

WORLD
CLASS

Health & Kinesiology

RESEARCH

DEPARTMENT OF HEALTH & KINESIOLOGY

GUEST SPEAKER

Graham Fraser, PhD



WEDNESDAY

May 31st

3:00 pm

Lawson B151

Dynamics of Capillary Blood Flow Regulation in Skeletal Muscle

Increases in oxidative metabolism, such as during exercise, necessitate increased skeletal muscle blood flow to match oxygen (O₂) demand for generating ATP needed for muscular contraction. Skeletal muscle O₂ concentration, and other metabolites formed through oxidative and non-oxidative energy pathways serve as direct vasomotor stimulus facilitating oxygen delivery: demand matching. The complex interplay between these metabolically mediated mechanisms, and the potential for overlapping and complementary pathways that produce vasodilation make studying blood flow responses directly in the context of exercising or contracting muscle challenging. In this presentation we quantify the direct capillary level flow responses to acute changes in skeletal muscle oxygen (O₂) and carbon dioxide (CO₂) concentrations, both in terms of their independent contribution and their combined effects. The dynamics of O₂ and CO₂ mediated responses and the apparent minimum scale of O₂ sensing in microvascular networks will be discussed in the context of potential mechanisms.

Dr. Graham Fraser is an Associate professor and coordinator for the Cardiovascular Research group in the Faculty of Medicine at Memorial University of Newfoundland. His NSERC funded research program is focused on the development of novel tools to study blood flow regulation in the microcirculation, and his CIHR research is aimed at examining microvascular regulatory defects in animal models of type 2 diabetes.