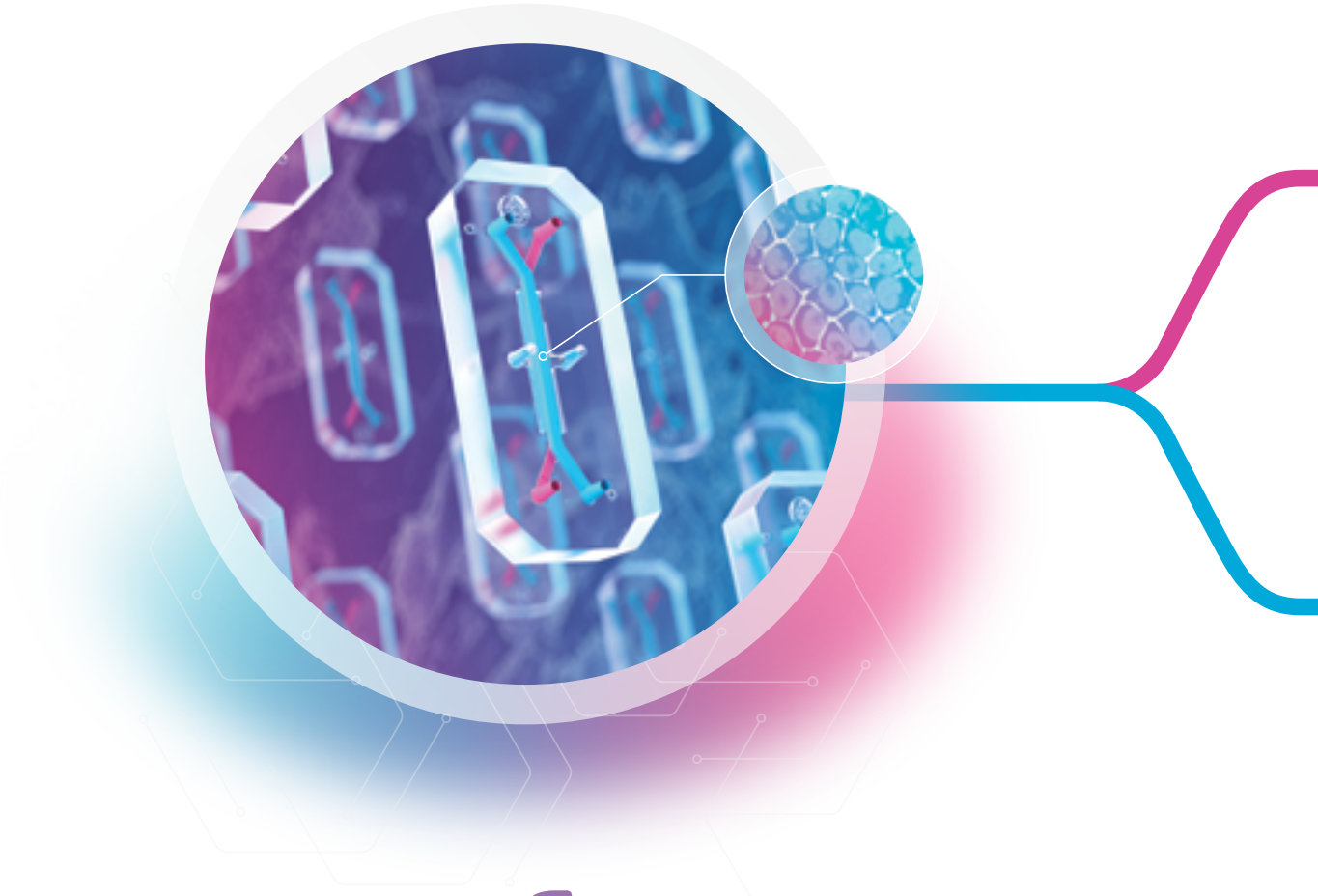
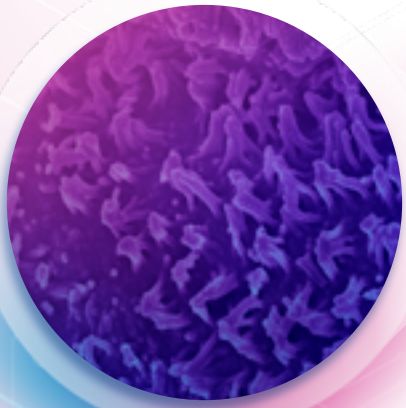


Redefining

Drug Discovery and Development

The Human Emulation System® — a complete Organ-on-a-Chip solution for next-generation *in vitro* models

emulate



Unprecedented biological insight

Welcome to the new age of drug discovery and development—an era powered by more predictive models of human biology.

Traditionally, pharmaceutical development has relied on conventional *in vitro* and animal models that cannot accurately recreate human biology or response to therapeutics. Because of this, only 10% of projects lead to an approved drug.

Fortunately, there is a better way.

Using the Human Emulation System, you can model human disease and response to drug candidates right in your lab. With advanced Organ-on-a-Chip technology, the system emulates true-to-life human biology more faithfully than animal, spheroid, or other conventional models.

As a result, you can gain a deeper comprehension of human disease and a more accurate understanding of the effects of drug candidates earlier in the drug development process.

One system with limitless applications

Organ-on-a-Chip technology recreates the microenvironment cells experience inside the human body to more faithfully emulate human response compared to conventional models. The Emulate Human Emulation System provides an open platform for recreating human biology with Organ-Chips, enabling you to model any organ of interest for any research application.

Applications include:

ADME-Tox

Predict the ADME-Tox profile of drug candidates with greater accuracy.

Inflammation

Explore complex mechanisms of inflammation and immune response.

Microbiome

Gain a deeper understanding of human host-microbiome interactions.

Infectious Disease

Study infectious disease, and evaluate treatment efficacy.

Cancer

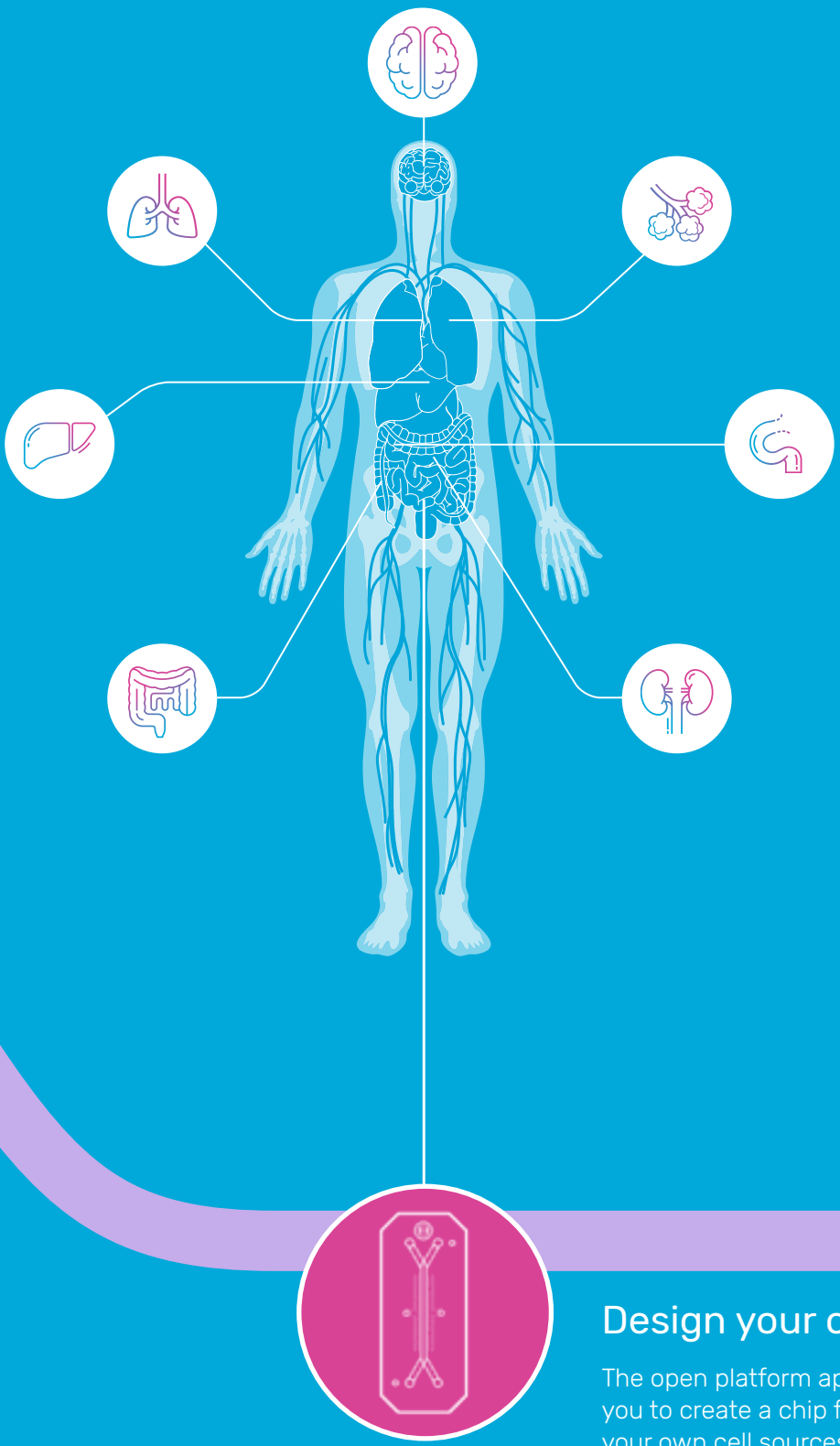
Model the complex tumor microenvironment, and evaluate the safety and efficacy of immunotherapies.

Neuroscience

Advance drug discovery and development for neurodegenerative diseases.

LEARN MORE

Model any organ



Supported Organ-Chips include:

Airway Lung-Chip

Primary co-culture model recreating key features of airway physiology, featuring increased cellular differentiation and functional cilia

Alveolus Lung-Chip

Primary co-culture model of the alveolar-capillary interface with an air-liquid interface and cyclic stretch to emulate breathing

Brain-Chip

Most comprehensive *in vitro* model of the neurovascular unit, with five cell types in a dynamic and tunable microenvironment

Colon Intestine-Chip

Only model to incorporate primary organoids and colonic endothelial cells with mechanical forces to emulate in vivo physiology

Duodenum Intestine-Chip

Primary organoids and duodenal endothelial cells co-cultured under mechanical forces to overcome the limitations of cell lines

Liver-Chip

Four human cell types co-cultured in a dynamic microenvironment to support *in vivo*-like gene expression, functionality, and physiology

Proximal Tubule Kidney-Chip

Co-culture of primary human kidney cells under flow for improved cellular functionality and response to candidate drugs

Design your own chip

The open platform approach of the Human Emulation System allows you to create a chip for any organ using our Basic Research Kit and your own cell sources.

Chip-S1® Stretchable Chip

The predictive power of Organ-on-a-Chip technology

Organ-Chips allow you to more accurately predict response to drug candidates for any organ throughout the human body. Whether you use qualified cells found in our organ-specific kits or your own cell sourcing, each Organ-Chip recreates the microenvironment needed to model human response.

Cellular crosstalk

Recreate complex biology using the two distinct culture channels, while enabling cell-cell interactions through the thin, porous membrane.

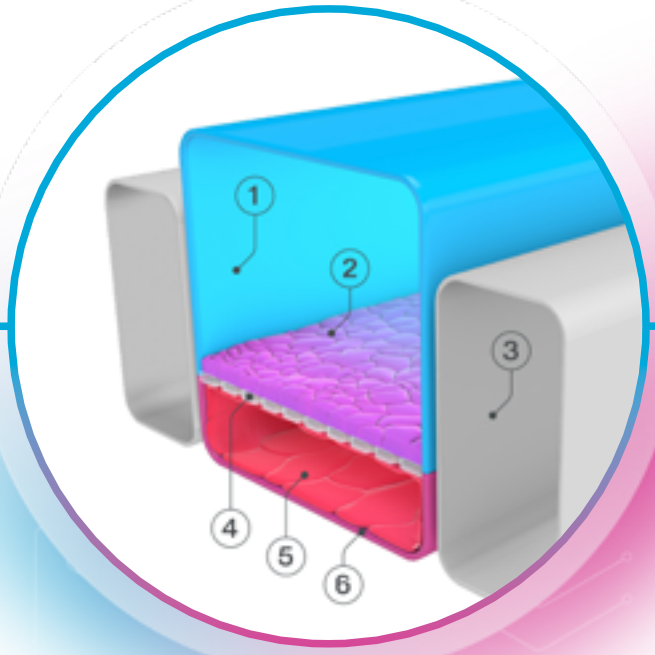
Flexible cell sources

Use a variety of human cell sources, including primary cells, induced pluripotent stem cells (iPSCs), organoids, and cell lines.

Biological complexity

Incorporate relevant biological components into each chip—including tissue-tissue interfaces, fluid flow, immune cell interactions, microbes, and mechanical forces.

1. Top channel
2. Epithelial cells
3. Vacuum channel
4. Porous membrane
5. Endothelial cells
6. Bottom channel



Unparalleled predictive toxicology

In the largest Organ-Chip study to date, 780 Liver-Chips were evaluated to assess toxicity risk across a blinded set of 27 known hepatotoxic and non-toxic drugs. Outperforming both animal models and spheroids, the Liver-Chip demonstrated a sensitivity of 87% and a specificity of 100%, supporting its use in preclinical toxicology assessment workflows. Published data for hepatic spheroids, meanwhile, shows a sensitivity of 47% and a specificity of 100% for the same drug set. A computational economic analysis suggests that, with this performance, the Liver-Chip could generate $3 billion per year in small-molecule drug development by helping drive an increase in research and development productivity.

A complete Organ-on-a-Chip solution

The Human Emulation System combines instruments, consumables, and software in a flexible, open format. Each component is designed to make Organ-on-a-Chip technology more accessible and easier to use, enabling you to create robust and reproducible data for your drug discovery and development program.

Organ-Chip

At the center of our system, each Organ-Chip contains living human cells in an organ-specific microenvironment for improved human relevance.

Pod® Portable Module

The interface between Organ-Chips and Zoë-CM2™ Culture Module, Pod houses the chip, contains media and effluent, and enables compatibility with laboratory equipment.

Zoë-CM2™ Culture Module

Zoë sustains the life of cells within Organ-Chips, automating the precise conditions needed to culture up to 12 chips.

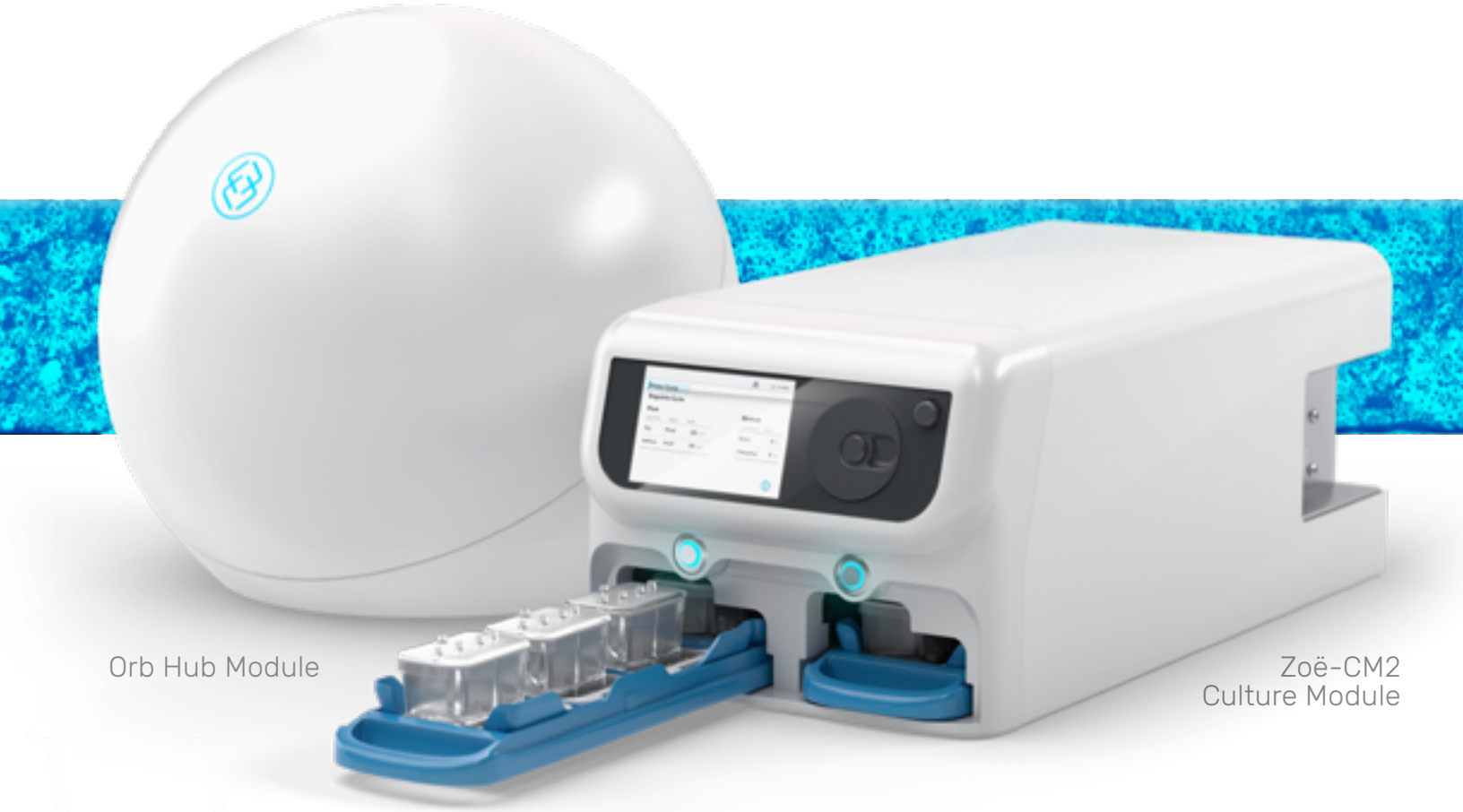
Orb® Hub Module

Orb connects to standard lab outputs, providing gas and stretch to up to four Zoë-CM2s.

Software

Our suite of software helps you design Organ-Chip studies, remotely control and monitor your Zoë-CM2, and analyze your results.

The Human Emulation System



Organ-Chips in your lab

By bringing the Human Emulation System into your workflow, you can overcome the limitations of inadequate *in vitro* and animal models. We'll support you every step of the way with robust scientific and technical support as well as an extensive library of validated protocols.

Organ-Chips as a service

We make it easy to partner with our scientific experts to gain access to Organ-on-a-Chip technology as an outsourced service. Working closely with you, we can design and execute the study you need to advance your drug development program.

With our selection of toxicology, drug-drug interaction, inflammation, and custom services, getting started with Organ-Chips has never been easier.

emulate

Join the growing Organ-Chip community

The time to get started is now. Researchers around the world are already using Organ-on-a-Chip technology to produce more human-relevant insights and advance drug discovery.

Let's advance human health together.

emulatebio.com

Emulate, Inc.

27 Drydock Ave, 5th floor
Boston, MA 02210

+1.844.902.4477
info@emulatebio.com

emulatebio.com