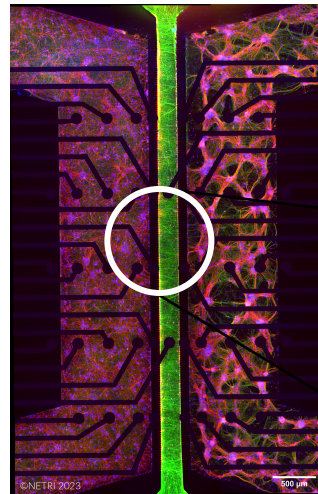
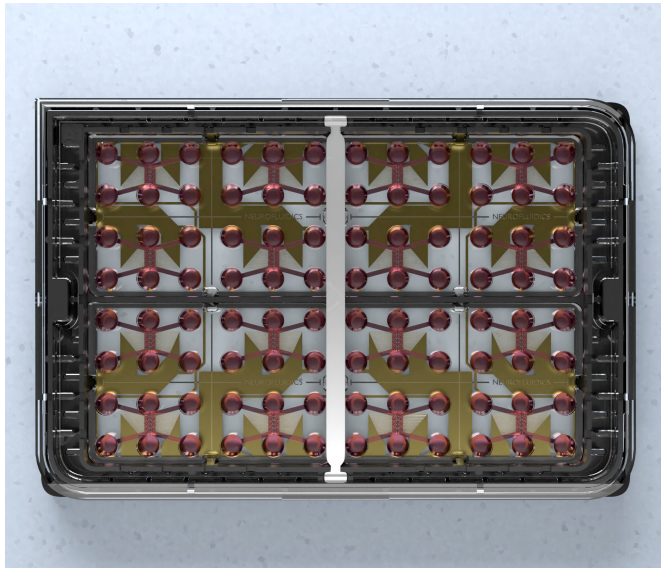
**Stimulate (compound or electrical) one population to gauge the effect on the other populations without directly subjecting them.**

**Isolate and target synapse activity**

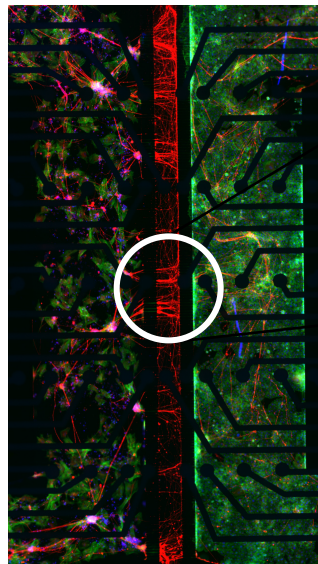
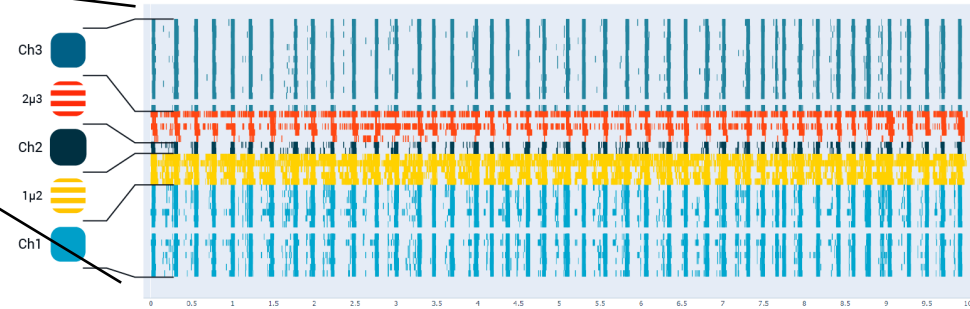
*Detect Speed and directionality of travel (tbc)*

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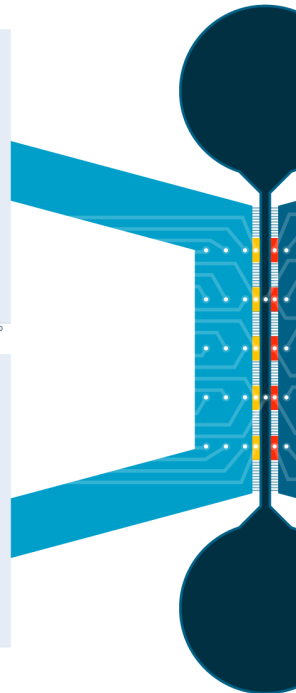
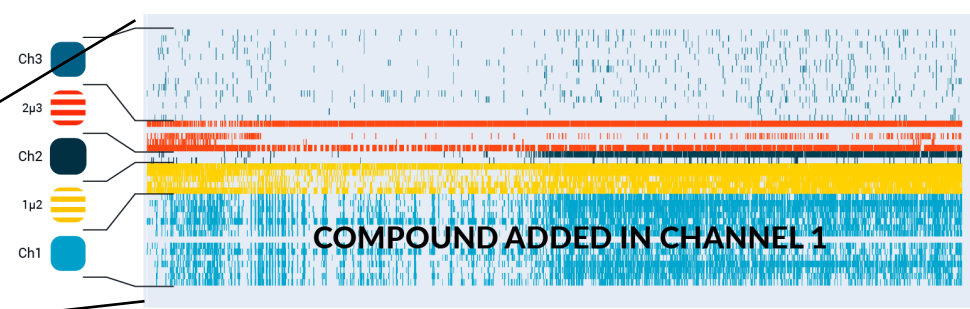




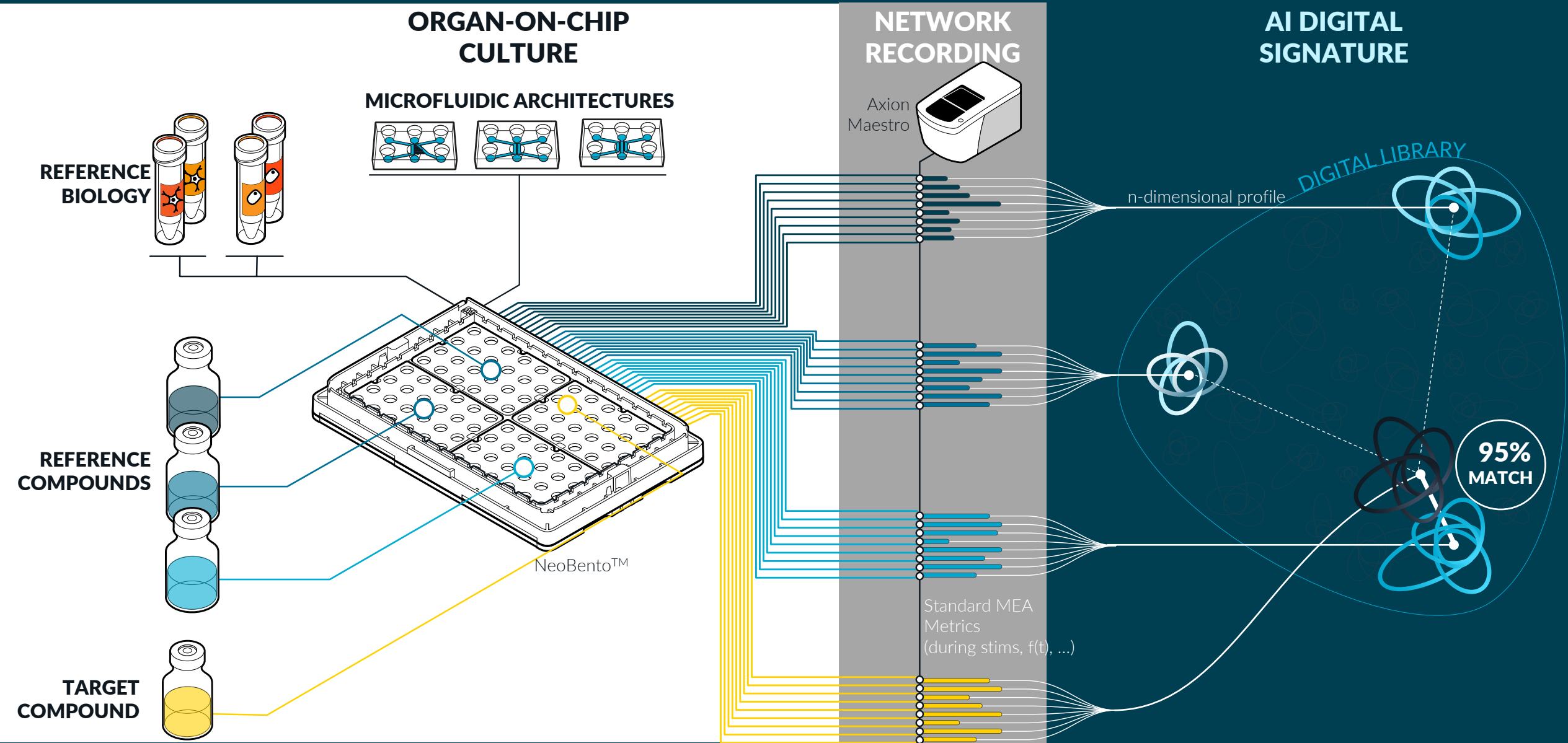
Healthy condition

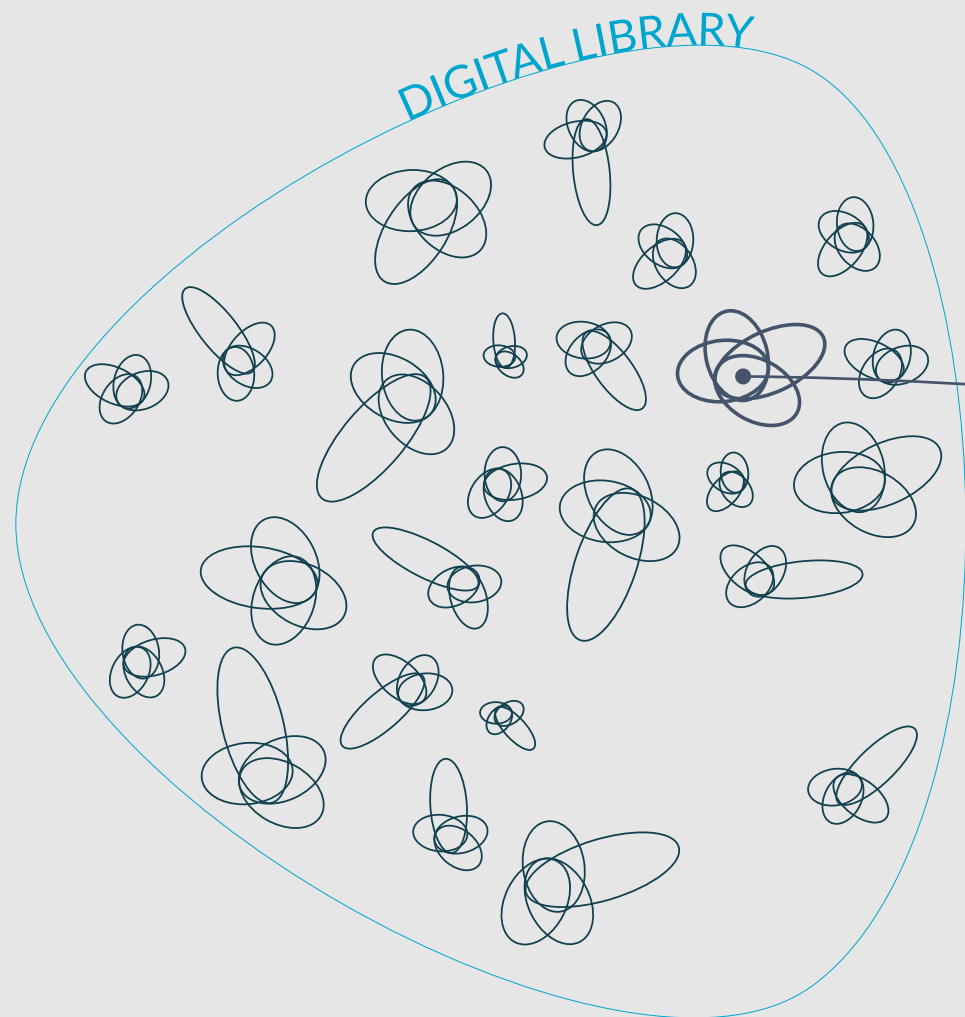


Pathological condition



# A Digital Library of network-effect signatures





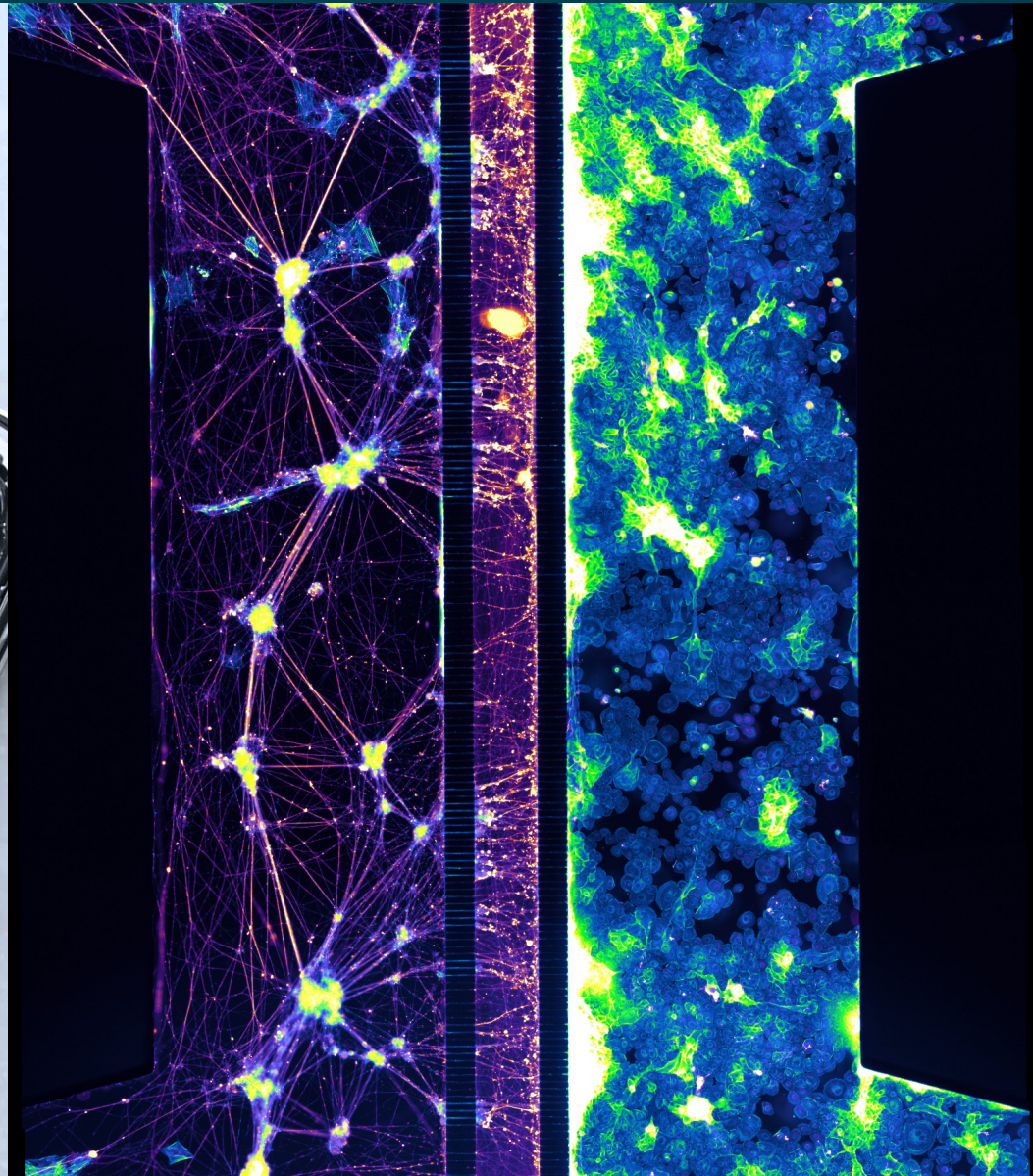
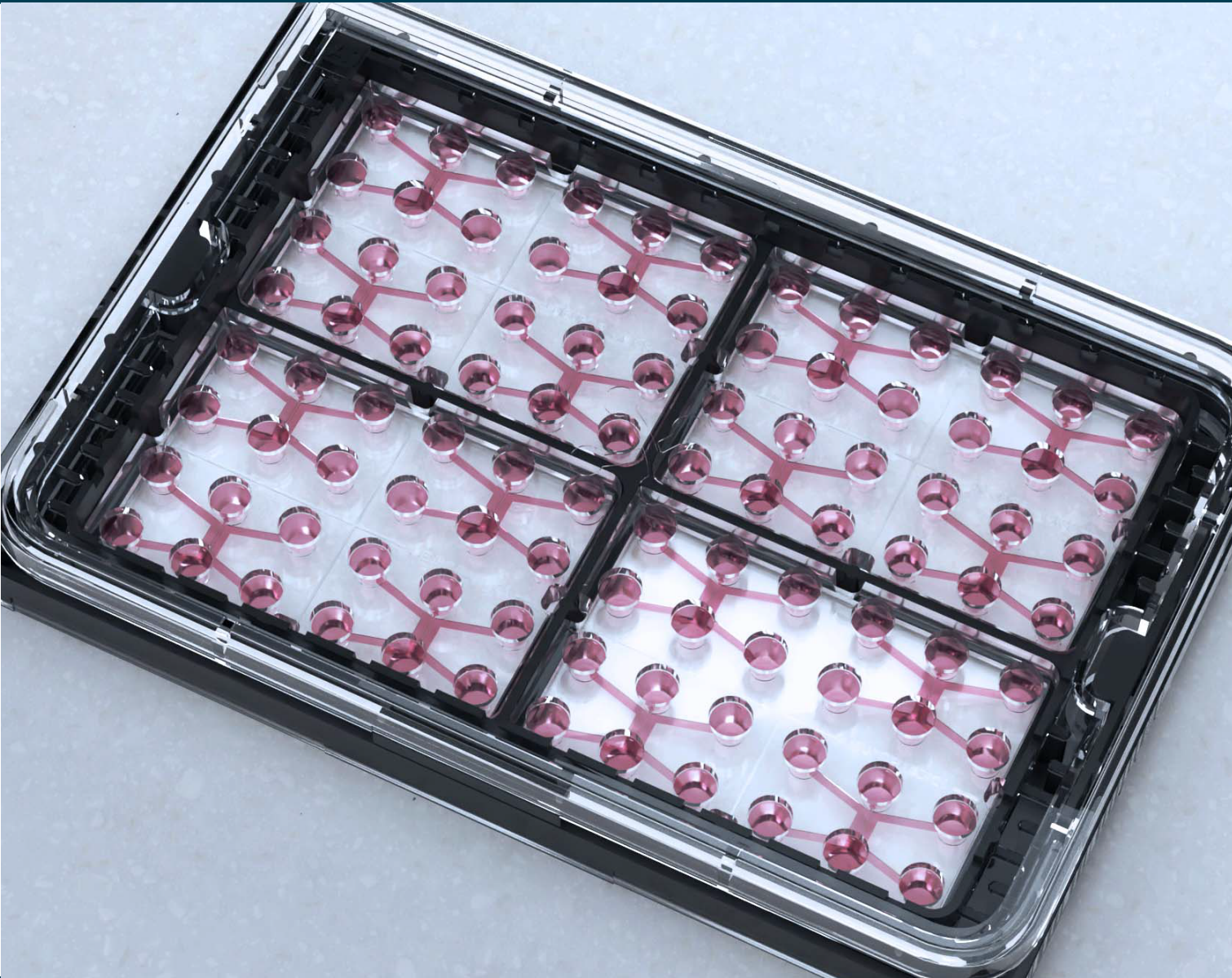
## NETRI DIGITAL LIBRARY

Viewing by : Pathology [Mechanism](#)

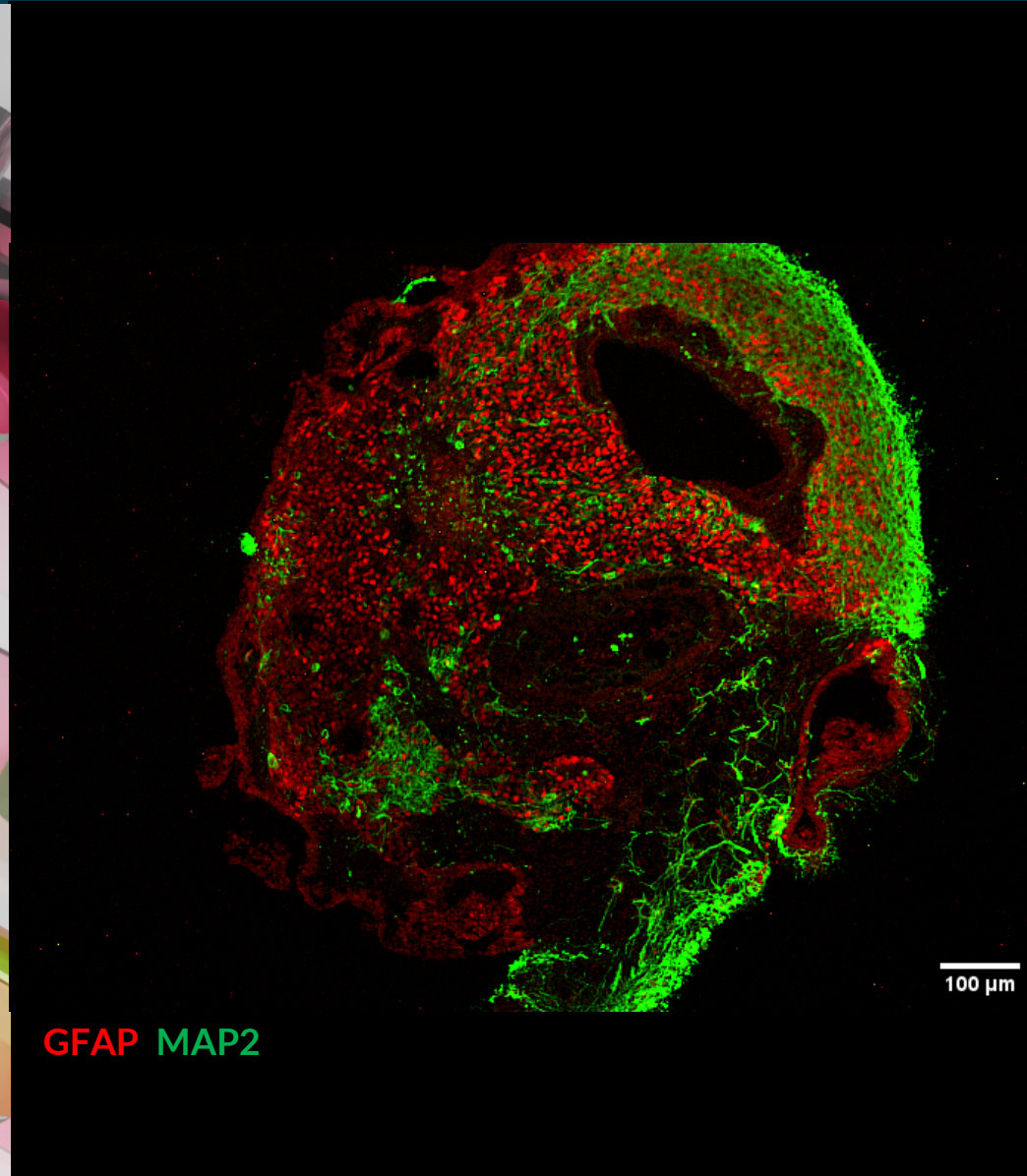
- Folder Pain Signatures
  - Folder Hyperalgesia
    - Folder Current PhI-III Clinical Trials Compounds
      - Folder First in-class
      - Folder Repositioning
    - Folder Failed PhII-III Clinical Trials Compounds
    - Folder Commercial Compounds
      - Atom Ibuprofen
        - Chip : [Dualink Shift](#)
        - [NETRI Protocol](#)
        - [Analytics](#)
      - Atom Acetaminophen
      - Atom Aspirin
  - Folder Neuropathic Pain
  - Folder Nociceptive Pain
  - Folder Allodynia
- Folder Neurological Troubles Signatures
- Folder Dermatopathological Signatures
- Folder Microbiota Signatures
- Folder Infectious disease Signatures



# Skin-on-chip



# Brain-organoids-on-chip



# New growth opportunities

NETRI's  
Growth  
Relays

## CONTRACT RESEARCH ORGANIZATIONS

**ETAP-Lab**

etap-lab.com



charles river

BIOSYSTEMS  
**Acro**



**ThermoFisher**  
SCIENTIFIC



## MARKETPLACES

## REFERAL CLIENTS



The Chemical Company



**AXION**  
BIOSYSTEMS



**AXOL**  
Discovery Stems From Here

**FUJIFILM**  
Value from Innovation



## SUPPLIERS

## ACADEMIA CALL TO PROJECTS



**Inserm**

université  
PARIS-SACLAY



**CHU**  
Saint-Étienne

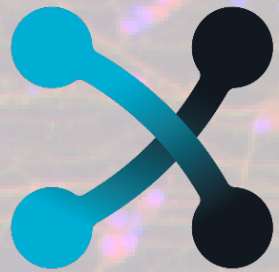
**ansm**

Agence nationale de sécurité du médicament  
et des produits de santé



EUROPEAN MEDICINES AGENCY  
SCIENCE · MEDICINES · HEALTH

## REGULATORS



NETRI

# Thank you!

PROVIDING [NEURO-ORGANS-ON-CHIP](#) FOR THE INDUSTRY

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[contact@netri.com](mailto:contact@netri.com)

