Samantha Zambuto

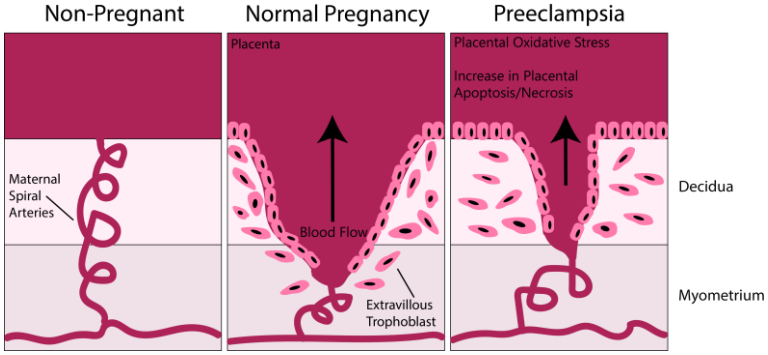
Development of a Stratified 3D Biomaterial Model of the Decidualized Endometrium to Study Vascular Formation and Trophoblast Invasion

Ph.D. Candidate, Bioengineering
Sc.M., Biomedical Engineering, Brown University
B.S., Biological Engineering, Cornell University

Hometown: Simsbury, CT

ABSTRACT:

Hypertensive pregnancy disorders, such as preeclampsia, affect approximately 10% of pregnant women around the world and are responsible for significant detrimental effects on both maternal and fetal health. Tissue engineering models of the endometrium may provide unique capabilities to ask questions about the cellular mechanisms of pregnancy and pregnancy disorders as well as a range of disorders and diseases associated with the endometrium, including endometriosis and endometrial cancers. I aim to create and characterize a 3D biomaterial model of the decidualized endometrium to study vascular formation and trophoblast invasion *in vitro* as they relate to pregnancy and preeclampsia. I intend to achieve this goal by creating a quad-culture of endometrial cells and trophoblast cells in a methacrylated-gelatin hydrogel platform that incorporates biochemical and biophysical cues relevant to the *in vivo* endometrium.



AWARDS/PUBLICATIONS:

- Master's Thesis: *Advancing Tissue Engineered Neural Platforms to Explore Sex Differences in Ischemic Stroke and Traumatic Brain Injury* (Hoffman-Kim Lab, Brown University, 2017)