

Dr. F.C. MacIntosh Lectureship Seminar

GUEST SPEAKER Dr. Marilyn J. Cipolla

Departments of Electrical and Biomedical
Engineering and Neurological Sciences,
University of Vermont



FRIDAY, NOVEMBER 17, 2023
11:00AM

MCINTYRE MEDICAL SCIENCES
BUILDING
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“Vascular Biology in Health and Disease through the Lifespan”

The primary focus of my research over the past 25 years has been to understand the structure and function of the cerebral circulation under normal and pathological conditions, and how cerebrovascular dysfunction can promote brain injury. We are focused on understanding mechanisms by which different segments of the vasculature respond to ischemia and reperfusion and have harnessed this heterogeneity to provide therapeutic targets. More recently, we have focused on stroke co-morbidities such as hypertension and how the cerebrovasculature responds functionally during both ischemia to limit collateral perfusion, and during reperfusion to promote blood-brain barrier disruption and impair perfusion. We are one of the few labs that have the expertise to study the microvessels in the brain isolated and pressurized and have provided important insight into ischemia and reperfusion-induced changes in brain hippocampal and parenchymal arterioles and leptomeningeal anastomoses (pial collaterals). We also have a long-standing interest in how pregnancy and preeclampsia affect the blood-brain barrier and cerebral blood flow autoregulation in ways that promote the neurological complications of preeclampsia, including seizure (eclampsia) and early-onset cognitive decline. We have determined mechanisms by which circulating factors in pregnancy and preeclampsia cause edema formation and promote seizure. We have recently combined our interest and expertise in pregnancy adaptation and ischemic stroke to study how preeclampsia worsens stroke outcome. Lastly, we have also begun to study how the adverse intrauterine environment of preeclampsia affects the cerebral circulation of offspring that predisposes them to early-onset hypertension and stroke.