

Vascular Biology of Pregnancy



Ira M. Bernstein, M.D. *John Van Sicklen Maeck Professor and Chair*

Dr. Bernstein's interest is in whole body physiology, specifically, understanding the predisposing conditions that contribute to the development of fetal growth abnormalities and preeclampsia. This has included examination of maternal blood volume, vascular tone and compliance, regional blood flow, intermediary metabolism and their determinants. He is also interested in normal and abnormal growth characteristics as defined by ultrasound including fetal body composition and fetal growth modeling as well as the influence of maternal cigarette smoking on these growth variables.



Lucia Brown, M.D. *Assistant Professor*

Dr. Brown's research is focused on epigenetic modifications that occur in the maternal vasculature in response to pregnancy in a mouse model. Other work relates to placenta methylation in a murine pregnancy loss model.



Stephen Brown, M.D. *Associate Professor*

Dr. Brown's current research is focused on understanding epigenetic changes that occur during maternal vascular adaptation to pregnancy and how those changes persist during the postpartum period. Other projects in his lab have looked at epigenetic changes in blastocyst stage embryos that are subjected to in-vitro culture and at methylation abnormalities in a mouse model of pregnancy failure. Past projects have focused on the role of the ZIC2 gene in human brain malformation.



Marilyn Cipolla, Ph.D. *Professor*

Dr. Cipolla's research focuses on how both acute hypertension and ischemic injury affect the structure and function of the cerebral circulation, including control of blood flow, blood-brain barrier disruption and edema formation. Research interests include how pregnancy and hypertension in pregnancy affect the cerebral circulation as it relates to eclampsia and how reperfusion injury affects brain blood flow and vascular permeability.



Natalia Gokina, Ph.D. *Associate Professor*

Dr. Gokina's primary research interest is in cardiovascular physiology, specifically, control of vascular muscle and endothelial cell calcium and membrane potential during pregnancy, and in the signal mechanisms underlying arterial reactivity. Current research in Dr. Gokina's lab is focused on understanding cellular and molecular mechanisms of uteroplacental vascular dysfunction in diabetic pregnancy



Carole McBride, Ph.D. *Research Specialist*

Dr. McBride's primary research interest are large data base analysis examining hypertensive complication of pregnancy and clinical research support in preeclampsia and vascular adaptation within pregnancy research.



Erin Morris, M.D. *Assistant Professor*

Dr. Morris' primary research interests are maternal cardiovascular adaptation to pregnancy and preeclampsia. She is currently involved in a research project examining the degree to which pregnancy-induced cardiovascular changes persist postpartum. She is also the site coordinator for the Australian Placental Transfusion Study—an international multi-center randomized controlled trial of delayed cord clamping in preterm infants.



George Osol, Ph.D. *Professor and CVRI Distinguished Investigator*

Dr. Osol's research interest is in vascular adaptation during pregnancy, with a focus on understanding the cellular and molecular pathways and mechanisms that regulate maternal uterine vascular remodeling during normal vs. preeclampsia/hypertensive pregnancy. Most recent studies are focused on understanding the nature of communication between arteries and veins, and on the role of hemodynamic forces such as pressure/stretch, and fluid shear stress in shaping the remodeling process.