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Japanese firm develops urethane microfoam film for cell culture

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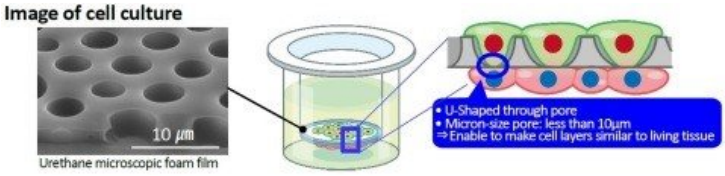
A promising alternative to animal experiments and for other uses in new drug development



Japan based Toyoda Gosei has developed a urethane microfoam film for cell culture, using the knowledge of urethane materials it has gained in the development and production of steering wheels. This film allows cells to be cultivated with a structure close to that of certain living tissues, and is promising as an alternative to animal experiments and for other uses in new drug development. The company is currently conducting pharmacokinetic studies for early practical application.

A key feature of the urethane film is that two kinds of cells can be cultivated in a two-layered tissue structure close to that of living tissues such as blood vessels and the intestinal epithelium. This is achieved with the film's ability not only to separate the two kinds of cells on opposite sides of the film and keep them from mixing with each other but also to allow the two kinds of cells to contact each other through countless U-shaped through pores in the film. The size of these pores can be controlled at the micrometer level.

In new drug development, this two-cell layer tissue will enable detailed examination of the movement of a drug in individual cell layers similar to those in the living body. This will lead to alternatives to some animal experiments, which are used to assess drug efficacy and safety and help to narrow the list of candidate drugs in the early phase. In this way it will contribute to shorter development periods and lower development costs.

Toyoda Gosei will continue to leverage its core technologies to contribute to medical advances.