

07/2017

06/2018

# BBDC

BANTING & BEST DIABETES CENTRE

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ANNUAL REPORT

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# WHO WE ARE

The BBDC was established in 1978 as an extra-departmental unit of the Faculty of Medicine, University of Toronto with the primary objective of advancing diabetes research, education, and patient care.

We offer several grants, studentships, fellowships, and other support for qualified individuals involved in diabetes research at the University of Toronto and its affiliated hospitals and research institutes across the city including SickKids, Mount Sinai Hospital, University Health Network, Sunnybrook Health Sciences Centre, St. Michael's Hospital, Women's College Hospital, Centre for

Addiction and Mental Health and many other community affiliated sites.

We host scientific conferences to facilitate the exchange of scientific information and ideas, and to assist in the development of collaborative diabetes research activities both locally and internationally. We foster and develop continuing health education and quality improvement

initiatives for all members of the diabetes health care team with the aim of providing a tangible impact at the patient level.

Our members are a network of over 200 faculty and health care providers involved in diabetes research, education and care from various departments at the University of Toronto and its affiliated hospitals and research institutes.

## OUR VISION

As a centre of excellence for innovation in diabetes research, education, and clinical care, we will tangibly impact diabetes prevention and outcomes in Canada and globally.

## OUR MISSION

We bring together researchers and health professionals across multiple University of Toronto affiliated disciplines to:

- ▶ Lead discoveries in patient-oriented research, large-scale clinical trials and basic science across affiliated hospitals and research institutes
- ▶ Develop novel treatment paths to cure diabetes or prevent its complications
- ▶ Identify innovative ways to manage diabetes and improve the lives of those living with the condition

# DIRECTOR'S REPORT

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**Gary F. Lewis, MD, FRCPC**

Director, Banting & Best

Diabetes Centre

Professor, Departments of Medicine  
and Physiology

Sun Life Financial Chair in Diabetes

Drucker Family Chair in Diabetes Research

I would like to thank the members of our committees for volunteering their time and sharing their expertise for the benefit of the BBDC membership.

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Many have provided years of service and their commitment is truly appreciated. I would also like to thank the outstanding BBDC administrative staff who make the BBDC run so efficiently. Specifically our longstanding business manager, Ms. Rose La-Barbera, our new administrative assistant and event coordinator, Ms. Sanam Tajadod (as well as her predecessor Mr. Chris Sargent who supported the BBDC for over 5 years), and administrative coordinator of our Knowledge Translation And Optimizing

Care Models program, Ms. Rosanne Kagaoan.

Each year for the BBDC annual report I am proud to highlight the ongoing success as well as new initiatives of the Centre, and there is always so much to report. The BBDC offers a large number of training and innovation grants, travel awards, seminar series, and supports programs in diabetes quality, education, safety and knowledge translation. Only part of the funding for those grants and programs is derived every

year from our endowment and we work hard to raise additional funds to support core BBDC activities. We are extremely grateful to our philanthropic and industry supporters, who are acknowledged in this report. Without their generous support the activities of the BBDC would be significantly stripped down to a much smaller portfolio of funding opportunities.

Unlike other centre or institute annual reports, our report does not include a list of our members'

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publications, grants and awards. The sheer number of our members (137 scientists at U of T whose research is focused primarily on diabetes) and the tremendous productivity of BBDC member laboratories would make inclusion of those details into very lengthy and cumbersome annual reports. Instead, I encourage readers to browse the [Membership](#) section of the BBDC website to view profiles of our members who are primarily involved in diabetes research. Each member profile includes a description of their diabetes-related research and a link to their publications listed on PubMed. The total published output of all BBDC members for just the past twelve months is quite impressive.

The 2017/2018 year was a very productive one for the BBDC. Below are some of the major highlights and new initiatives:

- ▶ The BBDC and University Health Network (UHN) renewed a 5-year commitment which will enable experts from diverse backgrounds from both organizations to continue to work together on cutting-edge prevention and treatment strategies for people with diabetes. This is the third renewal of the partnership, which began in 2007 with a focus on training a new generation of diabetes scientists. UHN will continue to provide much needed support for post-doctoral fellowships and graduate students who are working in the laboratories of UHN-based diabetes scientists, enabling the BBDC to increase the breadth of its diabetes research. Over the past ten years, 31 postdoctoral fellows and 52 graduate students have received support from UHN for their diabetes research training. The majority of these trainees have pursued their interests in diabetes and many are predicted to make important contributions to the field. Continued support will also be provided for BBDC educational activities such as the Annual Scientific Day and Seminar Series at City-wide Endocrine Rounds.
- ▶ The 4th BBDC-Joslin Diabetes Center-University of Copenhagen Conference on Diabetic Complications: From Molecular Mechanisms to Patient-Oriented Research was held in Toronto on October 20-21, 2017. The event brought together diabetes researchers from the three institutions and beyond to promote collaboration and understanding of the most cutting-edge diabetes research initiatives. The next conference will be held in Copenhagen on October 26-27, 2018.
- ▶ The BBDC's new Trainee Lab Seminar Series and Clinical Research in Progress Rounds began in September 2017. These seminar series provide post-doctoral fellows, graduate students, residents and junior faculty with an opportunity to present their diabetes research proposals, unpublished basic science, or clinical and population-based research in an academic setting.
- ▶ A \$1 million investment has been made possible through a private donation from the DH Gayles Family Charitable Foundation of Toronto. This investment, paid over ten years, will support diabetes training and innovation within the Banting & Best Diabetes Centre along with other initiatives at Univer-





**U OF T'S BANTING & BEST DIABETES CENTRE** has one of the largest concentrations of top diabetes scientists in the world. We are leading not only discovery research and clinical trials, but also in taking that knowledge and directly impacting care.”

**Dr. Gary Lewis, BBDC Director**

sity Health Network. This will include the establishment of the DH Gales Family Foundation Pilot and Feasibility Grant and/or Postdoctoral Fellowships commencing in 2019. Training the next generation of diabetes scientists and stimulating innovative discovery research by Banting & Best Diabetes Centre scientists are the highest priorities of the Centre. This award addresses both of these priorities.

- ▶ A new BBDC/Heart & Stroke-Richard Lewar Centre of Excellence Pilot and Feasibility Grant in Cardiovascular and Diabetes Research was established. Each year, \$100,000 will be available for a project focusing on the interaction between diabetes and cardio-

vascular disease. Funding has been secured for three years.

- ▶ The BBDC's Quality, Education and Safety (QUEST) program led by Dr. Phillip Segal launched an educational website with the purpose of providing the diabetes healthcare provider with the best clinical resources and tools to facilitate and improve clinical care. Two diabetes self-management video guides were added to the website, A Guide to Testing Your Blood Sugar, and A Guide to Using Your Insulin Pen. The videos are original content produced by the QUEST committee which address some of the most challenging diabetes self-management skills that patients struggle with.

A QUEST Environmental Scan and Scoping Review was under-

taken to determine what interventions, innovations, models, and quality improvement strategies were utilized in Ontario at the provider level to address gaps in care for individuals with diabetes. Members of the QUEST committee are now in the process of a detailed assessment of all sources included in the document to identify initiatives that can be applied locally, as well as what gaps still exist and what opportunities there are to address them. A manuscript of this initiative is being submitted for publication.

- ▶ The BBDC's Knowledge Translation and Optimizing Care Models Program and Diabetes Pharmacy Network led by Dr. Lori MacCallum continues to flourish. The Canadian Journal of Diabetes dedicated a full issue to pharmacy practice and diabetes care with Dr. MacCallum as the Guest Editor and included a [manuscript](#) on the creation of the first Canadian Diabetes Pharmacists Network. The pharmacist network continues to grow and engage with 1,300 members across Canada.

New educational resources continue to be developed by the program including a practice tool on the safe and effective



use of [SGLT2 inhibitors](#). Development of the second edition of the BBDC Guidebook for Pharmacists on Diabetes Management is underway.

Dr. MacCallum was awarded a Canadian Foundation for Pharmacy Innovation Fund Grant to lead an interdisciplinary research team that includes pharmacists, physicians, patients and implementation science experts to examine follow-up for people with diabetes by community pharmacists. She also authored an [editorial](#) on this topic for the *Canadian Pharmacists Journal*.

► In March of this year, the BBDC launched its new website. The site has a fresh new look in keeping with the Faculty of Medicine identity and a new responsive layout for both mobile and desktop devices. Our home page now includes more visible and convenient quick links to our most frequently visited webpages and an improved search tool.

Diabetes research at the University of Toronto, supported by the BBDC continues to flourish and grow. The Toronto diabetes research, education and clinical community is highly collab-

orative, despite its geographical spread across a number of university-affiliated academic hospitals and research institutes. Openness, collegiality and willingness to collaborate across hospitals and research institutes leads to a very attractive and stimulating research environment. As the 100th anniversary of the discovery of insulin in 2021 draws ever closer, we can be proud that the University of Toronto continues its leadership position in diabetes research, care and education that was established in the early twentieth century.

# COMMITTEES

JULY 2017 – JUNE 2018

## EXECUTIVE COMMITTEE

The governance structure of the BBDC consists of a Director and Executive Committee who ensure that the goals of the Centre are appropriately implemented. The Executive Committee provides leadership and representation for the University of Toronto diabetes research, education and care communities.

### DIRECTOR & CHAIR

**Dr. Gary Lewis**, Department of Medicine, Division of Endocrinology & Metabolism, and Department of Physiology\*

**Dr. Khosrow Adeli**, Department of Biochemistry, and Department of Laboratory Medicine & Pathobiology\*

**Dr. George Fantus**, Department of Medicine, Division of Endocrinology & Metabolism, and Department of Physiology\*; BBDC Core Laboratory Director

**Dr. Richard Gilbert**, Department of Medicine, Division of Endocrinology & Metabolism\*

**Dr. Richard Hegele**, Vice Dean, Research and Innovation, Faculty of Medicine\*

**Dr. Tony Lam**, Department of Medicine and Department of Physiology\*

**Dr. Lorraine Lipscombe**, Department of Medicine, and Department of Health Policy, Management and Evaluation\*

**Dr. Bruce Perkins**, Department of Medicine, Division of Endocrinology & Metabolism\*

**Dr. Phillip Segal**, Department of Medicine, Division of Endocrinology & Metabolism\*

**Dr. Minna Woo**, Department of Medicine, Division of Endocrinology & Metabolism\*

## CLINICAL APPLIED RESEARCH EDUCATION (CARE) COMMITTEE

This committee is made up of the leadership of the Applied Research Programs. Their purpose is to coordinate activities in these programs and promote collaboration between the Applied Research Programs.

### CHAIR

**Dr. Gary Lewis**, Department of Medicine, Division of Endocrinology & Metabolism, and Department of Physiology\*

**Dr. Lorraine Lipscombe**, Leader, Vulnerable Populations/Population Health Program

**Dr. Lori MacCallum**, Program Director, Knowledge Translation and Optimizing Care Models; Leslie Dan Faculty of Pharmacy\*

**Dr. Phillip Segal**, Chair, Quality Education and Safety Committee

## TRAINING AND RESEARCH EXCELLENCE COMMITTEE

This committee implements the scientific review of BBDC funding programs, develops the Annual Scientific Day program, and selects speakers for the BBDC Seminar Series.

### CHAIR

**Dr. Tony Lam**, Associate Director of Research, BBDC; Departments of Medicine and Physiology\*

**Dr. Kim Connelly**, Department of Medicine, Division of Cardiology\*

**Dr. Margaret Hahn**, Department of Psychiatry\*

**Dr. Caroline Kramer**, Department of Medicine\*

**Dr. Cynthia Luk**, Department of Medicine\*

**Dr. Ian Rogers**, Department of Obstetrics and Gynecology\*

**Dr. Robert Screaton**, Department of Biochemistry\*

**Dr. Hoon-Ki Sung**, Department of Laboratory Medicine and Pathobiology\*

**Dr. Daniel Winer**, Department of Laboratory Medicine and Pathobiology\*

**Dr. Darren Yuen**, Department of Laboratory Medicine and Pathobiology\*

## QUALITY EDUCATION AND SAFETY (QUEST) COMMITTEE

This committee fosters and develops continuing health education and quality improvement initiatives for all members of the diabetes team with the aim of providing a tangible impact at the patient level.

### CHAIR

**Dr. Phillip Segal**, Department of Medicine, Division of Endocrinology & Metabolism\*

**Ms. Leigh Caplan**, Certified Diabetes Nurse Educator, Sunnybrook Hospital

**Ms. Celia Fredericks**, Clinical Nurse Specialist, Mount Sinai Hospital

**Dr. Julie Anne Gilmour**, Department of Medicine, Division of Endocrinology & Metabolism\*

**Dr. Ilana Halperin**, Staff Physician, Sunnybrook Health Sciences Centre; Assistant Professor\*

**Dr. Lori MacCallum**, BBDC Program Director, Knowledge Translation and Optimizing Care Models; Leslie Dan Faculty of Pharmacy\*

**Dr. Geetha Mukerji**, Physician, Women's College Hospital & Mount Sinai Hospital\*

**Dr. Monica Parry**, Assistant Professor, Leadership Team; Director, Nurse Practitioner Programs, Lawrence S. Bloomberg Faculty of Nursing\*

**Ms. Lori Sutton**, Outreach Facilitator – Diabetes and Chronic Disease Management, Toronto Central LHIN Diabetes Program, South Riverdale Community Health Centre

**Ms. Dana Whitham**, Case Manager, Diabetes, St. Michael's Hospital

**Dr. Rene Wong**, Department of Medicine, Division of Endocrinology & Metabolism\*

## TRAINEE ADVANCEMENT AND DEVELOPMENT COMMITTEE

As a subcommittee of the Training and Research Excellence Committee, this committee implements the scientific review of the Summer Studentships, Annual Trainee Awards, and Trainee Travel Awards funding programs. Members are post-doctoral fellows with diverse expertise and disciplines who are either BBDC or externally funded.

### CHAIR

**Dr. Tony Lam**, Associate Director of Research, BBDC; Departments of Medicine and Physiology\*

**Dr. Sri Batchu**  
(Supervisors: Drs. Kim Connelly and Andrew Advani)

**Dr. Jacqueline Beaudry**  
(Supervisor: Dr. Daniel Drucker)

**Dr. Javier Jaldin-Fincati**  
(Supervisor: Dr. Amira Klip)

**Dr. Haneesha Mohan**  
(Supervisor: Dr. Michael Wheeler)

**Dr. Yoo Jin Park**  
(Supervisor: Dr. Minna Woo)

**Dr. Jillian Rourke**  
(Supervisor: Dr. Robert Sreaton)

**Dr. Priska Stahel**  
(Supervisor: Dr. Gary Lewis)

\* University of Toronto

# FUNDING PROGRAMS AND FUNDING DECISIONS

BANTING & BEST DIABETES CENTRE

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12,500	5,000	47,200
680	3,981	
78	23	1,398
		10,500

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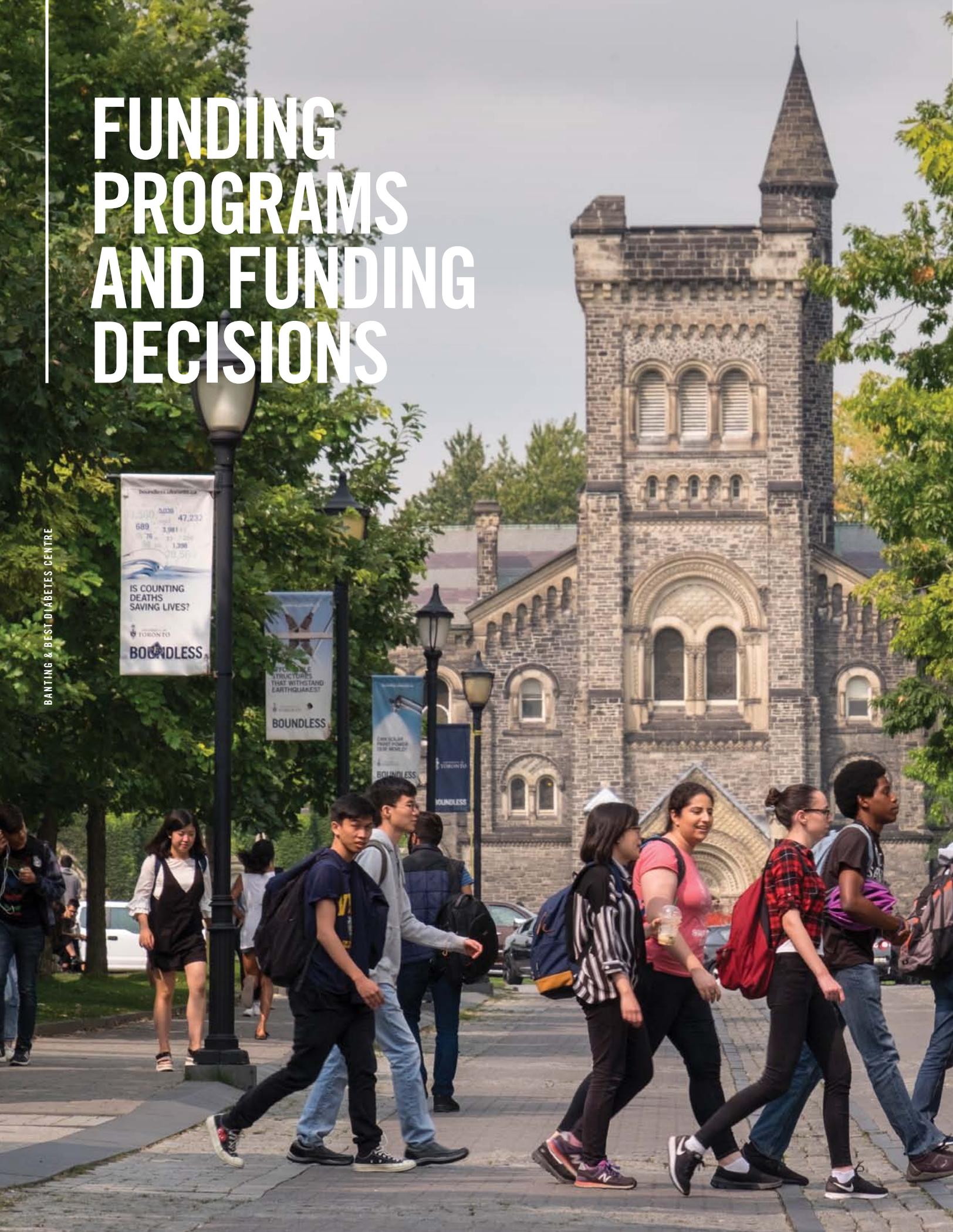
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This section of our annual report provides a brief overview of the significant funding that we provide for the diabetes research, education and care communities at the University of Toronto and its affiliated institutions. Complete details and specific eligibility requirements for each program are outlined on our website [bbdc.org](http://bbdc.org).

## FUNDING PROGRAMS FOR TRAINEES

### 4TH BBDC-JOSLIN-UCPH ABSTRACT COMPETITION

The following ten trainees were selected to participate in the Danish Diabetes Academy Training Day held in Toronto on October 19, 2017 in advance of the 4th BBDC-Joslin Diabetes Center-University of Copenhagen Conference on October 20-21, 2017. The objective of the Training Day is to facilitate development of networks and future research collaborations among the selected young researchers across the three involved institutions. The trainees also presented posters at the conference.

<u>TRAINEE</u>	<u>SUPERVISOR(S)</u>	<u>TITLE OF RESEARCH</u>
Scott Frendo-Cumbo	Dr. Amira Klip and Dr. John Brumell	Deletion of specific autophagy-related genes induces insulin resistance
Queenie Hu	Dr. Robert Screaton	Identification of novel regulators of human pancreatic beta-cell proliferation using high-content functional RNAi screens
Javier Jaldin-Fincati	Dr. Amira Klip	Insulin signalling and insulin uptake into microvascular and lymphatic endothelial cells
Sareh Keshavarzi	Dr. Andrew Paterson	Meta Genome-Wide Association Study of Cardiovascular Disease in People with Type 1 Diabetes
Evan Lewis	Dr. Bruce Perkins	1-year of omega-3 supplementation stops the progression of diabetic sensorimotor polyneuropathy: results from a phase 2 trial
Lilia Magomedova	Dr. Carolyn Cummins	Hepatic ablation of the nuclear receptor coactivator ARGLU1, is protective against the development of type 2 diabetes and fatty liver in vivo
Zhila Semnani-Azad	Dr. Anthony Hanley	Longitudinal Associations of Soluble CD163 with Insulin Sensitivity and $\beta$ -Cell Function: The Prospective Metabolism and Islet Cell Evaluation (PROMISE) Cohort
Priska Stahel	Dr. Gary Lewis	Evaluation of intranasal insulin effects on the regulation of lipoprotein production in healthy men
Elodie Varin	Dr. Daniel Drucker	Is DPP4 an hepatokine or an adipokine critical for the regulation of glucose homeostasis?
Julie Anh Dung Van	Dr. James Scholey	Dysregulated proteolytic processing of uromodulin reflects early tubular response to chronic hyperglycemia

## FUNDING PROGRAMS AND FUNDING DECISIONS

The following were selected to present a poster at the 4th BBDC-Joslin Diabetes Center-University of Copenhagen Conference on October 20-21, 2017 in Toronto.

<u>TRAINEE</u>	<u>SUPERVISOR(S)</u>	<u>TITLE OF RESEARCH</u>
Battsetseg Batchuluun	Dr. Michael Wheeler	Elevated Medium Chain Acylcarnitines are Associated with Prediabetes and Induce Pancreatic $\beta$ Cell Dysfunction
Cindy Bui	Dr. Jonathan Rocheleau	Imaging ApoB=NADP+ to track NADPH dynamics in pancreatic $\beta$ cells
William Cameron	Dr. Jonathan Rocheleau	Mitochondrial Targeting of ApoB-NADP+ reveals that Palmitate-induced Toxicity in Beta-Cells Involves a Drop in Mitochondrial NADPH/NADP+ Redox State
Sergi Clotet Feixas	Dr. Ana Konvalinka and Dr. James Scholey	Silac-based proteomics of Primary Human Renal Cells Reveals a Novel Link Between Male Sex Hormones and Impaired Energy Metabolism in Diabetic Kidney Disease
Jia-Xu Li	Dr. Carolyn Cummins	The potential role of LXR $\beta$ antagonism in protecting brown adipose tissue from the chronic effects of glucocorticoid exposure
Yuliya Lytvyn	Dr. David Cherney	Plasma Uric Acid and Renal Function in Adolescents Compared to Adults with T1D for $\geq 50$ Years
Cigdem Sahin	Dr. Carolyn Cummins	The Novel PPAR Pan-Active Antagonist Derived from Cashew Nut Shell Liquid Ameliorates Dyslipidemia and Insulin Resistance in Diet-Induced Obese Mice
Sanja Visekruna	Dr. Linda McGillis and Dr. Monica Parry	A Preliminary Analysis of Parents' Perceptions of Cost Burden of Type 1 Diabetes Health Technologies
Alanna Weisman	Dr. Bruce Perkins	Effect of artificial pancreas systems on glycaemic control in patients with type 1 diabetes: a systematic review and meta-analysis of outpatient randomised controlled trials
Lucy Shu Nga Yeung	Dr. Adria Giacca and Dr. Jonathan Rocheleau	NOD1 Mediates Insulin Resistance in Response to Circulating Free Fatty Acid

# 5 MILLION

PEOPLE IN CANADA ARE ESTIMATED TO DEVELOP DIABETES BY YEAR

# 2025



# 44%

**INCREASE**

## ANNUAL TRAINEE AWARDS

The Annual Trainee Awards program is intended to showcase the best innovative and novel diabetes research being conducted by trainees at the University of Toronto and to provide an incentive for BBDC trainees to share their very best work with their colleagues and the BBDC membership. The top ten abstracts are selected for poster presentations at the BBDC's Annual Scientific Day where they are judged by internationally renowned diabetes researchers. This year's judges were Dr. Martin Myers Jr., Editor-in-Chief of Diabetes, and Dr. Kim Connelly, Department of Medicine, University of Toronto. The winners receive gift cards for the University of Toronto Bookstore. The 2017/2018 prize winners are:

<u>PRIZE</u>	<u>RECIPIENT</u>	<u>SUPERVISOR(S)</u>	<u>TITLE OF RESEARCH</u>
1st Prize	Jillian Rourke	Dr. Robert Screatton	Nove G protein-coupled receptors promote human pancreatic beta cell proliferation
2nd Prize	Elodie Varin	Dr. Daniel Drucker	Is DPP4 an hepatokine or an adipokine critical for the regulation of glucose homeostasis and inflammation?
3rd Prize	Saifur Rahmam Khan	Dr. Michael Wheeler	The transition between Gestational Diabetes and Type 2 Diabetes: Predictive biomarkers and pathophysiology revealed through lipidomics
Honourable Mention	Battsetseg Batchuluun	Dr. Michael Wheeler	Elevated Medium-chain Acylcarnitines: Early Inducers of Beta-Cell Dysfunction
Honourable Mention	Cindy Bui	Dr. Jonathan Rocheleau	Imaging ApoB-NADP <sup>+</sup> to track NADPH dynamics in pancreatic $\beta$ cells
Honourable Mention	Simon Hoffman	Dr. Khosrow Adeli	Portal vein GLP-1 receptor activation modulate dietary fat absorption and intestinal lipoprotein metabolism

## CHARLES HOLLENBERG SUMMER STUDENTSHIP PROGRAM

This program is designed to introduce undergraduate and medical students to the field of diabetes research by providing an opportunity to perform a full-time summer research studentship in the laboratory of a BBDC member. Students and their supervisors participate in a weekly Seminar Series which include presentations by the summer students describing how their projects fit into the overall goals of their labs. All students present the results of their work at the end of the summer in a workshop format at a half-day mini-conference. The awards are valued at \$5,880 each (half is provided by the BBDC). The BBDC would like to thank Dr. Priska Stahel for coordinating the 2018 Summer Studentship Program. The 2018 summer studentship recipients are:

<u>RECIPIENT</u>	<u>SUPERVISOR</u>	<u>TITLE OF RESEARCH</u>
Brigida Bruno	Dr. Catherine Yu	Secondary analysis of an Inter-professional Shared Decision-making Study: Using the Decision Support Analysis Toll to assess shared-decision making in patients with diabetes
Amar Dholakia	Dr. Maria Rozakis	Epigenetic Control of Diabetes Networks
Brooke Howell	Dr. Jill Hamilton	Investigating the relationship between weight loss before and weight loss after bariatric surgery in adolescents with severe obesity



2018 Charles Hollenberg Summer Studentship recipients with program coordinator, Dr. Priska Stahel (right)

### CHARLES HOLLENBERG SUMMER STUDENTSHIP PROGRAM cont'd

<u>RECIPIENT</u>	<u>SUPERVISOR</u>	<u>TITLE OF RESEARCH</u>
So Jeong Lee	Dr. Satya Dash	Investigating the acute effect of intranasal glucagon on food intake and energy expenditure in humans
Jing Wen Li	Dr. Tony Lam	Leptin action in the brain
Kathy Liu	Dr. Dana Philpott	Changes in the intestinal microbiome post-bariatric surgery contribute to the improved insulin sensitivity of target organs
Sarah Macklin	Dr. Richard Gilbert	Effect of CXCR3 agonist in acute experimental kidney fibrosis
Samantha McLellan	Dr. Jill Hamilton	Is nutrition risk associated with insulin resistance in early childhood?
Benjamin Merrick	Dr. Cristina Nostro	Overexpression of GATA6 to induce hESC-beta like cell maturation
Emilia Mitova	Dr. Patricia Brubaker	Role of secretagogen in circadian secretion of the incretin hormone, glucagon-like peptide-1
Arghavan Omid	Dr. Khosrow Adeli	Mechanisms of Postprandial Dyslipidemia and Intestinal Dysfunction in Insulin Resistant States
Janice Pang	Dr. Amira Klip	Glucose uptake and release from endothelial microvascular cells exposed to diabetogenic conditions
Daniel Scarr	Dr. Bruce Perkins	Alleviating Carbohydrate-Counting Burden in Type 1 Diabetes Using Artificial Pancreas and Sodium Glucose-Linked Transporter 2 Inhibition: A Randomized Placebo-Controlled Trial
Shawn Sud	Dr. Satya Dash	Assessment of the acute effects of intranasal leptin on food intake and energy expenditure in obese humans

### GRADUATE STUDENTSHIPS

#### BBDC-NOVO NORDISK STUDENTSHIPS

A collaboration with Novo Nordisk Canada Inc. was established in 1996 to provide long-term endowment in support of graduate students who are pursuing a career in diabetes research. As part of the Ontario Student Opportunity Trust Fund program, the support obtained from Novo Nordisk was matched by equal contributions from the University of Toronto and the Government of Ontario for a total endowment of 4.2 million dollars. Studentships are valued at up to \$21,000 each. The 2017/2018 award recipients are:

<u>RECIPIENT</u>	<u>SUPERVISOR(S)</u>	<u>TITLE OF RESEARCH</u>
Parastoo Boroumand	Dr. Amira Klip and Dr. Stephen Girardin	Nutritional influence on the development of bone marrow monocytes: implications for metabolic inflammation
Chantal Kowalchuk	Dr. Margaret Hahn and Dr. Gary Remington	Elucidating the mechanisms behind antipsychotic impairment on central insulin sensing
Emily McGaugh	Dr. Maria Cristina Nostro	Elucidating the role of FGF signaling during the expansion of pancreatic progenitor cells
Stephanie Kimiko Nishi	Dr. John Sievenpiper and Dr. Richard Bazinet	Assessing the Effect of Nut Consumption on Adiposity: Is a Calorie a Calorie?
Romario Regeenes	Dr. Jonathan Rocheleau	Quantifying OCR and ECAR levels in individual pancreatic islets using an optical sensor and microfluidic device
Zhila Semnani-Azad	Dr. Anthony Hanley	Soluble CD163, a marker of adipose tissue macrophage activation, in the etiology of type 2 diabetes
Zhengnan Wang	Dr. Anthony Hanley	Urinary vitamin D binding protein loss as a potential biomaker for nephropathy in patients at risk for type 2 diabetes



## FUNDING PROGRAMS AND FUNDING DECISIONS

### BBDC-UNIVERSITY HEALTH NETWORK GRADUATE AWARDS

These awards were made possible by the partnership between the BBDC and the University Health Network. To be eligible for this award, the student's supervisor must hold a full-time UHN appointment as an active staff physician, or if he/she holds an associate staff position or staff scientist position the supervisor's principal laboratory or clinical research space must be physically located at the UHN. Studentships are valued at up to \$21,000 each. The 2017/2018 award recipients are:

<u>RECIPIENT</u>	<u>SUPERVISOR</u>	<u>TITLE OF RESEARCH</u>
Paige Bauer	Dr. Tony Lam	Dissecting the upper small intestinal microbiota-dependent mechanisms in the anti-diabetic action of metformin
Cindy Bui	Dr. Jonathan Rocheleau	Investigating the role of NADPH production in glucolipotoxicity-induced pancreatic $\beta$ cell failure

### TAMARACK GRADUATE AWARD IN DIABETES RESEARCH

This graduate scholarship was made possible by a generous private endowment which was matched by equal funding from the University of Toronto and the Government of Ontario under the Ontario Student Opportunity Trust Fund program. The award is valued at up to \$21,000. Due to an insufficient number of applications, no award was presented this year.

### YOW KAM-YUEN GRADUATE SCHOLARSHIP IN DIABETES RESEARCH

This graduate scholarship was made possible by a generous private endowment which was matched by equal funding from the University of Toronto and the Government of Ontario under the Ontario Student Opportunity Trust Fund program. The value of the award varies and is normally between \$10,000 and \$15,000. Due to an insufficient number of applications, no award was presented this year.

### POST-DOCTORAL FELLOWSHIPS

The support of research fellows has been a major priority of the BBDC since the Centre's inception. Each year, the BBDC endeavours to provide as many fellowships as possible to enable individuals holding an MD or PhD to carry out full-time diabetes research at the University of Toronto or one of its affiliated institutions. The objective of these awards is to attract and foster young investigators to initiate and/or continue research training in the field of diabetes. Awards are \$40,000 or \$50,000 depending on the degree held. The 2017/2018 recipients are:

### SELLERS POST-DOCTORAL FELLOWSHIP

<u>RECIPIENT</u>	<u>SUPERVISOR</u>	<u>TITLE OF RESEARCH</u>
Sri Mahavir Agarwal	Dr. Margaret Hahn	Investigation of the role of gut microbiome in antipsychotic (AP) induced glucose dysregulation and associated cognitive dysfunction in AP-naïve schizophrenia patients

### BBDC POST-DOCTORAL FELLOWSHIPS

<u>RECIPIENT</u>	<u>SUPERVISOR</u>	<u>TITLE OF RESEARCH</u>
Haneesha Mohan	Dr. Michael Wheeler	CMPF Regulates Hepatic Lipid Metabolism
Ashley Anne Untereiner	Dr. Michael Wheeler	Investigation of GABA-stimulated beta-cell mass and its correction of hyperglycemia and glucose intolerance in mouse models of T1D and T2D
T. M. Zaved Waise	Dr. Tony Lam	The role of intestinal energy sensors in the antidiabetic action of metformin

### BBDC FELLOWSHIPS IN DIABETES CARE (FUNDED BY ELI LILLY/BOEHRINGER INGELHEIM DIABETES ALLIANCE)

The BBDC Fellowships in Diabetes Care have been made possible by a generous contribution from Eli Lilly/Boehringer Ingelheim Diabetes Alliance. Eli Lilly first established this program in 2009 and has been generously providing annual support since then.

<u>RECIPIENT</u>	<u>SUPERVISOR(S)</u>	<u>TITLE OF RESEARCH</u>
Evan Lewis	Dr. Bruce Perkins and Dr. Vera Bril	The effect of omega-3 supplementation on diabetic neuropathy
Dler Mahmood	Dr. Maria Rozakis-Adcock	Epigenetic regulation of hepatic gluconeogenesis & insulin resistance
Brent McLean	Dr. Daniel Drucker	Mechanisms linking GLP-1 Receptor Signaling to Control of Inflammation in the Cardiovascular System

### BBDC-KANGBUK SAMSUNG INTERNATIONAL RESEARCH FELLOWSHIP PROGRAM

In 2015, the BBDC and University Health Network entered into a first-of-its kind partnership with the Kangbuk Samsung Medical Centre in Seoul, South Korea to help them become Asia's top centre for diabetes treatment, research and education. An international fellowship program was established in which post-doctoral research fellows recruited by the Kangbuk Samsung Hospital are hosted by BBDC-affiliated scientists. Host labs are selected by Kangbuk Samsung based on their identified areas of research interest. Fellows from South Korea travel to Toronto to receive hands-on training under the guidance of the BBDC's world-renowned researchers. In 2017, a third fellow arrived in Toronto to begin a 3-year fellowship:

<u>RECIPIENT</u>	<u>SUPERVISOR(S)</u>	<u>TITLE OF RESEARCH</u>
Yu-Mi Lim	Dr. Tony Lam	Understanding the progression of high-fat diet-induced obesity

## FUNDING PROGRAMS AND FUNDING DECISIONS

### TRAINEE TRAVEL AWARDS

Attendance at scientific meetings provide all researchers, trainees and established researchers alike, with an opportunity to hear about cutting edge research in their field, often well before those results are published in scientific journals. Scientific meetings provide an opportunity for trainees to present their research findings to an international audience of their peers and promote networking and the establishment of research collaborations. Travel awards are available to trainees presenting a first-author abstract directly related to diabetes research which has been accepted for poster or oral presentation at a scientific meeting. Trainees receive travel reimbursement of up to \$1,000 CAD to attend the meeting. The 2017/2018 award recipients are:

### BBDC TRAINEE TRAVEL AWARDS

<u>RECIPIENT</u>	<u>SUPERVISOR(S)</u>	<u>TITLE OF RESEARCH</u>
Tamadher Alghamdi	Dr. Andrew Advani	Histone H3 Serine 10 Phosphorylation Facilitates Endothelial Activation in Diabetic Kidney Disease
Dana Al Rijjal	Dr. Michael Wheeler	Identifying Putative Bioactive Molecules in Fish Oil Supplements
Danielle Alvares	Dr. Khosrow Adeli	Neuregulin 4 (Nrg4) regulation of Hepatic Lipid and Lipoprotein Metabolism in the Hamster Model
Cindy Bui	Dr. Jonathan Rocheleau	Apollo-NADP+ expressed in the pancreatic beta-cells of living zebrafish responds to glucose and diamide to reveal NADPH dynamics
Huntley Chang	Dr. Jonathan Rocheleau	Simultaneous imaging of Apollo-NADP+ and Fucci1 to correlate beta-cell NADPH/NADP+ redox state to the cell cycle
Sergi Clotet Freixas	Dr. Ana Konvalinka	Proteomics and Systems Biology Analysis of Human Kidney Cells Reveals a Link Between Androgen-Induced Alterations in Renal Cell Metabolism and Circulating Metabolite Levels in Chronic Kidney Disease
Scott Frendo-Cumbo	Dr. Amira Klip	Autophagy Related Protein 16L1 (Atg16L1) Depletion Induces Insulin Resistance Through Decreased IRS Expression
Andrea Glenn	Dr. John Sevenpiper	Relation of Vegetarian diets with Cardiovascular Disease Outcomes: A Systematic Review and Meta-analysis of Prospective cohort Studies
Victoria Higgins	Dr. Khosrow Adeli	Postprandial GLP-1 response to a high-fat meal is blunted in obese adolescents with insulin resistance and metabolic dyslipidemia
Nicholas Howell	Dr. Gillian Booth	Associations Between Traffic-Related Air Pollution and Cardiovascular Disease Risk Factors Were Stronger in More Walkable Neighborhoods: The Cardiovascular Health in Ambulatory Care Research Team Cohort
Sareh Keshavarzi	Dr. Andrew Paterson and Dr. Angelo Canty	A Meta Genome-wide Association Study Identifies a Novel Locus for Cardiovascular Disease in Type 1 Diabetes
Jia Xu Li	Dr. Carolyn Cummins	LXRβ Antagonism as a Novel Approach to Target Glucocorticoid-Mediated Brown Adipose Tissue Dysfunction

**BBDC TRAINEE TRAVEL AWARDS cont'd**

<b><u>RECIPIENT</u></b>	<b><u>SUPERVISOR (S)</u></b>	<b><u>TITLE OF RESEARCH</u></b>
Yuliya Lytvyn	Dr. David Cherney	Plasma Uric Acid (PUA), Renal Hemodynamic Function and Arterial Stiffness at the Extremes of T1D Duration: Adolescents vs. Adults with T1D for $\geq 50$ Years
Benjamin Markowitz	Dr. Andrew Advani	The Three I's of Diabetes Integration in Emerging Adulthood – Developing a Framework to Individualize Diabetes Care
Stephanie Nishi	Dr. John Sievenpiper	Nut consumption and measures of adiposity in type 2 diabetes: A systematic review and meta-analysis of randomized controlled trials
Frankie Poon	Dr. Cristina Nostro	Elucidating pancreatic lineage commitment using hESC directed differentiation
Romario Regeenes	Dr. Jonathan Rocheleau	Design of an Islet-on-a-chip Device to Dynamically Measure Metabolites in Individual Pancreatic Islets
Delnaz Roshandel	Dr. Andrew Paterson	A meta-genome-wide association study identifies multiple loci in the MHC region and a locus on chromosome 1 for serum C-peptide in type 1 diabetes
Ingrid Dominique Santaren	Dr. Anthony Hanley	Combining Dietary and Biomarker Data to Evaluate Associations of Dairy Intake with Risk of Type 2 Diabetes (T2DM): The Prospective Metabolism and Islet Cell Evaluation (PROMISE) Cohort
Zhila Semnani-Azad	Dr. Anthony Hanley	Determinants of Longitudinal Change in sCD163, a Biomarker of Adipose Tissue Macrophage Activation
Christopher Tait	Dr. Laura Rosella	The role of obesity in explaining the relationship between food security and incident type 2 diabetes: A population based study
Alanna Weisman	Dr. Bruce Perkins	Artificial pancreas compared to insulin pump therapy to glucose control in type 1 diabetes: a systematic review and meta-analysis of outpatient randomized controlled trials
Lucy Shu Nga Yeung	Dr. Adria Giacca and Dr. Jonathan Rocheleau	NOD1 Mediates Insulin Resistance in Response to Circulating Free Fatty Acid
Andreea Zurbau	Dr. Vladimir Vuksan	Co-Administration of Four Complementary Therapies (Viscous Dietary Fibre, Whole Grain and Ginsengs) for Comprehensive Risk Reduction in Type 2 Diabetes

**SIR FREDERICK BANTING LEGACY FOUNDATION TRAVEL AWARDS**

<b><u>RECIPIENT</u></b>	<b><u>SUPERVISOR</u></b>	<b><u>TITLE OF RESEARCH</u></b>
Ju Hee Lee	Dr. Hoon-Ki Sung	Non-Thermogenic Metabolic Benefits Conferred by Intermittent Fasting in Age-Associated Metabolic Abnormalities
Elodie Varin	Dr. Daniel Drucker	Role of DPP-4 in Metabolic Disease: Adipokine, Hepatokin, or Omnikine?

## FUNDING PROGRAMS FOR FACULTY AND HEALTH PROFESSIONALS

### ARCHIE SOPMAN DIABETES RESEARCH AND EDUCATION AWARDS 2017

This program is intended to promote continuing diabetes education for health professionals at the University Health Network who do not normally have access to funds to travel to diabetes conferences or bring seminar speakers to Toronto. Award recipients who attend conferences are encouraged to share their learnings from the conference with their colleagues. Funding for this program is provided by the Toronto General and Western Hospital Foundation Archie Sopman endowment fund. The endowment is held at the University Health Network (UHN) and award payments are made directly to the recipients by the UHN. The 2017 funding recipients are:

<u>RECIPIENT</u>	<u>OCCUPATION AND UHN SITE</u>	<u>AMOUNT (FOR TRAVEL TO MEETING)</u>
Margaret Brum	Registered Dietitian, Toronto Western Hospital	Up to \$250
Lucia Chan	Registered Nurse, Toronto Western Hospital	Up to \$1,000
Tina Cheung	Clinical Nurse Specialist, Toronto General Hospital	Up to \$1,000
Kathy Cohen	Registered Dietitian, Toronto Western Hospital	Up to \$250
Margaret De Melo	Practice Leader, Clinical Nutrition, Toronto Western Hospital	Up to \$1,000
Dharshani Haththotuwa	Registered Nurse, Toronto General Hospital	Up to \$1,000
Hyangjin Im	Registered Nurse, Toronto General Hospital	Up to \$1,000
Doreen Klar	Registered Dietitian, Toronto Western Hospital	Up to \$250
Kitty Mak	Nurse Clinician, Toronto General Hospital	Up to \$1,000
Ann Murphy	Dietitian, Toronto General Hospital	Up to \$1,000
Maria Ricupero	Clinical Dietitian, Toronto General Hospital	Up to \$1,000
Teresa Sobhy	Nurse Practitioner, Toronto General Hospital	Up to \$1,000
Mary Weiland	Clinical Dietitian, Toronto Western Hospital	Up to \$250

**ASTRAZENECA IMPACT CHALLENGE GRANT: CARDIOVASCULAR/DIABETES**

In 2013, the BBDC and the Heart & Stroke/Richard Lewar Centre of Excellence in Cardiovascular Research in conjunction with the Vice-Dean, Research and International Relations, Faculty of Medicine established this joint funding program to support research initiatives focusing on diabetes and heart disease. The goal is to establish the University of Toronto as an international leader in the study of diabetes and heart disease and to foster bench to bedside translational research with a focus on innovation and first-in man clinical trials. Applicants must be members of either the BBDC and/or the Heart & Stroke/Richard Lewar Centre of Excellence to be eligible to apply. This funding program is administered by and payments are made to the award recipients by the Heart & Stroke/Richard Lewar Centre of Excellence. In 2015, the program received a generous contribution from AstraZeneca which will provide three \$250,000 grants over three years. The 2017 funding recipient is:

<u>PRINCIPAL APPLICANT</u>	<u>CO-APPLICANTS</u>	<u>TITLE OF RESEARCH</u>	<u>AMOUNT</u>
Dr. David Cherney	Dr. Daniel Drucker Dr. John Floras Dr. Mansoor Husain Dr. Susanna Mak Dr. John Parker Dr. Bruce Perkins Dr. Jacob Udell	iNcretin And TRreatment with Inhibition of sodiUm-glucose cotRansportEr-2 combinaTion In Congestive Heart Failure Preserved Ejection Fraction Trial ("NATRIURETIC-pEF")	\$249,863

**BBDC – NOVO NORDISK CHAIR IN INCRETIN BIOLOGY**

In 2010, the BBDC-Novo Nordisk Chair in Incretin Biology was established at the Banting & Best Diabetes Centre, University of Toronto. The research Chair was made possible through a \$3 million gift from Novo Nordisk in appreciation of the innovative diabetes research undertaken by the Centre. Both Novo Nordisk and the University of Toronto, Faculty of Medicine have a long-standing tradition of diabetes research originally dating back to the discovery of insulin, and most recently focused on the science of incretin biology which holds the potential to have the kind of transformative impact that insulin had in improving the lives of people with diabetes. This Chair will position the University of Toronto as a leader in this area of research. Dr. Daniel J. Drucker is the Chair holder and has been reappointed for a second 5-year term until 2020. Dr. Drucker is a clinician-scientist world-renowned for his ability to translate scientific breakthroughs into clinical treatments for patients.

ESTIMATED COST OF DIABETES TO **CANADA'S HEALTHCARE SYSTEM**



## FUNDING PROGRAMS FOR FACULTY AND HEALTH PROFESSIONALS



Diabetes Educator of the Year 2017 award recipient Angela Kennedy (centre) with Dr. Phillip Segal and Lisa Sparrow.

### DIABETES EDUCATOR OF THE YEAR AWARD 2017

Each year one award is presented to recognize a diabetes educator who has demonstrated outstanding efforts and achievements in his/her role as a diabetes educator. This award is meant to recognize achievements above and beyond the individual's clinical job description, and exceptional individuals who contribute to initiatives across teams within their organization and more broadly to the diabetes community. Candidates are not required to be members of the BBDC. The 2017 award recipient is:

<u>RECIPIENT</u>	<u>OCCUPATION AND INSTITUTION</u>	<u>AMOUNT</u>
Angela Kennedy, RN, CDE	Registered Nurse, Michael Garron Hospital (formerly Toronto East General Hospital)	\$1,000

### REUBEN & HELENE DENNIS SCHOLAR IN DIABETES RESEARCH (BIENNIAL PROGRAM)

This award was established to support new clinician-scientists and basic scientists in the early stages of their careers. Faculty are eligible for this funding within five years of their first faculty appointment. Awards are held over a 2-year period. This is a biennial funding program. The 2016-2018 award recipient is:

<u>RECIPIENT</u>	<u>TITLE OF RESEARCH</u>	<u>AMOUNT</u>
Dr. Satya Dash	Investigating the role of dopaminergic pathways in human carbohydrate and lipid metabolism	\$10,000 for 2016/2017 \$10,000 for 2017/2018

### SUN LIFE FINANCIAL NEW INVESTIGATOR AWARD

This award is made possible by a generous contribution from Sun Life Financial. The award was established to support new clinician-scientists and basic scientists in the early stages of their careers, which is a particularly challenging and vulnerable time as the researcher transitions from trainee to independent investigator. Faculty are eligible for this funding within five years of their first faculty appointment. Awards are held over a 2-year period. The 2017-2019 award recipient is:

<u>RECIPIENT</u>	<u>TITLE OF RESEARCH</u>	<u>AMOUNT</u>
Margaret Hahn	Disruptions in hypothalamic fuel sensing as a mechanism of antipsychotic-induced glucose dysregulation	\$40,000 for 2017/2018 \$40,000 for 2018/2019

### SUN LIFE FINANCIAL PILOT AND FEASIBILITY GRANTS

New ideas and directions for research involve risk-taking by scientists and funding agencies. Most established funding agencies require considerable evidence of feasibility before they consider funding an application for a new project. Furthermore, researchers who are new to the diabetes field who may wish to adapt their non-diabetes research techniques to a diabetes-related topic of interest are disadvantaged in most funding competitions. The BBDC, therefore, prioritizes pilot and feasibility funding to attract researchers without a pre-existing track record of diabetes research or established diabetes researchers who wish to pilot an innovative research idea or project. This funding program is made possible by a generous contribution from Sun Life Financial. The 2017/2018 grant recipients are:

<u>RECIPIENT</u>	<u>TITLE OF RESEARCH</u>	<u>AMOUNT</u>
Andrew Advani	Manipulating non-coding RNA to promote islet alpha cell transdifferentiation	\$50,000
Adria Giacca Xiao Yu (Shirley) Wu	Development of polymer-lipid nanoparticles for diabetes prevention	\$50,000
Amira Klip	How does injected insulin reach the circulation?	\$60,000
Tony Lam	Metformin and neurogenesis	\$50,000
Hoon-Ki Sung	Glucose regulatory function of adipose-derived protein, adiponin	\$50,000
Darren Yuen Michael Kolios	Avoiding a kidney biopsy: developing novel ultrasound techniques to non-invasively measure diabetic kidney fibrosis	\$50,000

# EDUCATIONAL ACTIVITIES

BAUNTING & BEST DIABETES CENTRE

## **4TH BBDC-JOSLIN DIABETES CENTER-UCPH CONFERENCE: DIABETES COMPLICATIONS: FROM MOLECULAR MECHANISMS TO PATIENT-ORIENTED RESEARCH**

On October 20-21, 2017, the BBDC co-hosted the 4th collaborative conference in Toronto with the Joslin Diabetes Center and the University of Copenhagen. The one and a half day event focused on diabetes complications – from molecular mechanisms to patient-oriented research. It is an exciting time to be involved in diabetes research. With new discoveries being announced near daily, it is the ideal time for major institutions from across the world to come together to help advance our understanding of this debilitating disease. The BBDC, in conjunction with the Joslin Diabetes Center and University of Copenhagen, is poised to take a leading role in bringing together key individuals in diabetes research in forums such as this to promote collaboration and understanding of the most cutting-edge research initiatives.

## FRIDAY, OCTOBER 20, 2017

7:15 A.M. Registration and breakfast

8:00 Opening Remarks: **Drs. Gary Lewis, George King, Jens Nielsen**

### SESSION 1: CARDIOVASCULAR COMPLICATIONS

Chairs: Drs. Scott Frendo-Cumbo, Frida Karin Emmanuëlsson, Kyoungmin Park

### SESSION 2: RENAL COMPLICATIONS

Chairs: Drs. Julie Van, Line Engelbrechtsen, John Tsay

8:15	The DCCT/EDIC study: Thirty three years of data impacting on our understanding and prevention of complications in Type 1 DM <b>Dr. Bernard Zinman, BBDC</b>	1:15	Scar Wars: Targeting fibrosis in diabetic kidney disease <b>Dr. Richard Gilbert, BBDC</b>
8:45	Micro- and macrovascular complications in newly diagnosed T2D patients <b>Dr. Henning Beck-Nielsen, UCPH</b>	1:45	TNFRs as predictors of diabetic kidney complications <b>Dr. Monika Niewczas, Joslin</b>
9:15	Diabetes, inflammation and atherosclerosis – new pieces of the puzzle <b>Dr. Karin Bornfeldt, University of Washington</b>	2:15	The role of the complement system in diabetic nephropathy <b>Dr. Allan Flyvbjerg, SDCC</b>
9:45	Break	2:45	Break
10:15	Pericyte regulation of endothelial growth dynamics: Insights into the angiogenic switch and microvascular proliferative disorders <b>Dr. Ira Herman, Tufts University</b>	3:15	Scarred Stiff: Stiffness as a novel therapeutic target and biomarker for diabetic nephropathy <b>Dr. Darren Yuen, BBDC</b>
10:45	Insulin signaling in vascular endothelial cells affects intestinal tumor formation <b>Dr. Christian Rask-Madsen, Joslin</b>	3:45	Human proteomics to therapeutics for diabetic nephropathy – The 50-Year Joslin Medalist Study <b>Dr. Weier (Glorian) Qi, Joslin</b>
11:15	Dietary fatty acid spillover to the heart: a novel target for the prevention and treatment of diabetic cardiomyopathy <b>Dr. Andre Carpentier, Université de Sherbrooke</b>	4:15	Urinary proteomic patterns as predictors of renal and cardiovascular outcome <b>Dr. Peter Rossing, UCPH</b>
11:45	Novel methods to probe cardiac metabolism – role of hyperpolarized c13 imaging using MRI <b>Dr. Kim Connelly, BBDC</b>	4:45	Reporting severe hypoglycemia in type 1 diabetes <b>Dr. Birger Thorsteinsson, UCPH</b>
12:15 P.M.	Lunch	5:15 – 6:45	Poster Session – MaRS Atrium
		7:00 – 10:00	Conference Dinner – Arcadian Loft

## EDUCATIONAL ACTIVITIES

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### SATURDAY, OCTOBER 21, 2017

7:30 A.M. Registration and Continental breakfast

#### SESSION 3: RETINAL AND NEUROLOGICAL COMPLICATIONS

Chairs: Zhila Semnani-Azad, Dr. Lene Ring Madsen, Dr. Ward Fickweiler

8:15 The Role of Pericytes in Diabetic Microangiopathy  
**Dr. Patricia D'Amore, Harvard Medical School**

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8:45 Clinical Trials from the DCCT through the DRCR.net: Data impacting our understanding and treatment of diabetic retinopathy  
**Dr. Jennifer Sun, Joslin**

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9:15 Glycemic conditioning of the retina and the early worsening response to improved metabolic control  
**Dr. Michael Larsen, UCPH**

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9:45 Break

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10:15 Biomarkers of Early Diabetic Neuropathy  
**Dr. Bruce Perkins, BBDC**

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10:45 Mechanisms of diabetes-associated cognitive decline  
**Dr. Heather Ferris, Joslin**

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11:15 Muscarinic receptor antagonism to treat diabetic sensory neuropathy  
**Dr. Paul Fernyhough, University of Manitoba**

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11:45 Closing Remarks  
**Drs. Gary Lewis, George King, Jens Nielsen**



**BBDC-AFFILIATED RESEARCHERS** are showing how keeping **BLOOD-SUGAR LEVELS** close to normal can slow the progression of **BLINDNESS**, and **KIDNEY AND NERVE DAMAGE**.



## ANNUAL SCIENTIFIC DAY

This annual event provides an opportunity for BBDC members to exchange scientific information and ideas and assists in the development of collaborative diabetes-related research activities. It also provides a valuable opportunity for BBDC trainees to network and present their research. BBDC post-doctoral fellowship recipients, graduate studentship recipients and select Annual Trainee Awards abstract submitters present posters of their work. This year Dr. Martin Myers Jr., Editor-in-Chief of Diabetes and Dr. Kim Connelly, Department of Medicine, University of Toronto co-judged ten of the trainee posters for the Annual Trainee Awards competition. The event focuses on the latest diabetes research topics with both clinical and laboratory applications. This year's Charles Hollenberg Memorial Lectureship was delivered by Dr. Leonard Guarente, Professor of Biology at MIT. Registration is free for all BBDC members, their trainees and U of T endocrine residents.

We gratefully acknowledge partial support of this year's event by: AstraZeneca, Boehringer-Ingelheim/Eli Lilly Diabetes Alliance, Janssen, Merck, Novo Nordisk, Sanofi and the University Health Network.

Trainee poster session

## 29TH ANNUAL SCIENTIFIC DAY • FRIDAY, MAY 11, 2018

8:00 A.M. Continental breakfast and poster set-up

**SESSION 1** Chair: Dr. Ashley Untereiner

8:40 Welcome and Introduction: **Dr. Tony Lam**

8:45 **Dr. Cristina Nostro:** Human embryonic stem cells for T1D treatment

9:15 **Dr. Hoon-Ki Sung:** Fat regulates metabolic homeostasis

9:45 **Dr. Evan Lewis:** Using Omega-3 Targeted Nutritional Therapy for Diabetic Sensorimotor Polyneuropathy

10:00 Refreshments, Poster Presentations, and BBDC Annual Trainee Awards Competition poster judging by **Dr. Martin Myers Jr.** and **Dr. Kim Connelly.** Moderator: Dr. Tony Lam

**SESSION 2** Chair: Dr. Mahavir Agarwal

11:15 **Dr. Michelle Bendeck:** Discoidin domain receptor 1 (DDR1), a collagen receptor with functions in obesity, diabetes and atherosclerosis

11:45 **Dr. Richard Gilbert:** Scar Wars: Targeting fibrosis in diabetic kidney disease

12:15 P.M. **Dr. Gary Lewis:** BBDC Director's Report

12:30 Lunch

**CHARLES HOLLENBERG MEMORIAL LECTURESHIP** Chair: Tony Lam

1:30 **Dr. Leonard Guarente:** Sirtuins and NAD in Aging and Diseases

2:30 BBDC Annual Trainee Awards Presentation 2017/2018: **Dr. Martin Myers Jr.** and **Dr. Kim Connelly**

2:40 Evaluation and adjournment

## EDUCATIONAL ACTIVITIES

### BBDC SEMINAR SERIES (AT CITY-WIDE ENDOCRINE ROUNDS)

Each year the BBDC invites internationally renowned diabetes researchers to present their work and to interact with BBDC faculty at our Seminar Series. To ensure a broad audience, seminars have been incorporated into the University of Toronto City-wide Endocrine Rounds which are held every Friday morning at the Mount Sinai Hospital.



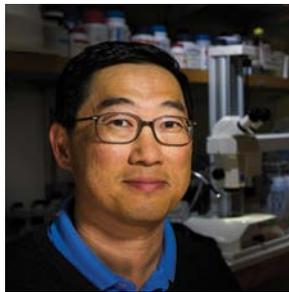
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**OCTOBER 27, 2017**

**Gerald Shulman, MD, PhD**

Professor, Yale University School of Medicine

*Non-Alcoholic Fatty Liver Disease as a Nexus of Metabolic and Hepatic Diseases*



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**DECEMBER 1, 2017**

**Seung K. Kim, MD, PhD**

Director, Stanford Diabetes Research Center

*Frontiers of human pancreas biology and genetics: implications for diabetes and cancer*



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**JANUARY 19, 2018**

**Yu-Hua Tseng, PhD**

Associate Professor, Harvard Medical School

*Thermogenic Fat Metabolism in Mice and Humans*



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**MARCH 23, 2018**

**Pere Puigserver, PhD**

Professor, Harvard Medical School

*Chemical Approaches to Metabolic Disorders*

## TRAINEE SEMINARS

In an effort to provide an enhanced training environment for trainees, the BBDC regularly hosts two seminar series: the **Trainee Lab Seminar Series** and the **Clinical Research in Progress Rounds**. These seminar series provide post-doctoral fellows, graduate students, residents and junior faculty with an opportunity to present their diabetes research proposals and unpublished basic science research or clinical and population-based research to their peers in a moderated academic setting. The Trainee Lab Seminars are held monthly from 12-1 pm at the University of Toronto Medical Sciences Building, 3rd floor Physiology Seminar room. The Clinical Research in Progress Rounds are held four times per year from 12-1pm at Women's College Hospital, room 1441. Attendance is open to all BBDC members, their trainees and U of T endocrine residents.



## DIABETES PHARMACISTS NETWORK

The Diabetes Pharmacists Network was created by the BBDC as a way to bring together pharmacists from across Canada who are interested in the care of patients with diabetes. At the BBDC, we are committed to finding ways to improve the lives of people with diabetes and those at risk of diabetes. We recognize the value of pharmacists in improving outcomes for patients and want to empower and support pharmacists who exemplify best practices through networking, education, and knowledge translation initiatives. Our goal is to bring together pharmacists to share ideas and best practices through events, publications, networking and interactive learning. Membership is free and open to all licensed pharmacists in Canada with an interest in diabetes. Pharmacy students currently enrolled in a pharmacy program in Canada are also invited to join. Visit [diabetespharmacistsnetwork.ca](http://diabetespharmacistsnetwork.ca) for more information.

## GUIDEBOOK FOR PHARMACISTS ON DIABETES MANAGEMENT

The BBDC's *Guidebook for Pharmacists on Diabetes Management* is intended to support pharmacists in the management of diabetes patients, particularly during scheduled medication reviews. The Guidebook incorporates recommendations from Canadian evidence-based guidelines in diabetes, blood pressure and lipid management and is supplemented with information that pharmacists need to know, including prevention and management of adverse effects, tips for assessment of adherence and medication management. Print and e-book versions of the guidebook are available in both English and French at [diabetespharmacistsnetwork.ca](http://diabetespharmacistsnetwork.ca).



## QUEST WEBSITE

The BBDC's Quality Education & Safety program recently launched an educational website where diabetes health care providers can obtain the best diabetes clinical practice resources and learn about local diabetes initiatives. For clinicians and those living with diabetes including patients and their caregivers, QUEST offers valuable tools and information about diabetes as well as opportunities to get involved with diabetes care and research in your community. Providers will find valuable tools and information about the disease and options to get involved with diabetes care and research in their communities. Visit the site at [diabetesquest.ca](http://diabetesquest.ca).



# CORE LABORATORY

The BBDC Core Laboratory provides a wide range of high quality laboratory assays and services at a discounted rate to diabetes researchers at the University of Toronto involved in clinical and basic research. The lab also provides services to the wider scientific community including external academic and/or industry initiated research. A list of current services and assays provided by the Core Lab is available on the BBDC's website at [bbdc.org](http://bbdc.org) or by contacting the Core Lab directly:

## LABORATORY DIRECTOR

**Dr. George Charames**

(416) 586-4800 Ext. 7733

[george.charames@sinaihealthsystem.ca](mailto:george.charames@sinaihealthsystem.ca)

## ADDRESS

**Mount Sinai Hospital**

600 University Avenue, 6th Floor, Room 6-414

Toronto, Ontario, M5G 1X5

# ACKNOWLEDGEMENTS

We would like to express our gratitude and appreciation to the following

- ▶ The members of our Training and Research Excellence Committee, Quality Education and Safety (QUEST) Committee, and Trainee Advancement and Development Committee who volunteer their time to review applications for the Centre's funding programs and to organize educational initiatives on behalf of the BBDC.
- ▶ The members of our Executive Committee and Clinical Applied Research Education (CARE) Committee.
- ▶ Those who participated in the 4th BBDC-Joslin Diabetes Center-University of Copenhagen Conference in Toronto in October 2017.
- ▶ Everyone who participated in our 29th Annual Scientific Day.
- ▶ The 2017/2018 Annual Trainee Awards poster judges, Drs. Martin Myers Jr. and Kim Connelly.
- ▶ Our 2018 Charles Hollenberg Summer Studentship Program Coordinator, Dr. Priska Stahel.
- ▶ Faculty of Medicine Advancement and the Toronto General and Western Hospital Foundation who fundraise on behalf of the BBDC.
- ▶ Individuals who have donated to the Banting & Best Diabetes Centre this past year.

# OUR SUPPORTERS

## THE BANTING & BEST DIABETES CENTRE GRATEFULLY ACKNOWLEDGES ENDOWED FINANCIAL SUPPORT FROM THE FOLLOWING CONTRIBUTORS:

C. H. Best Memorial Fund  
The Estate of Reuben & Helene Dennis  
The Estate of Marion Hamilton  
The Estate of Miriam Neveren  
The Estate of Dr. & Mrs. Edward A. Sellers  
The Estate of Mary E. Sharp  
The Estate of Archie Sopman (Toronto General & Western Hospital Foundation)  
The Estate of Arthur Spoerri  
Novo Nordisk  
Mr. Stephen Yow Mok Shing

## THE CENTRE IS ALSO GRATEFUL TO THE FOLLOWING FOR CONTRIBUTIONS MADE IN 2017/2018:

AstraZeneca  
Boehringer-Ingelheim/Eli Lilly Diabetes Alliance  
Janssen  
Kangbuk Samsung Hospital  
Merck  
Novo Nordisk  
Sanofi  
Sir Frederick Banting Legacy Foundation  
Toronto General & Western Hospital Foundation  
United Way of Greater Toronto  
University Health Network  
Individuals who have donated to the Banting & Best Diabetes Centre this past year.

## THE BBDC GRATEFULLY ACKNOWLEDGES THE SUPPORT OF OUR MAJOR CONTRIBUTORS:





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Web: [www.bbd.org](http://www.bbd.org)

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Banting & Best  
Diabetes Centre

