

Vice-President (Research) & Office of Research Services Annual Report 2007-2008

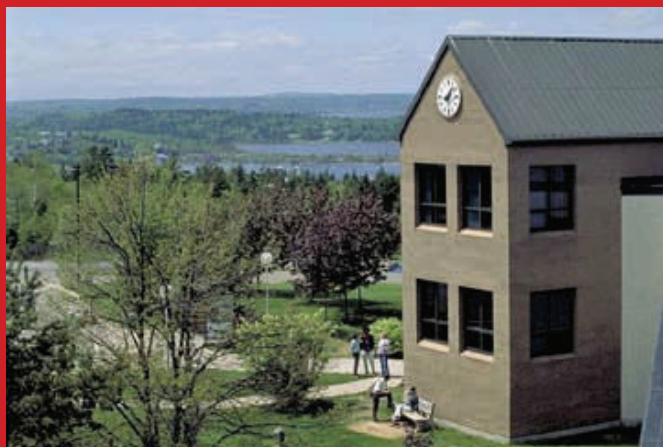




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Highlights from the year in research...

- Research revenue remains above \$50 million mark
- Research revenues at UNB grew by 76.5% from 2003 to 2007—the largest increase of all Canadian comprehensive universities.
- UNB researchers receive one of nine Knowledge Impact in Society (KIS) grants awarded by SSHRC.
- Karen Kidd makes Discover magazine's 100 top science stories for 2007.
- Nicole Letourneau is one of Canada's top 40 under 40.

Message from the Vice-President

UNB researchers had another good year in 2007-08. We maintained our \$50 million+ achievement of the previous year and enjoyed modest growth at the same time (about 2%). While this slowing of growth is cause for concern, it should not detract from our remarkable 77% increase of the previous five years, the highest of any Canadian comprehensive university (see chart on page 4).

In 2007-08, we also welcomed our newest Research Centre, the Information Security Centre of Excellence, led by Dr. Ali Ghorbani of the Faculty of Computer Science, in partnership with Q1 Labs.

With the forthcoming opening of the Dalhousie-UNBSJ Medical

Education Program and the construction of a new Saint John Community College Health Education building at Tucker Park, we have considerable opportunity to continue to expand our health research agenda. We have also recently entered into an important partnership with the Atlantic Cancer Research Institute.

Other important developments have occurred in the Energy Research area. Researchers working on both traditional energy sources and on an array of alternatives, including nuclear, solar, wind, biomass, and hydrogen, have enjoyed considerable success in forging important partnerships in New Brunswick and across the country.



*Dr. Gregory S. Kealey
Vice-President (Research)*

While celebrating our success, it is also timely to point out that infrastructure and personnel renewal are crucial to our ongoing research efforts. The recent provincial infrastructure commitments will certainly help, but we need additional space at UNB to allow our research efforts to grow and flourish. We shall work to address these needs as we move forward.



*Dwight Ball
Executive Director (ORS)*

Last year, I stated that partnerships were an important component of UNB's research enterprise if we are to maintain, let alone grow, research activity. This comment stemmed from the challenges we face related to resources, namely, funds, space and people. I am pleased to report that during the past fiscal year, we have made considerable headway in developing new and strengthening existing research

Message from the Executive Director

partnerships. A quick review of the UNB Research Success Stories toward the end of this report will provide you with a few examples. We are seeing many more researchers developing relationships with off-campus organizations and individuals who are seeking solutions at UNB to their problems. Assisting in finding these solutions challenges our researchers and their students, and the relationships are often accompanied by funding and access to off-campus resources such as facilities, data and people.

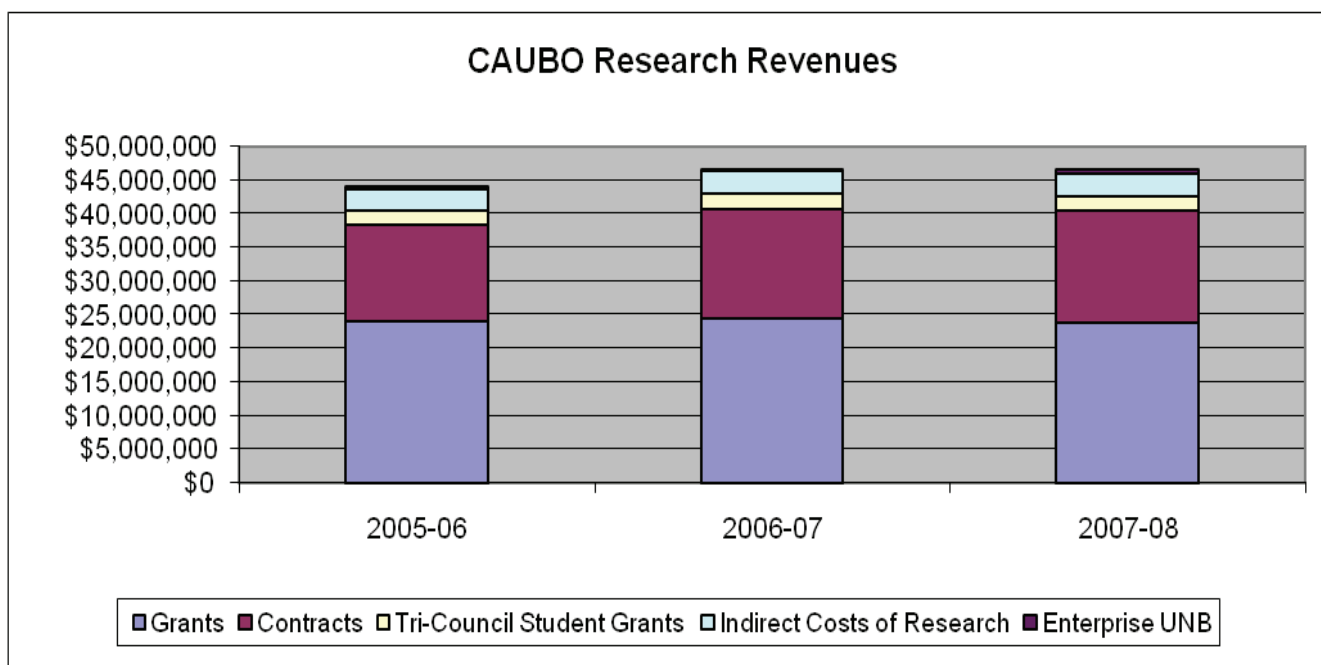
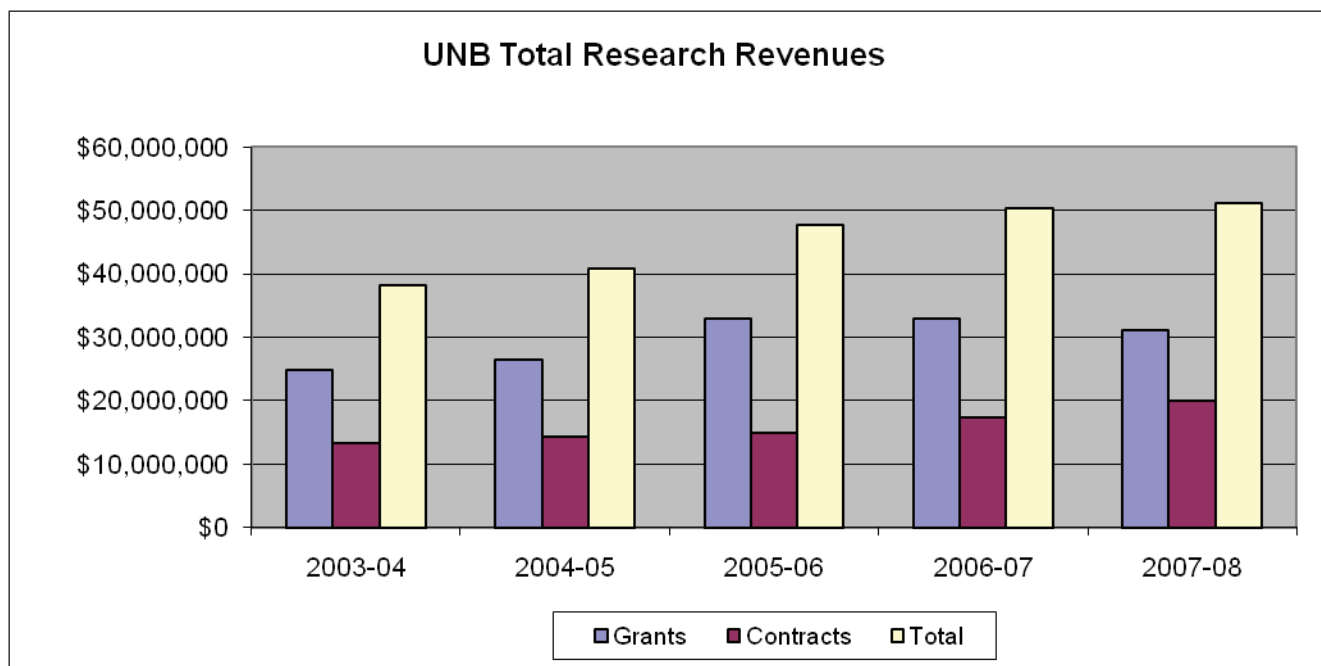
After several years of remarkable growth in the university's research revenues, the 2007-08 fiscal year showed a slower growth at 1.8%. However, the five-year period from 2003 to 2007 was an outstanding period for UNB's

research enterprise. At 77%, our growth in this period outstripped that of our peer group of universities. This obviously required an enormous effort by the entire university community.

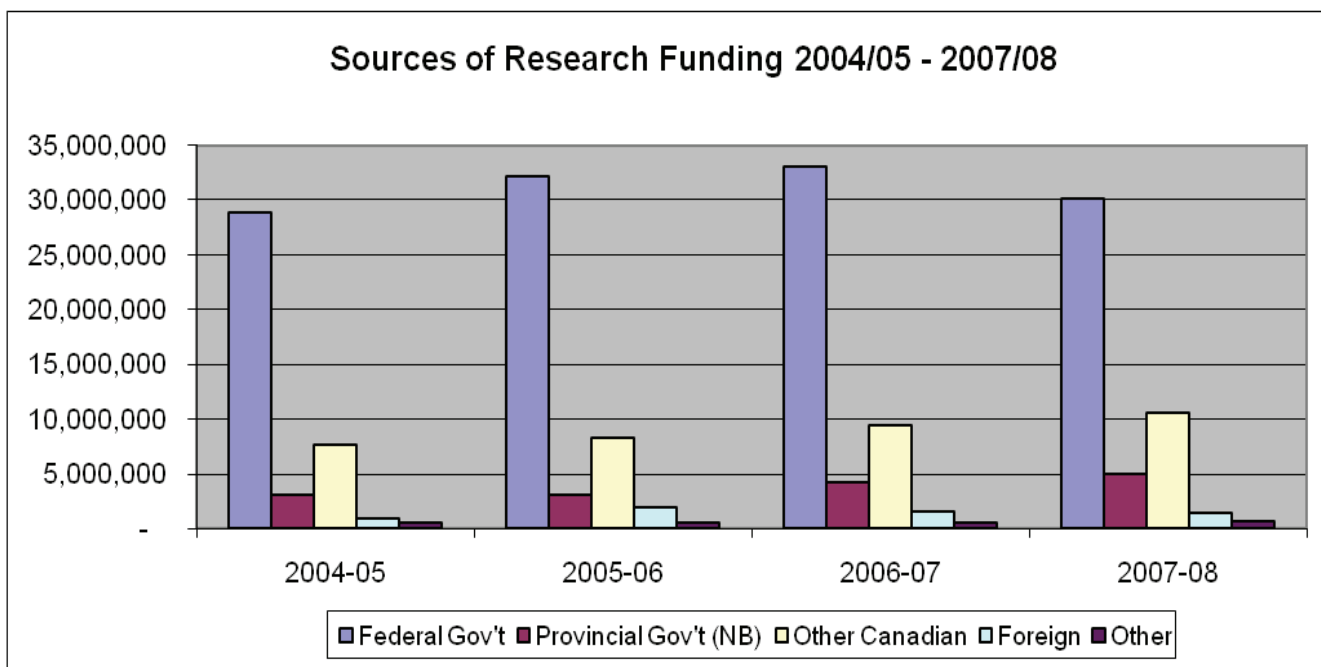
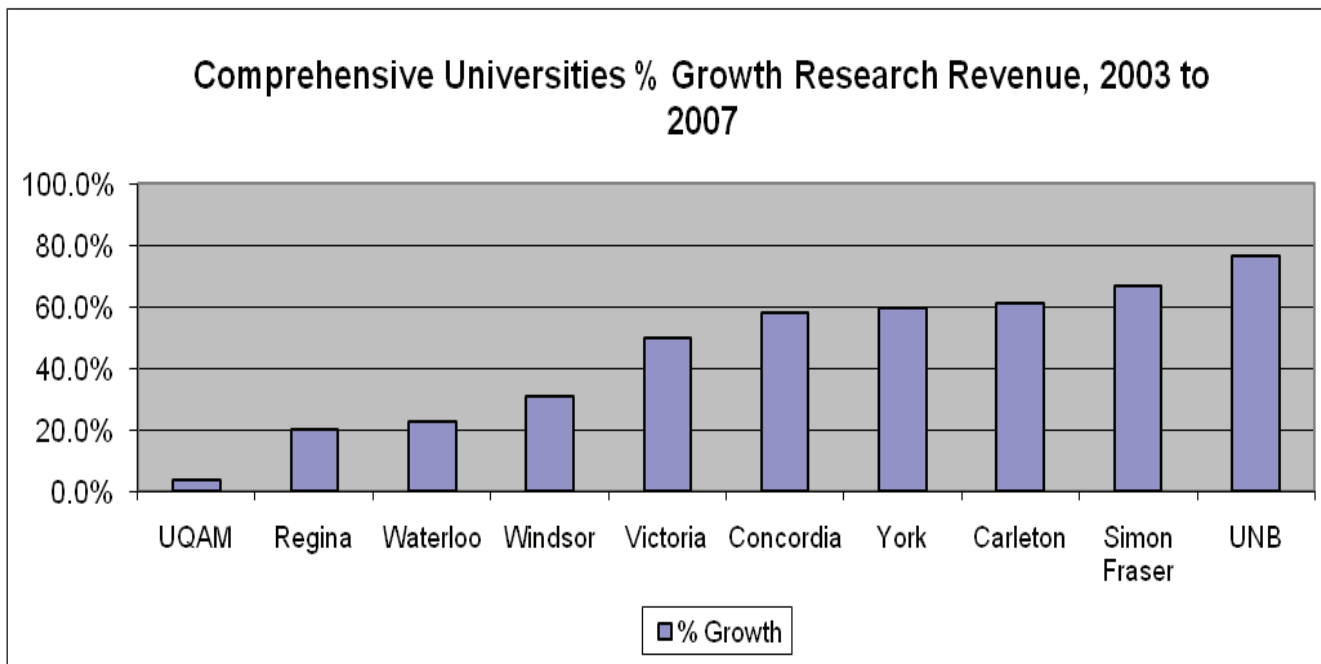
Looking forward, I see many challenges. Since I am writing these words well into the 2008-09 fiscal year, we are all now very aware of the world's financial problems, which are impacting our research partners and will affect their ability to fund research. That said, there is evidence of potential for improvements on the world stage, both politically and in fiscal management. The partnerships established to date and the new ones being developed will stand us in good stead through the current downturn and will form a sound foundation for our future.

Research Revenue

After a banner year at UNB in 2006-07, when research revenue surpassed the \$50-million mark, UNB continued to thrive by bringing in a total of \$51,170,519 in research funding for 2007-08. This represents a 1.8% revenue growth rate from the previous fiscal year. The second graph shows the figures reported to the Canadian Association of University Business Offices (CAUBO), which exclude some categories of research-related funding. As shown in the third graph on page 4, UNB enjoyed the largest increase of all Canadian comprehensive universities in sponsored research, which grew by 76.5% over the five-year period ending April 30, 2007. The last graph on page 4 indicates the various sources of UNB's research funding. Of note is the steady increase in the "Other Canadian" category.

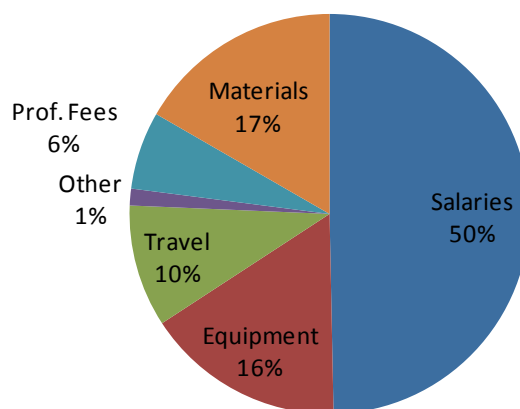


Research Revenue (continued)



Research Expenditures

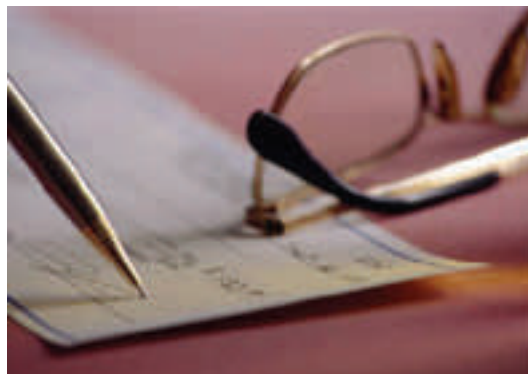
The majority of the research funding received by UNB goes back into the New Brunswick economy through salaries. Just under \$22 million was spent on student and non-student salaries in 2007-08. Materials were the next largest expenditure category at \$7.4 million, followed by equipment at \$7.1 million, travel at \$4.4 million, professional fees at \$2.8 million, and other expenses at \$0.6 million.



NOTE: All research revenues eventually flow back out as expenses. Due to the timing of different accounting tasks, however, total research expenditures will not equal total research revenues for the fiscal year.

Indirect Costs of Research

The Indirect Costs of Research program provides funding for research facilities, resources, management and administration, regulatory requirements, and accreditation and intellectual property management. The amount UNB receives from this program is contingent on our level of tri-council funding. The university's allocation for 2007-08 was \$3,370,547, and the allocation for the coming year is \$3,470,330.



Tri-Council Funding

Funding from the Natural Sciences and Engineering Research Council (NSERC), the Social Sciences and Humanities Research Council (SSHRC) and the Canadian Institutes of Health Research (CIHR) continues to drive fundamental and applied research at UNB, with funding in 2007-08 remaining at healthy levels for all three councils. In 2007-08, NSERC supported 237 projects led by UNB faculty members, SSHRC supported 31 projects, and CIHR supported 11 projects. The total of tri-council awards are used to determine the level of funding UNB receives from the Indirect Costs of Research program as well as UNB's allocation for the Canada

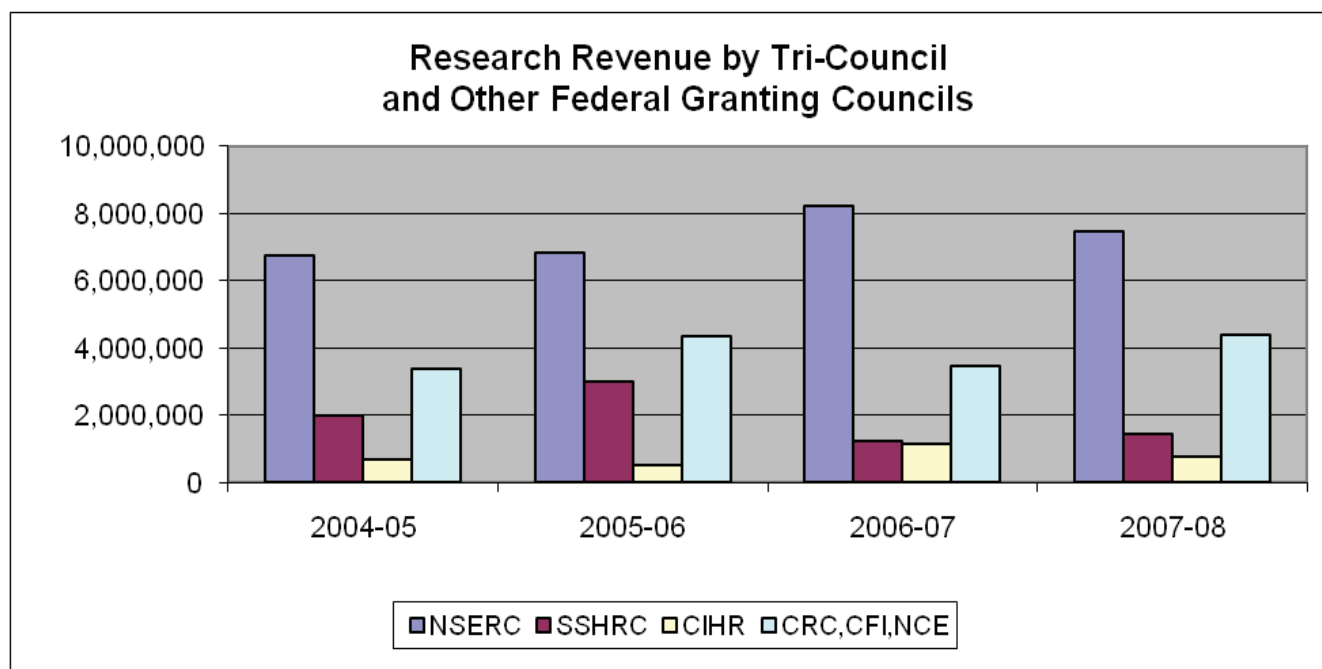
Research Chair program.

In April 2008, SSHRC announced that Robert MacKinnon and Nancy Mathis had been awarded a Knowledge Impact in Society (KIS) Grant for their proposal "Business development through community development." This grant provides funding at \$300,000 over three years, bringing together academics and community groups, transferring research findings to community action.

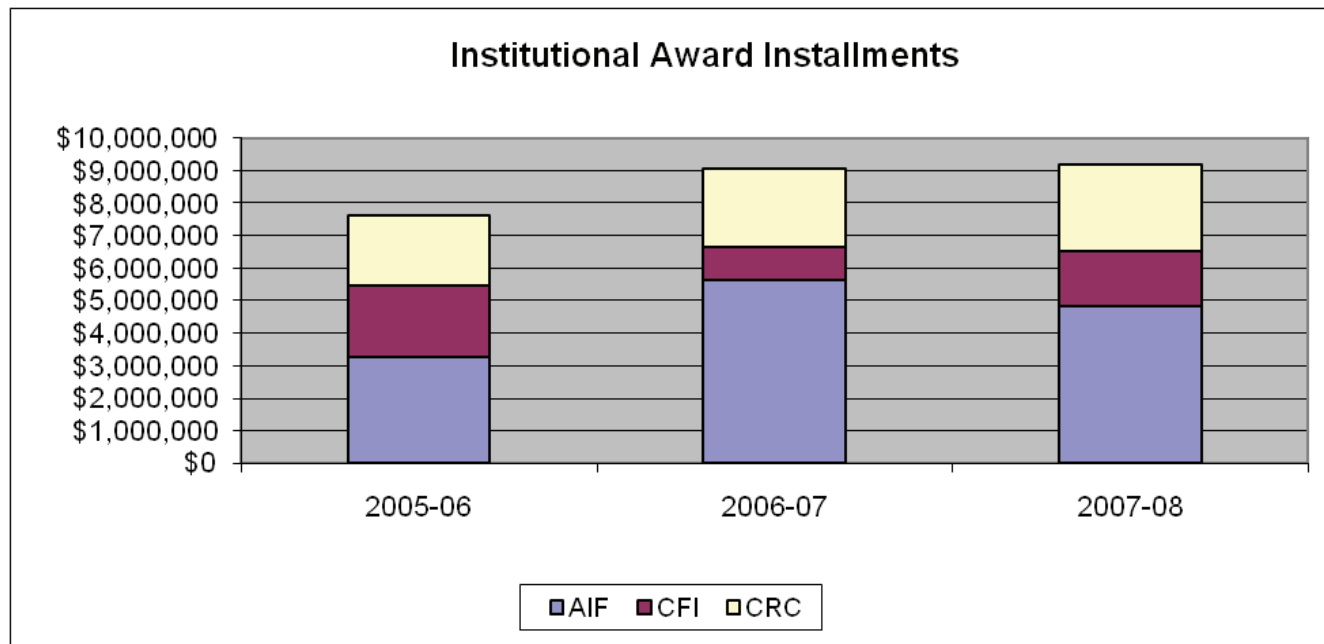
Researchers from the Faculty of Nursing were successful in obtaining two new CIHR Operating Grants in March 2008 for a total of \$188,000.

One is a multi-site study involving the partners of women with postpartum depression, and the other is a study to identify recommendations for changes in programming, practices and policies that will reduce the likelihood of non-attendance by Aboriginal patients in diabetes clinics.

In fiscal 2007-08, researchers at UNB were successful in receiving NSERC funding for 46 new research projects totalling \$1,174,000. Of note was the success of researchers in both the Strategic Grants Regular and Special competitions, where four researchers were awarded a total of more than \$1.2 million.



Institutional Funding



Atlantic Innovation Fund (AIF)

UNB's success with the Atlantic Innovation Fund continued with the announcement of Round 5 project approvals in January 2008. Two UNB-led projects were approved. Dr. Bruce Balcom (Physics) was awarded \$2.1 million towards a \$3.7-million project to develop the next generation of magnetic resonance measurements for petroleum reservoir core analysis. Dr. Ying Zhang (Chemical Engineering) was awarded \$1.3 million towards her \$2.3-million project to develop innovative technologies for production of ultraclean diesel fuel. As

well, UNB researchers will realize further funding of \$ 3.5 million from five Round 5 AIF through collaboration on projects led by companies or other institutions.

Canada Foundation for Innovation (CFI)

UNB continued its positive growth trend in Canada Foundation for Innovation funding as six newly approved projects were awarded a total of \$762,000 during the 2007-08 fiscal year. UNB researchers are leading 42 active CFI infrastructure projects involving \$6.8 million from CFI and \$9.7 million from matching sources.



Institutional Funding (continued)

Canada Research Chairs (CRC)

UNB received almost \$2.7 million for the 17 active Canada Research Chairs in 2007-08. Due to the loss of one Tier 1 NSERC Chair equivalent in UNB's allocation, it was decided that two existing Tier 2 Chairs would not be renewed at the end of their first terms. Three new nominations were submitted, of which two were approved. Unfortunately, one of these subsequently declined the Chair due to concerns over the implications of the provincial PSE report for the Saint John campus. On May 1, 2008, Dr. Yun Zhang of the Geodesy and Geomatics Department became UNB's newest CRC when his application for the Tier 2 Chair in Advanced Geomatics Image Processing was approved. As well, Dr. Rick Cunjak and Dr. Kelly Munkittrick were successful in the renewal of their Tier 1 Chairs for a second seven-year term.

UNB's current CRC contingent:

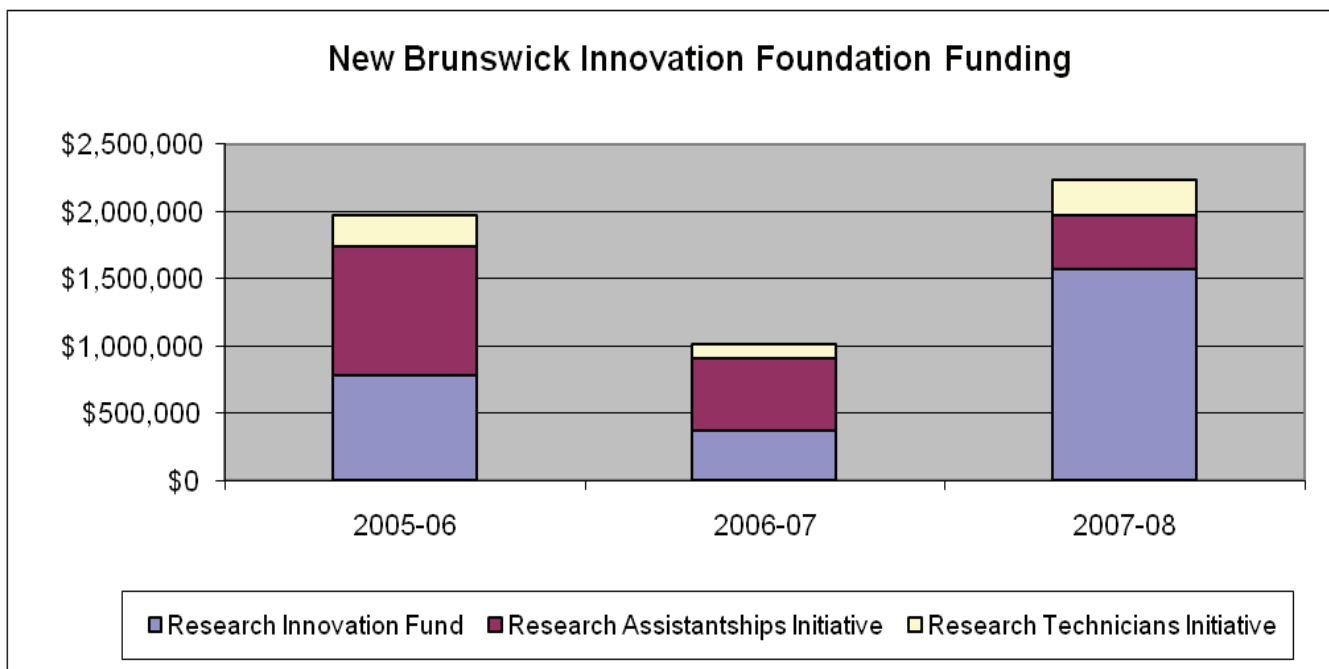
	Name	Department/ Faculty	CRC in...	Tier	Renewal date
1	Bruce Balcom	Physics	Materials Science MRI	1	2009
2	Margaret Conrad	History	Atlantic Canada Studies	1	N/A
3	Rick Cunjak	Biology (F)	River Ecosystem Science	1	2015
4	Karen Kidd	Biology (SJ)	Chemical Contamination of Food Webs	2	2009
5	Peter Kyberd	Elec. & Computer Eng.	Rehabilitation Cybernetics	2	N/A
6	Nicole Letourneau	Nursing	Healthy Child Development	2	2012
7	Kerry MacQuarrie	Civil Eng.	Groundwater-Surface Water Interaction	2	2013
8	Kelly Munkittrick	Biology (SJ)	Ecosystem Health Assessment	1	2015
9	Yonghao Ni	Chem./Chem. Eng.	Pulp and Paper Science and Engineering	1	2009
10	Lucia O'Sullivan	Psychology	Adolescent Sexual Health Behaviour	2	2011
11	Barbara Paterson	Nursing	Chronic Illness	1	2011
12	Om Rajora	Forestry & Env. Mgmt.	Forest and Conservation Genomics and Biotechnology	1	2012
13	Gary Saunders	Biology (F)	Molecular Systematics and Biodiversity	2	N/A
14	John Spray	Geology	Planetary Materials	1	2013
15	Mihaela Ulieru	Computer Science	Adaptive Information Infrastructures for the e-Society	2	2010
16	Douglas Willms	Education	Human Development	1	2009
17	Yun Zhang	Geodesy & Geomatics Eng.	Advanced Geomatics Image Processing	2	2013

New Brunswick Innovation Foundation

UNB funding from the New Brunswick Innovation Foundation for fiscal year 2007-08 rebounded significantly from 2006-07. UNB continued to enjoy a high success rate for applications to the NBIF's Research Innovation Fund (RIF) between April 2007 and March 2008. NBIF funded three start-up grants, three seed grants for tri-council applicants, two emerging project grants, one innovation capacity development grant, four grants for CFI matching and two grants for CIHR Regional Partnerships Program matching, all of which have leveraged substantial federal

funding.

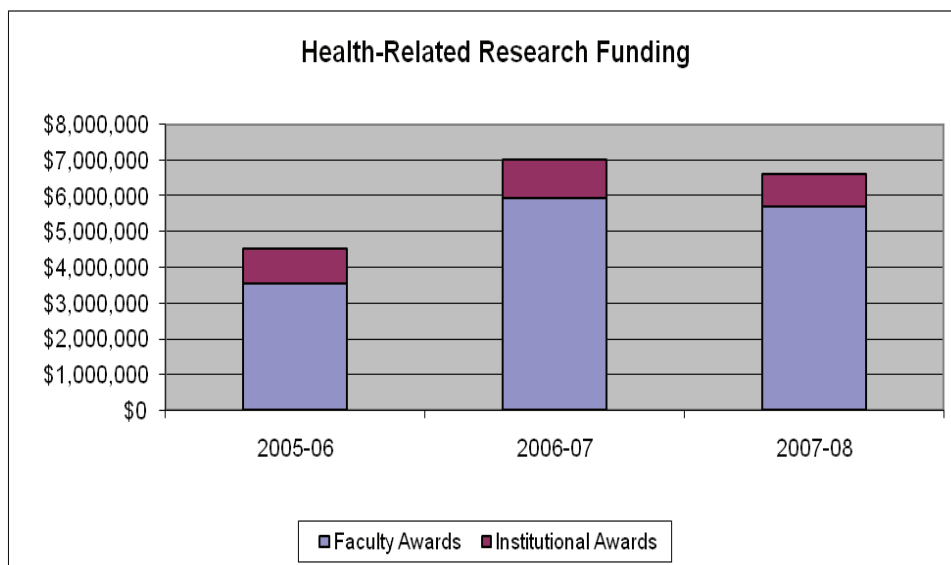
UNB was again pleased with the results for the Research Technicians Initiative (RTI) and Research Assistantship Initiative (RAI) programs. UNB researchers received nine RTI grants, which provide partial funding for technical and laboratory personnel, and 46 RAI grants, which provide research assistantships to students working with researchers dealing with innovation activities in the strategic industries identified by the NBIF.



Health Research at UNB

Health-related research dipped slightly (-5.7%) to \$6.6 million in 2007-08. UNB researchers were again successful with the Canadian Institutes of Health Research (CIHR), with three new Operating Grants as well as two new Regional Partnerships Program (RPP) awards.

UNB researchers were also successful in obtaining funding through the Alzheimer Society and March of Dimes. Contract research with various federal and provincial government departments generated approximately \$2.8 million in health-related research revenues.



Intellectual Property Management, Technology and Knowledge Transfer

The Industry-Government Services (IGS) division of the Office of Research Services connects business to researchers and guides research to market. In 2007-08, IGS:

- Obtained four \$10,000 patent awards and five \$20,000 proof-of-concept project awards from Springboard Atlantic Inc. to assist in moving technologies through the commercialization process.
- Entered into seven technology transfer agreements.
- Provided services to Université de Moncton and Mount Allison University, including reviewing and drafting agreements and developing the direction of a NB university industry liaison program.
- In cooperation with ACOA, Business New Brunswick, Université de Moncton, the New Brunswick Community College, Mount Allison University, Enterprise Saint John, the Atlantica Centre for Energy, Petroleum Research Atlantic Canada, and NSERC-Atlantic, hosted *Jumpstart: From Research to Commercialization in the Energy Sector*, a research and commercialization event. The session provided researchers from across the province with an opportunity to showcase research and technologies applicable to the Energy Sector.
- Was awarded \$1.54 million in tri-council IPM Group funding, three NSERC I2I Phase 1 grants and one Phase 2 grant, and two AUTM Better World Projects.

Technology and Knowledge Transfer			
	2005-06	2006-07	2007-08
Disclosures	21	21	17
Originating Patents Filed	20	19	22
Total Applications Pending	16	21	21
License Agreements	8	16	8
Gross Revenue Received	\$204,813	\$303,701	\$269,107

Research Ranking

The Research Ranking exercise, completed on a biannual basis, has become an important tool that assists the Office of the Vice-President (Research) in measuring research output of faculties at the University of New Brunswick. This exercise exists in the form of an electronic questionnaire that is completed by each person with the designations of Professor, Associate Professor, Assistant Professor, Adjunct Professor, Honorary Research Professor, Post Doctoral Fellow, Research Associate and Senior Research Associate. Once the data is collected, a committee is formed to review the submissions per academic unit and give a ranking of 1 through 10 to each faculty or department based on their

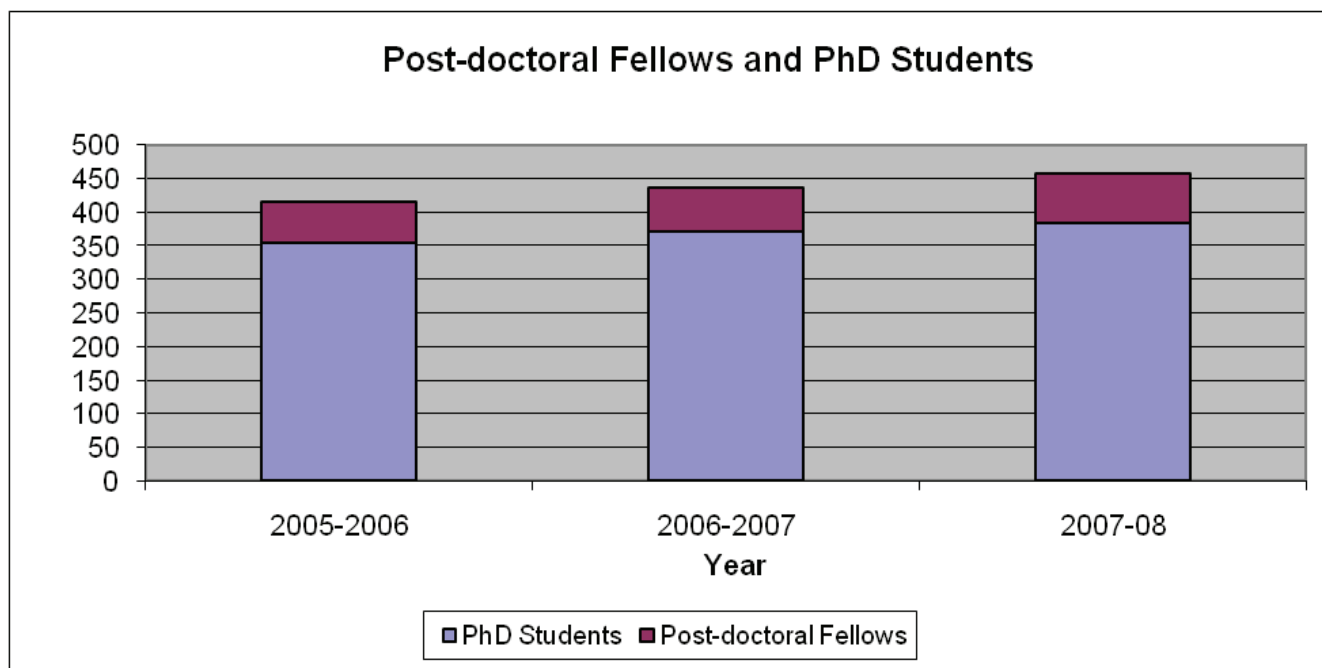
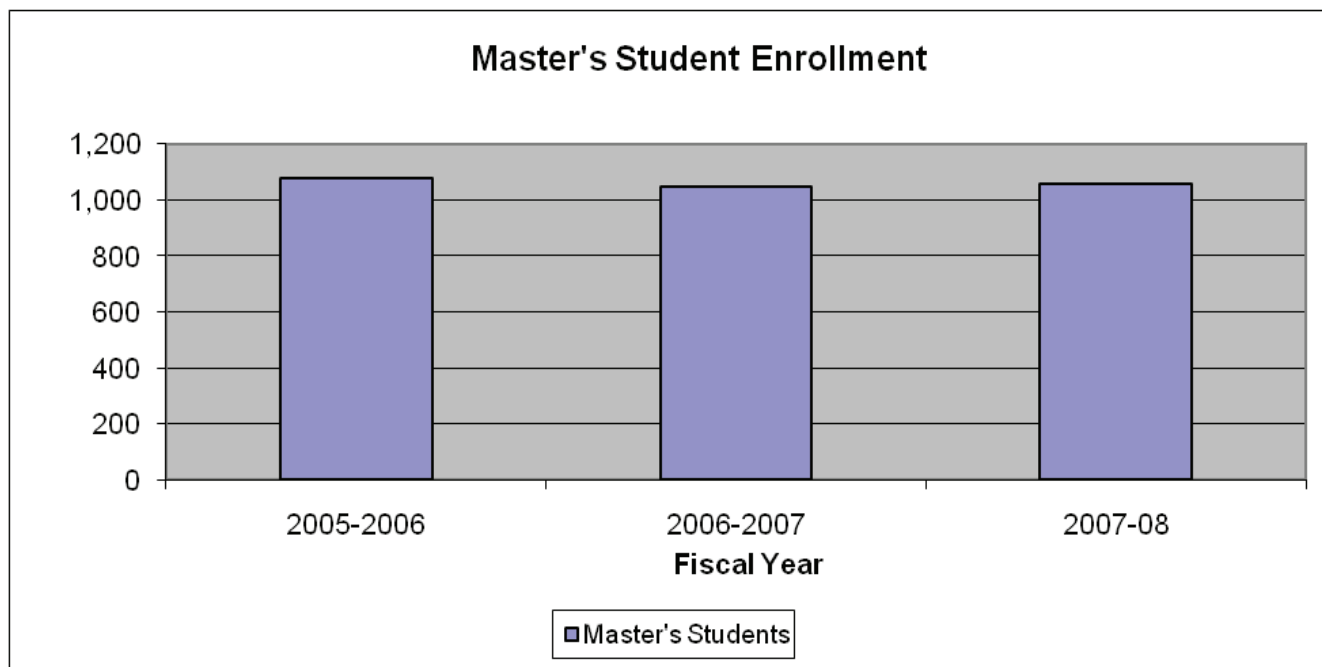
submission. A ranking of 1 signifies research excellence, while a ranking of 10 signifies extremely low research performance.

The Research Ranking results for the period of July 1, 2005, to June 30, 2007, were finalized in December 2007. The online portal for the next ranking period was made available as of February 2008 to allow faculty members to update their responses on a regular basis. Historical comparisons of department and faculty rankings from 2001-03 to 2005-07 are presented here.

Saint John Campus							
Department/Faculty	Final Ranking			Department/Faculty	Final Ranking		
	2001-03	2003-05	2005-07		2001-03	2003-05	2005-07
Biology	1	1	1	Mathematical Sciences	5	5	3
Business	7	6	6	Nursing	7	7	6
Computer Science & Applied Statistics	2	2	2	Physical Sciences	5	5	6
Engineering	4	5	5	Psychology	5	5	5
History & Politics	4	4	4	Social Sciences	5	5	6
Humanities & Languages	5	5	5				
Fredericton Campus							
Department/Faculty	Final Ranking			Department/Faculty	Final Ranking		
	2001-03	2003-05	2005-07		2001-03	2003-05	2005-07
Administration	5	4	4	French	5	6	5
Anthropology	4	5	5	Geodesy & Geomatics Eng.	1	1	1
Biology	2	2	1	Geology	1	1	1
Chemical Eng.	1	2	1	History	1	1	1
Chemistry	1	1	1	Kinesiology	4	4	4
Civil Eng.	2	2	2	Law	4	5	4
Classics & Ancient History	7	8	7	Mathematics & Statistics	5	4	3
Computer Science	2	2	3	Mechanical Eng.	1	1	1
Culture and Language Studies	7	10	6	Nursing	5	4	4
Economics	5	4	5	Philosophy	6	7	6
Education	4	4	3	Physics	3	2	1
Electrical & Computer Eng.	3	2	2	Political Science	5	3	3
English	2	2	2	Psychology	3	3	2
Forestry & Env. Mgmt.	2	1	1	Sociology	5	3	4

School of Graduate Studies

Master's student enrolment remained steady in 2007-08. From 2006-07 to 2007-08, the number of PhD student grew from 371 to 385, and the number of post-doctoral fellows employed at UNB grew from 65 to 72.



VP (Research) Representation

The VP (Research) holds the following positions on and off campus as part of the office mandate:

President:

- Fredericton Knowledge Park

Chairperson:

- Board of Directors, Enterprise UNB
- Board of Directors, Institute of Biomedical Engineering
- Board of Directors, Canadian Rivers Institute
- Board of Directors, Canadian Research Institute for Social Policy
- Standing Committee on Research Support, SSHRC

Member:

- Board of Directors, Muriel McQueen Ferguson Centre for Family Violence Research
- Board of Directors, Kings Landing
- Board of Directors, New Brunswick Research and Productivity Council
- Board of Directors, BioAtlantech
- University Advisory Committee, Industry Canada
- Board of Directors, Canadian Council on Social Development
- Board of Directors, Huntsman Marine Science Centre
- Board of Directors, International Aquaculture Innovation Centre

(Memberships continued...)

- Board of Directors, Populomix Cancer Research Institute
- Advisory Board, Canadian Research Knowledge Network
- Board of Directors, SSHRC
- Executive Committee, SSHRC
- Advisory Board of National Research Council Institute of Information Technology

In addition, the VP (Research) holds several positions related to his academic interests:

- Secretary, Academy of Humanities, Royal Society of Canada
- Chair, New Fellows Committee, Division 1, Academy I, Royal Society of Canada
- Treasurer, Canadian Committee on Labour History
- Chair, Publications Committee, Canadian Committee on Labour History
- Treasurer, International Association of Social History
- Editor, Canadian Social History Series, University of Toronto Press
- Member, Editorial Board, *Labour/le Travail*
- Member, Editorial Board, *Acadiensis*
- Member, Advisory Board, *Labour History* (Australia)
- Member, Advisory Board, *Socialist History* (UK)
- Member, H-Canada Editorial Board

Executive Director Representation

The Executive Director of the Office of Research Services represents the Office and/or the University in the following university functions:

- Chair, Biohazards Safety Committee, UNB
- Member, Directors Plus
- Member, Board of Directors, Enterprise UNB
- Member, Board of Directors, Construction Technology Centre Atlantic
- Representative of the VP Research, Board of Directors, Centre for Nuclear Engineering Research
- Representative of the VP Research, Advisory Board, Wood Science and Technology Centre

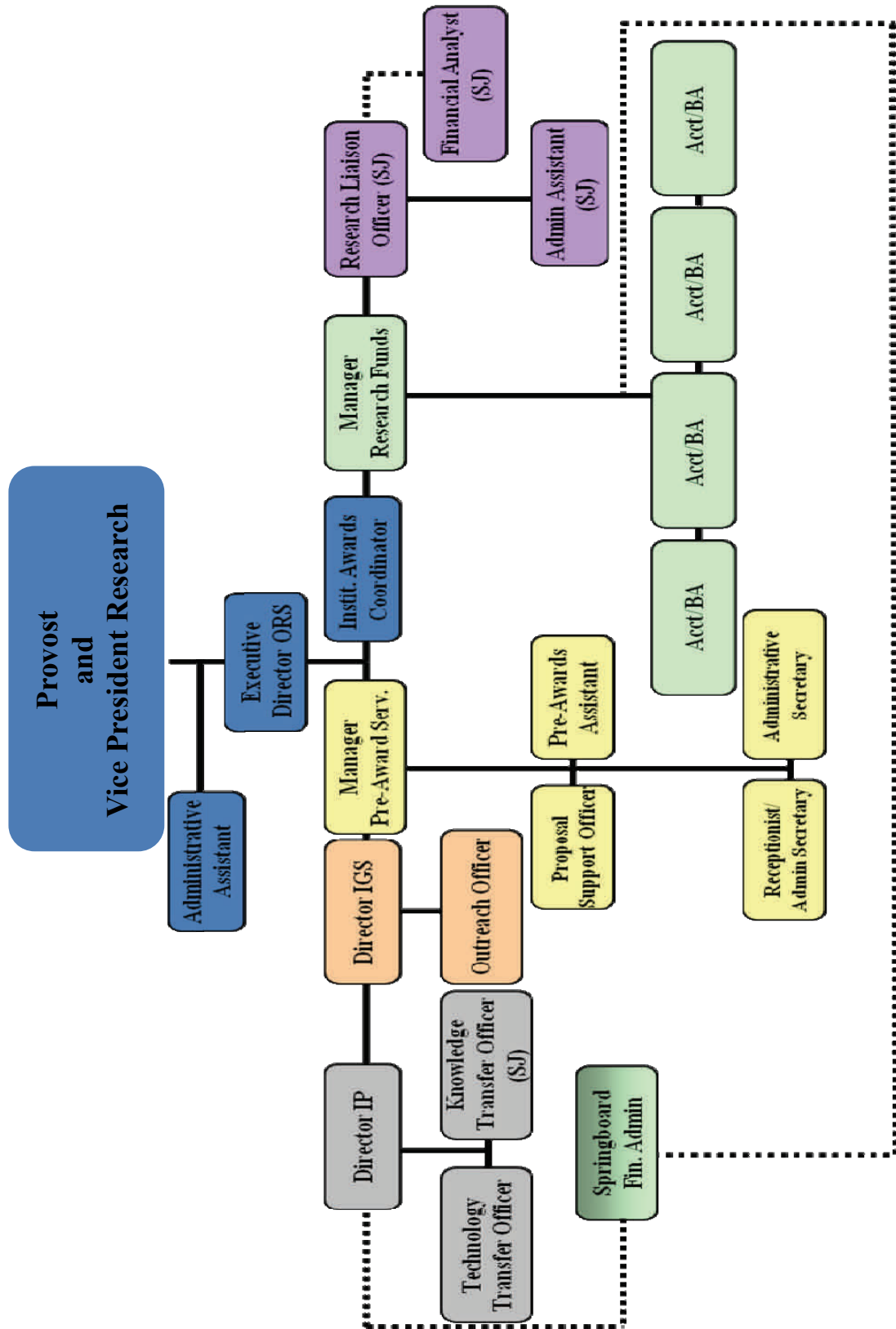
In addition, the Executive Director holds positions related to his professional and personal interests:

- Member, Society of Research Administrators International

- Member, Executive Committee, Canadian Association of University Research Administrators
- Chair, Professional Development Committee, Canadian Association of University Research Administrators
- Member, Admissions Committee, Association of Professional Engineers and Geoscientists of New Brunswick
- Fellow, Canadian Institute of Mining, Metallurgy and Petroleum
- Fellow, Geological Association of Canada
- Member, Association of Professional Engineers & Geoscientists of New Brunswick
- Certified Geologist, State of Maine
- Vice President, New Brunswick Highland Games & Scottish Festival, Inc.

VP (Research)/Office of Research Services Organizational Chart

Organizational Chart



University Research Scholar 2007: Dr. Ali Ghorbani

The award of University Research Scholar is intended for University of New Brunswick researchers who have demonstrated a consistently high level of scholarship, and whose research is, or has the potential to be, of international stature. The award shall honour leading researchers at the University. Recommendations for this award are made by a selection committee and approved by the Board of Governors.



Dr. Ali Ghorbani

*The 2007 awardee for the University Research Scholar was
Dr. Ali Ghorbani, Faculty of Computer Science.*

Dr. Ghorbani has made and continues to make an outstanding contribution to the Faculty of Computer Science in the area of research and dissemination of knowledge. Dr. Ghorbani's research involves the areas of modeling and simulation, particularly in trusted agents and security. He is currently supervising 7 doctoral candidates and 9 Masters students as part of this commitment.

Dr. Ghorbani has published 20 refereed journal papers (10 since 2005) and 73 more publications (25 since 2005) as refereed conference proceedings. Five more papers have recently been submitted to refereed journals. In addition, Ali has been invited to speak at many international venues. His research funding is extremely lucrative. Since 2002, he has been the principal or co-principal investigator in nearly \$5,000,000 worth of research funding, including funds from ACOA's Atlantic Innovation Fund (AIF), and the Natural Sciences and Engineering Research Council of Canada (NSERC).

UNB Research Success Stories in 2007-08

Launch of Film of UNBF Research About Eating Disorders

May 23, 2007

UNB Fredericton News Release: D995

Eating disorders are on the rise with society's emphasis on female thinness as an expression of beauty, success and sexual attraction. When vulnerable women attempt weight loss to improve themselves, they may develop eating disorders.

As many as one in five women in Canada are affected by eating disorders. Eating disorders may jeopardize academic, social and career opportunities.

In addition, eating disorders cause harm to every system in the body including the heart, nerve, brain, bone and kidneys. Young women between the ages of 15 and 24 are more likely to die from eating disorders than from any other cause of death.

Eating disorders can be difficult to treat, leading to the commonly held perception that recovery is rare.

Kate Weaver, faculty of nursing at the University of New Brunswick, identifies in her research that women with eating disorders can totally recover.

"There is a turning point where women begin to see the eating disorder as a problem and accept responsibility for initiating recovery," said Dr. Weaver.

"They learn to take care of themselves and work through both eating and non-eating issues; they develop positive self worth, and gain support from others."

Dr. Weaver's research has been used to produce an educational film that will be launched on Wednesday May 23, 2007, at 7:30 p.m. in the theatre of the Hugh John Flemming Forestry Centre at 1350 Regent Street in Fredericton.

The film, *Through True Eyes, The Process of Recovery from Eating Disorders*, tells the story of three New Brunswick women who courageously share their near death and recovery experiences. They participated in the film with the hope that their stories will

Fact: As many as one in five women in Canada are affected by eating disorders. Eating disorders may jeopardize academic, social and career opportunities.

help others.

The film is aimed at teenage girls and women, families, teachers, guidance counselors, coaches, health care providers and community agencies.

Through True Eyes was produced by Atlantic Mediaworks Ltd, a film and video production company in Fredericton.

The film has been endorsed by The National Eating Disorder Information Centre, the Bulimia Anorexia Nervosa Association, Canada and the Nurses Association of New Brunswick.

Information on the video is available online at www.throughtrueeyes.com.

Information Security Centre of Excellence Celebrates Official Opening

May 14, 2007

UNB Fredericton News Release: D987

The faculty of computer science at the University of New Brunswick in Fredericton celebrated the official opening of the Information Security Center of Excellence (ISCE) on May 14.

Dedicated to information security research, the centre is supported by the Atlantic Canada Opportunities Agency (ACOA) through its Atlantic Innovation Fund, UNB and Q1 Labs.

“We recognize that our ability to compete is linked to our ability to develop products and services and to bring them to new markets,” said Greg Thompson, Minister of Veterans Affairs and Regional Minister for New Brunswick, on behalf of Peter McKay, Minister of Foreign Affairs and Minister for ACOA. “That is why Canada’s new government, through ACOA, invests in innovation, and in the Atlantic Canadian scientists and entrepreneurs

behind the best ideas. This Centre of Excellence will position the province as a leader in network security technology and build R&D capacity in the region.”

Ali Ghorbani, founding director of the centre and assistant dean of computer science, says the official opening of ISCE marks the creation of Canada’s newest – and New Brunswick’s first – centre of excellence in the area of cyber security.

“In this centre, researchers, postdoctoral fellows and graduate students will work on research projects that will advance the current state of threat detection algorithms, attack simulation, correlation techniques, and network application discovery,” said Dr. Ghorbani.

The centre’s research projects will be determined by Dr. Ghorbani and the centre’s industry partner, Q1Labs, a leading network security company that originated at UNB.

“This Centre of Excellence will position the province as a leader in network security technology and build R&D capacity in the region.”

- Greg Thompson, Minister of Veterans Affairs and Regional Minister for New Brunswick

“The University of New Brunswick has been an integral part of Q1 Labs’ success from our earliest days” said Shaun McConnon, CEO of Q1 Labs. “We are thrilled by this opportunity to give back to the university and very excited at the innovation and vision that this research center can deliver to our industry leading network security products.”

The opening ceremony was attended by officials from UNB, Q1Labs, ACOA and the City of Fredericton.

UNB/HSM Systems Research Team Commended by US Department of Energy

June 8, 2007

UNB Fredericton News Release: E003

Research conducted by Sean McGrady at the University of New Brunswick in Fredericton (UNBF) and HSM Systems has been recognized by the U.S. Department of Energy (DOE). They were inducted into the U.S. DOE Center of Excellence for Hydrogen Storage at their annual review in Washington, DC.

"This is an example of how the United States and Canada are supporting their commitment to international collaboration by inducting a non-U.S. institution into the Center of Excellence," said Pat Davis, Acting Program Manager of the U.S. program.

UNB is now a member of the Metal Hydride Center of Excellence, which includes the Savannah River, Oak Ridge, Sandia and Brookhaven national laboratories, and top U.S. universities such as Stanford, Caltech and Carnegie Mellon.

"Dr. McGrady is to be congratulated and UNB is very pleased to be in the company of some of the most prestigious research organizations in North America," said Dwight Ball, Executive Director of Research Services at UNB.

Hydrogen storage is key to the advancement of hydrogen and fuel cell power technologies, which could lead to the creation of a renewable and environmentally friendly automotive fuel.

Dr. McGrady and his collaborators were recognized for developing promising new concepts that could lead to a breakthrough in hydrogen storage. They have successfully managed to make aluminum powder react with hydrogen gas, forming a compound that contains a higher density of hydrogen than is possible

with liquefied or high-pressure forms of the fuel. The hydrogen can be released on demand by heating the resulting compound.

Hydrogen gas is usually stored, under pressure, in large metal composite cylinders, which are heavy and costly to transport and involve complex high pressure refueling requirements. Alternatively, it can be liquefied by cooling to $-250\text{ }^{\circ}\text{C}$, but the technological challenges and energy penalty associated with maintaining a liquid under these conditions are challenging.

Dr. McGrady said the next step in the research is to take this solid material from its present demonstration stage and process it into a powder that could be used for an unlimited number of commercial applications. The powder is lightweight and non-volatile, making it safer to transport.

"The challenge of hydrogen storage is one of the major obstacles to developing a hydrogen economy that will be able to supersede current hydrocarbon energy technologies based on oil, coal and natural gas," said Dr. McGrady. "In addition to transportation, compounds such as this will find applications varying from large-scale power generation to domestic home energy systems."

Dr. McGrady has assembled a world-class research team of eight to work on his hydrogen storage program. This is one of the largest research and development teams focused on hydrogen in Canada, and one of very few in the country dedicated to novel hydrogen storage materials.

A chemistry professor at UNB Fredericton, Dr. McGrady has over 20 years' experience working with reactive hydrogen-containing materials. With nearly 60 publications and several U.S. patents to his credit, he has achieved an international reputation for his

"This is an example of how the United States and Canada are supporting their commitment to international collaboration by inducting a non-U.S. institution into the Center of Excellence."

- Pat Davis, Acting Program Manager of the U.S. Department of Energy Center of Excellence for Hydrogen Storage program

research.

Dr. McGrady earned his doctorate at the University of Oxford in the U.K., and held faculty positions at the Universities of Oxford and London before moving to Canada in 2003. In 2006 he was named a UNB Research Scholar, an award that allows him to concentrate on his research full time.

UNB has a Research and License Agreement with HSM Systems Inc., a New Brunswick-based company dedicated to the development and commercialization of novel technologies and materials for the storage and transportation of hydrogen.

UNB and HSM Systems are collaborating with one of the top hydrogen research groups in the world. Craig Jensen, an inorganic chemist at the University of Hawaii leads the team. Dr. Jensen has won several awards from the U.S. Department of Energy for his work on hydrogen storage, and holds several U.S. patents in the area.

The U.S. Department of Energy works with industry, academia, national laboratories and federal and international agencies on the research and development of a wide range of energy technologies including hydrogen production, delivery, storage and conversion technologies.

UNBF and Fredericton Police Force Partner to Deliver Training on Intimate Partner Violence

June 14, 2007

UNB Fredericton News Release: E006

On June 14, the Muriel McQueen Fergusson Centre for Family Violence Research and the Fredericton Police Force officially launched: Understanding the Impact of Intimate Partner Violence: Helping Police Officers to Better Intervene – a train-the-trainer program.

As a result of this training, police officers in New Brunswick will be better equipped to respond to intimate partner violence calls.

This new and innovative train-the-trainer program on intimate partner violence response is the result of a year-long partnership between the Muriel McQueen Fergusson Centre and the Fredericton Police Force, in collaboration with key community organizations and government agencies.

Carmen Gill, director of the Muriel McQueen Fergusson Centre at the University of New Brunswick in Fredericton, credits the success of the program to the strong partnerships.

“This training program could not have been completed without input from the Fredericton Police Force and community organizations,” said Dr. Gill. “We must also thank the National Crime Prevention Strategy and the Executive Council Office – Women’s Issues Branch of the New Brunswick

government for their financial support.”

Intervening in situations of intimate partner violence is one of the most difficult aspects of policing, and police officers are often the first members of the law enforcement system to be encountered by victims. Successful interventions rely on effective practices.

That is why Fredericton Police Chief Barry McKnight and Deputy Chief Leanne Fitch welcomed this partnership.

“Police response to situations of intimate partner violence requires a unique set of skills and competencies in order for the police to be successful in their intervention,” said Deputy Chief Fitch. “Calls of this nature have the potential to be damaging on many levels, volatile, and in some cases fatal for the victim, as well as the responding officers.

“The Muriel McQueen Fergusson Centre, in partnership with the Fredericton Police Force, has developed this important training to provide police officers with the tools and the knowledge to better intervene in a safe, effective and compassionate way. This training is fully endorsed by our organization and we hope that other agencies across the country will adopt this as a model training guide for their police and civilian employees.”

“The Muriel McQueen Fergusson Centre, in partnership with the Fredericton Police Force, has developed this important training to provide police officers with the tools and the knowledge to better intervene in a safe, effective and compassionate way.”

**- Fredericton Police Deputy Chief
Leanne Fitch**

The training will look at police officer intervention, from receiving a 911 call and charging and assessing the risk of lethal violence to report writing. It will also focus on the impact of the interventions on police officers.

To date, four Fredericton police officers have been trained and are now prepared to deliver training in their agency.

Established in 1992, the Muriel McQueen Fergusson Centre develops and offers targeted educational programs designed to understand and prevent family violence and violence against women. Located on the Fredericton campus of the University of New Brunswick, the strength of the Muriel McQueen Fergusson Centre relies on the collaborations between academic and community members.

Top Nanotechnology Researcher Returns Home

July 9, 2007

UNB Fredericton News Release: E017

The University of New Brunswick has appointed Felipe Chibante as the Richard J. Currie Chair in Nanotechnology in the faculty of engineering.

Dr. Chibante, who grew up in Fredericton, New Brunswick, left in 1981 to pursue studies at McGill University in Montreal and then Rice University in Texas where he is currently a Research Fellow. He is also the founder and president of two nanotech companies based in Houston.

"The creation of an interdisciplinary chair in nanotechnology signals the importance UNB is placing in this field of research," said Dr. Chibante. "I am pleased to be given the opportunity to contribute and support UNB's frontier involvement in the burgeoning nanotechnology community."

Bell Canada and Alcatel-Lucent Canada have joined forces to establish the new Richard J. Currie Chair in Nanotechnology at UNB.

"UNB has a very highly respected faculty of engineering and Dr. Chibante will help to better position us as leaders in the field of nanotechnology research," said Dr. John McLaughlin, UNB president and vice-chancellor. "We are very pleased to have received the support of Bell and Alcatel-Lucent whose vision and commitment helped to make this appointment possible."

The new chair will strengthen and solidify UNB's ongoing research in nano-technology, contributing to the fields of materials science, biotechnology, biomedicine and engineering. The interdisciplinary chair will involve both research and teaching of graduate level courses. Bell is contributing \$1.5 million and Alcatel-Lucent Canada is contributing \$500,000 to help fund the chair.

"Creating this new position will support and encourage research at the forefront of technological innovation," said Michael Sabia, president and CEO of Bell Canada. "This field of research offers the opportunity to positively impact our economy and society and we are very pleased to participate in its strategic development."

"Alcatel-Lucent, along with its global research community, which includes the world renowned Bell Labs, has long been a global leader in the field of nanotechnology research," said Alex Giosa, president of Alcatel-Lucent Canada. "We are pleased to support UNB in establishing this new program in such an exciting area of research and wish Dr. Chibante every success as the first Chair in Nanotechnology." Dr. Chibante is an expert in the field of nanoscience. At Rice University he conducted research on nanoscale clusters and carbon nanomaterials under the mentorship of the late Dr. Richard Smalley, winner of the 1996 Nobel Prize in chemistry. He has ongoing collaborations with NASA, U.S. Department of Defense, and national laboratories in the U.S., France, and Germany and will bring his international partners to the region.

"Creating this new position will support and encourage research at the forefront of technological innovation. This field of research offers the opportunity to positively impact our economy and society and we are very pleased to participate in its strategic development."

- Michael Sabia, President and CEO of Bell Canada

Dr. Chibante founded two companies in Houston, BuckyUSA and NanoTex Corp., to promote nanocarbon manufacturing, application research and commercialization. Of particular interest were nanocomposite fibers, multifunctional textiles, nanofluids, and components for organic electronics and displays.

"We welcome Dr. Chibante to UNB and his new position as chair of nanotechnology research," said David Coleman, dean of engineering. "He has a wealth of experience and expertise in this ground-breaking research, and his contribution will help to make UNB a leader in this emerging new technology."

Dr. Currie has been UNB's chancellor since 2003, and the chairman of Bell since 2002. An alumnus of UNB, Dr. Currie has received numerous awards for his professional and charitable work, including an honorary degree from his alma mater in 1987 and the Order of Canada in 1997.

UNB'S Health and Education Research Group to Study the Use of SMART Boards in Schools

July 11, 2007

UNB Fredericton News Release: E019

Following a school-based initiative that led to the provision of 25 SMART Board systems put in Park Street Elementary School, the University of New Brunswick's Health and Education Research Group (HERG) is conducting a study that will examine the impact of using interactive technology on student learning.

The group hopes to show that the use of applied technology enhances inter-professional collaboration, teacher professional development, knowledge exchange and inclusive approaches through access to technology.

William Morrison, executive director of HERG at UNB in Fredericton believes this research has the potential to improve the New Brunswick education system.

"Our research will provide insight into how technology can be applied to address a wide range of student

learning needs within the classroom," said Dr. Morrison.

This \$142,000 research project is a partnership among UNB's Health and Education Research Group, Park Street Elementary School, the Department of Education, SMART Technology and School District 18.

Park Street Elementary School will serve as the research site. The study will examine the staff's training, readiness, and incorporation of this technology into teaching practices over a one-year period beginning this fall.

"The Park Street School Home and School Association initiated the agreement with SMART Technology and will cover the cost of shipping the SMART Boards, making this a truly grassroots initiative," said Patti Kirby, co-director of HERG.

The New Brunswick government has been proactive in encouraging the use of technology in education.

"We must find opportunities for our

"We must find opportunities for our teachers and our schools to be creative, innovative and entrepreneurial in their approaches to meet the learning needs of our kids."

- NB Education Minister Kelly Lamrock

teachers and our schools to be creative, innovative and entrepreneurial in their approaches to meet the learning needs of our kids," said Education Minister Kelly Lamrock.

The New Brunswick Department of Education has provided a grant of \$50,000 to HERG for their research, which was awarded through the provinces new Innovation Fund.

For more information about this research initiative, contact Patti Kirby at pkirby@unb.ca or 506-453-3515.



UNB Researcher Receives Funding to Study Employment Following Intimate Partner Violence

September 25, 2007

UNB Fredericton News Release: E069

Lynne Duffy, a nursing professor at the Moncton Campus of the University of New Brunswick, has received \$77,800 in support of her research from the Social Sciences and Humanities Research Council of Canada (SSHRC). Marilyn Merritt-Gray and Judy Wuest of Fredericton are co-researchers.

The grant will go towards the second phase of Dr. Duffy's research, which will look at lone mothers achieving employment in the aftermath of intimate partner violence.

Dr. Duffy says research in this area has focussed primarily on women's deficits after leaving the relationship. Their strengths and assets, particularly related to employment, have not received much attention.

Many lone mothers want to work to

improve the health and quality of life for themselves and their children. Little is known about how they overcome the many barriers to finding and maintaining meaningful employment over time.

"This knowledge is vital to develop more suitable entry points and interventions to support lone mother survivors of intimate partner violence to achieve a sustainable livelihood," said Dr. Duffy.

Intimate partner violence is one of the major health problems of our time. One in three women is affected worldwide. Intimate partner violence, and the crisis of leaving, push many women into poverty.

"This extremely important project is but one component of the internationally renowned work done at UNB in the area of family violence," said Greg Kealey, vice-president (research) at UNB. "Such research demonstrates the

importance of UNB to the province and the nation."

The overall goal of the study is to explore and describe lone mother's transition to a sustainable livelihood using employment strategies after leaving an abusive partner.

The findings of this three-year participatory action research will assist leaders, policy makers, and employers, at various levels of Canadian society, to better understand employment strategies and economic development for this group of women.

The research initiative is a university-community partnership with three local agencies that work with the effects of violence and poverty: Moncton Headstart Inc., Crossroads for Women Inc., and Support to Single Parents Inc.

Lafarge Donation Benefits UNBF Research

September 28, 2007
UNB Fredericton News Release: E073

Concrete is the most widely used construction material in the world because the raw materials to make it are inexpensive and universally available.

However, to be durable, it must be mixed correctly.

“Everyone assumes that concrete will last forever, and sometimes we think of concrete as being synonymous with durability, but if it’s not built properly, with proper materials, it has a lot less than its intended service life and it’ll deteriorate much faster,” said Michael Thomas, professor at the University of New Brunswick in Fredericton.

Dr. Thomas is the head of the Concrete Materials Group at UNBF, which conducts research on the durability of concrete.

Concrete is a mixture of cement, stones, sand and water; cement is made by burning limestone. Although concrete is simple to manufacture, it takes skill to make it properly.

The goal is to ensure that these

materials last 100 years or more, but this requires using the right materials in the correct proportions. Modern concrete mixes also include newly developed binders to help make the substance more durable.

Dr. Thomas believes public attention is focused on improving the durability of concrete, because in some cases, Canada’s infrastructure is not aging gracefully.

“People who live in very dense areas, where there is a lot of concrete, are more aware of the problem because some of it is deteriorating now, and it can be a problem,” Dr. Thomas said.

Dr. Thomas said his research has recently benefited from a generous donation from the Lafarge factory, which is located in Brookfield, N.S. Lafarge is one of the world’s largest manufacturers of concrete.

The company donated a concrete mixer, two laboratory ovens, a mechanical sieve shaker, a curing tank and precision balances, valued at approximately \$50,000.

“This laboratory equipment is very important, it allows us to update some of our aging equipment which would



otherwise be very difficult to replace. We’ll use this equipment for just about everything,” said Dr. Thomas.

“We have a whole range of different research programs and just all of them involve producing concrete, so for example, a concrete mixer is a key part of our work. It takes a long time to build up enough funds to buy a new piece of major equipment for the lab, it would cost \$100,000 to replace, so this donation is very important.”

For more information about the Concrete Materials Group at UNBF visit: <http://www.unb.ca/civil/materials/> The Lafarge Group is a world leader in building materials, with top-ranking positions in all of its businesses: cement, aggregates and concrete and gypsum. Lafarge North America is the largest diversified supplier of construction materials in the United States and Canada, which are used in residential, commercial, institutional and public works construction.

New Artificial Arm Lands Research Team Popular Mechanics Award



Photo credit: Rehabilitation Institute of Chicago

October 25, 2007

UNB Fredericton News Release: E136

Imagine an artificial arm that looks and functions like the real thing. The University of New Brunswick's Kevin Englehart does.

Dr. Englehart is part of a team of scientists from across North America that have developed Proto 2, a state-of-the-art myoelectric arm that has many of the features of a human arm and can move 27 different ways. This latest advancement in prosthetic limb development has earned the team a Popular Mechanics 2007 Breakthrough Award.

"This is such an exciting time in the field of prosthetics technology," said Dr. Englehart, associate director of UNB's Institute of Biomedical Engineering. "We've really come a long way in the development of artificial limbs."

What makes the Proto 2 different from all other prosthetic arms is that it is designed to operate using not only muscles, but nerve fibers, and eventually, the brain. This will give

users the ability to control the arm by thinking. Proto 2 has 80 sensors in the fingertips and palm, which will send signals back to the brain, giving users the ability to feel with the new arm.

"This project is more ambitious than anything we've done so far," said Dr. Englehart. "We've tested Proto 2 on an amputee user and the results have been remarkable. In addition to unprecedented dexterity, the limb is more powerful, less noisy, and will be more comfortable than any other."

UNB's role in the four-year project is to develop pattern recognition software that is at the heart of the controller.

"The software decodes the information from muscles and nerves, extracting the intended motion of the arm and hand," said Dr. Englehart. "The prosthesis learns the characteristics of a particular user's biological signals, refining itself to allow the control of as many motions as possible."

Proto 2 is funded by the Defense Advanced Research Projects Agency (DARPA) in the United States, and is managed by the Johns Hopkins University Applied Physics Laboratory. In addition to dramatic engineering advances, the project aims to develop robust new man-machine interfaces by implanting sensors in the body, allowing muscle, nerve and brain signals to be recorded directly. This work is on the frontier of biomedical science, and involves close partnerships with leading universities and government laboratories in the United States.

"We hope to enhance the controls, fitting, cosmetics, mechatronics, power storage and neural interfacing

of the prosthetic arm," said Dr. Englehart.

The Proto 2 project is at the half-way point, with a second generation system currently under testing.

The Popular Science Breakthrough Awards began in 2005. Other winners this year include Microsoft, Apple, and Nintendo. The 2007 Breakthrough Award winners will be featured in the November issue of Popular Mechanics magazine.

The UNB team comprises project engineers, clinical research staff and graduate students from the Institute of Biomedical Engineering.

"Kevin and the team at the Institute of Biomedical Engineering are doing remarkable work," said Greg Kealey, vice-president (research) at UNB. "They have changed the lives of so many people and are most deserving of this recognition."

UNB's Institute of Biomedical Engineering, located on the Fredericton campus, is a world-renowned research institutes in biomedical engineering and is one of the oldest research institutes to be solely dedicated to the field of biomedical engineering. The institute is also the region's prosthetic fitting centre where amputees are fitted with state-of-the-art intelligent artificial limbs.

The institute and its researchers have been internationally recognized for the design and development of myoelectric control systems for upper limb prostheses.

UNB Researcher Studying Ways to Improve the Quality of Health Care of Seniors

October 31, 2007

UNB Fredericton News Release: E159



Professor Rose McCloskey

Rose McCloskey, a PhD candidate at the University of New Brunswick, is working to improve the quality of health care provided to seniors when they are transferred from nursing homes to hospitals.

Ms. McCloskey, a former emergency

room nurse at the Saint John Regional Hospital, and a professor of nursing at UNBSJ, has been awarded a doctoral fellowship by the Canadian Institutes of Health Research (CIHR), the major federal agency responsible for funding health research in Canada.

Ms. McCloskey's fellowship of \$55,000 per year and a \$5,000 research allowance are renewable for three years.

"CIHR support for our graduate students is invaluable," said Gwen Davies, dean of graduate studies and associate vice president of research at UNB. "Rose McCloskey's graduate research, carried out in this province, will translate into policies for the betterment of aging New Brunswickers and other Canadians."

Ms. McCloskey is in her third year of full-time studies at UNB, on leave from the faculty of nursing at UNBSJ. She is originally from Glace Bay, N.S., and

has been living in Saint John since 1988.

Her research looks at factors influencing the disintegration of care and the clinical errors that can occur in the transition of long term care residents to and from hospital emergency departments.

Her research supervisor is Barbara Paterson, the Canada Research Chair in Chronic Illness at UNBF.

The CIHR is the Government of Canada's agency for health research. CIHR's mission is to create new scientific knowledge and to catalyze its translation into improved health, more effective health services and products, and a strengthened Canadian health-care system. Composed of 13 Institutes, CIHR provides leadership and support to more than 11,000 health researchers and trainees across Canada.

UNB Researcher One of Discover's Top 100

December 20, 2007

UNB Fredericton News Release

The research of a University of New Brunswick professor has been featured as one of Discover magazine's 100 top science stories for 2007. Karen Kidd's findings made the list at 51.

Dr. Kidd holds the Canada Research Chair in Chemical Contamination of Food Webs at UNB Saint John. Her research on the effect of synthetic estrogen on fish was one of only two Canadian stories featured in the top

100. Following is an excerpt:

"Birth control pills work wonders in preventing human reproduction. Unfortunately, they're also effective on an unintended target—fish. In fact, the synthetic estrogen in contraceptives can wipe out entire fish populations, according to Karen Kidd of the Canadian Rivers Institute at the University of New Brunswick. Her findings, reported in the Proceedings of the National Academy of Sciences in May, suggest that tougher sewage treatment could safeguard the little swimmers."



Dr. Karen Kidd

UNB Scientists Receive \$3.4 Million to Research Petroleum and to Develop Cleaner Fuel

January 30, 2008
UNB Fredericton News Release

University of New Brunswick researchers will receive up to \$3.4 million over the next five years from the Atlantic Canada Opportunities Agency to develop methods to better analyze petroleum samples for oil producers to develop technologies for cleaner diesel fuel.

The funding will support research at UNB's Hydroprocessing Laboratory and the Magnetic Resonance Imaging Centre.

The MRI Centre has earned an international reputation for excellence in developing new methods to analyze petroleum core samples. In collaboration with Saudi Aramco, the largest oil company in the world, and Green Imaging Technologies of New Brunswick, UNB researchers will develop measurement techniques for petroleum core analysis that are

faster, more precise and more economical than current methods.

The MRI project will receive up to \$2.1 million from ACOA's Atlantic Innovation Fund (AIF) over a five-year period.

Bruce Balcom, the director of the MRI Research Centre and Canada Research Chair in Material Science MRI at UNB, said this project clearly demonstrates how New Brunswick-based researchers are doing work of global significance.

He explained the funding will help Green Imaging Technologies take the project into the marketplace.

"UNB is important to the province's future," Dr. Balcom said. "And it's really rewarding to see how the ideas that we develop here, with local researchers, can be taken out into the larger community and really make a meaningful contribution on the world stage."

"UNB is important to the province's future. And it's really rewarding to see how the ideas that we develop here, with local researchers, can be taken out into the larger community and really make a meaningful contribution on the world stage."

- Dr. Bruce Balcom, UNB Professor and Canada Research Chair in Material Science MRI

UNB's Hydroprocessing Laboratory will receive \$1.3 million in AIF funding. It specializes in fuel analysis, catalyst synthesis and characterization. It will develop technologies to produce high-quality, ultra-clean petro diesel and reduce nitrogen oxide emissions from biodiesel.

UNB Houses Infrastructure That Will Change Face of Research in Atlantic Canada

February 28, 2008

UNB Fredericton News Release: E293



Dr. Virendra Bhavsar

Researchers from universities across Atlantic Canada will be able to collaborate and share large amounts of information thanks to new high-performance computing infrastructure at the University of New Brunswick in Fredericton.

UNB is one of four universities to house Atlantic Computational Excellence Network (ACEnet) infrastructure. The other universities are Memorial University of Newfoundland (MUN), St. Mary's University and St. Francis Xavier University.

UNB will be home to a supercomputer that has a storage capacity of more than 50,000 gigabytes and a state-of-the-art videoconferencing facility that will bring researchers together without having to leave their universities.

"In terms of what this infrastructure means for research at UNB, this is huge," said Virendra Bhavsar, dean of computer science and director of the Advanced Computational Research Laboratory at UNB Fredericton. "The supercomputer that we are housing

can process information more than 200 times faster than a typical desktop computer. Researchers can solve computational problems in a matter of hours rather than days and they can model and visualize data simultaneously. This infrastructure will serve researchers from across many disciplines including social sciences, sciences, humanities, and engineering."

ACEnet is Atlantic Canada's entry into the national fabric of high-performance computing. It is a \$26-million consortium made up of UNB, MUN, St. Mary's University, St. Francis Xavier University, Dalhousie University, Mount Allison University, University of Prince Edward Island, Cape Breton University, and Acadia University. Researchers from these universities have access to the ACEnet infrastructure, creating a computational power grid of enormous capacity.

"Computational resources have transformed the way we do research," said Dr. Bhavsar. "They allow us to create computer models of applications, design more efficient industrial products and solve problems thought intractable a decade ago. ACEnet infrastructure allows researchers to store huge amounts of information that can be processed quickly and accessed by other researchers."

ACEnet is supported by the Canada Foundation for Innovation, Atlantic Canada Opportunities Agency, Business New Brunswick, New Brunswick Innovation Foundation, Nova Scotia Research and Innovation Trust, and Newfoundland's Industrial Research and Innovation Fund, with Sun Microsystems as a private partner.

"The supercomputer that we are housing can process information more than 200 times faster than a typical desktop computer...This infrastructure will serve researchers from across many disciplines including social sciences, sciences, humanities, and engineering."

- Dr. Virendra Bhavsar, dean of computer science and director of the Advanced Computational Research Laboratory

At the infrastructure launch held on Feb. 28, ACEnet, along with Sun Microsystems Canada Ltd., announced seven ACEnet/Sun Research Fellowship Awards. The fellowships provide financial support to attract and support world-class researchers who want to visit an ACEnet institution for an extended period. These fellowships can also be used to support visiting faculty on sabbatical leave from their home institution

The UNB recipients of the ACEnet/Sun Research Fellowship Awards are Zong-Chao Yan, Colin Ingalls, Gavin Brown, Andrew Gerber, Virendra Bhavsar, Eric Aubanel and Abdelhaq M. Hamza.

Thirty-one fellowships have been awarded across Atlantic Canada. These fellowships will increase the number of research personnel involved in high-performance computing throughout Atlantic Canada.

UNB Researcher Is One of Canada's Top 40 Under 40

May 6, 2008

UNB Fredericton News Release: E338



Dr. Nicole Letourneau

Nicole Letourneau, a nursing professor at the University of New Brunswick in Fredericton, has been named to Canada's Top 40 Under 40TM list for 2007.

Canada's Top 40 Under 40TM is a national award program, which annually honours 40 Canadians in the private, public and not-for-profit sectors under the age of 40.

Dr. Letourneau holds the Canada Research Chair in healthy child development at UNB. She develops and tests interventions that support vulnerable children, mothers with postpartum depression, and mother and infants who are exposed to domestic violence.

"This is a very prestigious award which recognizes the top professionals across many sectors in Canada," said John McLaughlin, president of UNB. "I am very pleased to see one of our top researchers, and her work, receive this recognition. Dr. Letourneau is conducting research on issues of family violence and postpartum depression that have not received much attention, and has helped to demonstrate the need for more support for these families."

Dr. Letourneau also studies the impact of these interventions on parent-child relationships. Her research provides a strong incentive for policy-makers and those who have influence on the development of social programs to create programs to help children and their families.

Dr. Letourneau, who earned an

undergraduate degree in nursing from UNB in 1991, is one of two UNB alumni in the Top 40. The other is 1992 MBA grad Adrienne O'Pray, the senior vice-president of operations at Atlantic Lottery Corp.

Canada's Top 40 Under 40 TM program, now in its 13th year, is managed by its founding sponsor, The Caldwell Partners. Other sponsors include Deloitte, the Globe and Mail, Certified General Accountants of Canada, and Air Canada.

Dr. Letourneau was selected from over 1,600 nominees by an independent advisory board, comprised of 27 business leaders from across Canada. Honourees were chosen on five key criteria including: vision and leadership; innovation and achievement; impact; community involvement and contribution; and strategy for growth.

The 2007 Recipients of Canada's Top 40 Under 40TM are formally awarded the designation in Toronto May 6 and are featured in May 6 issue of The Globe and Mail.

Lockheed Martin Supports Creation of High-Speed Impact Facility at the University of New Brunswick

May 16, 2008

UNB Fredericton News Release: E346



UNB's John Spray, Bill Dalton, Lockheed Martin; Industry Minister Jim Prentice; John McLaughlin, UNB

Professor John Spray has received \$4 million from Lockheed Martin to establish a high-speed impact laboratory at the University of New Brunswick's Planetary and Space Science Centre.

The funding is a result of Lockheed Martin's industrial benefits commitments to Canada arising from the government's purchase of 17 C-130J Super Hercules aircraft. Industry Minister Jim Prentice was on hand to welcome the announcement.

For more than 20 years the Planetary and Space Science Centre (PASSC) research team has been investigating the high-energy effects of meteorites and comets hitting Earth and other planets.

"Our group has considerable expertise in what high-speed impact can do to natural materials in terms of structural

change and damage" said Dr. Spray, director of PASSC. "The goal is to transform that knowledge into real-world applications by developing new materials that are more impact resistant. Lockheed Martin's contribution will allow us to develop a world-class facility with state-of-the-art equipment."

The funding will be used to test materials under high-speed collision conditions and to develop new materials to protect people, vehicles and infrastructure.

"For example, a major hazard for orbiting telecommunication satellites is the threat of micrometeorite and space debris collision," said Dr. Spray, who holds the Canada Research Chair in Planetary Materials. "If we can help to design new lightweight compounds to shield these assets, then we will have made a valuable contribution."

The funding from Lockheed Martin is part of a broader initiative to develop shielding technologies for the aerospace, space and defence sectors.

"We anticipate privatizing aspects of our activities after five years" said Dr. Spray. "We also intend to build strong, complementary manufacturing partnerships within Atlantic Canada. The increased use of lightweight composite materials instead of metals in aircraft structures requires a better understanding of how those materials perform under high impact conditions".

For commercial aircraft, this includes how best to limit damage due to ice and hail impact and bird strikes. The new laboratory will be able to reproduce these conditions, while providing inspiring training opportunities for undergraduate and graduate students in science and engineering.

"This is a very exciting opportunity, with scope for increasing university-industry relations as we transform academic knowledge into applied products," said Dr. Spray.

Headquartered in Bethesda, Md., Lockheed Martin employs over 140,000 people worldwide, including more than 500 Lockheed Martin Canada employees. The corporation is principally engaged in the research, design, development, manufacture and integration of advanced technology systems, products and services. The corporation reported 2006 sales of \$39.6 billion.

The Planetary and Space Science Centre at the University of New Brunswick in Fredericton is the only NASA-supported regional planetary image facility in Canada. Established in 2001, it is Canada's national database for NASA's space science archives and Canada's space science databases. The core of PASSC is its research program into high-speed impact, shock wave-materials behaviour and planetary science.

New Grants Funded at UNB, 2007-08

Acenet

Eric Aubanel Computer Science
Virendra Bhavsar Computer Science
Andrew Gerber Engineering
Abdelhaq Hazma Science
Colin Ingalls Science
Yan Zong-Chao Science

Actuarial Foundation

Luis Zuluaga Administration

AECL

William Cook Engineering

Atlantic Health Sciences Corporation

Roberta Clark Nursing
Marilyn Hodgins Nursing
Nicole Letourneau Nursing

Alzheimer Association

Judith Wuest Nursing

AUCC

Ian Methven Forestry & Env. Mgmt.

BCE- Alcatel

Felipe Chibante Engineering

Bowater

David MacLean Forestry & Env. Mgmt.

Canadian Heritage

Margaret Conrad Arts

Canadian Council on Learning

Pamela Nason Education

CFI

David Clark Arts
William Cook Engineering
Mladen Eic Engineering
Laura Romero-Zeron Engineering
Yun Zhang Engineering
Ying Zheng Engineering
Richard Cunjak Science
Thayyil Jayachandra Science
Linley Jesson Science
Cheryl Patten Science
John Spray Science
Kelly Munkittrick Science

CIDA

Ian Methven Forestry & Env. Mgmt.

CIHR

Catherine Aquino-Russell Nursing
Marilyn Hodgins (2) Nursing
Nicole Letourneau (2) Nursing
Judith MacIntosh Nursing
Dianne McCormack Nursing

Judith Wuest Nursing
Denise Clark Science
Cheryl Patten Science

Coady International Institute

Melanie Wiber Arts

Contact Exploration Inc.

Laura Romero-Zeron Engineering

Cornerbrook Pulp & Paper

Yonghao Ni Engineering

CRC

Yun Zhang Engineering
Richard Cunjak Science
Kelly Munkittrick Science

DFAIT

Kelly Munkittrick Science

Eagle Plains Resources Ltd.

David Lentz Science

Falconbridge

David Lentz Science

Forintek

Ying Hei Chui Forestry & Env. Mgmt.

Forest Products Association Nova Scotia

David MacLean Forestry & Env. Mgmt.

Forest Protection Ltd.

Gordon Holloway Engineering

Grand Lakes Meadows

Darka Mioc Engineering
Donald Baird Science
Karen Kidd Science

GSCF

Edmund Biden Engineering

Human Frontier Science Program

James Watmough Science

IDRC

Melanie Wiber Arts

Indian and Northern Affairs

Rod Savidge Forestry & Env. Mgmt.
Allen Curry Science
Les Cwynar Science
Karen Kidd Science

JD IRVING

David MacLean Forestry & Env. Mgmt.

Kidney Foundation

Barbara Paterson Nursing

McCain Foundation

Susan Blair Arts
Wendy Churchill Arts
Joanna Everitt Arts
Diane Lachapelle Arts
Darren Piercy Arts
Bradford Nickerson Computer Science
Mihaela Ulieru Computer Science
Carmen Gill Arts
Zengtao Chen Engineering
Peter Dare Engineering
Eric Hildebrand Engineering
Yonghao Ni Engineering
Alastair Neil Craik Law
Denise Clark Science

Measurand

Bradford Nickerson Computer Science

NB Executive Council

Carmen Gill (2) Arts

NB Coal

Om Rajora Forestry & Env. Mgmt.

NB Dept PSET

Elizabeth Sloat Education

NB Dept Natural Resources and Energy

David MacLean Forestry & Env. Mgmt.

NB Dept Family and Community Services

Barbara D'Entremont Arts

NBIF

Gopalan Srinivasan Administration
David Clark Arts
Darren Piercy Arts
Luc Theriault Arts
Roy Turner Arts
Bradford Nickerson Computer Science
Mihaela Ulieru Computer Science
Meng Gong WSTC
Francois Anton Engineering
Yevgen Biletskiy Engineering
Juan Carretero Engineering
Eduardo Castillo Guerra Engineering
Zengtao Chen Engineering
Felipe Chibante Engineering
Anna Chrzanowski Engineering
Adam Chrzanowski Engineering
Bruce Colpitts Engineering
William Cook Engineering
Rickey Dubay Engineering
Mladen Eic Engineering
Kevin Englehart Engineering

New Grants Funded at UNB, 2007-08 (continued)

NBIF (continued)

Katy Haralampides Engineering
 Bernard Hudgins Engineering
 Peter Kyberd Engineering
 Kecheng Li(2) Engineering
 Howard Li Engineering
 Darka Mioc (2) Engineering
 Yonghao Ni (2) Engineering
 Jeffrey Rankin Engineering
 Laura Romero-Zeron (2) Engineering
 Kripa Singh Engineering
 Yun Zhang Engineering
 Ying Zheng (2) Engineering
 Felisa Chan Forestry & Env. Mgmt.
 Ying-Hei Chui (2) Forestry & Env. Mgmt.
 Daniel Quiring Forestry & Env. Mgmt.
 Om Rajora Forestry & Env. Mgmt.
 Rod Savidge Forestry & Env. Mgmt.
 Ian Smith Forestry & Env. Mgmt.
 Victoria Chester Kinesiology
 Chris McGibbon (2) Kinesiology
 James Sexsmith Kinesiology
 Judith Wuest Nursing
 Jeff Banks Science
 Karl Butler Science
 Denise Clark Science
 Allen Curry Science
 Ghislain Deslongchamps Science
 Thayyil Jayachandra (2) Science
 Linley Jesson Science
 David Magee Science
 Christopher MacFarlane Science
 Sean McGrady (2) Science
 Cheryl Patten Science
 Yvan Pelletier Science
 John Spray (2) Science
 Owen Kaser Science
 Kelly Munkittrick Science
 Remy Rochette Science

NBMRF

Denise Clark Science

NB Museum

Linley Jesson Science

NCE

Virendra Bhavsar Computer Science
 Bradford Nickerson Computer Science
 David MacLean Forestry & Env. Mgmt.
 Nicole Letourneau Nursing
 Matthew Litvak Science
 Kelly Munkittrick Science

Neenah Paper Company

David MacLean Forestry & Env. Mgmt.

National Institutes of Health (NIH)

Lucia O'Sullivan Arts

NSERC

M Abdur Rahim Administration
 Darren Piercy Arts
 Eric Aubanel Computer Science
 Virendra Bhavsar Computer Science
 Weichang Du Computer Science
 Michael Fleming Computer Science
 Kenneth Kent Computer Science
 Bradford Nickerson Computer Science
 Mihaela Ulieru Computer Science
 Yuhong Yan Computer Science
 Huajie Zhang Computer Science
 Adam Chrzanowski Engineering
 Kevin Englehart Engineering
 Simon Li Engineering
 Yonghao Ni Engineering
 Jeffrey Rankin Engineering
 Robert Rogers Engineering
 Laura Romero-Zeron Engineering
 Kripa Singh Engineering
 James Venart Engineering
 Bruce Wilson Engineering
 Huining Zao Engineering
 Ying Zheng Engineering
 Ming Zhong (2) Engineering
 Paul Arp Forestry & Env. Mgmt.
 Marek Krasowski Forestry & Env. Mgmt.
 Brigitte Leblon Forestry & Env. Mgmt.
 David MacLean Forestry & Env. Mgmt.
 Rod Savidge Forestry & Env. Mgmt.
 Wayne Albert Kinesiology
 Victoria Chester Kinesiology
 Jeff Banks Science
 Bryan Crawford Science
 Jack Gegenberg Science
 Viqar Husain Science
 Colin Ingalls Science
 David Lentz Science
 David Magee Science
 Saba Mattar (2) Science
 Gerard McGrady Science
 Benedict Newling (2) Science
 Cheryl Patten Science
 Steve Peake Science
 Cliff Shaw Science
 John Spray (2) Science
 Dennis Tokaryk Science

Thomas Turner Science
 James Watmough Science
 Joseph White Science
 Timothy Alderson Science
 Keith De'Bell Science
 Jeff Houlahan Science
 James Kieffer Science
 Alexey Kuznetsov Science
 Bruce MacDonald Science
 Remy Rochette Science
 Gheorghe Stoica Science

PAPRICAN

Yonghao Ni Engineering

Park Street School

William Morrison Education

PEI WCF

Van Lantz Arts

PHAC

William Morrison Education

PQ-NB CoOp

Allen Curry Science
 Owen Kaser Science

RCMP

Carmen Gill Arts

Spencer Foundation

Emery Hyslop-Margison Education

Springboard

Bruce Balcom (2) Science
 James Christie Engineering
 Janet Thompson Science

SSHRC

Susan Blair Arts
 Michael Marquis Arts
 Evelyn Plaise Arts
 Roy Turner Arts
 Thomas Buckley Forestry & Env. Mgmt.
 Lynne Duffy Nursing

STORAENSO

David MacLean Forestry & Env. Mgmt.
 Om Rajora Forestry & Env. Mgmt.

University Health Network

Barbara Paterson Nursing

Walter and Duncan Gordon Foundation

Shawn Dalton Forestry & Env. Mgmt.