Foreword—*Microphysiological Systems*

It has been increasingly realized that the conventional planar cell cultures do not necessarily reproduce human physiology *in vitro* due to their limited ability to reproduce the structural and functional complexity of the *in vivo* counterparts, often resulting in biased outcomes of biological and pharmacological interrogations. On the other hand, the animal models, while competent in reproducing the complex physiology, their discrepancy in anatomy and the genetics against the humans inevitably lead to the mismatch in response towards drugs, chemicals, and toxins, thus resulting in inaccurate predictions. These facts apply to essentially every scenario that we can imagine, ranging from basic science discoveries in cell biology where studies are performed on single-cell levels all the way to systems biology where investigations at the tissue/organ levels are conducted—simply because that the three-dimensional, hierarchical microenvironment intertwined with multi-component biochemical and biophysical cues are so important that they significantly affect every level of biological function—from individual cells to tissue building units and to organs.

Miniaturized physiological systems have therefore been proposed as alternative platforms to planar cell cultures and animal models, which are anticipated to bridge the gaps between these models and the human body. By taking advantage of multidisciplinary approaches combining materials science, chemistry, physics, engineering, biology, and medicine, the last decade has witnessed fruitful progress in the development of these biomimetic systems with improved biological and physiological relevance.

The journal *Microphysiological Systems* aims to provide latest insights and updates on the advances of *in vitro* tissue and organ models including but are not limited to, technologies for biofabrication, biomaterials for reconstructing the microenvironments, manipulation of cells and cell populations, organotypic cultures, computational analyses, and analytical methods for characterizing organoid behaviors. The journal seeks to break the boundary on the current usage of the *in vitro* models by embracing their expanded applications in any relevant fields such as cell biology, regenerative engineering, organs-on-chips, pharmaceutical screening, nanomedicine, and environmental toxicology.

The journal is now starting its voyage—I sincerely welcome every one of you to join us as an author, a reviewer, and a reader, to push this exciting field forward at full speed ahead.

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