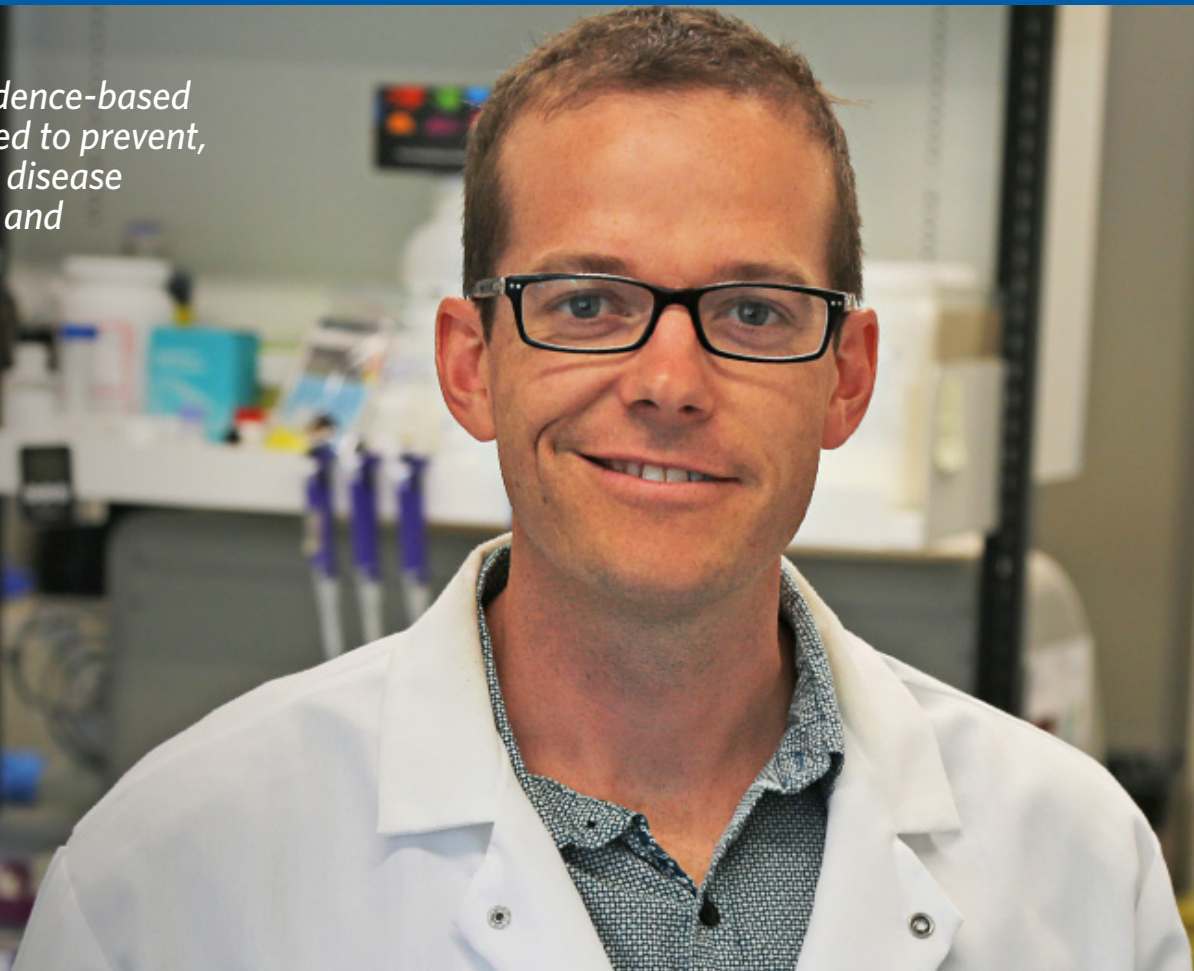


"My goal is to provide evidence-based knowledge that can be used to prevent, treat and manage chronic disease through targeted exercise and nutritional interventions."



Little's research is focused on understanding obesity, insulin resistance, type 2 diabetes, and the therapeutic effects of exercise and nutrition.

Little employs a broad spectrum of techniques, spanning from whole-body metabolic measurement in humans down to advanced molecular analyses in isolated cells.

Type 2 diabetes affects ~3 million Canadians and costs our healthcare system more than \$12 billion annually.

A further 9 million Canadians are estimated to have prediabetes, largely due to unhealthy diet and insufficient physical activity. Dr. Little's research program aims to help reduce the burden of type 2 diabetes by finding out what exercise and nutritional strategies work best for targeting the pathophysiology of this chronic disease. Using findings from lab-based studies he then explores innovative ways to promote uptake of the most promising life-style strategies with individuals, healthcare providers, and communities.

Main Research Focus:

1. Low-carbohydrate and ketogenic diet interventions for "reversing" type 2 diabetes
2. Novel exercise strategies for improving cardiometabolic health
3. Pro- and anti-inflammatory effects of exercise and nutritional interventions



JONATHAN LITTLE

About

Little's interest in metabolism began as a competitive distance runner as he became fascinated with trying to understand how the body produced energy to fuel exercise. As a student, Little was first introduced to research as an undergraduate summer student working in the laboratory of Dr. Martin Gibala at McMaster University, and he was quickly hooked. After pursuing his MSc degree at the University of Saskatchewan focusing on sport nutrition he returned to McMaster to complete a PhD focusing on muscle mitochondrial adaptations to exercise in healthy humans and individuals with type 2 diabetes. These experiences give Little a strong background in human exercise physiology and metabolism. As a postdoctoral fellow at UBC, Little explored how metabolic disruptions associated with obesity and type 2 diabetes (e.g., high glucose, hyperlipidemia) impacted inflammatory activation of isolated cells. This work led Little to his current work in which he and his team combine all of these approaches to understand how the metabolic disruptions that characterize type 2 diabetes affect cellular inflammation and explore how different exercise and nutritional strategies can be used to reduce inflammation and improve overall cardiometabolic health.

Research Environment

Little heads the Exercise, Metabolism and Inflammation Lab (EMIL). In the human exercise physiology laboratory located in the Arts Building they have a metabolic cart, vascular ultrasound equipment, treadmill, cycle ergometers, elliptical trainer, resistance training equipment, and a medical procedures area which enables Little and his team to conduct studies ranging from acute exercise manipulations to clinical exercise trials with metabolic measurements. In our cellular and molecular laboratory located in the Reich Wald Health Sciences Building, the team has a full cell culture suite, Miltenyi MACSQuant(R) flow cytometer, MagPIX(R) multiplex reader, MSD Quickplex assay system, real-time PCR machine, multi-function plate reader, and western blot equipment. Key experimental techniques utilized include continuous glucose monitoring, flow-mediated dilation, peripheral blood mononuclear cell (PBMC) isolation/culture, and multi-colour flow cytometry. Most studies involve a team of trainees, including postdoctoral fellows, graduate and undergraduate students.

Next Stages

Little is working with key stakeholders to mobilize his research with aims to help reverse type 2 diabetes for the millions of Canadians living with this condition. To achieve this aim, Little looks to strengthening partnerships within the healthcare system and related industries, as well as continuing to study the pathophysiology of type 2 diabetes and mechanisms underlying reversal.



FEATURED PROJECT

Therapeutic Nutrition is Proving Type 2 Diabetes Can be Reversed Without Drugs

The project is led on the ground by 13 community pharmacists across BC working with patients with and their doctors to adhere to diet and adjust and even eliminate medication. Results have been dramatic with dramatic improvements in diabetes control, improved quality of life, and health care savings of about \$1,500 per patient per year in medications reductions.

The next step is connecting the approximately 1.3 million British Columbians with Type 2 diabetes or pre-diabetes to this treatment pathway that could reduce and even eliminate a disease that drives 40% of strokes and 30% of heart attacks.

TO LEARN MORE:

Jonathan Little

jonathan.little@ubc.ca

250 807 9876



Visit hes.ok.ubc.ca



THE UNIVERSITY OF BRITISH COLUMBIA

School of Health and Exercise Sciences

Faculty of Health and Social Development
Okanagan Campus