



University of Toronto, Faculty of Medicine

BANTING AND BEST DIABETES CENTRE

**ANNUAL REPORT
JULY 1, 2005 – JUNE 30, 2006**

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MISSION

To support and advance diabetes research, education, and patient care at the University of Toronto and its affiliated hospitals.

MESSAGE FROM THE DIRECTOR, DANIEL J. DRUCKER, M.D.

The BBDC had a year full of notable activity in 2006, including several successful educational programs, and an extensive series of awards and grants to trainees, scientists, and educators. These endeavors required a tremendous amount of hard work on the part of our members, all of whom willingly donate their time and energy on behalf of the BBDC, allowing us to deliver our peer-reviewed programs with minimum overhead but with maximum quality and careful scrutiny.

Among this year's highlights, we initiated our New Diabetes Educator of the Year Award to recognize outstanding contributions and sustained excellence in diabetes education. In response to feedback from our clinical community, we held a new workshop devoted to "New Long Acting Insulin Analogues" in April 2006. Under the auspices and editorial guidance of Dr. Jacqueline James, the 6th edition of our clinical care monograph was published and posted in a new user-friendly web-based format. If you have not perused this document, it is well worth a few minutes of your time. Our Annual Scientific Day in May 2006 was a great success, anchored by our guest speaker, Dr. Jens Holst.

How does the BBDC spend its endowed funds? For the last five years, we have published our annual report describing in considerable detail our budget, funded programs, committee members and award recipients. Please take a moment to peruse the annual report, and if you have any questions, feel free to drop me a line or send an inquiry to Rose LaBarbera, the individual who keeps the BBDC running on a daily basis.

As many of you know, the BBDC and its leadership was the subject of an external review in the spring of 2006, a regular and necessary event for an academic extra-departmental unit. The external reviewers, Drs. John Buse and Jean-Louis Chiasson, met with representatives from many BBDC constituencies, and compiled and forwarded their report to Dean Whiteside. The external review, and the response of the Dean, is also available for your perusal and comment at www.bbdc.org

What can we look forward to in 2007? As a result of the recommendations of the external reviewers and following consultation with the BBDC Executive and the Dean, the BBDC is exploring several options for broadening and strengthening our mandate to advance diabetes research, education, and clinical care at the University of Toronto. Although it is not possible to predict the outcome of these ongoing deliberations, BBDC members should be assured that we will not diminish our existing programs and relationships; rather, we seek to expand our capability for fostering excellence and supporting diabetes-related activities at the University of Toronto and its affiliated teaching hospitals.

Finally a note of thanks and a request. I am grateful to the members of our Research Committee and Diabetes Care and Education Committee for their tireless work on behalf of the BBDC. Rose LaBarbera as always has been a pillar of strength and model of excellence in her stewardship and her flair for operational excellence. Finally, Dr. Catharine Whiteside has devoted a large amount of constructive attention to the BBDC, both in her previous capacity as a member of the BBDC Executive, and most recently as our new Dean. As we redouble our efforts to support academic activities in all areas of our diabetes mandate, we will count on your continuing support. Comments, criticisms, queries, and suggestions are always welcome. Please let us know what you like and tell us how we can do better.

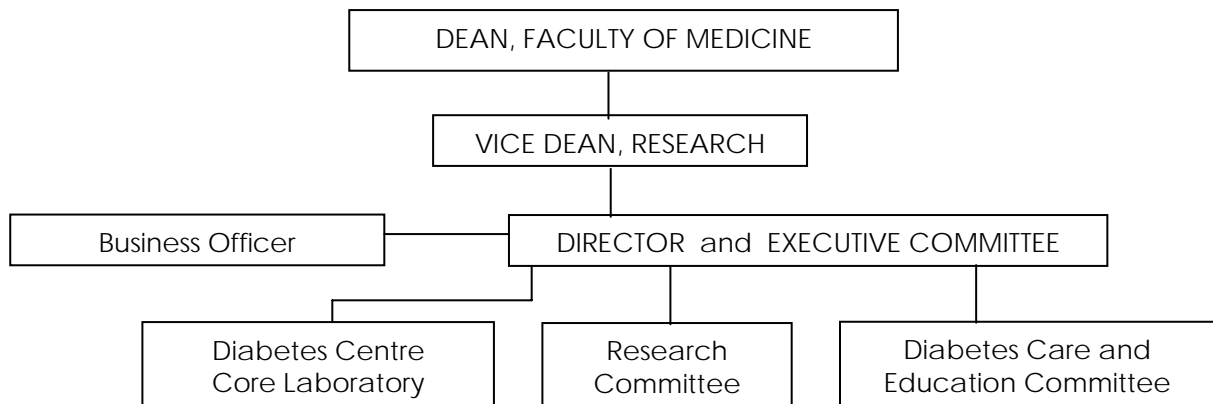
BACKGROUND

The Banting and Best Diabetes Centre was established in 1978 as an extra-departmental unit of the Faculty of Medicine at the University of Toronto. Dr. Edward A. Sellers, a personal friend of the co-discoverer of insulin, Dr. Charles Best, was the first director of the Diabetes Centre (1978-1981). He was succeeded by Dr. Charles H. Hollenberg who was appointed director from 1981-1993, followed by Dr. Bernard Zinman who served as director from 1993-2000. Presently, the director of the Centre is Dr. Daniel J. Drucker who was appointed in July of 2000.

The programs of the BBDC are supported almost entirely from the income on its endowments. The BBDC has also received generous donations from industry which have funded various research programs, scientists, students, and fellows. The Centre offers several studentships, fellowships, and other support for qualified individuals involved in diabetes research at the University of Toronto.

ADMINISTRATIVE STRUCTURE and COMMITTEES

The administrative structure of the BBDC was established to provide both broad based input and an efficient decision making process. The BBDC administrative structure is as follows:



The Director reports to the Dean, Faculty of Medicine. The Director of the Diabetes Centre and the Executive Committee form the principal decision making body of the Centre. The Research Committee and the Diabetes Care and Education Committee serve as the principal working committees. The Diabetes Core Laboratory provides laboratory, analytical, and technical support to the diabetes investigators on a cost recovery basis.

EXECUTIVE COMMITTEE

This is the principal decision making body of the Centre established to ensure that the goals of the Centre are appropriately implemented. The Executive Committee provides leadership and representation for the University of Toronto diabetes community.

Director: Dr. Daniel J. Drucker Department of Medicine, Division of Endocrinology & Metabolism*
Dr. Patricia Brubaker Department of Physiology*
Dr. I. George Fantus Department of Medicine, Division of Endocrinology & Metabolism*
Dr. Avrum Gotlieb Laboratory Medicine and Pathobiology*
Dr. Jacqueline James Department of Medicine, Division of Endocrinology & Metabolism*
Dr. Amira Klip Department of Biochemistry*

MEMBERSHIP

The BBDC membership is derived from various departments at the University of Toronto and its affiliated teaching hospitals. Since the BBDC is an extra-departmental unit of the Faculty of Medicine, members cannot hold a faculty appointment with the Centre, and graduate students must be registered with a graduate department to obtain their degree. Until recently, BBDC membership was open to U of T diabetes research faculty only. Following the BBDC's external review in May 2006, the Centre decided to broaden its membership to include **individuals involved in full and part-time diabetes research, education, and patient care who are employed at the University of Toronto or its affiliated institutions.** (E.g. scientists, physicians, nurses, dietitians, pharmacists, and other allied health care professionals.)

As of June 30, 2006 there are **89 members** registered with the BBDC, almost all of whom are profiled on the BBDC's website. The Centre also has an expanded **e-mail distribution list** of approximately 305 contacts, which not only includes our members but also postdoctoral fellows, graduate students, and other individuals with diabetes interests located at other universities and employed by industry. As of June 30, 2006, the members are:

<u>Last Name</u>	<u>First Name</u>	<u>Location</u>
Adeli	Khosrow	Hospital For Sick Children
Allison	Kenneth	University of Toronto
Baines	Andrew	University of Toronto
Belsham	Denise	University of Toronto
Bendeck	Michelle	University of Toronto
Boright	Andrew	Toronto General Hospital
Boyd	Shelley	St. Michael's Hospital
Brubaker	Patricia	University of Toronto
Carlen	Peter	University of Toronto
Colton	Patricia	Toronto General Hospital
Connelly	Philip	St. Michael's Hospital
Cybulsky	Myron	Toronto General Research Institute
Daneman	Denis	Hospital For Sick Children
Danska	Jayne	Hospital For Sick Children
Der	Sandy	University of Toronto
Dhe-Paganon	Sirano	University of Toronto
Diamant	Nicholas	Toronto Western Hospital
Donnelly	Sandra	St. Michael's Health Centre
Dosch	Hans-Michael	Hospital for Sick Children
Drucker	Daniel	Toronto General Hospital
Elsholtz	Harry	Toronto General Hospital
Fantus	George	Mount Sinai Hospital
Farine	Dan	Mount Sinai Hospital
Fu	Lei	Sunnybrook Health Sciences Centre
Gaisano	Herbert	University of Toronto
Giacca	Adria	University of Toronto
Gotlieb	Avrum	University of Toronto
Greenwood	Carol	University of Toronto
Grynpas	Marc	Mount Sinai Hospital
Halperin	Mitchell	St. Michael's Hospital
Hamilton	Jill	Hospital For Sick Children
Hanley	Anthony	University of Toronto
Hughes	Timothy	University of Toronto
Hux	Jan	Sunnybrook Health Sciences Centre
Irwin	David	University of Toronto
Jenkins	David	University of Toronto

Jin	Tianru	Toronto General Hospital
Josse	Robert	St. Michael's Hospital
Klip	Amira	Hospital For Sick Children
Lam	Tony	Toronto General Hospital
Langille	Lowell	University of Toronto
Leiter	Lawrence	St. Michael's Hospital
Lewis	Gary	Toronto General Hospital
Li	Ren-Ke	Toronto General Hospital
Mandelcorn	Mark	Toronto Western Hospital
Matthews	Stephen	University of Toronto
McIntyre	Roger	Toronto Western Hospital
Ng	Dominic	St. Michael's Hospital
Norwich	Kenneth	University of Toronto
Ohashi	Pamela	Ontario Cancer Institute
Pace-Asciak	Cecil	Hospital For Sick Children
Parra	Esteban	University of Toronto at Mississauga
Paterson	Andrew	Hospital For Sick Children
Percy	Maire	University of Toronto
Perkins	Bruce	University Health Network
Poussier	Philippe	Sunnybrook Health Sciences Centre
Prud'homme	Gerald	St. Michael's Hospital
Quaggin	Susan	Mount Sinai Hospital
Rodin	Gary	Toronto General Hospital
Rovet	Joanne	Hospital For Sick Children
Rozakis Adcock	Maria	University of Toronto
Scholey	James	Toronto General Hospital
Schwartz	Leonard	Toronto General Hospital
Sefton	Michael	University of Toronto
Silverman	Mel	University of Toronto
Steiner	George	Toronto General Hospital
Stewart	Donna	University of Toronto
Trinh	Denny	Toronto General Hospital
Tsushima	Robert	University of Toronto
van der Kooy	Derek	University of Toronto
Volchuk	Allen	Toronto General Hospital
Vranic	Mladen	University of Toronto
Wang	Qinghua	St. Michael's Hospital
Watt	Valerie	University of Toronto
Weisel	Richard	Toronto General Hospital
Wen	Xiao-Yan	Princess Margaret Hospital
Westall	Carol	Hospital For Sick Children
Wheeler	Michael	University of Toronto
Wherrett	Diane	Hospital For Sick Children
Whiteside	Catharine	Toronto General Hospital
Wittnich	Carin	University of Toronto
Wojtowicz	Martin	University of Toronto
Wolever	Thomas	University of Toronto
Woo	Minna	St. Michael's Hospital; Ontario Cancer Institute
Woodgett	James	Mount Sinai Hospital
Yip	Cecil	University of Toronto
Yip	Christopher	University of Toronto
Young	Kue	University of Toronto
Zinman	Bernard	Mount Sinai Hospital

FINANCIAL REPORT (Statement of operations for the fiscal year ended June 30, 2006 with comparative figures for the fiscal year ended June 30, 2005)

	2006	2005
REVENUES		
Unrestricted:		
Carry forward from previous year	228,197	282,136
Endowment income *	429,375	428,177
Donations/miscellaneous income	61,339	18,666
Restricted:		
BBDC/Novo Nordisk Studentship endowment fund **	178,202	208,420
Yow Kam-Yuen Scholarship endowment fund **	12,248	14,901
Tamarack Graduate Award endowment fund **	20,055	24,716
BBDC fellowship/personnel fund	109,000	105,000
Archie Sopman endowment fund (University Health Network) ***	38,329	35,842
Novo Nordisk Canada Inc. for Annual Trainee Awards †	1,200	1,200
TOTAL REVENUES	1,077,945	1,119,058
EXPENSES		
Administration:		
Salary support and benefits	87,852	83,540
Office supplies/review expenditures/miscellaneous	16,545	18,509
Educational Functions:		
BBDC Seminar Series	5,667	5,597
BBDC and T.G.R.I. Diabetes Investigator Seminar Series	3,860	4,175
Workshop	889	0
Annual Scientific Day	15,651	14,524
Funding Programs for Trainees:		
Hugh Sellers and BBDC Postdoctoral Fellowships	109,000	105,000
BBDC/Novo Nordisk Studentships **	172,226	196,577
Yow Kam-Yuen Graduate Scholarship in Diabetes Research **	12,000	14,000
Tamarack Graduate Award in Diabetes Research **	20,000	20,505
Charles Hollenberg Summer Studentship Program - 2006	36,000	33,600
Trainee Travel Awards	32,864	28,447
Annual Trainee Awards from Novo Nordisk †	1,200	1,200
Funding Programs and Support for Faculty:		
Reuben & Helene Dennis Scholar in Diabetes Research	10,000	10,000
New Investigator Awards For Diabetes Research	40,000	40,000
Pilot and Feasibility Grants (biannual program)	60,000	89,790
Equipment Grants for Diabetes Research (biannual program)	0	59,246
Travel allowance for committee chairs	3,107	3,671
Other Funding Programs:		
Pilot Grants for Innovative Activities Related to Diabetes Education, Management & Care	0	39,919
Archie Sopman Diabetes Research and Education Competition (2006 calendar year) ***	12,500	11,000
Diabetes Educator of the Year Award - 2005	2,000	0
TOTAL EXPENSES	641,361	779,300
REVENUES LESS EXPENSES	436,584	339,758

* Endowment income represents investment income distributed by the University's Long-Term Capital Appreciation Pool. The annual endowment income is available to the BBDC for spending and it is expected to increase every year by inflation. Market conditions can also affect future income distribution.

** Ontario Student Opportunity Trust Fund. Revenue amount includes carry forward of unspent endowment income from previous year. Payments made directly to award recipients by Faculty of Medicine Graduate Affairs.

*** This endowment is held at the University Health Network (UHN). Revenue amount includes carry forward of unspent endowment income from previous year. Payments are made directly to the award recipients by the UHN.

† Annual Trainee Awards are paid directly to award recipients by Novo Nordisk Canada Inc.

DESCRIPTION OF FUNDING PROGRAMS and FUNDING DECISIONS

The majority of the Centre's funding programs are only open to full-time University of Toronto faculty involved in diabetes research with the exception of the following programs:

- 1) Archie Sopman Diabetes Research and Education Competition
- 2) Diabetes Educator of the Year Award
- 3) Pilot Grant for Innovative Activities Related to Diabetes Education, Management and Care

ANNUAL TRAINEE AWARDS

Each year undergraduate and graduate students, and postdoctoral fellows are invited to submit their abstracts for the Annual Trainee Awards competition. To be eligible, the trainee's supervisor must be a member of the BBDC. The abstract must be directly related to diabetes research and the trainee must be first author. Abstracts are reviewed by members of the Research Committee. This year's prizes and plaques were generously provided by **Novo Nordisk Canada Inc.** and paid directly to the trainees. The 2005/2006 prize winners are:

Award	Applicant	Supervisor	Abstract Title
1st Prize	Ilana Talior	Dr. Amira Klip	Insulin-dependent interaction of GLUT-4 with α -actinin4 in muscle cells and significance of this interaction for GLUT4 traffic
2nd Prize	Robert Wallis	Dr. Philippe Poussier	Refinement of a novel susceptibility locus for type 1 diabetes to 20.3 Mb of rat chromosome 8, using the BBDP/Wor rat model
3rd Prize tie	Feihan Dai	Dr. Michael Wheeler	A Member of a Neuronal Ca^{2+} -Sensor Protein Visinin-like Protein-1 (VILIP-1) is Expressed in Pancreatic β Cells and Regulates Insulin Secretion and Insulin Biosynthesis
3rd Prize tie	Armen Gyulkhandanyan	Dr. Michael Wheeler	Investigation of Zn^{2+} -transporting pathways in pancreatic β -cells.
3rd Prize tie	Gareth Lim	Dr. Patricia Brubaker	The Effect of Insulin Resistance on Glucagon-like Peptide-1 (GLP-1) Secretion in Mouse Enteroendocrine L Cells
3rd Prize tie	Edward Park	Dr. Adria Giacca	Resveratrol Prevents Free Fatty Acid (FFA)-Induced Peripheral Insulin Resistance in Parallel with Prevention of FFA-Induced Increase in Serine (307) Phosphorylation of Insulin Receptor Substrate 1 in Skeletal Muscle

ARCHIE SOPMAN DIABETES RESEARCH AND EDUCATION COMPETITION

This award is only open to full and part-time University Health Network employees (i.e. employees of Toronto General Hospital, Toronto Western Hospital, or Princess Margaret Hospital). To be eligible, the applicant must be either a staff physician, dietitian, nurse, social worker, pharmacist, scientist, research technician, or clinical trial coordinator who is involved in diabetes research, diabetes education, or diabetes clinical care. Hence, applicants are not required to be members of the BBDC. Funding can be used for: 1) Travel to a national or international

diabetes meeting occurring in the year 2006 or 2) To support a visiting lecturer in diabetes or metabolic disorders in the year 2006. Applications are reviewed by the BBDC's director. 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 and paid directly to the award recipients. The 17 funding recipients for the 2006 calendar year are:

Applicant	Position and UHN Site	Purpose	Award
Lynn Baughan	Nurse Clinician, Diabetes Toronto General Hospital	Travel to diabetes meeting	Up to \$1,000
Marianne Beckstead	Clinical Nurse Specialist, Diabetes Toronto General Hospital	Travel to diabetes meeting	Up to \$1,000
Kathy Camelon	Practice Leader, Clinical Nutrition Toronto General Hospital	Travel to diabetes meeting	Up to \$500
Joyce Chan	Clinical Pharmacist Toronto Western Hospital	Travel to diabetes meeting	Up to \$1,000
Kathy Cohen	Registered Dietitian Toronto Western Hospital	Travel to diabetes meeting	Up to \$500
Ann Cook	Diabetes Educator Toronto Western Hospital	Travel to diabetes meeting	Up to \$500
Margaret De Melo	Professional Practice Leader, Clinical Dietitian, Diabetes Educator Toronto Western Hospital	Travel to diabetes meeting	Up to \$1,000
Anne Guilar	Clinical Dietitian Toronto General Hospital	Travel to diabetes meeting	Up to \$500
Elizabeth Karaskov	Research Technician Toronto General Hospital	Travel to diabetes meeting	Up to \$1,000
Doreen Klar	Clinical Dietitian Toronto Western Hospital	Travel to diabetes meeting	Up to \$500
Lorna Lawrence	Clinical Dietitian Toronto Western Hospital	Travel to diabetes meeting	Up to \$500
Louisa Li	Clinical Dietitian Toronto Western Hospital	Travel to diabetes meeting	Up to \$500
Kitty Mak	Diabetes Nurse Educator Toronto Western Hospital	Travel to diabetes meeting	Up to \$1,000
Ann Murphy	Clinical Dietitian Toronto General Hospital	Travel to diabetes meeting	Up to \$1,000
Ana Offenheim	Diabetes Nurse Educator, Patient Care Coordinator Toronto Western Hospital	Travel to diabetes meeting	Up to \$500
Mary T. Weiland	Clinical Dietitian, Diabetes Educator Toronto Western Hospital	Travel to diabetes meeting	Up to \$500
Martha Wright	Nurse Clinician, Diabetes Toronto General Hospital	Travel to diabetes meeting	Up to \$1,000

CHARLES HOLLENBERG SUMMER STUDENTSHIP PROGRAM 2006

This program is designed to introduce young undergraduate students to diabetes research. This year the BBDC awarded 15 studentships valued at \$4,800 each to qualified undergraduate and/or medical students to carry out full-time summer research in diabetes in the laboratory of a BBDC member. The student's stipend is shared by the BBDC and the supervisor(s). Students are required to participate in the program's weekly *Seminar Series* and to present their work at the end of the summer in a workshop format at the *Mini-conference (see page 20 for seminar series and conference program)*. Applications are reviewed and ranked by members of the Research Committee as

well as the Summer Studentship Program Coordinator, Dr. Allen Volchuk. The following are the 2006 summer studentship recipients:

Applicant	Supervisor	Title of Research
Alice Chan	Dr. George Fantus	Cell Signaling in Diabetic Nephropathy: Investigation of PKC Isoforms in High Glucose-Mediated Activation of Src Kinase in Glomerular Mesangial Cells
Alex Won-Pang Cheng	Dr. Amira Klip	Visualizing the insulin-sensitive GLUT4 vesicle arriving at the plasma membrane
Diana Choi	Dr. Minna Woo	Mechanisms of beta cell apoptosis in diabetes models
Nina Flora	Dr. Patricia Brubaker	Insulin resistance impairs secretion of the insulinotropic hormone, glucagon-like peptide-1
Amber Menezes	Dr. Stephen Matthews	Effects of Volitional Exercise to Attenuate Type 2 Diabetes Mellitus (T2DM) in the Male Zucker Diabetic (ZDF) rat: A Study of HPA function in T2DM and Volitional Exercise
Thirumahal Selvanantham	Dr. Hans-Michael Dosch	Characterizing the autoimmune response to GFAP in NOD mice
Tracy Teodoro	Dr. Allen Volchuk	Examining Anti-Diabetic Properties of Oleanolic Acid in Pancreatic β -Cells
Garry Robert Thomas	Dr. Mladen Vranic	Effects of Antagonizing Somatostatin on Glucagon Responses to Hypoglycemia
Mitchell Vainberg	Dr. Pamela Ohashi	Examining the role of PKB and Cbl-b in regulating T cell tolerance and activation
Thea Van Rossum	Dr. Lowell Langille	Directional motility of vascular cells
Shriley Chi-Tyan Wang	Dr. Donna Stewart	Sex differences in various psychosocial, behavioural, and clinical characteristics related to diabetes as identified during an initial assessment at a diabetes education centre (DEC)
Steven Wong	Dr. Tianru Jin	Role of Wnt3A in regulating proglucagon gene expression and GLP-1 synthesis
Carol Shanshan Yang	Dr. Shelley Boyd	Erythropoietin Receptors in a Rat Model of Diabetic Retinopathy
Fei Lu Ye	Dr. Dominic Ng	Novel Lipid-insulin signaling crosstalk in a low HDL syndrome
Andrea Yeung	Dr. Patricia Brubaker	Role of R-spondin-1 in the endocrine pancreas

DIABETES EDUCATOR OF THE YEAR AWARD (2005)

This new award was established in 2005 to recognize diabetes educators who have demonstrated outstanding efforts and achievements in their role as a diabetes educator. One award of \$2,000 is presented each year. This award is meant to recognize those who educate at the patient and community/professional levels. Candidates must be nominated for the award by a health care professional. To be eligible for nomination, the candidate must be a full-time diabetes educator or health care professional employed by a University of Toronto-affiliated institution. Nominations are reviewed and ranked by members of the Diabetes Care and Education Committee. The following is the recipient of the first annual Diabetes Educator of the Year Award for 2005:

Nominee	Title
Helen E. Jones, RN, MSN, CDE	Clinical Nurse Specialist Manager, Leadership Sinai Centre for Diabetes Mount Sinai Hospital

EQUIPMENT GRANTS FOR DIABETES RESEARCH

A minimum amount of \$5,000 and a maximum amount of \$30,000 is made available for the one-time purchase of laboratory equipment for diabetes research. To be eligible, the applicant must be a full-time faculty member of the University of Toronto conducting diabetes research. Those who wish to purchase equipment costing over \$30,000 are required to obtain the remaining funds from other sources before the BBDC releases the funds to successful applicants. Applications are reviewed and ranked by members of the Research Committee as well as an external reviewer(s). Following consultation with the Research Committee in 2005, the BBDC decided to hold this annual funding program on a biannual basis instead in order to divert funds to the postdoctoral fellowship program. Therefore, there was no competition held in 2005-2006. The next competition will be held in the 2006-2007 academic year.

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 (*OSOTF*), 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. Each year the BBDC invites applications from students who are registered with the Faculty of Medicine, School of Graduate Studies at the University of Toronto. To be eligible for this award, students must demonstrate financial need, and must be carrying out studies in diabetes research. Applications are ranked and reviewed by the Research Committee. This year the BBDC was able to award 16 studentships of up to \$21,000. The following are the BBDC/Novo Nordisk Studentship recipients for 2005-2006:

Applicant	Supervisor	Title of Research
Kristin Beard	Dr. I. George Fantus	Bradykinin Augments Insulin-Stimulated Glucose Transport in Rat Adipocytes via an Endothelial Nitric Oxide Synthase-Mediated Inhibition of JNK
Danna Breen	Dr. Adria Giacca	Investigation of the biological effects of the polyphenol resveratrol on the skeletal muscle glucose transport system.
Yin Chan	Dr. H.-Michael Dosch	Neuronal Contributions to Diabetes Pathoetiology
Sai-Wing Andrew Chiu	Dr. Marc Grynopas	Effects of Vanadium Treatment on Bone Qualities in Combined Type 1 Diabetes and Osteoporotic Rat Models
Diana Islam	Dr. Tianru Jin	Role of Epac Signaling Pathway in Regulating Proglucagon Gene Expression, GLP-1 Synthesis and Secretion
Michael Kiraly	Dr. Mladen Vranic & Dr. Stephen Matthews	The Effects of 13 Weeks of Exercise Training and Neurogenic Stress on β -Cell Mass Dynamics in the Zucker Diabetic Fatty (ZDF) Rat Model of Type 2 Diabetes Mellitus.
Nicole Liadis	Dr. Minna Woo & Dr. Pamela Ohashi	Caspase-3-mediated beta cell apoptosis in the progression of Type 1 Diabetes
Gareth Lim	Dr. Patricia Brubaker	Insulin resistance impairs GLP-1 secretion in type 2 diabetes
Betty Ting Kwan Ng	Dr. Herbert Gaisano	SNARE regulation of cardiac sulfonylurea receptor, a novel drug target for cardiac ischemia
Andrei Oprescu	Dr. Adria Giacca	β -Cell Lipotoxicity-Evidence for a Role of Oxidative Stress in vitro and in vivo.
Varinder Randhawa	Dr. Amira Klip	Characterization of GLUT4 compartments regulated by insulin and other stimuli.

Simon Smukler	Dr. Derek van der Kooy	Clonal Identification and Characterization of Pancreas-Derived Multipotent Precursors
Jane Sun	Dr. Tianru Jin	Potential crosstalk between Insulin and Wnt signaling pathways.
Victor Wong	Dr. Patricia Brubaker	The role of phosphoinositol-3 kinase gamma in glucagon-like peptide-1 regulation of pancreatic beta cell growth and function
Fuzhen Xia	Dr. Robert Tsushima	Lipid Rafts in Islet Stimulus-Secretion Coupling
Jessica Yue	Dr. Mladen Vranic	Effects of somatostatin antagonist on glucagon counterregulation to hypoglycemia in diabetic rats

GRADUATE STUDENTSHIPS:

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 (OSOTF). To be eligible for this award, students must demonstrate financial need, and must be carrying out studies in diabetes research. Applicants must also be registered with the Faculty of Medicine, School of Graduate Studies at the University of Toronto. Applications are ranked and reviewed by the BBDC Research Committee and preference is given to those students whose primary area of study is vascular problems of diabetes. Applications are ranked and reviewed by the Research Committee. This year the income earned on the endowment enabled the BBDC to award two studentships of up to \$10,000. The following students are the 2005-2006 Tamarack Graduate Award recipients:

Applicant	Supervisor	Title of Research
Jasmine Bahrami	Dr. Daniel Drucker	Role of incretins in glucose homeostasis
Patrick Lam	Dr. Herbert Gaisano	The function of the exocytic Syntaxins (Syn-1A, -2, -3 - 4) in islet beta-cells

GRADUATE STUDENTSHIPS:

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 (OSOTF). To be eligible for this award, students must demonstrate financial need, and must be carrying out studies in diabetes research. Applicants must also be registered with the Faculty of Medicine, School of Graduate Studies at the University of Toronto. Applications are ranked and reviewed by the Research Committee. This year the income earned on the endowment enabled the BBDC to award one \$12,000 studentship. The following student is the 2005-2006 Yow Kam-Yuen Graduate Scholarship recipient:

Applicant	Supervisor	Title of Research
Karen Sison	Dr. George Fantus & Dr. Susan Quaggin	Role of VEGF in Diabetic Nephropathy

HUGH SELLERS and BBDC POSTDOCTORAL FELLOWSHIPS

The support of research fellows has been a major priority of the BBDC. Since the inception of the BBDC and through the generosity of the Sellers family, one Hugh Sellers Postdoctoral Fellowship has been awarded annually. Whenever possible, the Centre endeavours to support additional trainees a year if extra funding is available. This

program provides one year of funding for an individual holding an M.D. or Ph.D. who is carrying out full-time diabetes research training at the University. Stipends approximate those of the CIHR postdoctoral fellowship program. Applications are reviewed by members of the Research Committee plus an external reviewer(s). The Hugh Sellers and BBDC Fellowship recipients for 2005-2006 are:

Applicant and Award	Supervisor	Title of Research
Hugh Sellers Fellowship: Dr. Christine Longuet	Dr. Daniel Drucker	Tissue-specific glucagon receptor action
BBDC Fellowship: Dr. Jacqueline Koehler	Dr. Daniel Drucker	GLP-1 receptor signalling in pancreatic cancer
BBDC Fellowship: Dr. Ilana Talior-Volodarsky	Dr. Amira Klip	Dissecting the proteome of the insulin-sensitive, GLUT4-compartment of muscle cells and insulin-sensitive GLUT4 partners.
BBDC Fellowship: Dr. Changting Xiao	Dr. Gary Lewis	Mechanisms of beta-cell lipotoxicity in humans

PILOT AND FEASIBILITY GRANTS

This program provides funding of up to \$30,000 per applicant, for one year, to enable eligible investigators to explore completely new initiatives in the area of diabetes research. This competition is open to both new and established full-time faculty members of the University of Toronto. Applicants new to the field of diabetes research do not need to be a member of the BBDC, but are encouraged to join the membership. Applications are reviewed and ranked by members of the Research Committee as well as an external reviewer(s). Following consultation with the Research Committee in 2005, the BBDC decided to offer this annual funding program on a biannual basis instead in order to divert funds to the postdoctoral fellowship program. The following are the Pilot and Feasibility Grant recipients for 2005-2006:

Applicant	Title of Research	Award
Dr. Dominic Ng	High density lipoprotein in Type 1 diabetes	\$30,000
Dr. Qinghua Wang	ALK7, a Novel pancreatic beta cell pro-apoptotic protein?	\$30,000

PILOT GRANTS FOR INNOVATIVE ACTIVITIES RELATED TO DIABETES EDUCATION, MANAGEMENT, AND CARE

This program provides funding of up to \$20,000 per applicant for pilot projects which are one to two years in length. Funding is intended to support new research initiatives in the following general areas: 1) Diabetes care delivery; 2) Evaluation of diabetes education programs; and 3) Practical issues in diabetes management. It is designed to encourage new academic research activities from individuals not usually supported by traditional granting processes, specifically, front line health care professionals working at the University of Toronto-affiliated hospitals or working with U of T-affiliated academics. Hence, applicants are not required to be members of the BBDC. Applications are reviewed by members of the Diabetes Care and Education Committee. Due the small number of eligible applications received in the 2005-2006 competition, no Pilot Grants were awarded this year.

REUBEN & HELENE DENNIS SCHOLAR IN DIABETES RESEARCH and NEW INVESTIGATOR AWARDS FOR DIABETES RESEARCH

In 2004 the BBDC merged the two competitions into one which will now be held every two years. These awards were established to support new University of Toronto diabetes research faculty. The New Investigator Awards

provide funding of \$20,000 per year for two years, and the Dennis Scholar Award provides \$10,000 per year for two years. To be eligible, the applicant must be involved in diabetes research and must be a principal investigator who holds a full-time academic appointment with the University of Toronto. Faculty are eligible for this funding normally within **five** years of their first faculty appointment. Applications are reviewed and ranked by members of the Research Committee as well as an external reviewer(s). The recipients of these two-year awards are:

Reuben & Helene Dennis Scholar in Diabetes Research

Applicant	Title of Research	Award
Dr. Minna Woo	The role of caspase-3 in islet destruction in type 1 diabetes	\$10,000 for 2004/2005 \$10,000 for 2005/2006

New Investigator Awards for Diabetes Research

Applicant	Title of Research	Award
Dr. Anthony Hanley	Longitudinal Associations of Adipocytokines and markers of Sub-Clinical Inflammation with Changes in Insulin Resistance and Beta-Cell Function in Women with a History of Gestational Diabetes Mellitus	\$20,000 for 2004/2005 \$20,000 for 2005/2006
Dr. Bruce Perkins	Early nerve function decline in type 1 and type 2 diabetes	\$20,000 for 2004/2005 \$20,000 for 2005/2006

TRAINEE TRAVEL AWARDS

The Trainee Travel Awards are available to 30 postdoctoral fellows and graduate students conducting diabetes research in the laboratory of a BBDC member. Trainees are eligible for a Travel Award of up to \$1,000 (CDN) each to defray the expense of attending a national or international meeting. The trainee must be presenting a first-author abstract which has been accepted for presentation at the meeting. Applications are reviewed by members of the Research Committee. This year, the BBDC was able to fund 34 applicants. The following are the Trainee Travel Award recipients for 2005-2006:

Applicant	Supervisor	Title of Research
Hussam Al-Kateb	Dr. Andrew Paterson	Testing of Common Variations in 212 Candidate Genes for Association with Diabetic Nephropathy and Retinopathy: The DCCT/EDIC Genetics Study
Heather Basciano	Dr. Khosrow Adeli	LXR in hepatic insulin sensitivity and production of apoB-containing lipoproteins: Evidence for LXR-mediated induction of insulin resistance, de novo lipogenesis, and VLDL-apoB production in hamster
Holly Bates	Dr. Mladen Vranic	Long term intermittent stress increases β -cell mass and lowers α -cell mass while improving diabetes in male ZDF rats
Kristin Beard	Dr. George Fantus	Bradykinin Sensitizes Rat Adipocytes to Insulin via a NO-Guanylate Cyclase (GC)-cGMP-Protein Kinase G (PKG) Signaling Pathway that Inhibits JNK and IRS-1 Ser 307 Phosphorylation
Helene Duez	Dr. Gary Lewis	1) Increased production of intestinal (apo B48-containing) lipoproteins is a newly described feature of insulin resistance in humans. 2) Dissociation between the insulin sensitizing effect of rosiglitazone and its effect on hepatic and intestinal lipoprotein production.
Kristin Freeland	Dr. Thomas Wolever	The long-term effect of cereal fiber on weight, fasting glucose, insulin, cholesterol, triglycerides and free fatty

		acids in hyperinsulinemic humans
Karena Huang	Dr. Qinghua Wang	Phosphatidylinositol 3-kinase γ Mediates Glucagon-like Peptide-1 Induced Inhibition of Glucagon Secretion in Mice
Edwin Kwan	Dr. Herbert Gaisano	Munc 13-1 Interactions with cAMP Pathways in Insulin Exocytosis
Patrick Lam	Dr. Herbert Gaisano	Non-neuronal Munc18b regulates insulin exocytosis in pancreatic islet β -cells
Nicole Liadis	Dr. Minna Woo	Tissue-specific Role of Caspase-8 in β Cell Homeostasis
Gareth Lim	Dr. Patricia Brubaker	The Effect of Insulin Resistance on Glucagon-like Peptide-1 (GLP-1) Secretion in Mouse Enteroendocrine L Cells
Christine Longuet	Dr. Daniel Drucker	Glucagon Receptor Signaling is Essential for Control of Hepatic Lipid Homeostasis
Adriano Maida	Dr. Daniel Drucker	Incretin hormones exert differential effects on adipose tissue and plasma adipokines in mice
Jocelyn Manning Fox	Dr. Michael Wheeler	α - and β -Cell Electrical Activity in Rat and Mouse Islets – the Role of Potassium Channels in Membrane Potential Oscillation
Andrei Opreescu	Dr. Adria Giacca	Evidence for a role of oxidative stress in both β cell lipotoxicity and glucotoxicity
Edward Park	Dr. Adria Giacca	Cabernet or Chardonnay: Resveratrol Prevents Free Fatty Acid (FFA)-Induced Insulin Resistance in Parallel with Prevention of FFA-Induced Increase in Serine (307) Phosphorylation of Insulin Receptor Substrate 1 in Skeletal Muscle
Wei Qiu	Dr. Khosrow Adeli	PTEN regulates hepatic apolipoprotein B100 production via modulation of microsomal triglyceride transfer protein (MTP) expression.
Varinder Randhawa	Dr. Amira Klip	Compartmentalization of GLUT4 distribution and traffic in L6 muscle cells
Elaine Sinclair	Dr. Daniel Drucker	Glucagon receptor signalling attenuates hepatocyte susceptibility to apoptosis.
Karen Sison	Dr. Susan Quaggin and Dr. George Fantus	Podocyte-specific Increase in VEGF-A Production Leads to Rapid Alterations in Glomerular Permeability and Features of Diabetic Nephropathy
Jane Sun	Dr. Tianru Jin	Examination of the cross talks between insulin and Wnt signalling pathways
Laura Stavar	Dr. George Fantus	Protein Kinase C (PKC) and Protein Tyrosine Phosphatase (PTP)- α are Upstream Signals in High Glucose-mediated Activation of Src, MAPKs and Collagen Synthesis in Glomerular Mesangial Cells
Ilana Talior	Dr. Amira Klip	Insulin-Dependent Interaction and Colocalization of GLUT4 with Alpha-actinin-4 within Dynamic Actin Structures
Christine Tang	Dr. Adria Giacca	β cell Glucotoxicity <i>in vivo</i> : Role of Superoxide Generation
Kanta Taniguchi	Dr. George Fantus	High Glucose Requires both Src and EGFR (Epidermal Growth Factor Receptor) Activation to Stimulate MAPK Signaling in Rat Mesangial Cells
Farah Thong	Dr. Amira Klip	Functional participation of the Rab GAP AS160 in GLUT4 <i>myc</i> translocation mediated by Akt, atypical protein kinase C (PKC ζ), 5'-AMP-activated protein kinase (AMPK) and Ca ⁺² /calmodulin binding in L6 muscle cells

Julie Tsai	Dr. Khosrow Adeli	MEK-ERK inhibition corrects the defect in VLDL assembly in HepG2 cells indicating a key role of IRK in hepatic VLDL-apoB assembly
Hubert Tsui	Dr. Hans-Michael Dosch	Targeting of Pancreatic Glia in Type 1 Diabetes
Robert Wallis	Dr. Philippe Poussier	A Novel Type 1 Diabetes Susceptibility Locus Identified Using the BB/Wor Rat Model
Peixiang Wang	Dr. Tianru Jin	The role of the Epac signaling pathway in regulating proglucagon gene expression in intestinal endocrine L cells
Fuzhen Xia	Dr. Robert Tsushima	Association of Kv4.3 to Lipid Rafts in Pancreatic α -Cells is Critical for Glucagon Secretion
Ling Xia	Dr. Catharine Whiteside	1) Mesangial cell generation of reactive oxygen species via NADPH oxidase in response to high glucose or transforming growth factor β_1 is protein kinase C- ζ - dependent 2) Mesangial cell upregulation of vascular endothelial growth factor in high glucose is dependent on reactive oxygen species and conventional and atypical protein kinase C
Changting Xiao	Dr. Gary Lewis	Endothelial lipase does not preferentially enhance the clearance of triglyceride-enriched versus native high-density lipoprotein apolipoprotein A-I
Jessica Yue	Dr. Mladen Vranic	Effects of Recurrent Restraint Stress on Counterregulatory Hormone Responses to Subsequent Stress in STZ-Diabetes

ACKNOWLEDGEMENTS

The BBDC would like to thank the members of the **Research Committee** and members of the **Diabetes Care and Education Committee** for reviewing applications for the Centre's numerous funding programs. We would also like to thank **Dr. Allen Volchuk** for coordinating the 2006 Charles Hollenberg Summer Studentship Program.

As an integral part of the application review process, the BBDC also obtains scientific reviews from University of Toronto faculty who are involved in diabetes-related research. The BBDC would like to thank the following faculty for acting as our **external reviewers** this past year for various BBDC funding programs:

Dr. Andrew Boright
Dr. Philip Connelly
Dr. Sandy Der
Dr. Philippe Poussier
Dr. James Woodgett

EDUCATIONAL ACTIVITIES OF THE CENTRE

BADC SEMINAR SERIES

(In conjunction with City-wide Endocrine Rounds)

An ongoing responsibility of the Centre is to invite researchers within Canada and the United States to present their work on diabetes research 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 8 a.m. in the Private Dining Room at the Mount Sinai Hospital. The presentations for the 2005-2006 year are as follows:

Friday, October 7, 2005

Pathophysiology of the Incretin System in Type 2 Diabetes

Michael Nauck, MD, PhD

Professor of Medicine
Diabetes Centre
Bad Lauterberg, Germany

Friday, December 9, 2005

Recent Progress in Understanding the Molecular Basis of Diabetic Complications

Michael Brownlee, MD

Anita and Jack Saltz Professor of Diabetes Research
Director, JDRF International Center for Diabetic Complications Research
Departments of Medicine and Pathology,
Albert Einstein College of Medicine, Bronx, New York

Friday, March 24, 2006

Islet Beta-Cell Regeneration : A Therapy for Type 1 Diabetes?

Alex Rabinovitch, MD

Professor, Department of Medicine
Co-Director, Muttart Diabetes Research and Training Centre
University of Alberta, Edmonton

Friday, April 28, 2006

Roles For Ghrelin in the Regulation of Body Weight and Glucose Homeostasis

David E. Cummings, MD

Associate Professor of Medicine
University of Washington, Seattle

BBDC and T.G.R.I. DIABETES INVESTIGATOR SEMINAR SERIES

These monthly seminars provide an opportunity for Toronto General Research Institute (TGRI) diabetes investigators associated with the BBDC to exchange diabetes research data. The meetings are usually held on the first Friday of each month from 12 to 1 p.m. at the Toronto General Hospital. Unlike the BBDC Seminar Series described on the previous page, this seminar series is only attended by the seven BBDC-associated investigators (Drs. Drucker, Elsholtz, Fantus, Irwin, Jin, Lewis, Volchuk) and their trainees. (*See page 26 for more information on diabetes investigators associated with the BBDC.*) The BBDC gratefully acknowledges support of this seminar series by **Merck Frosst Canada**. The 2005-2006 BBDC and T.G.R.I. Diabetes Investigator Seminar Series schedule is as follows:

BBDC and T.G.R.I. DIABETES INVESTIGATOR SEMINAR SERIES 2005-2006

12:00 to 1:00 p.m.

Toronto General Hospital

200 Elizabeth Street

Eaton Wing North, 1st Floor, Room 429/430

Friday, October 7, 2005	Dr. Tianru Jin presenting
Friday, November 4, 2005	Dr. Daniel Drucker presenting
Friday, December 2, 2005	Dr. George Fantus presenting
Friday, February 3, 2005	Dr. Harry Elsholtz presenting
Friday, March 3, 2006	Dr. Gary Lewis presenting
Friday, April 7, 2006	Dr. Allen Volchuk presenting
Friday, May 5, 2006	Dr. David Irwin presenting (cancelled)

CHARLES HOLLENBERG SUMMER STUDENTSHIP PROGRAM: SEMINAR SERIES AND MINI-CONFERENCE 2006

Summer students and their supervisors are required to participate in the Summer Studentship Program which consists of a weekly *Seminar Series* and a *Mini-conference*. The weekly seminars are held throughout June and July. Each seminar includes a 40 to 45 minute presentation prepared by the supervisor, followed by a 5 to 10 minute presentation by the summer student which outlines the project and indicates how his/her project fits into the overall goals of the lab. All students have the opportunity to present their work at the end of the summer in a workshop format at the half-day Mini-conference. Students are required to submit a one-page abstract for the conference program. The BBDC would like to thank **Dr. Allen Volchuk** for coordinating the 2006 Summer Studentship Program. The 2006 weekly Seminar Series schedule and Mini-Conference program are as follows:

WEEKLY SEMINAR SERIES 4:00 - 5:00 p.m. Banting and Best Diabetes Centre Conference Room Toronto General Hospital, 200 Elizabeth Street Max Bell Research Centre, 4th Floor, Room 4R405		
Date	Speakers	Title
Monday, June 5, 2006	Dr. Lowell Langille and Thea Van Rossum	Adaptive and pathological aspects of arterial remodeling
Monday, June 12, 2006	Dr. Enza Gucciardi / Dr. Donna Stewart and Shirley Wang	Determinants of attrition from diabetes self-management
Monday, June 19, 2006	Dr. George Fantus and Alice Chan	Pathogenesis of the complications of diabetes
Monday, June 26, 2006	Dr. Hans-Michael Dosch and Thirumahal Selvanantham	The role of sensory afferents in beta cell stress, insulin resistance and diabetic autoimmunity
Monday, July 3, 2006	Holiday	
Monday, July 10, 2006	Dr. Mladen Vranic and Garry Thomas	Molecular mechanisms of deficient counter-regulation to hypoglycaemia in diabetes
Monday, July 17, 2006	Dr. Tianru Jin and Steven Wong	Homeobox genes and proglucagon expression
Monday, July 24, 2006	Dr. Amira Klip and Alex Cheng	A journey of glucose through the body
Monday, July 31, 2006	Dr. Stephen Matthews and Amber Menezes	Development and susceptibility to Diabetes and the Metabolic Syndrome

MINI-CONFERENCE
Monday, August 14, 2006
1:10 – 5:15 P.M.
Banting and Best Diabetes Centre Conference Room
Toronto General Hospital, 200 Elizabeth Street
Max Bell Research Centre, 4th Floor, Room 4R405

1:10 P.M.	Introduction Dr. Allen Volchuk, Program Coordinator
1:15	Shirley Wang (Dr. Donna Stewart) Sex Differences in Psychosocial, Behavioral, and Clinical Characteristics Identified During the Initial Visit at a Diabetes Education Centre
1:30	Thirumahal Selvanantham (Dr. Hans-Michael Dosch) Characterization of the Autoimmune Response to the Peri-Islet Schwann Cell Antigen, GFAT in Type 1 Diabetes
1:45	Mitchell Vainberg (Dr. Pamela Ohashi) PKB Promotes Autoimmunity through the Suppression of Cbl-b Expression
2:00	Amber Menezes (Dr. Stephen Matthews) Swim Exercise Training Offers a Protective Effect to Partially Maintain β -Cell Compensation During the Development of Type 2 Diabetes in the Male ZDF Rat
2:15	Carol Yang (Dr. Shelley Boyd) Erythropoietin Receptors in a Rat Model of Diabetic Retinopathy
2:30	Garry Robert Thomas (Dr. Mladen Vranic) Using Somatostatin Receptor Type II Antagonists (SSTR2a) to Improve/Normalize the Glucagon Response to Hypoglycemia in Diabetic Rats
2:45	Tracy Teodoro (Dr. Allen Volchuk) Examining the Potential Anti-Diabetic Properties of Oleanolic Acid in β -cells and the Role of p24 Proteins as Cargo Receptors for Insulin Sorting
3:00	BREAK
3:15	Nina Flora (Dr. Patricia Brubaker) The Role of Insulin-Like Growth Factor-I in Regulating GLP-1 Secretion in Intestinal L Cells
3:30	Alex Cheng (Dr. Amira Klip) Regulation of Perinuclear GLUT4 Remodeling: Implications on Insulin-Mediated GLUT4 Traffic to the Plasma Membrane in L6 Skeletal Muscle Cells
3:45	Thea Van Rossum (Dr. Lowell Langille) The Effect of Mechanical Force as Transmitted by Integrins and Collagen on the Orientation of Endothelial Cell Division
4:00	Steven Wong (Dr. Tianru Jin) Examination of the Effect of the Homeodomain Protein Transcription Factors Nkx-6.1 and Nkx-6.2 on Proglucagon Gene Expression
4:15	Alice Chan (Dr. George Fantus) Bradykinin Enhances the Insulin Signaling Pathway by Inhibition of IRS-1 Ser307 Phosphorylation
4:30	Diana Choi (Dr. Minna Woo) Investigating the Role of PTEN in Body Size Determination
4:45	Fei Lu Ye (Dr. Dominic Ng) Modulation of Hepatic Insulin Signaling in Mouse Model of LCAT Deficiency
5:00	Andrea Yeung (Dr. Patricia Brubaker) R-Spondin/Wnt Signaling and GLP-1 Induced β -cell Proliferation

17th ANNUAL SCIENTIFIC DAY

This annual event which is organized by the Research Committee provides an opportunity for BBDC members to exchange scientific information and ideas, and to assist 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 postdoctoral fellows and graduate studentship recipients present posters of their work. The event focuses on the latest diabetes research topics with both clinical and laboratory applications. In addition, the Director of the Centre has an opportunity to review the activities of the BBDC over the past year with the Centre membership at large. This event is open and free to all BBDC members and their trainees. The program normally includes one internationally renowned guest faculty as well as University of Toronto faculty equally renowned for their work in diabetes research. The 17th Annual Scientific Day was held on **Friday, May 12, 2006** at The Estates of Sunnybrook. We gratefully acknowledge partial support of this event by **AstraZeneca, Eli Lilly Canada Inc., GlaxoSmithKline, LifeScan Canada, Merck Frosst Canada Ltd., and Sanofi-Aventis**, and support of the guest speaker by **Merck Frosst Canada**. The program was as follows:

**BANTING AND BEST DIABETES CENTRE
17th ANNUAL SCIENTIFIC DAY
Friday, May 12, 2006
Vaughan Estate, The Estates of Sunnybrook
2075 Bayview Avenue, Toronto**

8:30 - 9:00 A.M. **CONTINENTAL BREAKFAST** (lower level Courtyard Ballroom)

Chair: Dr. Bruce Perkins

9:00 - 9:30 Sequential Pathway of Fat-induced Impairment in Hepatic Insulin Action
Dr. Adria Giacca

9:30 - 10:00 Comparison of Low Carbohydrate vs. Low-glycaemic Index Diet in the Management of Type 2 Diabetes: Results of CCD (Canadian Trial of Dietary Carbohydrates in Diabetes)
Dr. Thomas M. Wolever

10:00 - 10:30 Mechanisms Controlling Glucose-stimulated Insulin Secretion
Dr. Michael Wheeler

10:30-11:15 **POSTER PRESENTATIONS** (lower level Courtyard Ballroom)

Chair: Dr. Tianru Jin

11:15 - 11:45 Glucagon-like Peptide-1 and the Regulation of Beta Cell Growth
Dr. Patricia L. Brubaker

11:45 - 12:15 P.M. GLP-1 Receptor Signalling in Pancreatic Cancer
Dr. Jacqueline A. Koehler
BBDC Postdoctoral Fellow 2005-2006

12:15 - 12:25 **Director's Report: Dr. Daniel J. Drucker**
Director, Banting and Best Diabetes Centre
Professor, Department of Medicine, Division of Endocrinology & Metabolism
University of Toronto

12:25 - 12:35	BBDC Annual Trainee Awards Presentation (Sponsored by Novo Nordisk Canada Inc.) Dr. Patricia Brubaker, Chair, BBDC Research Committee
12:35 - 1:30	LUNCH (lower level Courtyard Ballroom)
Chair: Dr. Patricia L. Brubaker	
1:30 - 2:30	Charles Hollenberg Lecture (Sponsored by Merck Frosst Canada Ltd.) GLP-1 Based Therapy of Type 2 Diabetes Mellitus Dr. Jens Juul Holst
2:30	EVALUATION AND ADJOURNMENT

GUEST SPEAKER

Jens Juul Holst, MD

Professor, Department of Medical Physiology, University of Copenhagen
The Panum Institute, Denmark

TORONTO SPEAKERS

Patricia L. Brubaker, PhD

Professor, Department of Physiology
Faculty of Medicine, University of Toronto

Adria Giacca, MD

Professor, Department of Physiology
Faculty of Medicine, University of Toronto

Jacqueline A. Koehler, PhD

BBDC Postdoctoral Fellow 2005-2006

Thomas M. S. Wolever, PhD, DM

Professor, Department of Nutritional Sciences
Faculty of Medicine, University of Toronto
Division of Endocrinology and Metabolism, St. Michael's Hospital

Michael Wheeler, PhD

Professor, Department of Physiology
Faculty of Medicine, University of Toronto

DIABETES UPDATE

Diabetes Update is a biannual, full-day continuing education event which is organized by the Diabetes Care and Education Committee and the Faculty of Medicine Continuing Education staff. It is attended by over 600 health care professionals split almost evenly between physicians, nurses, dietitians and pharmacists from across Ontario and beyond. The program usually includes internationally renowned guest speakers as well as members of the University of Toronto faculty and is comprised of large plenary lectures followed by smaller concurrent sessions. The next Diabetes Update will be held in March 2007 at the Metro Toronto Convention Centre.

WORKSHOP:

NEW LONG-ACTING INSULIN ANALOGUES – AN ADVANCED WORKSHOP FOR DIABETES EDUCATORS

One of the Diabetes Care and Education Committee's many responsibilities is to assess the educational needs of diabetes health care professionals and to design informative workshops to meet their needs. On Friday, April 21, 2006 the BBDC hosted an advanced continuing education workshop on the new long-acting insulin analogues for 30 diabetes educators employed at the University of Toronto's fully and partially affiliated hospitals. Through presentations and interactive case discussions, educators learned about two new analogues - detemir and glargine and how to convert patients to the new regimens. The BBDC would like to thank **Novo Nordisk Canada Inc.** and **Sanofi-Aventis** for providing an unrestricted educational grant for partial support of this event. The program was as follows:

NEW LONG-ACTING INSULIN ANALOGUES AN ADVANCED WORKSHOP FOR DIABETES EDUCATORS Friday, April 21, 2006 Mount Sinai Hospital, Joseph and Wolf Lebovic Building 60 Murray Street Leadership Sinai Centre For Diabetes 5th Floor, Classroom L5-038 Toronto, Ontario	
12:00 – 12:30 P.M.	REGISTRATION AND LUNCH
12:30 – 12:35	Welcome and Introduction Jacqueline James, MD, MEd, FRCPC
12:35 – 1:15	Presentations by Speakers: New Long Acting Insulin Analogues – How and why they work the way they do. Ravi Retnakaran, MD, FRCPC Perspectives of the diabetes nurse educator using the new basal insulins. Helen Jones, RN, MSN, CDE
1:15 – 3:00	Small group case studies
3:00 – 3:15	EVALUATIONS AND ADJOURNMENT

PROGRAM COMMITTEE

CHAIR: Jacqueline James, MD, MEd, FRCPC*
Endocrinologist, Mount Sinai Hospital

Marianne Beckstead, RN, MN, CDE
Clinical Nurse Specialist, Diabetes, University Health Network (Toronto General Hospital)

Gillian Booth, MD, FRCPC*
Endocrinologist, St. Michael's Hospital

Jennifer Buccino

Clinical Dietitian, Hospital for Sick Children

Margaret De Melo, RD, CDE, BSc

Clinical Dietitian, Toronto Western Hospital

Jan Glozier, RN, CDE

Diabetes Educator, North York General Hospital (Branson Division)

Henry Halapy, RPh

Diabetes Pharmacist, St. Michael's Hospital

Angela Kennedy, RN, CDE

Diabetes Educator, Toronto East General Hospital

Carolyn Lawton, RN, MScN, CDE

Nurse Practitioner, Diabetes, Sunnybrook & Women's College Health Sciences Centre

Kusiel Perlman, MD, FRCPC*

Endocrinologist, Hospital For Sick Children

PARTICIPANTS

Ravi Retnakaran, MD, MSc, FRCPC*

Endocrinologist, Mount Sinai Hospital

Helen Jones, RN, MSN, CDE

Clinical Nurse Specialist, Diabetes, Mount Sinai Hospital

** Faculty of Medicine, University of Toronto*

CORE LABORATORY

Director: Dr. I. George Fantus

The Core Laboratory was established in 1984 to provide analytical and technical support to the University of Toronto diabetes research community. A wide range of research quality assays are provided for investigator initiated clinical/basic research as well as for industry sponsored trials. The Core Laboratory will collaborate with the investigator to establish new assays to carry out and enhance diabetes-related research at the University. A list of the current services provided by the Core Laboratory are provided on the BBDC's website, www.bbdc.org. In 2001, the Core Laboratory partnered with Pathology and Laboratory Medicine at Mount Sinai Hospital and moved its facilities to that location, although it still remains a part of the BBDC.

DIABETES INVESTIGATORS ASSOCIATED WITH THE BBDC (Located at the Toronto General Hospital)

There are seven Toronto General Research Institute (TGRI) scientists associated with the Banting and Best Diabetes Centre:

Dr. Daniel Drucker, Department of Medicine
Dr. Harry Elsholtz, Department of Laboratory Medicine and Pathobiology
Dr. I. George Fantus, Department of Medicine
Dr. David Irwin, Department of Laboratory Medicine and Pathobiology
Dr. Tianru Jin, Department of Medicine
Dr. Gary Lewis, Department of Medicine
Dr. Allen Volchuk, Department of Medicine

The BBDC has laboratory space in the Max Bell Research Wing at the Toronto General Hospital, University Health Network. All of the scientists' laboratories are located in the Max Bell Research Wing with the exception of Dr. Tianru Jin. The investigators have shared access to a broad range of specialized research equipment on the 4th floor of the Max Bell Research Wing, and make use of BBDC offices for lab meetings and administrative core activities. The investigators meet as a group monthly at the *BBDC and T.G.R.I. Diabetes Investigator Seminar Series* (see page 19) to review research progress, while participating fully in the spectrum of research activities ongoing at the University of Toronto.

The research activities of the group are focused on:

- Understanding insulin action, lipid metabolism, and signal transduction (Drs. Elsholtz, Lewis and Fantus)
- Regulation of gene transcription (Drs. Elsholtz, Drucker, Irwin, and Jin)
- Biology of the glucagon-like peptides (Drs. Drucker and Irwin)
- Studying the cell biology of insulin secretion and exocytosis, with a focus on translation stress and the unfolded protein response in normal β cells and in models of β cell dysfunction (Dr. Volchuk)

PUBLICATIONS

WEB SITE: www.bbdc.org

Visitors to our site can view detailed information on all of our funding programs, funding decisions, educational activities, membership, clinical trials at University of Toronto-affiliated hospitals, diabetes research at the University of Toronto, links to international diabetes meetings, and much more. All application forms for BBDC funding programs can be downloaded from the site.

New to the web site this year:

- **2005 Research Highlights:** The annual research highlights section was added to the BBDC's web site to facilitate increased public awareness of the many exciting diabetes-related research developments that occur each year at the University of Toronto. It is intended to provide information for the general public and describes, in lay language, one or two highlights of diabetes research carried out by University of Toronto faculty members, published during the 2005 calendar year. Links to their publications are provided. The 2005 Research Highlights are located within the '*Research at the University*' section of the web site.
- **Approach to the Management of Diabetes Mellitus (Sixth Edition):** The BBDC's monograph was updated in 2005 and is now available on the home page of our web site in a new user-friendly, web-based format. (*See below for more information.*)

APPROACH TO THE MANAGEMENT OF DIABETES MELLITUS (Sixth Edition)

This BBDC publication was updated in 2005, and is now available on the home page of our web site in a new user-friendly, web-based format. The publication is a guide to the current concepts and management strategies practiced by health care professionals at the University of Toronto and its affiliate teaching hospitals in the care of individuals with diabetes. It provides an outline of standards of care and special topics in diabetes. Where possible, available evidence is used in these guidelines, however, expert clinical opinion is used to formulate treatment strategies in areas where high level clinical evidence is unavailable. Although not an exhaustive review of the literature, this document is meant to provide practical information to help medical students, residents, physicians, diabetes educators and other health care professionals in the management of individuals with diabetes.

The BBDC has been publishing and regularly updating this monograph since 1986 as a part of our mandate to promote diabetes education and patient care at the University of Toronto. The publication was updated in 2005 by the members of the Diabetes Care and Education Committee along with the generous help of many diabetes health care professionals at the University of Toronto teaching hospitals. The complete document is available through the home page of the BBDC's web site www.bbdc.org. Users can choose to view the document in a Web-based format, or they can download the entire PDF document or individual PDF chapters.

BBDC NEWSLETTER

The Banting and Best Diabetes Centre distributes a quarterly newsletter entitled **BBDC NEWS** by e-mail to those who have joined our e-mail distribution list. Issues are normally distributed in September, December, March, and June of each year. The newsletter highlights upcoming BBDC events, funding opportunities, award results, and BBDC seminars. Current and past issues are available on the BBDC's web site www.bbdc.org

SUPPORTERS OF THE BANTING AND BEST DIABETES CENTRE

The Banting and Best Diabetes Centre gratefully acknowledges recent and/or endowed financial support from the following private and corporate 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
Mr. Arthur Spoerri
Mr. Stephen Yow Mok Shing

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Sanofi-Aventis*
University of Toronto, Faculty of Medicine

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