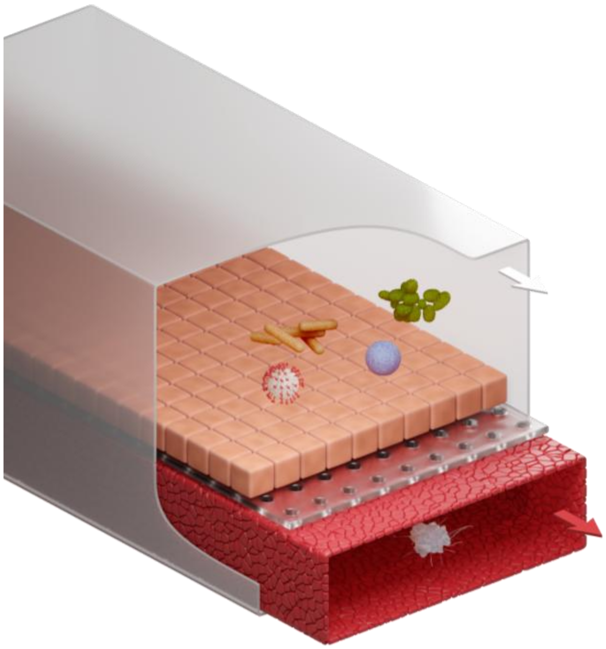
# Cellbox Labs

Industrial organ on chip technology



Organ on a chip technology is a cutting-edge in vitro test system that recreates the complex environment of human tissues on a microscale device, enables accurate modelling of human tissue biology and addresses the limitations of traditional in vitro and animal models.

Cellbox Labs industrial Organ on Chip technology simplifies the adoption of organ-on-chip advanced platform for drug discovery and disease research, streamlining workflows while saving time and reducing cost.

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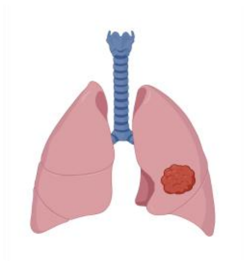
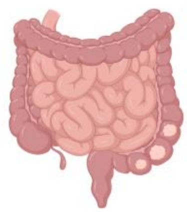
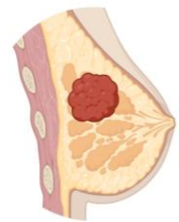


**Lung cancer**



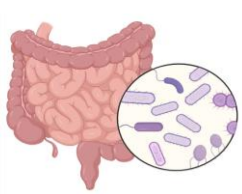
**Intestine**



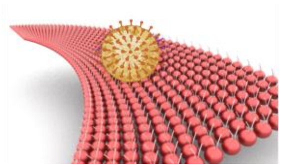
**Breast cancer**

**Design your own model**

With software-controlled flow, temperature, and imaging, Cellbox Labs systems enable researchers to design tissue models and a wide variety of cell types for custom models and applications.

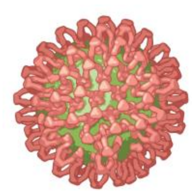


Host and microbiota interaction

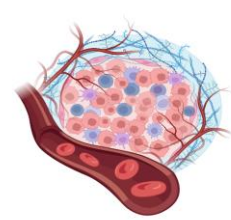


Biological barrier transport and integrity

Drug toxicity and efficacy



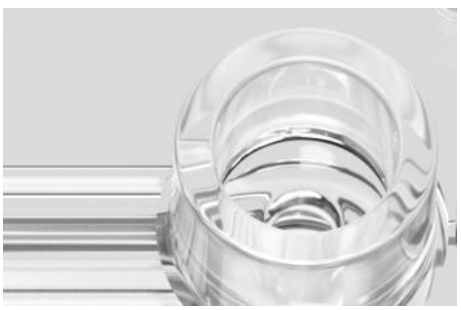
Infectious diseases



Cancer micro environment

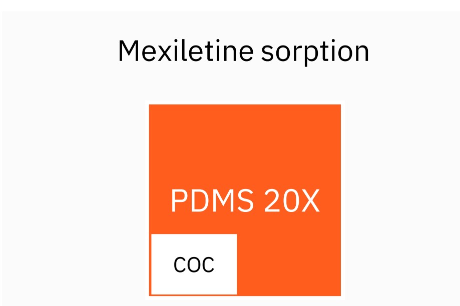
## Chips

Vertically stacked channel design separating endothelial and epithelial channels with a permeable membrane



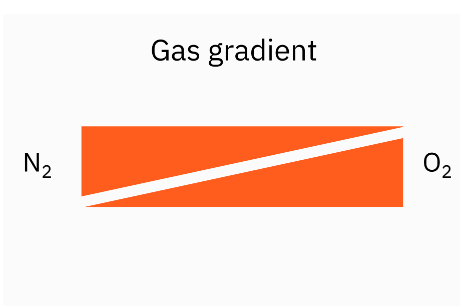
### High dimensional accuracy

Our mass manufacturing process guarantees exceptional reproducibility, achieving precision down to a few micrometers, ensuring consistency across every chip.




### Low chemical adsorption

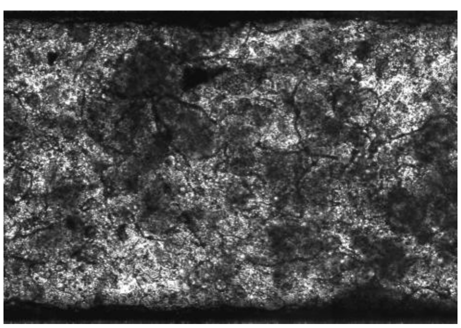
Made from COC (cyclic olefin copolymer), our chips offer significantly lower adsorption of small molecules compared to traditional PDMS, ensuring better retention and performance for your applications.




### Controlled gas environment

Designed to maintain precise hypoxia and normoxia conditions, our chips enable accurate and reliable organ model development.


## Automated system allows flexible experiment design and significantly reduces hands-on time



### Integrated microscopy

Built-in bright-field microscopy enables real-time monitoring of cell cultures. The system automatically captures images of the entire channel in just 2 minutes, and microscopy can be conducted remotely from the comfort of your office or home

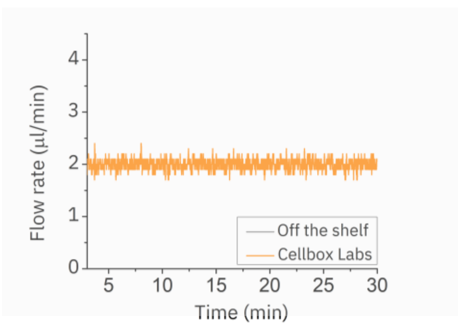

### User-Friendly Design

No prior experience with microfluidics is required. The system is intuitive and easy to operate, with straightforward software that allows you to design and execute experiments in just a few hours of training.

| Organ 1 | Flow rate | Units | Time set |
|---|---|---|---|
| Top | 2 | µl/min | 9:00:00 |
| Bottom | 4 | µl/min | 9:00:00 |
| Organ 2 | | | |
| Top | 3 | µl/min | 12:00:00 |
| Bottom | 6 | µl/min | 12:00:00 |

## Unmatched Flexibility

The proprietary pumping system lets you set flow rates for each channel, enabling experiments with 1, 2, 3, or all channels simultaneously. You can also control media flow separately for the top and bottom channels, offering exceptional experimental customization.




## Real time flow measurement

The system has integrated real-time flow sensors for continuous monitoring. The company's patented media pumping system delivers an accurate flow range of 0.5–1000 µL/min.

## Bench-top system

Featuring a built-in, sealed incubator, the system allows precise control of gas content in the media, minimizing human error and contamination risks.

# The Workflow

1

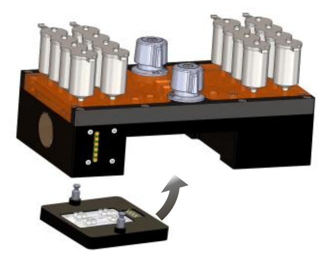
**Chip Seeding**

Chip functions as a cartridge on which the cells are seeded and cultured

2

**Chip into the Manifold**

The chip is inserted into the Manifold, which acts as a platform ensuring the flow of culture media in reservoirs and throughout the sensing elements



3

**Manifold into the Instrument**

Manifold is inserted and connected to the Instrument which provides a built-in Microscopy system


4

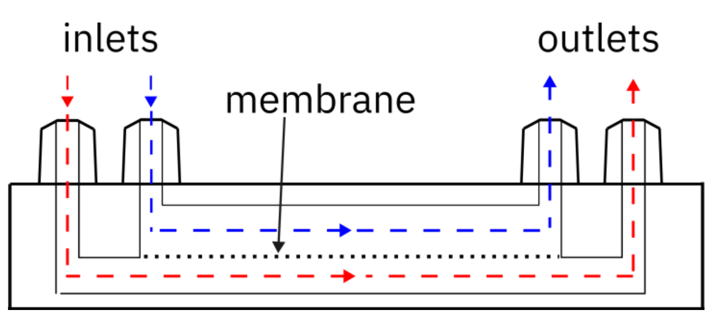
**Connecting to the Software**

The Instrument is controlled via Software, offering a real-time Microscopy and a controlled microenvironment.

# Technical specifications

## Chip

| | | |
|---|---|---|
| Material | | COC |
| Number of units/organs per chip | | 4 |
| Dimensions | | 50 x 30 mm |
| Inlet connection | | Mini Luer |
| Outlet connection | | Mini Luer |
| Pumping | | Continuous flow |
| Top channel | Width x height | 1.10 x 1.25 mm |
| | Area | 19.8 mm² |
| | Volume | 24.8 µl |
| Membrane | Material | PET |
| | Pore size/density | Customizable [Standard: 3 µm, 0.5*10⁶, 5.7% porosity] |
| | Thickness | 20 µm |
| | Co-culture area | 18 mm² |
| Bottom channel | Width x height | 1.0 x 0.2 mm |
| | Area | 27 mm² |
| | Volume | 5.4 µl |
| Sterilization | | Ethylene oxide |

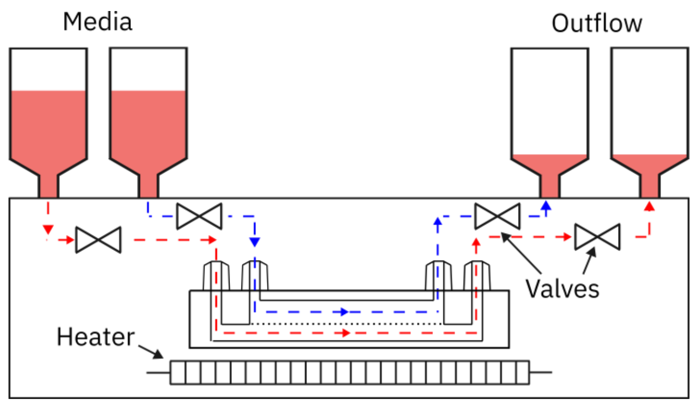



Schematic view of chip cross section

# Technical specifications

## Instrument

| | | |
|---|---|---|
| Number of manifolds | | 2 (up to 6) |
| Number of units/organs per chip | | 8 (up to 24) |
| Perfusion | Pumping<br>Control<br>Flow range | Piezoelectric air pressure system<br>Every channel individually<br>0.5-1000 µl/min |
| Bright-field microscopy | Image<br>Field of view<br>Light source<br>Frames<br>Number of images per channel | Monochrome<br>1.9 x 1.4 mm<br>LED<br>57 fps<br>10 for top & 10 for bottom |
| Temperature | Range<br>Uniformity | 30 to 50 °C<br>±0.25 °C |
| Instrument control computer | Processor<br>RAM<br>SSD<br>Operating system | i7-13700T<br>16 GB<br>512 GB<br>Windows 11 Pro |
| Connections | | HDMI, 2 x USB A, Ethernet |
| Gas input port | | 6 mm push fit |
| Dimensions | | 605 x 455 x 370 mm |
| Power requirements | | 100 VAC to 240 VAC 50/60 Hz |




Schematic view of manifold cross section

The manifold functions as a compact incubator, providing the interface between the chip and the instrument.

www.cellboxlabs.com