



*University of Toronto, Faculty of Medicine*

# **BANTING AND BEST DIABETES CENTRE**

## **ANNUAL REPORT JULY 1, 2002 – JUNE 30, 2003**

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## MISSION

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

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

The Year 2003 witnessed an important number of milestones relevant to the ongoing activities of the Diabetes Centre. The BBDC was established 25 years ago in 1978, and in 2003, we celebrated our 25th anniversary. The BBDC has grown considerably in membership, and in the scope and breadth of funding it provides in support of educational and research activities across the University. A quick glance at our Annual Report will demonstrate that Centre's support facilitated the academic activity of dozens of individuals over the past 12 months, ranging from undergraduate students, to nurses, from research fellows to principal investigators. The majority of our funding provided opportunities for trainees at all levels to engage in diabetes-related research experiences, an investment we hope will pay considerable dividends in the years to come.

Despite the unpredictable and often considerable challenges faced by the local hospital and university communities this spring, the BBDC was fortunate to hold several outstanding events, including our highly successful Diabetes Update 2003 in March (with record attendance!) and our special 25th Anniversary Annual Scientific Day in May. These events were just two of the highlights reflecting the work of our industrious committees chaired by Dr. Patricia Brubaker (Research Committee), and Dr. Jacqueline James (Diabetes Care and Education Committee). I would like to thank the members of these two Committees, as well as the members of our Executive Committee, for the time and effort expended on our behalf.

Finally it would not be appropriate to recount the strength and vitality of the BBDC without pausing to acknowledge and remember the outstanding contributions of Dr. Charles Hollenberg, BBDC Director from 1981 to 1993. Many of us were proud to have trained with and worked with Charles and we benefited greatly from his knowledge, enthusiasm, integrity and visionary leadership. The BBDC will honour the memory of Dr. Hollenberg each year through its *Charles Hollenberg Lectureship* at the spring Scientific Day and the *Charles Hollenberg Undergraduate Summer Studentship Program*. Consistent with our ongoing custom, we have reproduced below a summary of BBDC activities, finances, awardees and committees. Please send us your comments and suggestions about any of the information within this report.

## 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.

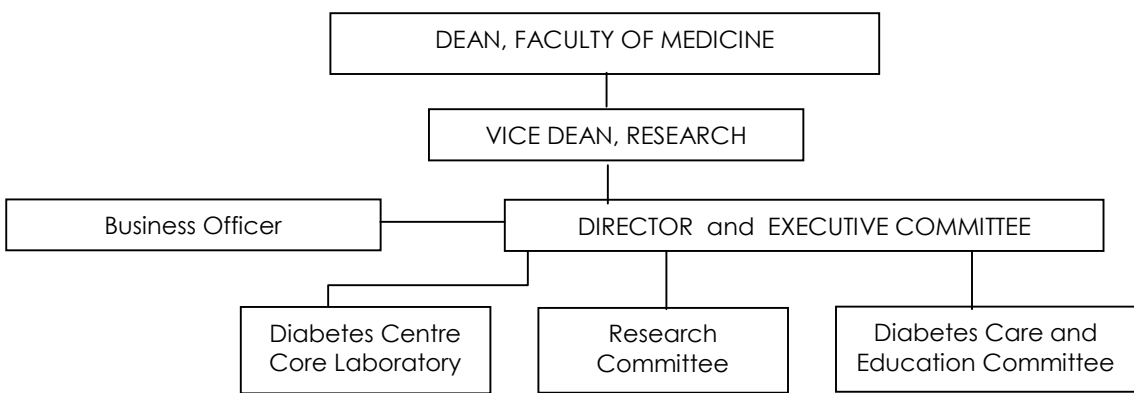
The programs of the BBDC are supported almost entirely from the income on its endowments. The BBDC has also received generous donations from industry which have funded various research programs scientists, students, and fellows. The Centre offers several studentships, fellowships, and other support for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

## 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 in the Centre, and graduate students must be registered with a graduate department to obtain their degree. To be eligible for membership one must be involved in diabetes-related research and hold a full-time faculty appointment at the University of Toronto. Membership allows University of Toronto investigators and their trainees to become eligible to apply for the Centre's awards. As of June 30, 2003 there are 67 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 220 contacts, which not only includes our members, but also individuals with diabetes interests located at other universities, employed by industry, or involved in diabetes health care delivery.

## 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 Centre 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.

- |  |   |
|--|---|
| <b>Director:</b> 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. Robert G. Josse                    | Department of Medicine, Division of Endocrinology & Metabolism* |
| Dr. Amira Klip                         | Department of Biochemistry*                                     |
| Dr. Catharine Whiteside                | Department of Medicine, Division of Nephrology*                 |
| Dr. Bernard Zinman                     | Department of Medicine, Division of Endocrinology & Metabolism* |

## RESEARCH COMMITTEE

Among its many responsibilities, the Research Committee advises the Executive Committee on new research initiatives to be undertaken by the Centre, and implements the scientific review of the BBDC research competitions.

<b>Chair:</b> Dr. Patricia Brubaker	Department of Physiology*
Dr. Michelle Bendeck	Laboratory Medicine and Pathobiology*
Dr. Andrew Boright	Department of Medicine, Division of Endocrinology & Metabolism*
Dr. Harry Elsholtz	Laboratory Medicine and Pathobiology*
Dr. Adria Giacca	Department of Physiology*
Dr. Dominic Ng	Department of Medicine, Division of Endocrinology & Metabolism*
Dr. Robert Tsushima	Department of Medicine*
Dr. Michael Wheeler	Department of Physiology*
Dr. Minna Woo	Department of Medicine, Division of Endocrinology & Metabolism*

## DIABETES CARE AND EDUCATION COMMITTEE

This committee develops and publishes standards for the total health care of diabetic patients in Toronto area hospitals, and communicates these standards to health care practitioners nationally. The Diabetes Care and Education Committee organizes continuing medical education in diabetes for the health care team which is comprised of physicians, nurse educators, dietitians, pharmacists, and other health care professionals.

<b>Chair:</b> Dr. Jacqueline James	Department of Medicine, Division of Endocrinology & Metabolism*
Ms. Marianne Beckstead	Clinical Nurse Specialist in Diabetes, Toronto General Hospital
Dr. Gillian Booth	Department of Medicine, Division of Endocrinology & Metabolism*
Miss Jennifer Buccino	Clinical Dietitian, Hospital For Sick Children
Ms. Margaret De Melo	Clinical Dietitian and Diabetes Educator, Toronto Western Hospital
Ms. Carolyn Lawton	Nurse Practitioner Diabetes, Sunnybrook & Women's College Health Sciences Centre
Dr. Lori MacCallum	Clinical Pharmacy Specialist, St. Michael's Hospital
Ms. Heather Munro	Diabetes Nurse Clinician, Scarborough Hospital
Dr. Kusiel Perlman	Department of Medicine, Division of Endocrinology & Metabolism*

\* *University of Toronto faculty member.*

## FINANCIAL REPORT

(Statement of operations for the fiscal year ended June 30, 2003  
with comparative figures for the fiscal year ended June 30, 2002)

<b>INCOME</b>	<b>2003</b>	<b>2002</b>
<b>Unrestricted:</b>		
Endowment income *	588,010	555,897
Donations/miscellaneous income	18,000	43,910
<b>Restricted:</b>		
BBDC/Novo Nordisk Studentship fund endowment income *	227,934	221,845
Yow Kam-Yuen Scholarship fund endowment income *	15,482	15,068
Tamarack Graduate Award fund endowment income *	12,511	14,420
Novartis Graduate Award †	10,000	0
Archie Sopman fund endowment income – U.H.N. (April 1/02 - March 31/03)	10,600	10,805
BBDC fellowship/personnel funds	76,000	165,000
<b>TOTAL INCOME</b>	<b>958,537</b>	<b>1,026,945</b>
<b>EXPENSES</b>		
<b>Administration:</b>		
Salary support and benefits	74,496	71,445
Office supplies/miscellaneous	23,909	8,830
<b>Educational Functions:</b>		
BBDC Seminar Series, and Special Seminars	4,939	8,975
T.G.R.I. Diabetes Investigator Seminar Series	1,272	872
BBDC Annual Scientific Day	29,474	10,462
<b>Trainees:</b>		
Hugh Sellers Postdoctoral Fellowships	59,650	35,000
Other BBDC Fellowships †	0	165,000
BBDC/Novo Nordisk Studentships (travel allowances included)	198,871	200,000
Yow Kam-Yuen Graduate Scholarship in Diabetes Research (travel allowance included)	12,000	12,000
Tamarack Graduate Award in Diabetes Research (travel allowances included)	13,790	12,000
Novartis Graduate Award (travel allowance included) †	11,500	0
Undergraduate Summer Studentship Program (summer 2003)	22,750	17,500
Trainee Travel Awards	15,569	15,269
<b>Faculty Support:</b>		
Reuben & Helene Dennis Scholar in Diabetes Research	20,000	10,000
New Investigator Awards	40,000	0
Travel allowance for committee chairs	3,818	4,000
Other	0	9,000
<b>Pilot and Feasibility Projects:</b>		
Pilot and Feasibility funding	68,220	39,818
Pilot Grants for Innovative Activities Related to Diabetes Education, Management, and Care	20,000	30,000
<b>Other Research Initiatives:</b>		
Equipment Grants	76,808	90,000
Archie Sopman Diabetes Research Competition (2003 calendar year)	11,000	10,000
Other	0	582
<b>Cost Recoveries:</b>	-11,200	-16,541
<b>TOTAL EXPENSES</b>	<b>696,866</b>	<b>734,212</b>
<b>INCOME LESS EXPENSES</b>	<b>261,671</b>	<b>292,733</b>

\* Endowment income reflects the return on investment generated by the University of Toronto Long-Term Capital Appreciation Pool (LTCAP). The annual endowment income available to the BBDC may change depending on market conditions and rate of investment return.

† Non-recurring program

## DESCRIPTION OF FUNDING PROGRAMS and FUNDING DECISIONS

The majority of the Centre's funding programs are only open to BBDC members as well as students and fellows working in the laboratory of a member with the exception of the following awards:

- 1) Pilot and Feasibility Funding
- 2) Pilot Grants for Innovative Activities Related to Diabetes Education, Management, and Care
- 3) Archie Sopman Diabetes Research Competition

### PILOT AND FEASIBILITY FUNDING

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 Banting and Best Diabetes Centre, 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). The following are the Pilot and Feasibility Funding recipients for 2002-2003:

Applicant	Title of Research	Award
Dr. Gary Lewis	Vasoactive agents and carbohydrate metabolism.	\$ 8,220
Dr. Dominic Ng	Caveolae and atherosclerosis.	\$30,000
Dr. Minna Woo	The Role of Islet Apoptosis in Induction of Tolerance vs. Immunity	\$30,000

### EQUIPMENT GRANTS

A minimum amount of \$5,000 and a maximum amount of \$50,000 is made available for the one-time purchase of laboratory equipment for diabetes research. Equipment costing between \$25,000 and \$100,000 is funded at 50 % and requires the applicant to obtain matching funds from other sources. To be eligible, the applicant must be a full-time faculty member of the University of Toronto conducting diabetes research. Applications are reviewed and ranked by members of the Research Committee as well as an external reviewer(s). The following are the Equipment Grant recipients for 2001-2002:

Applicant	Title of Research	Award
Dr. Khosrow Adeli	Application of Proteomics to Understanding the Mechanisms of Metabolic Dyslipidemia Associated With The Insulin Resistance Syndrome	\$25,907
Dr. Adria Giacca	Mechanisms of the diabetogenic effects of free fatty acids.	\$23,792
Dr. Amira Klip	FCS2 Perfusion Chamber and Pump for Live Cell Studies	\$ 7,845
Dr. Qinghua Wang	Proteomics Approach Using 2D-Electrophoresis. Identification of Novel Proteins in Regulating Islet Beta Cell Mass by GLP-1.	\$19,264

### REUBEN & HELENE DENNIS SCHOLAR IN DIABETES RESEARCH

This competition is held once every two years. An amount of \$10,000 per year for two years is available to be used for the salary of a researcher and/or research support. To be eligible, the applicant must be involved in diabetes research, and must be a principal investigator who holds a full-time academic appointment at the University of Toronto. Preference is given to those who are within the first 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 last competition was held in early 2002 and the next competition is scheduled for early 2004. The recipients of this two-year award are:

<b>Applicant</b>	<b>Academic Title</b>	<b>Award</b>
Dr. Qinghua Wang	Assistant Professor, Department of Physiology, University of Toronto	\$10,000 for 2002/2003 \$10,000 for 2003/2004
Dr. Minna Woo	Assistant Professor, Department of Medicine, University of Toronto	\$10,000 for 2002/2003 \$10,000 for 2003/2004

### **NEW INVESTIGATOR AWARDS**

A new funding program has been established by the Banting and Best Diabetes Centre to support new University of Toronto diabetes research faculty. An amount of \$20,000 for one year is made available to investigators at the University and who are within the first three 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 program's first New Investigator Award recipients are:

<b>Applicant</b>	<b>Academic Title</b>	<b>Award</b>
Dr. Andrew Boright	Assistant Professor, Department of Medicine, University of Toronto	\$20,000
Dr. Qinghua Wang	Assistant Professor, Department of Physiology, University of Toronto	\$20,000

### **ARCHIE SOPMAN DIABETES RESEARCH COMPETITION**

This award is only open to University Health Network employees. To be eligible, the applicant must be either a staff physician, dietitian, nurse, scientist, research technician, or clinical trial coordinator who is involved in diabetes research, diabetes education, or diabetes clinical care at the University Health Network. 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 2003 or 2) To support a visiting lecturer in diabetes or metabolic disorders in the year 2003. Applications are reviewed by the chair of the Diabetes Care and Education Committee and the BBDC Director. Funding for this program is provided by the Toronto General and Western Hospital Foundation, Archie Sopman Endowment Fund. The funding recipients for the 2003 calendar year are:

<b>Applicant</b>	<b>Title</b>	<b>Purpose</b>	<b>Award</b>
Marianne Beckstead	Toronto General Hospital, Clinical Nurse Specialist	Travel to diabetes meeting	Up to \$1000
Margaret De Melo	Toronto Western Hospital, Practice Leader, Dietitian/Diabetes Educator	Travel to diabetes meeting	Up to \$1000
Anne Guilar	Toronto General Hospital, Clinical Dietitian	Travel to diabetes meeting	Up to \$1000
Lorna Lawrence	Toronto Western Hospital, Clinical Dietitian	Travel to diabetes meeting	Up to \$1000
Louisa Li	Toronto Western Hospital, Diabetes Educator/Clinical Dietitian	Travel to diabetes meeting	Up to \$1000
Kitty Mak	Toronto Western Hospital, Diabetes Educator, Registered Nurse	Travel to diabetes meeting	Up to \$1000
Tess Montada-Atin	Toronto General Hospital, Nurse Clinician	Travel to diabetes meeting	Up to \$1000
Marilyn Mori	Toronto Western Hospital Clinical Dietitian, Diabetes Educator	Travel to diabetes meeting	Up to \$1000
Ann Murphy	Toronto General Hospital, Clinical Dietitian	Travel to diabetes meeting	Up to \$1000
Ana Offenheim	Toronto Western Hospital, Registered Nurse, Diabetes Educator	Travel to diabetes meeting	Up to \$1000
Mary Weiland	Toronto Western Hospital, Clinical Dietitian, Diabetes Educator	Travel to diabetes meeting	Up to \$1000

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

This program provides grants of up to \$20,000 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 in the University of Toronto-affiliated hospitals or working with U of T-affiliated academics. Therefore, applicants are not required to be members of the BBDC. Applications are reviewed by members of the Diabetes Care and Education Committee. The following are the Pilot Grant award recipients for 2002-2003:

Applicant(s)	Title of Research	Award
Dr. Denise Feig, Dr. Bernard Zinman, Dr. Janet Hux	Development of Type 2 Diabetes Following the Diagnosis of Gestational Diabetes in Ontario	\$10,000
Dr. Ann Fox	Needs Assessment of Front-Line Nurses Providing In-Home Diabetes Care	\$10,000

## HUGH SELLERS 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 has endeavoured to support one or two additional trainees a year. 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. Applications are reviewed by members of the Research Committee plus external reviewers. The Hugh Sellers Fellowship recipients for 2002-2003 are:

Applicant	Supervisor(s)	Title of Research
Kai Zhang	Dr. Denny Trinh	The role of extrahepatic glucose-6-phosphatase in the islets of Langerhans and hypothalamus.
Hui Li	Dr. Sandy Der and Dr. George Fantus	Characterization of Beta-cell defects caused by lipotoxic stress.
Jiahui Lin (Award terminated September 13, 2002)	Dr. Michael Wheeler, and Dr. Robert Tsushima	Delayed rectifier potassium channel inhibition as a novel treatment for type 2 diabetes.

## TRAINEE TRAVEL AWARDS

The Trainee Travel Awards are available to 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 \$1000 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. The following are the Trainee Travel Award recipients for 2002-2003:

Applicant	Supervisor	Title of Research
Crystal Au	Dr. Khosrow Adeli	Overexpression of Akt Does Not Affect the Level of Apolipoprotein B in McArdle Cells Stably Expressing ApoB Fragments
Paula Dworatzek	Dr. Thomas Wolever	The effect of different dietary fats on postprandial lipids in subjects with T54 variant of fatty acid-binding protein 2 ( <i>FABP2</i> ) gene.
Jen Estall	Dr. Daniel Drucker	Identification of Structural Determinants Mediating Activation and Desensitization of Glucagon-Like Peptide Receptor Signaling
Enza Gucciardi	Dr. Donna Stewart	Predictors of Optimal Diabetes Education Service Use

Hong Hua	Dr. Catherine Whiteside	High Glucose and Endothelin-1 Stimulate Reactive Oxygen Species Production and Consequent Specific Kinase and Ca <sup>2+</sup> Signaling in Mesangial Cells
Jamie Joseph	Dr. Michael Wheeler	Enhanced Secretory and Proliferative Capacity of UCP2 Knockout Mice After a High Fat Diet
Tony K. T. Lam	Dr. Adria Giacca	Role of PKC- $\delta$ in Oleate-Induced Decrease in Insulin Binding and Insulin Resistance in the Liver.
Nathalie Leung	Dr. Gary Lewis	1) Atorvastatin Induces Profound Insulin Sensitization in Zucker Lean Rats by Stimulating Akt/PKB Phosphorylation independent of IRS-1 2) Glucolipotoxicity in Humans
Hui Li	Dr. Michael Wheeler	Gene and Protein Kinase Expression Profiling of Reactive Oxygen Species-Associated Lipotoxicity in the pancreatic Beta-cell line MIN6
Lixin Li	Dr. Patricia Brubaker	Role of Akt1 in the stimulation of beta-(INS-1) cell proliferation by glucagon-like peptide-1
Yazhou Li	Dr. Daniel Drucker	$\beta$ cell-Specific Deletion of Pdx-1 Abrogates GLP-1R-Dependent Stimulation of Insulin Secretion but does not Eliminate Glucose Lowering Actions of Exendin-4 in vivo
Patrick MacDonald	Dr. Michael Wheeler	Glucagon-Like Peptide-1 Antagonizes Beta-Cell Voltage-Dependent Potassium Channels: A Possible Glucose Dependent Mechanism
Jean-Paul Morand	Dr. Khosrow Adeli	Proteomic Profiling of Hepatic ER-Associated Proteins in an Animal Model of Insulin Resistance and Metabolic Dyslipidemia
Ravi Retnakaran	Dr. Bernard Zinman	C-Reactive Protein and Gestational Diabetes: Pathophysiologic Implications
Simon Smukler	Dr. Anne Marie Salapatek	Nitric Oxide: Physiological Role in Insulin Secretion
Elaine Meng Xu	Dr. Qinghua Wang	Inhibition of Glucagon Secretion by Glucose via Insulin-PI3K-Akt-GABA <sub>A</sub> R Pathway

## BBDC-TORONTO DIABETES ASSOCIATION ANNUAL TRAINEE AWARDS COMPETITION

Each year graduate students and postdoctoral fellows are invited to submit their abstracts for the BBDC/TDA 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 two members of the Research Committee and two members of the Toronto Diabetes Association Committee. Prizes are provided by and awarded by the Toronto Diabetes Association and winners are invited to present posters on their work at the BBDC Annual Scientific Day held in May. This year's prize winners as well as honourable mentions are as follows:

Award	Supervisor(s)	Title of Abstract
<b>1<sup>st</sup> Prize:</b> Hubert Tsui	Dr. H. Michael Dosch	Dissociating Neuronal From Diabetic Autoimmunity in the Nod Mouse
<b>2<sup>nd</sup> Prize:</b> Lixin Li	Dr. Patricia Brubaker	Glucagon-like peptide-1 regulates proliferation and apoptosis via activation of Akt1 in pancreatic (INS-1) beta-cells
<b>Honourable Mention:</b> Jamie Joseph	Dr. Michael Wheeler	Uncoupling protein 2 (UCP2) and diet induced $\beta$ -cell abnormalities: a role for UCP2 in $\beta$ -cell protection and inhibition of glucose-stimulated insulin secretion.
<b>Honourable Mention:</b> Elaine Meng Xu	Dr. Qinghua Wang	Inhibition of Glucagon Secretion by Glucose via Insulin-PI3K/Akt-GABA <sub>A</sub> R Pathway

## 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 provincial government of Ontario for a total endowment of 4.2 million dollars. Each year the Banting and Best Diabetes Centre 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 \$20,000. This year's awardees were also eligible to receive a travel allowance of up to \$1,500. Students were eligible to receive the travel allowance if they were invited to present a first author diabetes-related abstract at a national or international conference. The following are the Novo Nordisk Studentship Award recipients for 2002-2003:

Applicant	Supervisor	Title of Research
Zeenat Asghar	Michael Wheeler	The search for a biochemical mechanism to explain beta cell lipotoxicity.
Kristin Beard	George Fantus	Bradykinin and insulin action.
Lisa Biancucci	Gary Rodin	Depressive symptoms, family functioning and metabolic control in preadolescent girls with Type 1 diabetes mellitus.
Liam Casey (Award period: September to December 2002)	Daniel Drucker	The biological importance of incretin function for control of food ingestion, body weight regulation, energy expenditure and glucose homeostasis in fat fed mice with single or combined disruption of incretin receptor signaling.
Kalam Karen Chan	Adria Giacca	Effect of hyperinsulinemia on vascular smooth muscle cell growth and migration in vivo after balloon carotid artery injury in rats.
Wasim El-kholy	Michael Wheeler	The PI 3-Kinase Inhibitor LY294002 Blocks Kv Currents in MIN6 Cells: A Novel Mechanism of Action Involving a Direct Interaction with the Channel.
Tanya Hansotia	Daniel Drucker	Elucidating Novel Incretin Actions In Vitro and In Vivo
Edwin Kwan	Herbert Gaisano	Mechanisms of priming insulin exocytosis.
Nicole Liadis	Minna Woo & Pamela Ohashi	Mechanisms of Islet Apoptosis in Diabetes.
Elaine Li	Ren-ke Li	Characterizing the Inflammatory Reaction Observed after Cell Transplantation to Repair the Damaged Myocardium in Diabetic Animals
Tao Liu	Tianru Jin	Functional analysis of Cdx-2 Homeodomain protein.
Anthony Naassan	Adria Giacca	Beta Cell Lipotoxicity
Laura Stavar	George Fantus	Role of Stress Activated Protein Kinase (SAPK)/1-jun N Terminal Kinase (JNK) Hexosamine Biosynthesis Pathway Induced Gene Expression
Daphne Yau	Anne Marie Salapatek	Is the $\beta$ -cell defect in Type 2 diabetes causally related to peripheral insulin resistance?
Jessica Yue	Stephen Matthews	Role of Glucocorticoids in Altering Hypothalamo-Pituitary-Adrenal and Sympathoadrenal Function in Streptozotocin-Diabetic Rats
Li Zhou	David Irwin	Identification and characterization of enhancer elements in the first intron of the human proglucagon gene.

## YOW KAM-YUEN GRADUATE SCHOLARSHIP IN DIABETES RESEARCH

This graduate scholarship was made possible by a generous private endowment which was matched 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. This year's awardee was also eligible to receive a travel allowance of up to \$1,500. The student was eligible to receive the travel allowance if invited to present a first author diabetes-related abstract at a national or international conference. The following student is the 2002-2003 Yow Kam-Yuen Graduate Scholarship recipient:

<b>Applicant</b>	<b>Supervisor</b>	<b>Title of Research</b>
Holly Douglas	Dr. Mladen Vranic	The effect of chronic neurogenic stress on the onset and severity of diabetes in ZDF obese rats (studies in pancreas and liver).

### **TAMARACK GRADUATE AWARD IN DIABETES RESEARCH**

This graduate scholarship was made possible by a generous private endowment which was matched 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. This year the income earned on the endowment enabled the BBDC to award two studentships of up to \$12,000. This year's awardees were also eligible to receive a travel allowance of up to \$1,500. Students were eligible to receive the travel allowance if they were invited to present a first author diabetes-related abstract at a national or international conference. The following students are the 2002-2003 Tamarack Graduate Award recipients:

<b>Applicant</b>	<b>Supervisor</b>	<b>Title of Research</b>
Liang Chen	Dr. Tianru Jin	Mechanisms Underlying the Expression of the Caudal Homeodomain Protein Cdx-2 in the Pancreatic and Intestinal Endocrine Cells
Laura Glaab	Dr. Denis Daneman	MSc: The Impact of Type 1 Diabetes on School Attendance Ph.D: Evolution of Eating Attitudes and Behaviour in a Cohort of Children and Teens with New Onset Type 1 Diabetes.

### **NOVARTIS GRADUATE AWARD**

In 2002, Novartis generously provided a one-time donation of \$10,000 to the Banting and Best Diabetes Centre to support a graduate student carrying out studies in diabetes research. To be eligible to receive this award, the applicant's supervisor must be a member of the BBDC and the student must be registered with the School of Graduate Studies at the University of Toronto. Applications were ranked and reviewed by the BBDC Research Committee. The award recipient was also eligible to receive a travel allowance of up to \$1,500. The student was eligible to receive the travel allowance if invited to present a diabetes-related abstract at a national or international conference. The following student is the Novartis Graduate Award recipient:

<b>Applicant</b>	<b>Supervisor</b>	<b>Title of Research</b>
Costin Antonescu	Dr. Amira Klip	New transgenic mice to study regulation of glucose uptake into muscle.

### **UNDERGRADUATE SUMMER STUDENTSHIP PROGRAM 2003**

The Summer Studentship Program is designed to introduce young undergraduate students to diabetes research. This year the BBDC awarded 13 studentships 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 have the opportunity to participate in a weekly summer seminar series and to present their work at the end of the summer in a workshop format. The following are the 2003 Summer Studentship recipients:

<b>Student</b>	<b>Supervisor(s)</b>	<b>Title of Research</b>
Diane Ahn	Dr. Patricia Brubaker	Role of glucagon-like peptide-1 in the protection of beta cells from apoptosis.
Michael Chui	Dr. Carol Greenwood	Impact of carbohydrate ingestion on memory function in adults with type 2 diabetes mellitus
Lisa Dias	Dr. George Fantus	Mechanisms of high glucose induced insulin resistance
Irene Hadjiyanni	Dr. Daniel Drucker	GLP-1, beta cell preservation and Type 1 diabetes
Melissa Ho	Dr. Mladen Vranic	Role of Glucocorticoids in Altering Hypothalamo-Pituitary-Adrenal and Sympathoadrenal Function in Streptozotocin-Diabetic Rats
James Kuo	Dr. Qinghua Wang	Characterization and Identification of Pancreatic Islet Protein by Using 2D Gel Electrophoresis
Janice Kwan	Dr. Catharine Whiteside	High glucose mediation of protein kinase C activation through reactive oxygen species.
Eric Lam	Dr. Dominic Ng	Vascular effects of low HDL dyslipidemia and dysglycemia – a murine model approach.
Regina Lee	Dr. Gerald Prud'homme	Muscle-based anti-advanced glycation end-product (AGE) gene therapy
Julie Tan	Dr. Amira Klip	Adaptive cues to combat insulin resistance
Christine Tang	Dr. Adria Giacca	Mechanisms of beta cell glucolipotoxicity
Brian Tsai	Dr. David Irwin	Molecular Evolution and Expression of Mammalian Proglucagon Promoters
Victor Wong	Dr. Gary Lewis	Mechanism of insulin sensitization of vasopeptidase inhibitors.

## EDUCATIONAL ACTIVITIES OF THE CENTRE

### BBDC 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 2002-2003 year were as follows:

- Friday, September 6, 2002**      There is More to Life Than GLUT4 Translocation (Try GLUT4 Activation)  
**Dr. Amira Klip**  
Professor, Departments of Pediatrics, Biochemistry, and Physiology,  
University of Toronto  
Hospital For Sick Children, Programme in Cell Biology
- Friday, October 25, 2002**      Insulin Sensitizers and Mimetics  
**Dr. Bei Zhang**  
Director, Molecular Endocrinology-Metabolic Disorders  
Merck Research Laboratories  
Rahway, New Jersey
- Friday, November 29, 2002**      Treatment of Type 1 Diabetes With Anti-CD3 Monoclonal Antibody  
**Dr. Kevan Herold**  
Endocrinologist, Naomi Berrie Diabetes Center at Columbia-Presbyterian  
Medical Center  
Associate Professor of Clinical Medicine at Columbia's College of Physicians and  
Surgeons, Columbia University  
New York, New York
- Friday, January 31, 2003**      The Natural History of Obesity and Type 2 Diabetes: Targets for Prevention and  
Mitigation  
**Dr. Barbara C. Hansen**  
Professor of Physiology  
Director, Obesity and Diabetes Research Center  
University of Maryland School of Medicine  
Baltimore, Maryland
- Friday, April 25, 2003**      Molecular Physiology of Energy Homeostasis in Rodents and Humans  
**CANCELLED**      **Dr. Rudolph L. Leibel**  
Head, Division of Molecular Genetics  
Co-Director, Naomi Berrie Diabetes Center  
Columbia University College of Physicians and Surgeons  
New York, New York
- Friday, May 16, 2003**      Immuno-gene Therapy of Autoimmune Diseases  
**Dr. Gerald J. Prud'homme**  
Professor, Department of Laboratory Medicine and Pathobiology,  
University of Toronto  
Clinician-Scientist, St. Michael's Hospital

## SPECIAL SEMINARS

In addition to the regular Seminars Series held in conjunction with City-wide Endocrine Rounds, the BBDC occasionally has the opportunity to host "Special Seminars". All those who attend the regular Seminar Series are welcome to attend the Special Seminars which are normally held at the Toronto General Hospital. This year, the BBDC was able to host two internationally renowned guest speakers:

- Monday, August 26, 2002**      New Drug Discovery Initiatives for Therapy of Type 2 Diabetes and Metabolic Syndrome  
**Dr. David E. Moller**  
Executive Director, Metabolic Disorders  
Merck Research Laboratories  
Rahway, New Jersey
- Wednesday, October 23, 2002**      Diet-Induced Diabetes in the Psammomys Obesus: A Problem of Beta-Cell Mass or Function?  
**Dr. Nurit Kaiser**  
Associate Professor of Experimental Endocrinology  
Endocrinology and Metabolism Service  
Department of Medicine and The Hadassah Diabetes Center  
Hadassah University Hospital  
Jerusalem, Israel

## 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. (See page 20 for more information on diabetes investigators associated with the BBDC.) 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 or the Special Seminars described on the previous pages, this seminar series is only attended by the seven BBDC investigators and their trainees. Below is the 2002-2003 T.G.R.I. Diabetes Investigator Seminar Series schedule.

- |                                 |   |
|---------------------------------|---|
| <b>Friday, October 4, 2002</b>  | Dr. Daniel Drucker hosting              |
| <b>Friday, November 1, 2002</b> | Dr. George Fantus hosting               |
| <b>Friday, December 6, 2002</b> | Dr. Tianru Jin hosting                  |
| <b>January 2003</b>             | <b>No seminar</b>                       |
| <b>Friday, February 7, 2003</b> | Dr. Harry Elsholtz hosting              |
| <b>Friday, March 7, 2003</b>    | Dr. Denny Trinh hosting                 |
| <b>Friday, April 4, 2003</b>    | Dr. Gary Lewis hosting <b>CANCELLED</b> |
| <b>Friday, May 2, 2003</b>      | Dr. David Irwin hosting                 |

## 14<sup>th</sup> ANNUAL SCIENTIFIC DAY 2003 / BBDC 25<sup>th</sup> ANNIVERSARY CELEBRATION (MAY 9, 2003)

The Annual Scientific Day is designed to provide a forum for BBDC members with diverse interests, to facilitate scientific interchange, and to assist in the development of collaborative diabetes-related research activities. All BBDC postdoctoral fellows, BBDC graduate studentship recipients, and winners of the BBDC/Toronto Diabetes Association Abstract Competition present posters of their work at this event. 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. Normally, the BBDC invites one internationally recognized scientist to present the keynote address. However, the year 2003 was special in that it marked the **BBDC's 25<sup>th</sup> Anniversary**. To celebrate this special occasion, the BBDC organized a full day of lectures featuring four internationally renowned guest faculty and two University of Toronto faculty, equally renowned for their work in diabetes research.

This year, the Annual Scientific Day was held on **Friday, May 9, 2003, from 8:30 a.m. to 4 p.m. at Vaughan Estate** located at The Estates of Sunnybrook. We gratefully acknowledge partial support of this event by Eli Lilly Canada Inc., GlaxoSmithKline, LifeScan Canada, Merck/Schering-Plough Pharmaceuticals, Novo Nordisk Canada Inc., and TheraSense. The program was as follows:

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### 8:30 A.M. CONTINENTAL BREAKFAST

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Chair: Dr. Patricia Brubaker

**9:00** Lineage Tracing Studies of Transcription Factors in Pancreas Development  
**Christopher V. E. Wright**, PhD  
Professor, Cell and Developmental Biology Department  
Director, Vanderbilt Developmental Biology Program  
Vanderbilt University Medical Center

**10:00** Emerging New Therapies for the Management of Diabetes  
**Bernard Zinman**, MD, FRCPC  
Professor, Department of Medicine, University of Toronto  
Director, Leadership Sinai Centre for Diabetes, Mount Sinai Hospital  
Sam and Judy Pencer Family Chair in Diabetes

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### 10:30 COFFEE BREAK

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Chair: Dr. Minna Woo

**11:00** Islet Transplantation: Bench to Bedside – to Standard of Care  
**Ray V. Rajotte**, PhD, FRCPC  
Professor, Departments of Surgery and Medicine, University of Alberta  
Director, Surgical-Medical Research Institute  
Director, Islet Transplantation Group

**12:00 P.M.** **Director's Report**  
Daniel J. Drucker, MD, FRCPC  
Director, Banting and Best Diabetes Centre

**12:10** **Student Awards Presentation:**  
**BBDC-Toronto Diabetes Association Annual Trainee Awards Competition**  
Burton Knight, MD  
President, Toronto Diabetes Association

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**12:15 LUNCH AND POSTER PRESENTATIONS**

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Chair: Dr. George Fantus

- 1:15** The Relative Contributions of Insulin Resistance and  $\beta$  Cell Dysfunction in Type 2 Diabetes  
**Steven E. Kahn**, MB, ChB  
Professor of Medicine, Division of Metabolism, Endocrinology and Nutrition  
University of Washington  
Director of Research and Development, VA Puget Sound Health Care System
- 2:15** Regulation of Glucose Transporters: They move, they sort, they score!  
**Amira Klip**, PhD  
Senior Scientist, Hospital For Sick Children  
Departments of Paediatrics, Biochemistry and Physiology, University of Toronto
- 2:45** Molecular Mechanisms Underlying the Adverse Effects of Hyperglycemia on Diabetic Complications  
**George L. King**, MD  
Professor of Medicine, Harvard Medical School  
Research Director, Senior Vice President, Joslin Diabetes Center

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**3:45 EVALUATION AND ADJOURNMENT**

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### **DIABETES UPDATE 2003**

Diabetes Update is a bi-annual continuing education event which is attended by hundreds of health care professionals split almost evenly between physicians, nurses, dietitians and pharmacists from across Ontario and beyond. The program usually includes members of the University of Toronto faculty as well as internationally renowned guest faculty. The BBDC held **DIABETES UPDATE 2003** at the Metro Toronto Convention Centre on **Wednesday, March 26, 2003**. The full-day event focused primarily on the prevention of diabetes and its complications particularly cardiovascular disease, nephropathy and retinopathy. Just over 700 health care professionals attended, making this one of the best attended Diabetes Update.

We gratefully acknowledge partial support of this event by Abbott Laboratories (MediSense, Ross & PPD Divisions); AstraZeneca Canada Inc.; Aventis Pharma; Disetronic Medical Systems Inc.; Eli Lilly Canada; Fournier Pharma; GlaxoSmithKline; LifeScan (a Johnson & Johnson Company); Merck Frosst Canada Ltd.; Novo Nordisk Canada Inc.; Pfizer Canada Inc.; Roche Pharma and Roche Diagnostics; and TheraSense Canada Inc. The program was as follows:

#### **PREVENTING DIABETES AND ITS COMPLICATIONS – HOW TO MAKE IT HAPPEN**

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**7:45 AM Registration & Continental Breakfast**

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- 8:25** Welcome **Dr. Daniel Drucker**, Director, Banting and Best Diabetes Centre
- 8:30** Learning Objectives **Dr. Jacqueline James**, Course Director

8:35	<b>Lecture 1</b> Chair: J. James	Can Type 2 diabetes mellitus be prevented? <b>Dr. Hertzel Gerstein</b> Professor, Faculty of Medicine Director, Division of Endocrinology & Metabolism, McMaster University
9:25	<b>Lecture 2</b> Chair: J. James	Weight loss and physical activity in the management and prevention of type 2 diabetes. <b>Dr. Jean-Pierre Després</b> Chair, Professor of Human Nutrition Director of Research, Cardiology, Laval Hospital Research Center
10:15	<b>Coffee Break</b>	
10:45	<b>Workshop 1</b> Chair: M. Beckstead	How do we prevent hypoglycemia? When low is too low. <b>Ms. Helen Jones</b> Clinical Nurse Specialist/Manager, Leadership Sinai Centre for Diabetes Mount Sinai Hospital
	<b>Workshop 2</b> Chair: L. MacCallum	Is there a role for the use of herbal therapies in diabetes prevention and treatment? <b>Dr. Heather Boon</b> Assistant Professor, Faculty of Pharmacy, University of Toronto
	<b>Workshop 3</b> Chair: M. De Melo	Prediction and prevention of Type 1 diabetes. <b>Dr. Diane Wherrett</b> Assistant Professor, Department of Paediatrics, Faculty of Medicine Hospital For Sick Children
12:15 PM	<b>Lunch</b>	
1:15	<b>Lecture 3</b> Chair: C. Lawton	The prevention of cardiovascular disease. How low should we go? <b>Dr. Lawrence Leiter</b> Professor, Departments of Medicine and Nutritional Sciences Chief, Division of Endocrinology and Metabolism, Faculty of Medicine St. Michael's Hospital
2:05	<b>Lecture 4</b> Chair: C. Lawton	The prevention and treatment of nephropathy. How low should we go? <b>Dr. David Mendelsohn</b> Associate Professor, Department of Medicine Head, Division of Nephrology, Faculty of Medicine Medical Director of Dialysis, Humber River Regional Hospital
2:55	<b>Refreshment Break</b>	
3:25	<b>Workshop 4</b> Chair: G. Booth	Prevention and treatment of retinopathy – A new view. <b>Dr. Shelley Boyd</b> Assistant Professor, Department of Ophthalmology and Vision Sciences. Faculty of Medicine Clinician Scientist, St. Michael's Hospital

**Workshop 5**

Chair: J. Buccino

Preventing the progression of impaired glucose tolerance to diabetes mellitus.  
What is the diet prescription?

**Ms. Dana Whitham**

Registered Dietitian

St. Michael's Hospital

**Workshop 6**

Chair: K. Perlman

Should we be sending obese children to the lab for a blood sugar test? The diagnosis and treatment of Type 2 diabetes in children.

**Dr. Jill Hamilton**

Assistant Professor, Department of Paediatrics

Faculty of Medicine

Hospital For Sick Children

4:55

**Evaluation & Adjournment**

## LABORATORIES

### CORE LABORATORY

**Director:** Dr. 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](http://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, Dr. Harry Elsholtz, Dr. I. George Fantus, Dr. David Irwin, Dr. Tianru Jin, Dr. Gary Lewis and Dr. Denny Trinh.**

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 (*see page 15, T.G.R.I. Diabetes Investigator Seminar Series*) to review research progress, while participating fully in the spectrum of research activities ongoing at the University of Toronto.

Drs. Daniel Drucker, George Fantus, Tianru Jin, Gary Lewis and Denny Trinh hold their primary appointment in the Department of Medicine; and Drs. Harry Elsholtz and David Irwin who hold their primary appointment in the Department of Laboratory Medicine and Pathobiology.

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, Jin and Trinh)
- Biology of the glucagon-like peptides (Drs. Drucker and Irwin)
- Studying the metabolic control of glucose regulation using gene transfer techniques and metabolic engineering to manipulate metabolic pathways in peripheral tissues essential for insulin action and glucose disposal (Dr. Trinh)

## PUBLICATIONS

### APPROACH TO THE MANAGEMENT OF DIABETES MELLITUS (Fifth Edition)

This 68-page document is a guide to the current concepts and management strategies practiced by health care professionals at the University of Toronto and its affiliated teaching hospitals in the care of individuals with diabetes. It is meant to provide practical information to help medical students, residents, physicians, diabetes educators and other health care professional in the management of individuals with diabetes. The BBDC would like to thank those who contributed to the production of this publication. The entire document (in PDF format) or individual chapters can be downloaded from the BBDC's website, [www.bbdc.org](http://www.bbdc.org). See the "Diabetes Information" section.

### BBDC NEWSLETTER

The Banting and Best Diabetes Centre distributes a quarterly newsletter, **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.

### WEBSITE [www.bbdc.org](http://www.bbdc.org)

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

New to the website:

- The BBDC has added a subsection within its *Research at the University* section entitled, **2002 RESEARCH HIGHLIGHTS**. This new section, which will be updated annually, was added to facilitate increased public awareness of the many exciting diabetes-related research developments that occur each year at the University of Toronto, starting with the year 2002. The site is intended to provide information for the general public and will describe, in lay language, one or two highlights of diabetes research carried out by University of Toronto faculty members, published during the 2002 calendar year. Links to their publications are provided.
- The fifth edition of the **APPROACH TO THE MANAGEMENT OF DIABETES MELLITUS** (see above) has been included in the *Diabetes Information* section of the BBDC's website.

## 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 Marion Hamilton  
The Estate of Miriam Neveren  
The Estate of Dr. & Mrs. E. A. Sellers  
The Estate of Mary E. Sharp  
The Estate of Archie Sopman  
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University of Toronto, Faculty of Medicine

*\* July 1, 2002 to June 30, 2003*