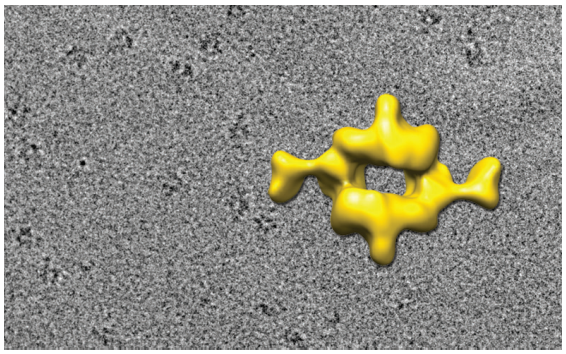
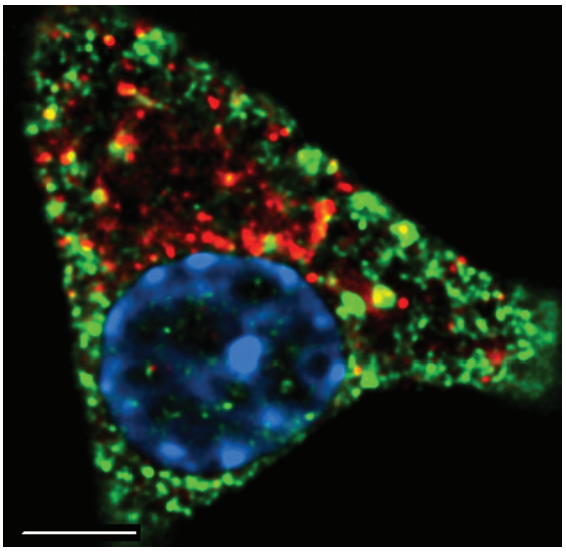
Diabetes is one of the most important medical problems of our time.

The UBC Diabetes Research Group is trying to understand the causes of this disease well enough to design rational therapies to defeat it.





Graduate Studies Admission

UBC Faculty of Graduate Studies establishes common minimum academic requirements (grad.ubc.ca). One of the main requirements for LSI graduate programs is securing a research supervisor.

Contact

Recruitment & Outreach Coordinator
lsi.grad@ubc.ca
website: grad.lsi.ubc.ca

Research Strengths & Facilities

Our Mission: To conduct world-class multi-disciplinary research aimed at curing Diabetes Mellitus.

Members of the Diabetes Research Group are attacking diabetes from multiple angles. Our research aims to understand and treat multiple forms of diabetes including type 1 diabetes, type 2 diabetes and conditions associated with these diseases.

Our scientists are working on projects focused on the fundamental causes of diabetes as well as novel strategies for treatment. A wide range of studies are ongoing, from investigations into the biochemistry of insulin signalling to the physiology of insulin release from pancreatic islets and much more. *http://diabetes.ubc.ca/*

Why study Diabetes?

Diabetes is a devastating disease that affects more than 2 million Canadians and over 350 million people worldwide. Diabetes costs Canada an estimated $9 billion annually and the incidence of diabetes is increasing dramatically. Because of its chronic nature, the financial burden of diabetes approaches that of all cancers combined. It is estimated someone dies of diabetes every 7 seconds.

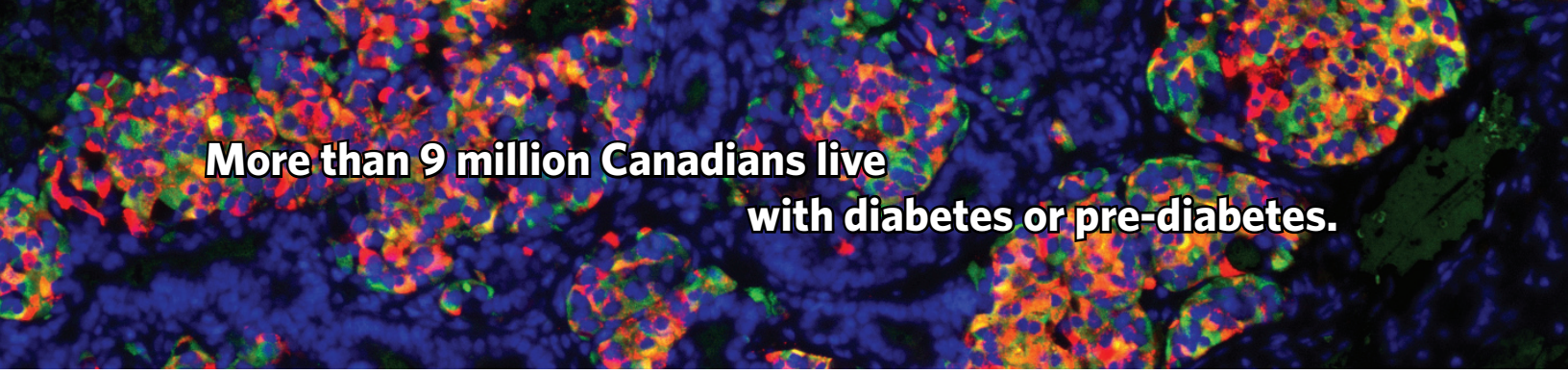
There are several forms of diabetes. Type 1 diabetes, previously known as juvenile diabetes, occurs when the body's own immune system destroys the insulin secreting pancreatic beta-cells. Type 1 diabetes is the most severe form of the disease and requires multiple daily insulin injections for survival. Even with excellent glucose control, patients are at significant risk for developing debilitating complications. Type 2 diabetes, formally known as adult-onset diabetes, occurs when there are insufficient functional insulin-producing pancreatic beta-cells for the body's needs. Type 2 diabetes is commonly associated with obesity. There are other forms of diabetes caused by rare mutations in important genes. In all forms of diabetes, the exact causes remain unclear, and better treatments are urgently needed.

Diabetes Research Group

http://diabetes.ubc.ca

a place of mind
THE UNIVERSITY OF BRITISH COLUMBIA

Life Sciences Institute
email: lsi.grad@ubc.ca
web: lsi.ubc.ca
web: diabetes.ubc.ca



DRG Researchers

Roger Brownsey: we aim to understand the molecular mechanisms by which hormones bring about changes in cell metabolism and function. Our work is especially concentrated on the mechanism of insulin action on fatty acid synthesis and on the key lipogenic enzyme acetyl-CoA carboxylase.

Susanne Clee: we use genetics as a tool to gain insight into novel pathways promoting obesity and diabetes. Genetic factors largely determine which individuals will develop obesity and/or diabetes in the context of a lifestyle of diets high in fat and carbohydrate and reduced exercise.

Eric Jan: translational regulation of proteins is fundamental for proper gene expression and cellular functions. Loss of these translational controls can lead to misexpression of proteins that contribute to cellular stress and diseases such as diabetes and cancer. Our laboratory is interested in elucidating these translational control mechanisms during cellular stress.

James Johnson: the Laboratory of Molecular Signalling in Diabetes is focused on understanding the causes of type 1 and type 2 diabetes at a molecular level. Our studies are guided by the discovery of genes and associated gene networks linked to diabetes risk and by known risk factors that predispose individuals to diabetes.

Timothy Kieffer: the Laboratory of Molecular and Cellular Medicine is working to develop novel and innovative therapeutic approaches for diabetes. Our research typically involves sophisticated molecular techniques and studies at the cellular and physiological level. We believe that gene and cell based therapies may be the medicine of the future.

Christopher McIntosh: our work focuses on intestinal hormones involved in the regulation of pancreatic islet function and fat metabolism and the consequences of their altered function in obesity and diabetes.

Calvin Yip: our research focuses on investigating the molecular architecture and function of protein complexes with an emphasis on complexes involved in insulin signalling.

Recent Publications

Rezania A, Bruin JE, Riedel MJ, Mojibian M, Asadi A, Xu J, Gauvin R, Narayan K, Karanu F, O'Neil JJ, Ao Z, Warnock GL, Kieffer TJ. (2012). Maturation of human embryonic stem cell-derived pancreatic progenitors into functional islets capable of treating pre-existing diabetes in mice. *Diabetes* 61:2016-29.

Yoganathan P, Karunakaran S, Ho MM, Clee SM. (2012). Nutritional regulation of genome-wide association obesity genes in a tissue-dependent manner. *Nutr Metab.* 9:65.

Khong A, Jan E. (2011). Modulation of stress granules and P bodies during dicistrovirus infection. *J Virol* 85:1439-1451.

Yip CK, Murata K, Walz T, Sabatini DM, Kang SA. (2010). Structure of the human mTOR complex I and its implications for rapamycin inhibition. *Mol Cell* 38:768-774.

Chu KY, Lin Y, Hendel A, Kulpa JE, Brownsey RW, Johnson JD. (2010). ATP-citrate lyase reduction mediates palmitate-induced apoptosis in pancreatic beta cells. *J Biol Chem* 285:32606-32615.

Jeffrey KD, Alejandro EU, Luciani DS, Kalynyak TB, Hu X, Li H, Lin Y, Townsend RR, Polonsky KS, Johnson JD. (2008). Carboxypeptidase E mediates palmitate-induced beta-cell ER-stress and apoptosis. *PNAS* 105:8452-8457.

Covey SD, Wideman RD, McDonald C, Unniappan S, Huynh F, Asadi A, Speck M, Webber T, Chua SC, Kieffer TJ. (2006). The pancreatic beta cell is a key site for mediating the effects of leptin on glucose homeostasis. *Cell Metab* 4:291-302.

Kim SJ, Doudet DJ, Studenov AR, Nian C, Ruth TJ, Gambhir SS, McIntosh CH. (2006). Quantitative micro positron emission tomography (PET) imaging for the in vivo determination of pancreatic islet graft survival. *Nat Med* 12:1423-1428.

Graduate Programs

Cell & Developmental Biology (MSc, PhD)

Biochemistry & Molecular Biology (MSc, PhD)

Grad School @ UBC

UBC offers over 130 master's and doctoral degree programs in nearly every academic field imaginable.

Discover more. **www.grad.ubc.ca**

The University of British Columbia

UBC is a global centre for research and teaching, consistently ranked among the 40 best universities in the world. Surrounded by the beauty of the Canadian West, UBC embraces bold new ways of thinking that attract exceptional students and faculty. It is a place where innovative ideas are nurtured in a gloablly connected research community, providing unparalleled opportunites to learn, discover and contribute in one's own way. UBC is a place of mind.