Dr. Sunghee Estelle Park

Assistant Professor of Biomedical Engineering, Purdue University, USA

Dr. Park is an Assistant Professor in the Weldon School of Biomedical Engineering at Purdue University. Since establishing her laboratory at Purdue in January 2024, she has led a multidisciplinary research group that combines stem cell biology, tissue engineering, and organ-on-a-chip platforms to uncover new insights into human organogenesis and metabolic disorders. Her work focuses on bridging the gap between engineering and biology to create more predictable models of human health and disease.

At Purdue, Dr. Park's research program focuses on developing advanced engineering strategies to create patient-specific tissue models. Her group specializes in integrating patient-derived stem cells into microengineered devices to generate physiologically relevant models of the intestine and liver. A significant portion of her current work involves identifying the molecular pathways that drive inflammation and metabolic dysfunction. This includes leveraging chip-based organoids to define nutritional impacts on pediatric liver metabolism and engineering models to study age-related mechanisms of fatty liver disease.

Additionally, her lab develops mechanically actuatable platforms to investigate the role of physical forces in development, such as mimicking hepatic sinusoid blood flow to study human liver maturation. By integrating dynamic mechanical and biochemical environments into microengineered systems, her research addresses the limitations of conventional culture systems to build high-fidelity models for biomedical research and therapeutic applications.

Dr. Park earned her Ph.D. in Bioengineering from the University of Pennsylvania, where her doctoral research focused on engineering human iPSCs and organoids-on-chips to model age-related macular degeneration, inflammatory bowel disease, and fetal lung development. She holds both a B.S. and M.S. in Mechanical Engineering from Korea University. Her contributions to the field have been recognized with honors such as the 2025 ORAU Ralph E. Powe Junior Faculty Enhancement Award and the Solomon R. Pollack Award for Excellence in Graduate Bioengineering Research. Beyond her research, she is active in the academic community, serving on various committees and mentoring early-career scientists.