

## Tissue engineering by modulating the cell adhesion microenvironment

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**Abstract:** Cells have the property to adhere to each other as well as to the substrate, enabling them to self-organize in vitro into structurally ordered 2D and 3D tissues. This property can be utilized to fabricate biomaterials such as cell sheets with potential applications in regenerative medicine, disease modeling and drug screening. In this talk, a unique micromesh culture approach will be introduced in which cell-substrate adhesion is minimized using suspended microstructured mesh substrates to induce cells to self-organize into cell sheets and even 3D tissues. The mechanics of cell sheet formation under this culture approach, including cell orientation control by mesh shape design, and extended application to realize organ/tissue models for drug screening and disease modeling will be highlighted. Overall, the talk will demonstrate the potential of our micromesh culture technique to uniquely achieve tissue engineering by modulating the cell adhesion microenvironment.

**講演者の紹介:** Dr. Kennedy O. Okeyo is currently a senior lecturer at the Institute for Frontier Life and Medical Sciences, Kyoto University. He graduated with a PhD in mechanical engineering from Kyoto University in 2010, and thereafter worked briefly as a researcher at the Hitachi Central Laboratory in Japan. He then joined the Department of Mechanical Engineering of the University of Tokyo in 2012 as an assistant professor where he engaged in teaching and research until his current appointment in 2017. His current research interest lies in cellular and tissue biomechanics based on cell adhesion modulation using microfabricated devices.

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