Reconstruction and Utilization of Tissues

Toward applications to regenerative medicine for transplantation treatment and cell-based assays for drug and chemical screening, we have studied mass production and differentiation control of progenitor stem cells, construction of implantable tissues, and development of cell-based assays.

**Mass Production and Differentiation Control of Progenitor Stem cells**

- New cell culture bag system for mass production
- Mass production of iPS cells using microgel particles
- Differentiation control of iPS cells to hepatocyte-like cells/pancreatic β-cells

**Implantable Tissues**

- Building blocks-based tissues for construction of large organs
- Development of the large artificial liver combined with 3D printer technology

**Cell-based Assays**

- Enhancement of liver metabolic capacity under direct oxygenation and application to drug screening tests
- Construction of pancreatic islet models for diabetes treatments
- Development of alveolar cell-based assay systems for nanotoxicology
- Development of new biosensor