IOWN INTEGRAL

NTT R&D FORUM 2024

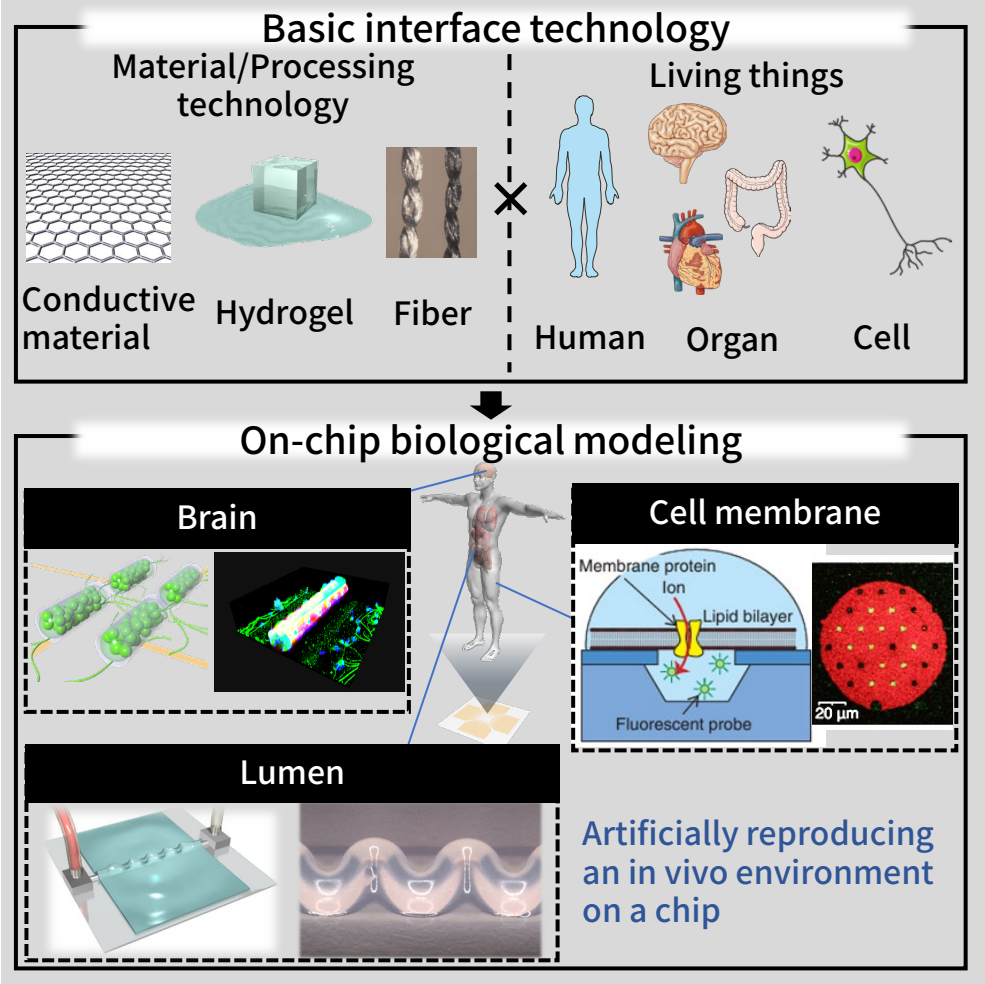
RESEARCH

γ 09-06

On-chip biological model

It is possible to recreate conditions similar to those in vivo on a chip, thereby acquiring biological information

Well-being, Human Capital Management



///Technical Issue

In order to mimic biological functions on an organ chip, it was necessary to create a shape and stimulating environment similar to that of a living organism.

///Research Goal

We aim to reproduce complex biological functions on a chip and to elucidate the mechanisms of biological functions at the cellular level.

---Technology

Combining NTT's microfabrication technology with processing technology for highly biocompatible soft materials, we will reproduce biological structures and functions that mimic living organisms on a chip.

---Novelty

1. Reproducing the complex movements of biological organs on a chip using a hydrogel processing technology.
2. Realization of signal measurements from three-dimensional (3D) neural networks with a 3D deformable electrodes.
3. Creation of an artificial cell environment that is more similar to a living organism and is suitable for evaluating biological functions at the molecular level.

---Applicable Business

Business area: Medical and healthcare fields.
Use Cases: Evaluation tools for pharmaceuticals and cosmetics, elucidation of disease mechanisms, etc.
Availability: Establish as a core technology in the medical and healthcare fields after 2030.

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