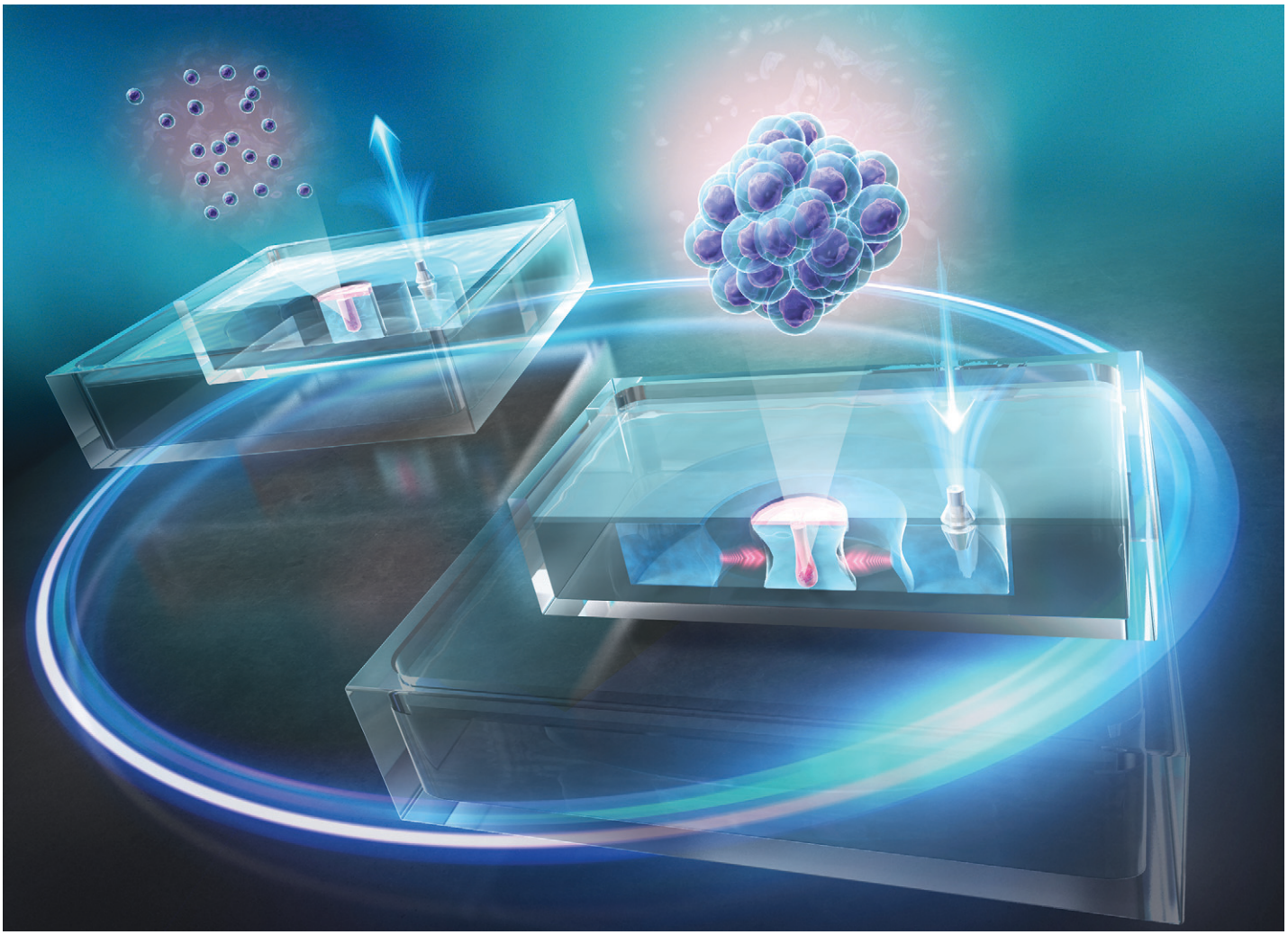

**Showcasing research from Professor Kurashina's laboratory, School of Chemistry, Tokyo University of Agriculture and Technology, Tokyo, Japan.**

Hydrogel microwell with pneumatic soft actuator for compression formation of three-dimensional cellular tissue

Three-dimensional cellular tissues that mimic native tissue structure are essential for regenerative medicine and drug screening. However, conventional compression systems rely on linear or rotary actuators, which limit stimulation to a single axis and require cells to adhere to scaffolds. Therefore, we propose a unique hybrid soft actuator system that integrates a pneumatic soft actuator with a hydrogel microwell to apply enveloping, three-dimensional compressive stimulation to cells without the need for scaffold fixation. Consequently, this system promoted early cellular tissue formation. This approach provides a promising platform for advanced three-dimensional cell culture and mechanobiology research.

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## As featured in:


See Yuta Kurashina *et al.*, *Lab Chip*, 2026, **26**, 2173.

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