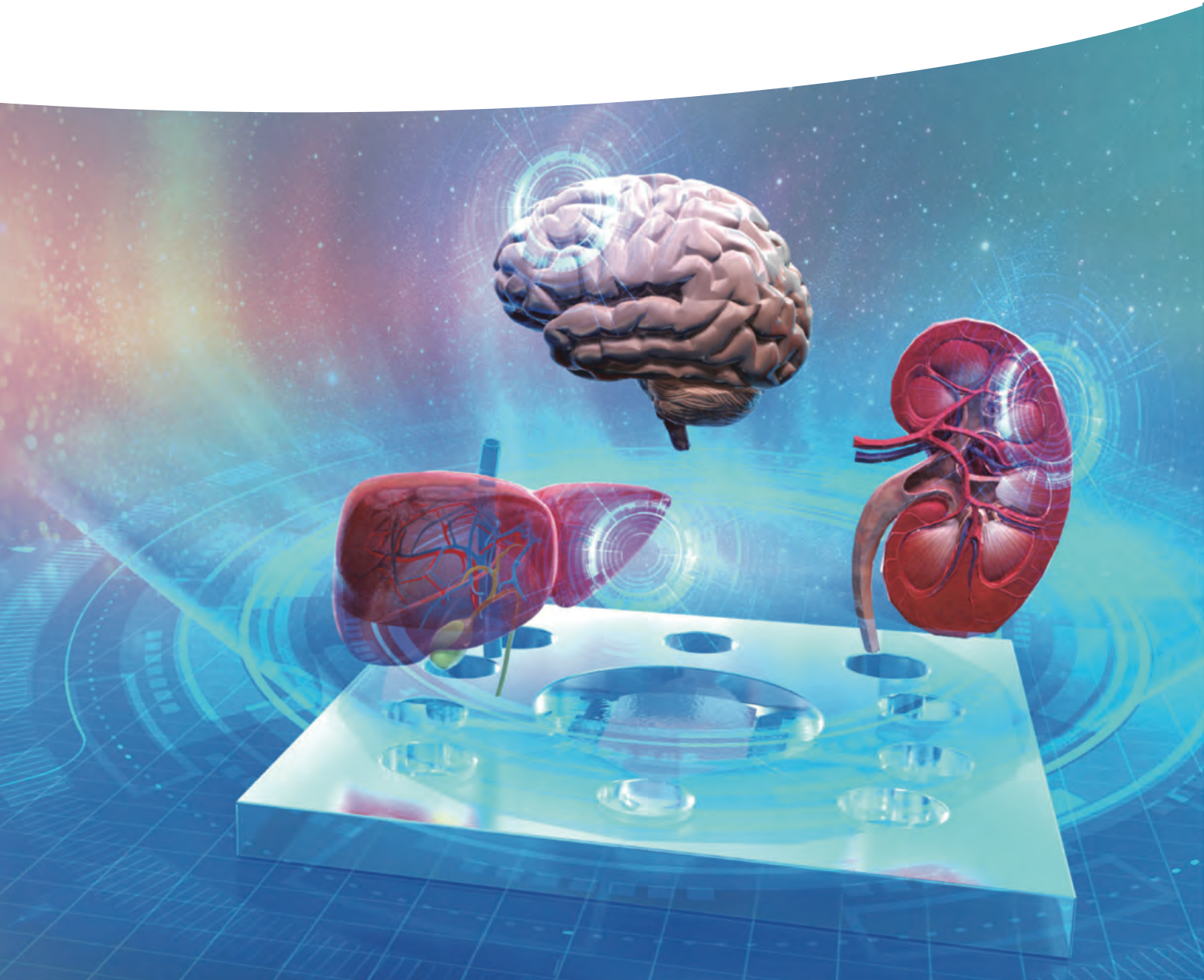




Physios Biotech

Physios Biotech Inc.

Organ Systems on Microfluidic Chips



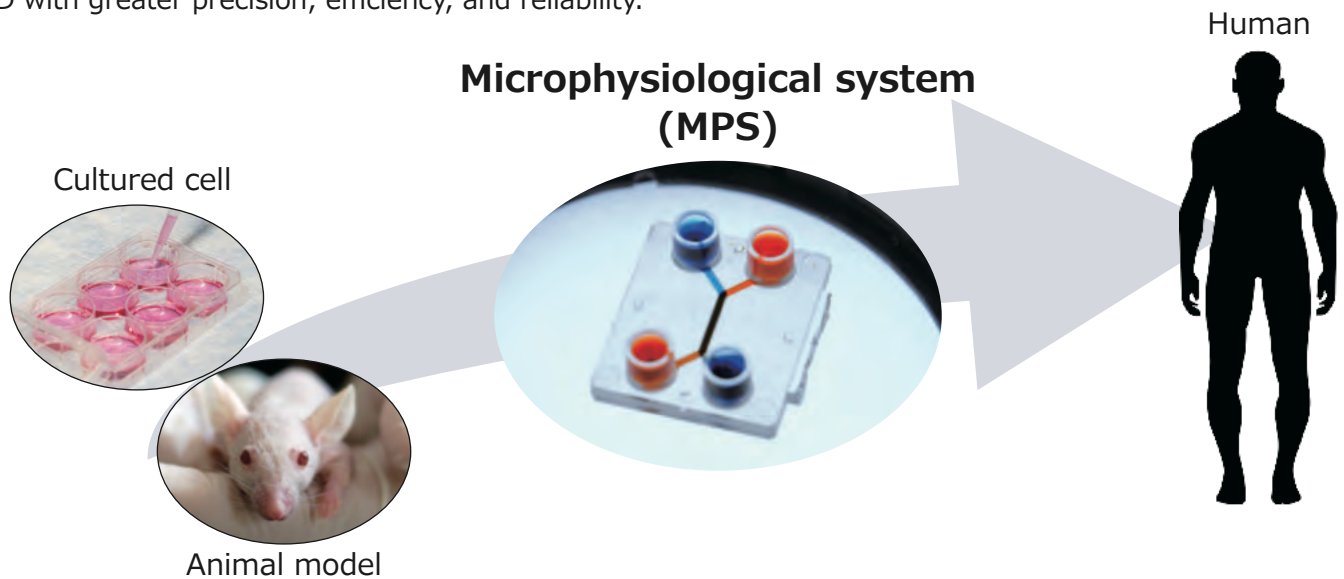
Miniaturizing human organ systems in microfluidic chips to delivering cutting-edge R&D tools for innovation

We are a startup company established in 2023 by Prof. Yokokawa at Kyoto University, specializing in microphysiological systems (MPS) technology.

MPS is an advanced microfluidic platform developed using nano- and microfabrication technologies to recreate functional tissue and organ models. By overcoming the limitations of conventional static culture systems, MPS replicates essential physiological conditions such as continuous fluid flow and dynamic cell-cell interactions. This innovation enables a more accurate representation of human biological functions.

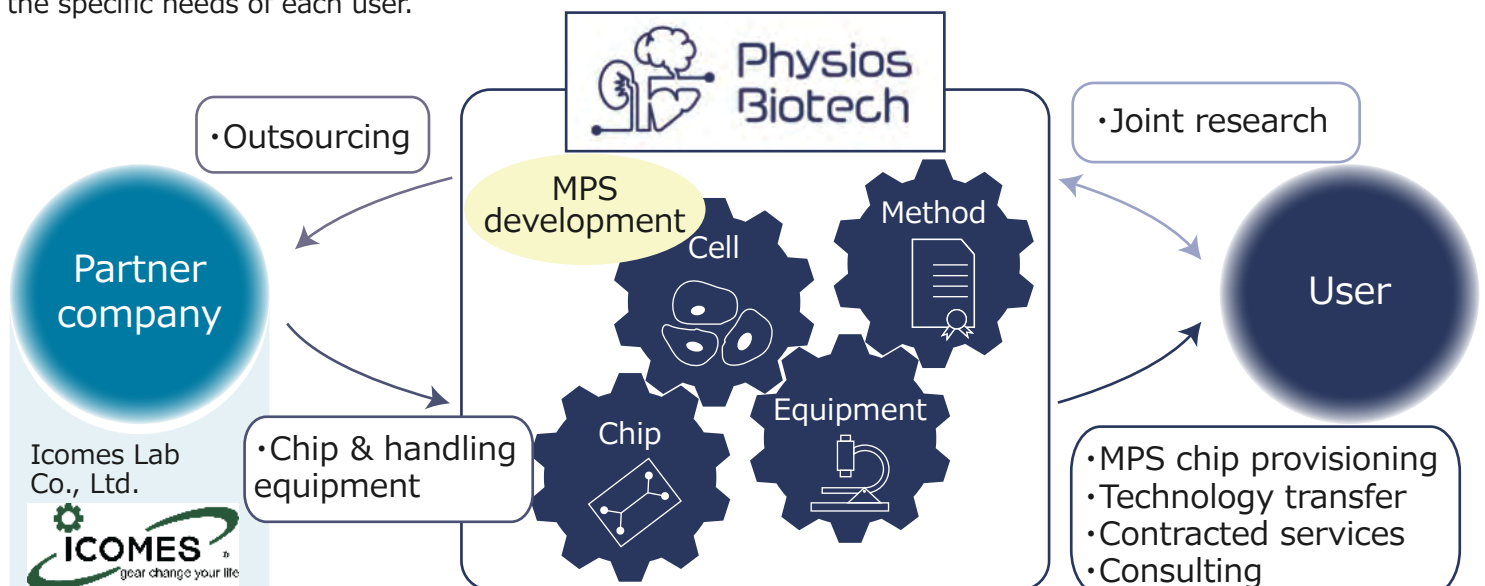
In traditional R&D, human cell cultures and animal models are commonly used. However, cultured cells often lack critical physiological functions, and animal models do not always faithfully mimic human responses. MPS technology addresses these limitations by offering a more physiologically relevant platform for research and testing. Its applications range from the development of pharmaceuticals, cosmetics, and supplements to the safety evaluation of chemicals and food products.

As a leading company in MPS technology, we deliver cutting-edge solutions across diverse industries, advancing R&D with greater precision, efficiency, and reliability.



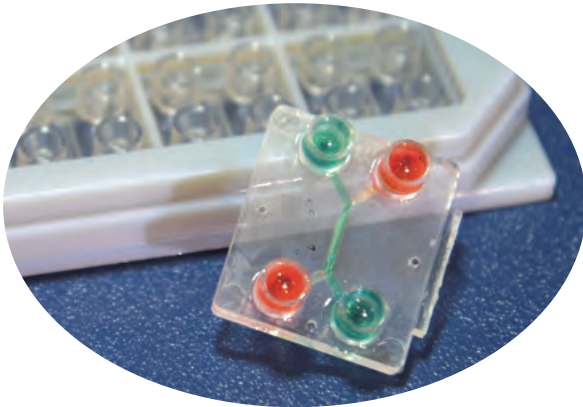
As a comprehensive MPS supplier

Developing and implementing MPS for specific purposes is often challenging for users to accomplish independently. This is partly because MPS development involves several critical components, including chip design, assay development for MPS construction, and the creation of equipment for MPS operation and measurement. Furthermore, MPS must be tailored to each specific application, adding to the complexity of implementation. Leveraging our expertise cultivated through research at Kyoto University, we develop and deliver MPS solutions tailored to the specific needs of each user.

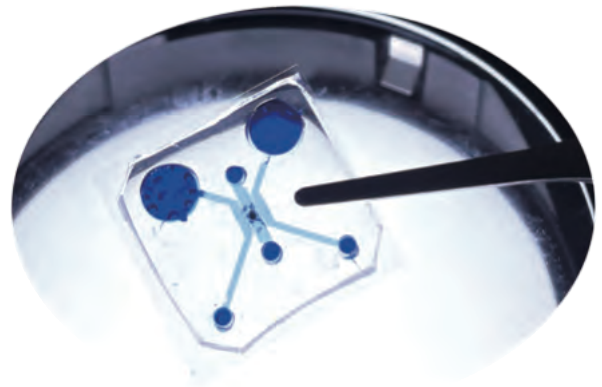


Core technology

MPS chips

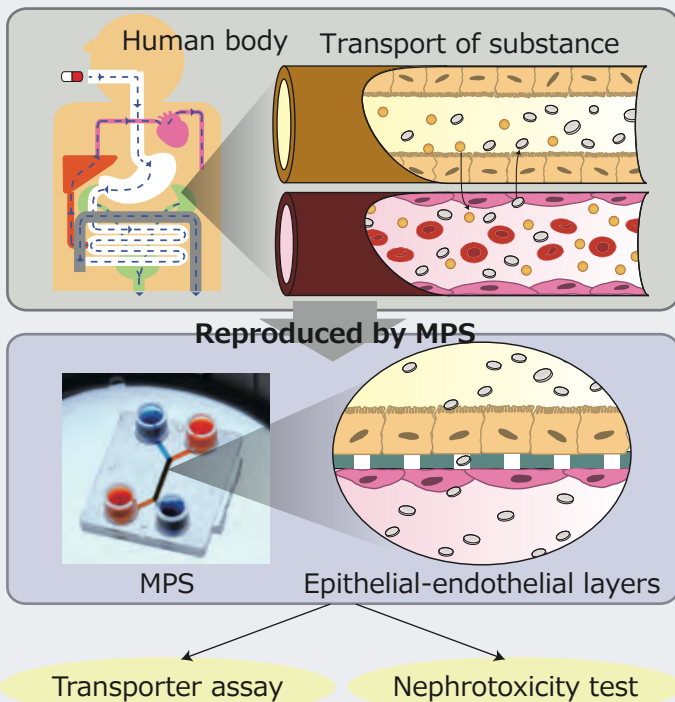


The MPS chip features a porous membrane that separates the upper and lower microfluidic channels. This configuration enables the co-culture of different cell types in each channel, facilitating the recreation of organ-level functions through controlled intercellular communication.



The MPS chip features multiple microchannels separated by micropillars, enabling the flexible placement of hydrogels, cells, and tissues within the channels. This design provides enhanced versatility for modeling complex biological systems.

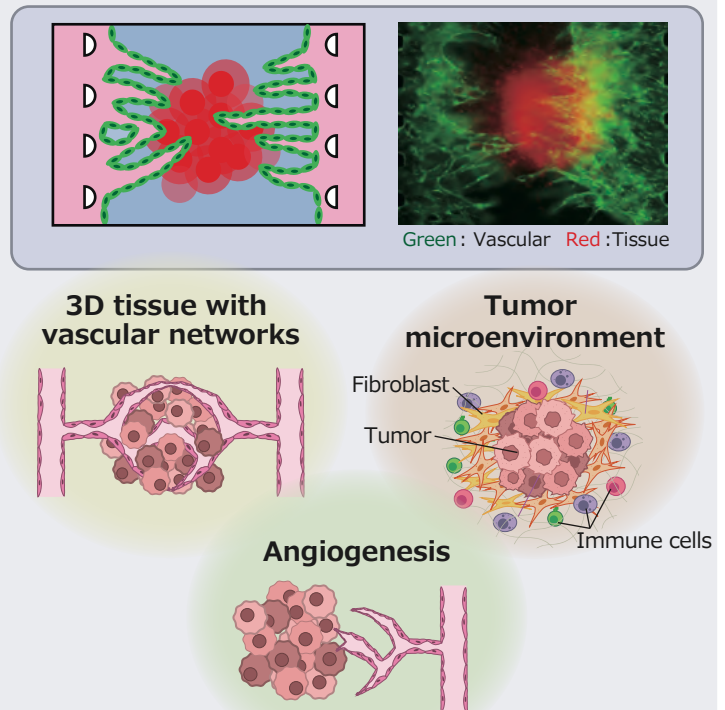
Proximal tubule model



Renal tubules play a key role in excreting drugs from the bloodstream into the urine. Accurate prediction of drug excretion is essential for understanding pharmacokinetics and ensuring drug safety. By culturing renal tubule epithelial cells and vascular endothelial cells on opposite sides of a porous membrane within the MPS, we can recreate renal tubule function. This MPS enables the evaluation of drug excretion and renal toxicity under physiologically relevant conditions.

Ref: R. Banan Sadeghian *et al.*, **Commun. Biol.**, 6, 483, 2023.

Vascular network model



This MPS enables blood vessel formation induced by growth factors secreted from 3D tissues, ensuring a continuous supply of essential nutrients and oxygen necessary for tissue development. In cancer research, targeting angiogenesis is a key therapeutic strategy, with drugs designed to inhibit new blood vessel formation and suppress tumor growth. This microphysiological system provides a powerful platform for generating vascularized organoids and spheroids and evaluating the efficacy of anti-cancer drugs.

Ref: S. Chuaychob *et al.*, **PNAS**, 121, 13, e2312472121, 2024.

<https://www.physiosbiotech.com/en/home/>



Company information

Company name	Physios Biotech, Inc.
Establishment	12th July, 2023
Capital	5,750,000 JPY
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