

SAKAI LAB.

[Tissue Engineering for Regenerative Medicine
and Cell-Based Assay]

Centre for International Research on Integrative Biomedical Systems

<http://envchem.iis.u-tokyo.ac.jp/sakai/index.php><http://www.cibic.iis.u-tokyo.ac.jp>

Organs and Biosystems Engineering

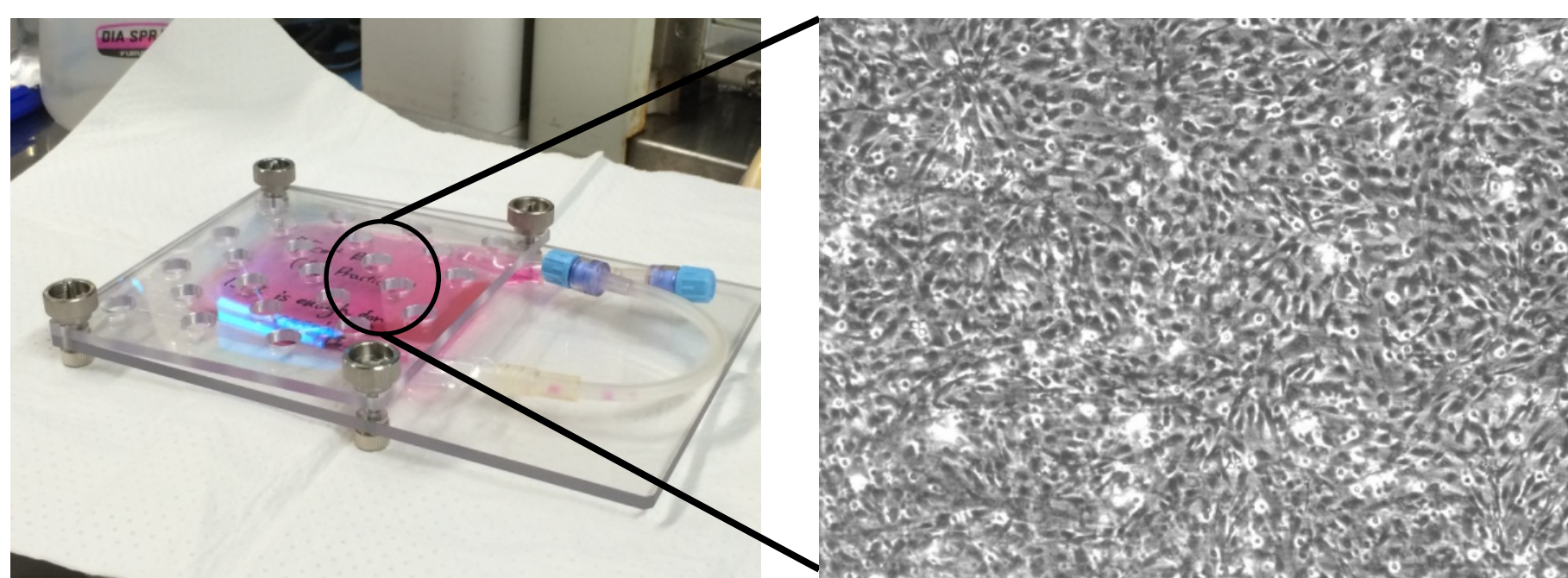
Department of
Chemical System Engineering
Bio Engineering

Reconstruction and Utilization of Tissues

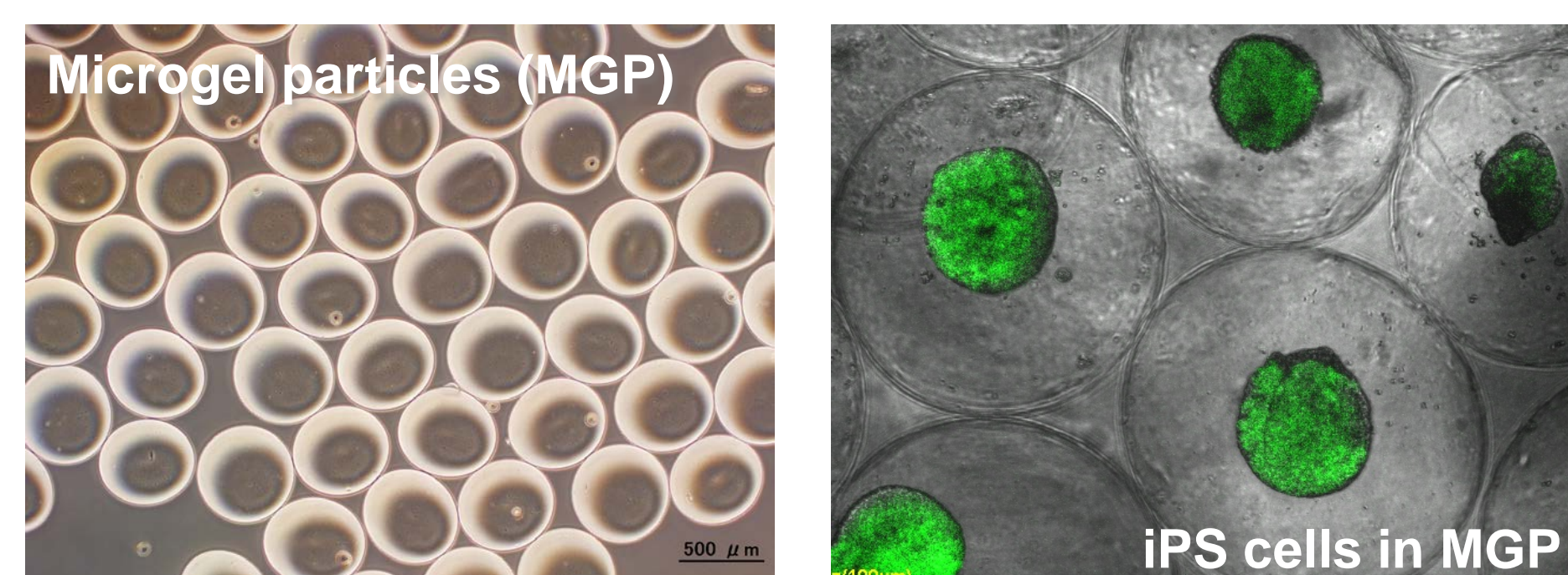
Toward applications to regenerative medicine for transplantation treatment and cell-based assays for drug and chemical screening, we have studied mass production and differentiation control of progenitor stem cells, construction of implantable tissues, and development of cell-based assays.

Mass Production and Differentiation Control of Progenitor Stem Cells

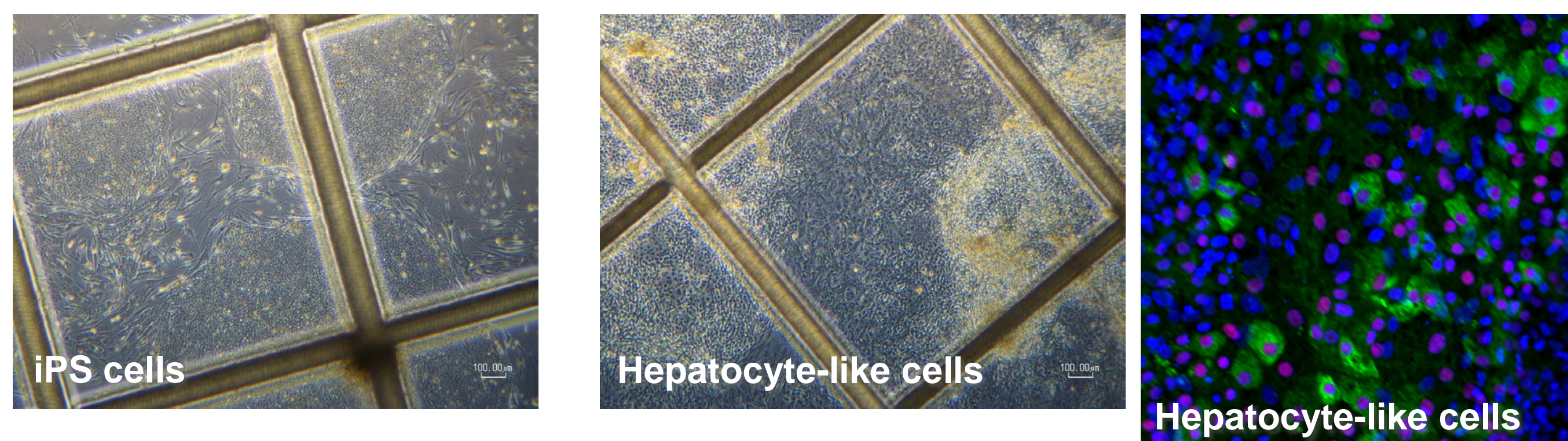
New cell culture bag system for mass production



Mass production of iPS cells using microgel particles

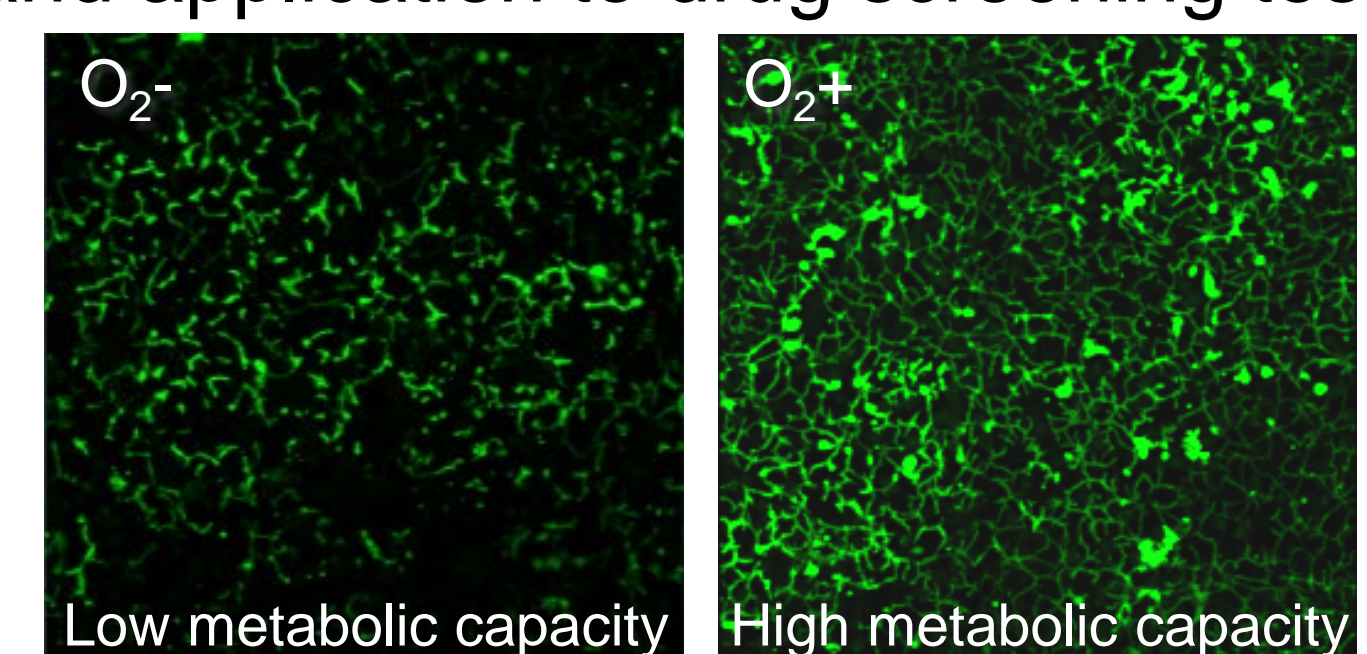


Differentiation control of iPS cells to hepatocyte-like cells

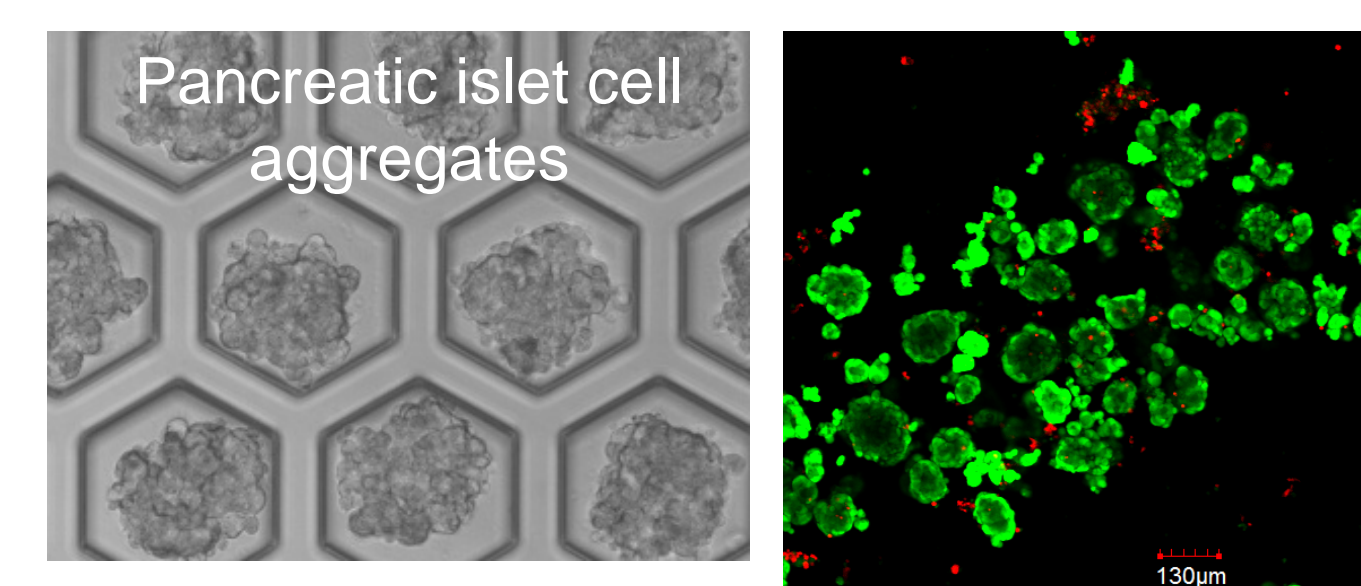


Cell-Based Assays

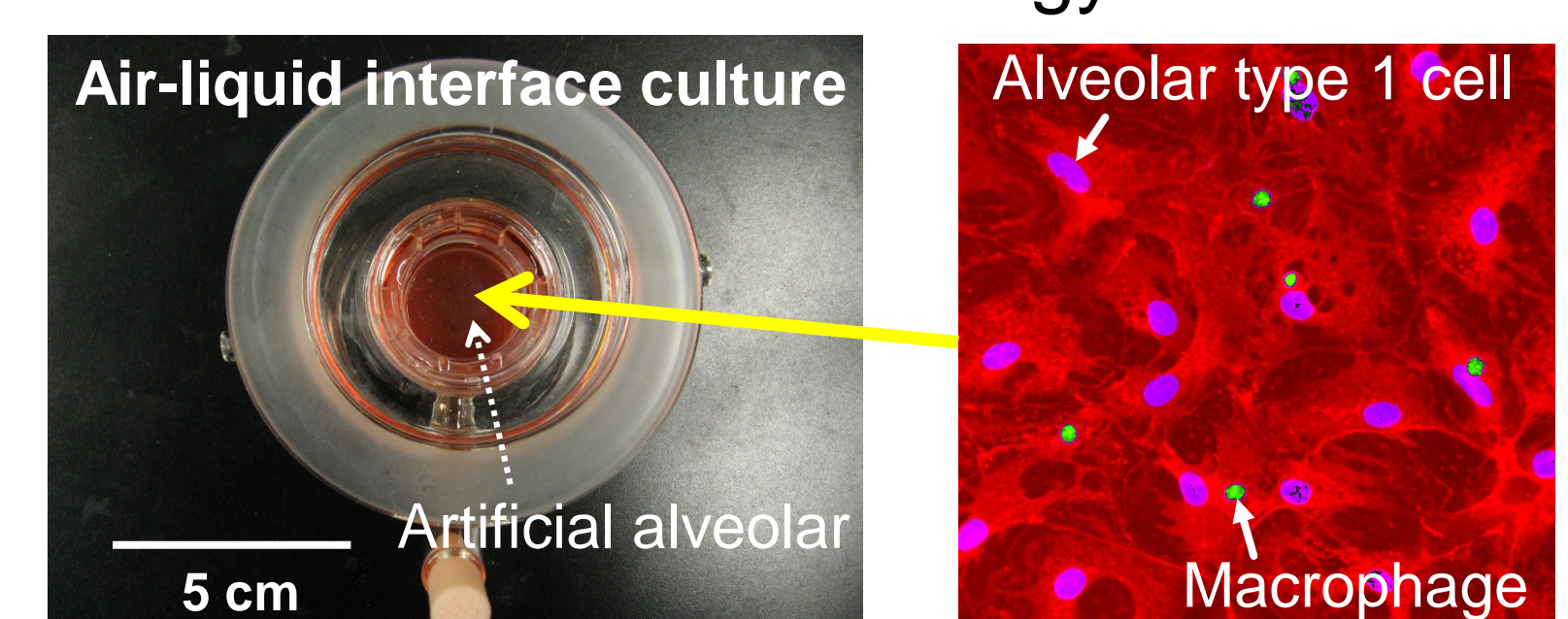
Enhancement of liver metabolic capacity
under direct oxygenation
and application to drug screening tests



Construction of pancreatic islet models
for diabetes treatments

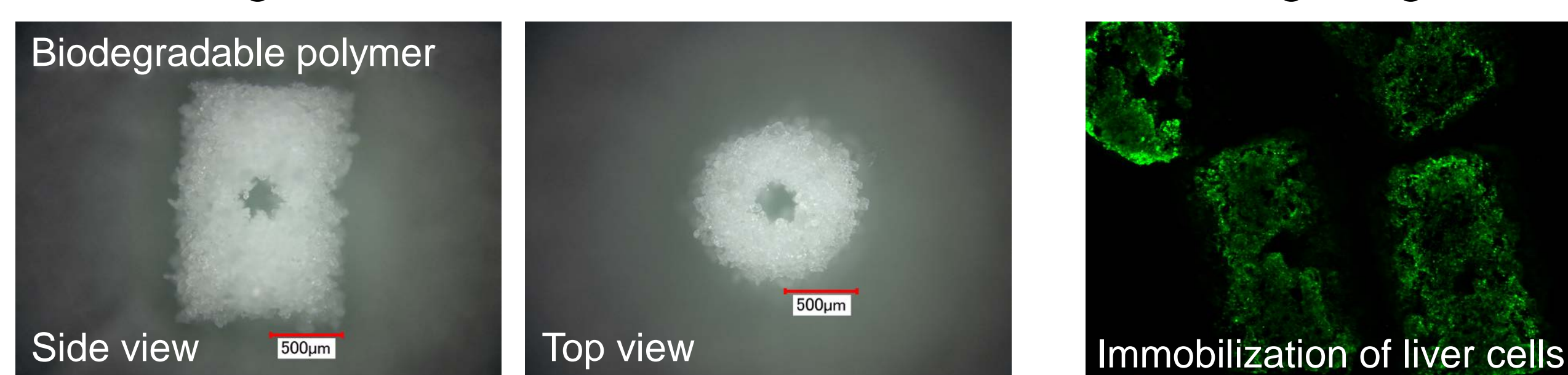


Development of alveolar cell-based assay systems
for nanotoxicology



Implantable Tissues

Building blocks-based tissues for construction of large organs



Development of the large artificial liver
combined with 3D printing technology

