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Engineered microsystems for creating human organ-specific micromechanical environments and quantitative readouts of tissue function

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Organ-on-Chip technology, the pairing of micro-engineered human tissue with micro-engineered environments, enables the *in vitro* emulation of human physiology. Our goal is in particular to recapitulate individual organ functions and organ-organ interactions, with the goal of elucidating their role in homeostasis, metabolism, development, toxicology and disease. Using computational design studies and working closely with collaborators in academia, industry, and the clinic, we develop micromechanical environments and quantitative readouts specific to particular organs and disease states. This study presents designs and applications of microengineered systems, including the Small-Airway-Chip and the Thrombosis-Chip. In the near future, we aim to study inter-organ signaling and cell migration involved in systemic processes such as cancer, immune-system responses and hormone-mediated remodeling.

Biography

Janna Nawroth is a Principal Investigator (R&D Lead) at Emulate Inc., a company in Boston, MA, USA, focusing on the development and commercialization of Organs-on-Chip Technology. She is an expert in biological fluid dynamics. She has completed her PhD in Biology in at the California Institute of Technology, USA and Post-doctoral studies at the Wyss Institute for Biologically Inspired Engineering at Harvard University, USA. She has published more than 10 papers in distinguished journals that collectively have been cited over 400 times.

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