Microfluidic Multiple Organ-on Chip Platforms

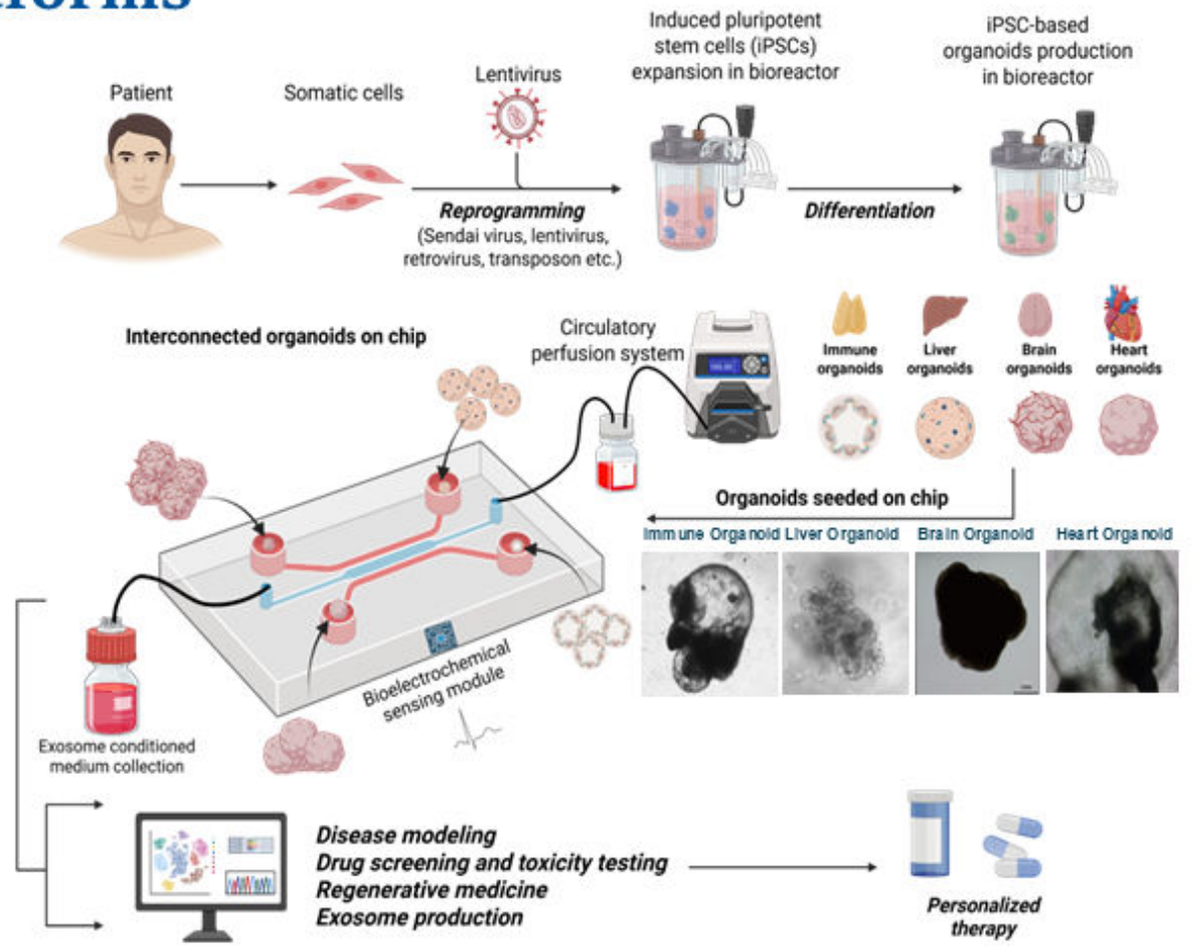
Principal Investigator: Professor Tse Hung Fat

Technology

- **Induced Pluripotent Stem Cell (iPSC) Technology**
- **Organoid Culture Techniques for multiple different tissue organoids**
- **Microfluidic Platforms**
- **Sensor and Monitoring Technologies**
- **Automation and High-Throughput Screening**
- **Exosome Production and Isolation Technologies**
- **Analytical and Omics Technologies**

Key Advantages

- **Physiological Relevance**
  - Mimics human organ complexity
  - Allows for the study of inter-organ interactions and systemic responses
- **Personalized Medicine**
  - Enables patient-specific disease models
  - Facilitates tailored drug screening and therapy development
- **Enhanced Disease Modeling**
  - Provides a platform for studying complex diseases, including multi-organ and multi-system interactions
- **Exosomes Production**
  - Facilitates scalable production of exosomes with therapeutic potential
- **Reduced Ethical Concerns**
  - Minimizes the use of animal testing
  - Uses human-derived cells for more relevant results



Stage of Development

- **The project is in the initial idea phase, with conceptual frameworks in multiple organ-on chip platform.**
- **Basic experiments have been conducted, with preliminary data and optimized protocols in iPSC-derived organoids generation and differentiation as well as exosomes productions.**

Opportunities

- **This project opens up significant clinical opportunities by advancing personalized medicine, regenerative therapies, and safer drug development.**
- **It offers commercial opportunities through product development, platform commercialization, and partnerships with multiple InnoHK health centres, biotech companies and pharmaceutical industries.**

Intellectual Property

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