

Mitsui Chemicals Establishes Technology for Commercial Production of InnoCell™ Oxygen-Permeable Cell Culture Vessels

Mitsui Chemicals, Inc. (Tokyo: 4183; President & CEO: HASHIMOTO Osamu) has leveraged the features of its proprietary resin TPX™*1 – the world’s only resin of its kind – to develop InnoCell™ cell culture vessels, a new cell culture tool that offers a high level of oxygen permeability*2. Mitsui Chemicals plans to launch InnoCell™ before the end of fiscal 2022.

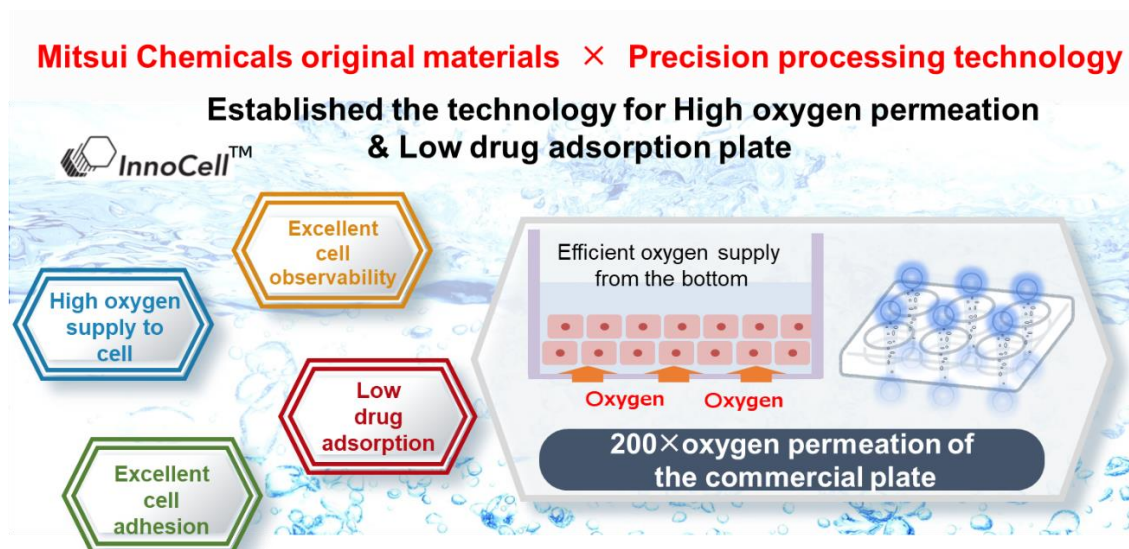
<Innovation in cell culture inspired by materials!>

■ Features of new cell culture tool InnoCell™



Mitsui Chemicals developed InnoCell™ using TPX™ (polymethylpentene; PMP), which offers the highest level of oxygen permeability of any industrial plastic. Making the base of the cell culture vessels from TPX™ enables about 200 times more oxygen to be efficiently supplied to the cells than when conventional culture plates are used. TPX™ also offers superior releasability, in addition to which precision processing technology prevents the leaching of cytotoxic chemical substances and inhibits drug adsorption. As a result, InnoCell™ products are expected to be suitable not only for research applications but also as a drug discovery assay tool.

A joint research project conducted with Professor SAKAI Yasuyuki^{*3} of the University of Tokyo, Professor ITO Kousei^{*4} of Chiba University and Myoridge Co. Ltd.^{*5} has confirmed that InnoCell™ products improve toxic susceptibility and metabolic activity stemming from activation of the mitochondrial function of hepatocytes and cardiomyocytes. When culturing cells with a high oxygen requirement, controlling the oxygen content of the culture medium has hitherto not been easy, necessitating the vibration of culture plates or adjustments to the quantity of culture medium. However, InnoCell™ opens the way for a new in vitro culture method in which oxygen can be readily supplied. Hopes are high that this method will speed up regenerative medicine research in the fields of both spheroids and organoids, along with research into drug discovery and development, specifically toxicity testing, pharmacokinetic studies and efficacy testing.



■ Mitsui Chemicals' cell culture solutions

Mitsui Chemicals leverages catalyst technology, organic synthesis technology and processing technology to manufacture and sell all sorts of functional chemicals and functional resins. The company's VISION 2030 Long-Term Business Plan includes a focus on next-generation business, where the company is aiming to booster solutions businesses that capitalize on its R&D capabilities and assets.

One strength of Mitsui Chemicals is the company's integrated product development starting straight from material development. Mitsui Chemicals is therefore leaning on this to spur on the rollout of solutions businesses that look to solve the issues of various customers in the cell technology field, with its solutions here including culture plates; testing and drug discovery applications such as microchannel devices; and the synthesis of high-quality stem cells utilizing nonwovens. Mitsui Chemicals is also helping to cut down on the use of animal testing and animal-derived ingredients in drug discovery and food development.

*1 TPX™ product site: <https://jp.mitsuichemicals.com/en/special/tpx/>

*2 InnoCell™ is a Mitsui Chemicals brand of cell culture vessels designed to bring innovation to cell culture technology.

*3 Professor, Department of Chemical System Engineering, Graduate School of Engineering, University of Tokyo

*4 Professor, Laboratory of Biopharmaceutics, Graduate School of Pharmaceutical Sciences, Chiba University

*5 Myoridge Co. Ltd. <https://myoridge.co.jp/en/>

■ Reference

Related press release:

- https://jp.mitsuichemicals.com/en/release/2022/2022_0316.htm (March 16, 2022)
Mitsui Chemicals, FullStem Launch Joint Development of High-Performance Nonwovens for Use in High-Density, Large-Scale Stem Cell Culture

Contacts for inquiries about this matter

Corporate Communications Division, Mitsui Chemicals Inc.

Tel: 03-6253-2100

URL: https://form.mitsuichemicals.com/corporate/cc_pr_csr_en