


COLLEGE OF ENGINEERING BIOENGINEERING SEMINAR

 **Temple
University**
College of Engineering

Friday
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12pm

[VIA ZOOM](#)



Kyoko Yoshida, PhD

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DEPARTMENT OF BIOMEDICAL
ENGINEERING
UNIVERSITY OF MINNESOTA

The mechanics behind the miracle of life: Maternal soft tissue growth and remodeling

Pregnancy stands at the interface of mechanics and biology. The growing fetus continuously loads the maternal organs while circulating hormones surge. In response to these dynamic mechanical and biological cues, virtually all maternal soft tissues grow and remodel. For example, uterine cavity volume increases by 1000-fold, and the maternal heart pumps 50% more blood over nine months of pregnancy. The precise mechanical function of the maternal organs is critical for supporting a healthy pregnancy. Therefore, my research aims to uncover how mechanical and biological cues interact to drive pregnancy-induced soft tissue growth, remodeling, and mechanical function.

In this talk, I will 1.) outline a multiscale model of heart growth during pregnancy that incorporates hormonal changes along with mechanics, and 2.) discuss our plans for applying a similar framework to understand uterine growth and remodeling. Ultimately, we aim to apply our models for early detection and patient-specific therapies for pregnancy-related complications.

Dr. Kyoko Yoshida, Ph.D., is an Assistant Professor in the Department of Biomedical Engineering at the University of Minnesota. She previously conducted her Postdoctoral training at the University of Virginia. She obtained her Ph.D. in Mechanical Engineering from Columbia University as an NSF Graduate Research Fellow and her B.S. in Mechanical Engineering from the University of Notre Dame. Her research focuses on the growth and remodeling biomechanics of soft tissues, including the cervix, uterus, and heart. Specifically, she uses computational and experimental approaches to understand how mechanical and hormonal signaling interact to control maternal soft tissue adaptations during pregnancy to support both mother and baby for a healthy pregnancy.



For more info on BioE Seminars or for how to participate remotely [via Zoom](#) (Zoom ID: 923 7875 8038), please contact Dr. Wang (karin.wang@temple.edu) or Dr. Bellas (evangelia.bellas@temple.edu).

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