

October 5, 2026
Mitsui Chemicals, Inc.

Mitsui Chemicals Launches InnoCell™ P-Type High Oxygen-Permeable Culture Plates to Accelerate Organoid-Based Drug Discovery

Supporting high-performance 3D model construction and high-precision, high-throughput efficacy evaluation

Mitsui Chemicals, Inc. (Tokyo; President & CEO: Satoshi Ichimura) has launched InnoCell™ P-Type, a new adherent cell culture plate in its InnoCell™ series of cell culture ware, as of October 1, 2026.

InnoCell™ P-Type combines Mitsui Chemicals' proprietary highly oxygen-permeable material technology with original surface treatment technology. By providing an environment that helps cells maintain functions closer to those observed in vivo, the plate supports the development of organoids and other cell-tissue models, with the aim of improving the precision of efficacy and toxicity evaluation in drug discovery research and enabling more effective screening.

■ Background

In recent years, drug discovery research has placed increasing importance on complex in vitro models that closely reflect human biological function and generate highly reproducible data. Three-dimensional cell models, including organoids, are increasingly being used to elucidate disease mechanisms, evaluate drug efficacy and toxicity, and advance patient-derived models for drug discovery and personalized medicine.

In 3D culture, however, densely proliferating cells and thick tissue structures can lead to insufficient oxygen supply, which may affect cell function, tissue uniformity, and the reproducibility of evaluation data. In addition, deployment in drug discovery screening requires environmental conditions that support robust culture, observation, image acquisition, and drug screening.

InnoCell™ P-Type supports the construction of high-performance 3D cell models and their application in drug discovery evaluation by combining highly oxygen-permeable material, surface treatment technology designed to enhance cell adhesion, low autofluorescence for improved image acquisition, and low drug adsorption to reduce the impact on assay compounds.

■ **Confirmed uniform tissue formation with human iPS cell-derived cardiac organoids**

Hidetoshi Masumoto, MD, PhD, at Kansai Medical University used InnoCell™ P-Type plates to culture human iPS cell-derived cardiac organoids. Compared with conventional polystyrene plates, InnoCell™ P-Type enabled the formation of tissues with more uniform overall thickness and increased tissue thickness. The cardiomyocyte layer, which was positive for the cardiac marker troponin T, also showed increased thickness and density in the tissue profile. These results indicate that enhancing oxygen supply to cultured tissues could provide an important option for constructing 3D cardiac tissue models.



InnoCell™ P-Type plates



Conventional polystyrene plates

Brown: cardiac troponin T cardiomyocyte marker / Scale bar: 100 μm

Figure 1. Comparison of immunohistochemical cross-sectional images of cultured human iPS cell-derived cardiac organoids. Cultivation period: 12 days.

Provided by Hidetoshi Masumoto, MD, PhD

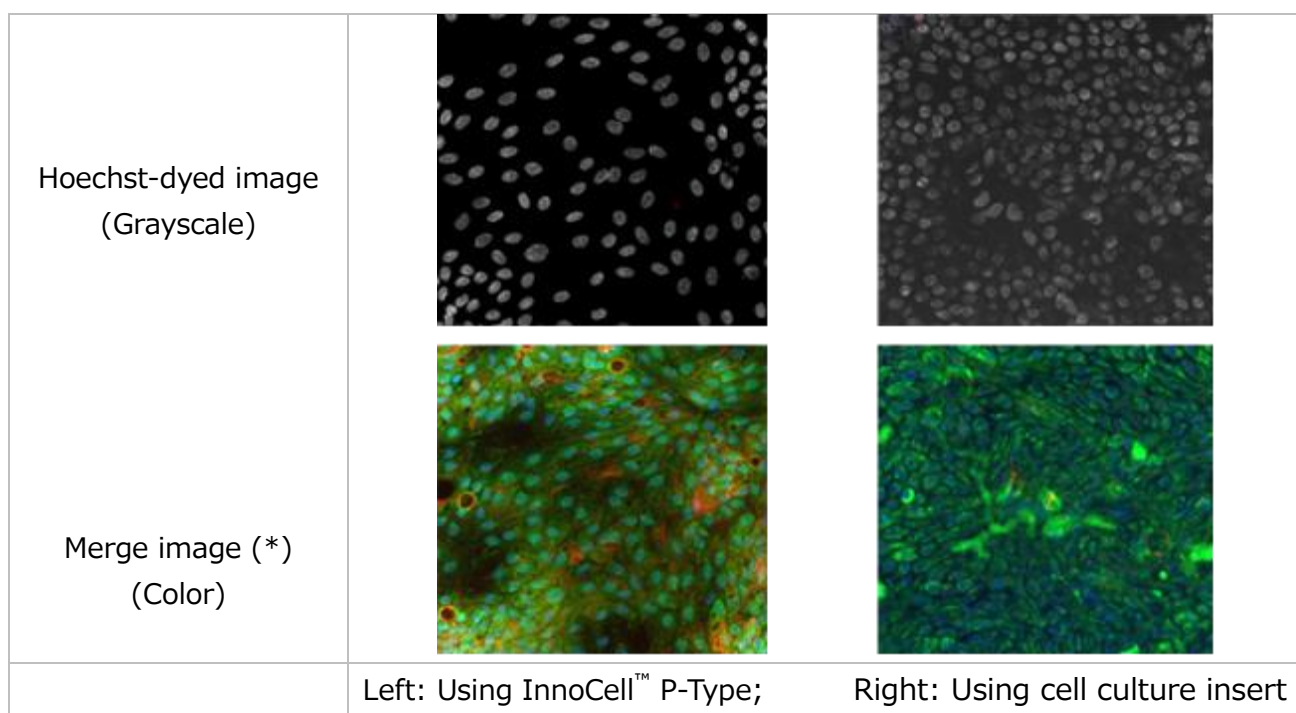
Distinguished Professor appointed by the University President,
Department of Cardiovascular Surgery, Kansai Medical University
Visiting Principal Researcher, RIKEN Center for Life Function Sciences

[Comment from Hidetoshi Masumoto, MD, PhD, Kansai Medical University]

When we used InnoCell™ P-Type plates to culture human iPS cell-derived cardiac organoids, the overall tissue thickness was more uniform and the cardiomyocyte layer was thicker than with the polystyrene plates we had previously used. We consider culture vessels that can provide an oxygen supply environment suited to these tissues to be one of the most promising options for studying culture conditions for three-dimensional cardiac tissues.

■ High-throughput screening of intestinal organoid-derived epithelial cells

Jonny Sexton, PhD, of the Department of Gastroenterology and Hepatology at the University of Michigan Medical School conducted culture and barrier function evaluation of human intestinal organoid monolayers using InnoCell™ P-Type plates. The evaluation suggested that, compared with cell culture inserts, which are widely used in conventional assays, epithelial barrier function could be evaluated with high sensitivity and low variability. In particular, better epithelial barrier formation and response to inflammatory stimulation were observed on InnoCell™ P-Type plates compared cell culture inserts. In addition, InnoCell™ P-Type's low autofluorescence is expected to support high-content imaging and high-throughput screening assays evaluating effects on intestinal barrier function.



(*) Blue: nuclei (Hoechst); red: tight junction (ZO-1); green: entire cells (HCS CellMask™)

Figure 2. Fluorescent staining images of epithelial cells derived from human intestinal rganoids

Provided by Jonny Sexton, PhD

[Comment from Jonny Sexton, PhD, University of Michigan]

In biomedical research, generating highly reproducible data from physiologically relevant models is essential. InnoCell™ P-type combines superior imaging capabilities with enhanced oxygen and gas permeability, delivering accelerated organoid maturation and improved functional maturity, enabling clearer visualization and more physiologically representative 3D models. Together, these advantages can strengthen disease modelling and accelerate drug discovery and regenerative medicine research.

■ Comment from Toshihiko Omote, Member of the Board, Managing Executive Officer, Chief Technology Officer (CTO) of Mitsui Chemicals

In recent years, drug discovery research has seen rapid growth in the use of 3D cell models, such as organoids and microphysiological systems, that more faithfully reproduce biological functions. InnoCell™ P-Type has been developed based on Mitsui Chemicals' long-cultivated core technologies, and is expected to contribute to advances in the culture environments that underpin these cutting-edge studies.

We position InnoCell™ not simply as a culture plate, but as research infrastructure that supports improved productivity and predictability in drug discovery research. Going forward, we will continue to create new values in the life sciences field by leveraging our core technologies.

For more information on InnoCell™ insights, product lineup and use cases, please visit the website below.

<https://jp.mitsuichemicals.com/en/special/innocell/index.htm>

In the Chinese market, InnoCell™ is offered under the brand name 亿能适迩™.

Contact information for product purchase and service inquiries

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