

University of New Brunswick

Vice-President (Research) & Office of Research Services

Annual Report 2009-2010





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Highlights from the year in research...

- Research revenue surpasses the \$57-million mark.
- UNB enjoys a 33.3% growth in our federal tri-council grants from fiscal year 2008-09.
- Re\$earch Info Source Inc. ranks UNB first in the comprehensive university category for growth in publications for the five-year period 2002-07.
- UNB Saint John's Electronic Commerce Centre developed the foundation for the new federal Small Business Internship Program (SBIP).
- Dr. Ying Hei Chui leads new NSERC Innovative Wood Products and Building Systems Strategic Network at UNB and Dr. Thierry Chopin directs new NSERC Canadian Integrated Multi-Trophic Aquaculture Network (CIMTAN). UNB now hosts four NSERC Strategic Research Networks.
- Three UNB researchers receive a total of \$5.8 million from Round VII of the ACOA AIF program.
- Drs. Judith Wuest and Nicole Letourneau receive CIHR Partnerships for Health System Improvement (PHSI) grants totalling close to \$1 million to carry out projects that will improve health services for New Brunswickers.

Message from the Provost and Vice-President (Research)

The most striking highlight of our 2009-10 research year is not our overall near 3 per cent growth in total external revenue, excellent though that is in tough economic times, but rather the extraordinary 33.3% growth in our federal tri-council grants. NSERC grants rose 34.4%, SSHRC 29.8% and CIHR 29.4%. These are truly outstanding results and our congratulations to all UNB researchers who made this happen!

I would also like to draw attention to our continued healthy contributions in the technology and knowledge transfer area. In the ten-year history of UNB's IPM office, we have handled nearly 200 disclosures, filed 154 patents for 61 separate technologies, entered into 93 licensing agreements, and participated in 17 start-up companies. To date those

efforts have generated almost \$2.2 million in revenue, but more importantly, the start-up companies have raised over \$60 million in venture capital investments.

I should also note that we completed the 2007-09 research ranking exercise. Congratulations to Biology (F'ton & Saint John), Chemical Engineering, Electrical and Computer Engineering, Forestry and Environmental Management, Geodesy and Geomatics Engineering, Geology, History and Physics for achieving the top rankings.

Finally, I would draw readers' attention to the fact that on the research output side of our efforts, Re\$earch Info Source Inc., the major third party authority on Canadian research and



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

development, ranked UNB as first in the comprehensive university category for growth in publications for the five-year period 2002-07. This is a significant achievement in which the whole UNB family can take pride.

Message from the Executive Director of ORS

As expected, growth in research revenues in our 2009-10 fiscal year slowed in comparison to the previous fiscal year. This slowed growth was due to a marked decline in contract research revenues, the direct result of the financial crisis which began in October 2008. The 12% decline in contract revenues, however, was more than compensated for by the 14.2% growth seen in research grant revenues. Worthy of note was the 1/3 overall increase in Tri-Council research funding, the details of which begin on page 9.

Tri-Council funding is a cornerstone of our research enterprise, and the growth experienced in this segment of our portfolio is an accomplishment in which all should take pride. Within this good news story lays a detail of which I suspect very few people are aware. I am referring to the fact that UNB now hosts four NSERC Strategic Research Networks. This is noteworthy because

this is a disproportionately high number in comparison to our size or by any other comparator for that matter. To put this number into context, the leaders in the country in this metric, the University of British Columbia, McGill University and the University of Guelph host five, four and three such networks, respectively.

As I have mentioned in this space in the past, it is the outputs from our research enterprise that attests to its value. In this vein, I refer you to page 8 and the pie chart that outlines what our research funds actually purchase, and draw your attention specifically to the "Salary" portion of the chart. The salary funds are used largely to support our students, and as of 2009-10, over half of our research expenditures were directed to salaries. Another output metric, reported last year but without the detail, is our having the largest percentage growth in the number of research publications between 2002



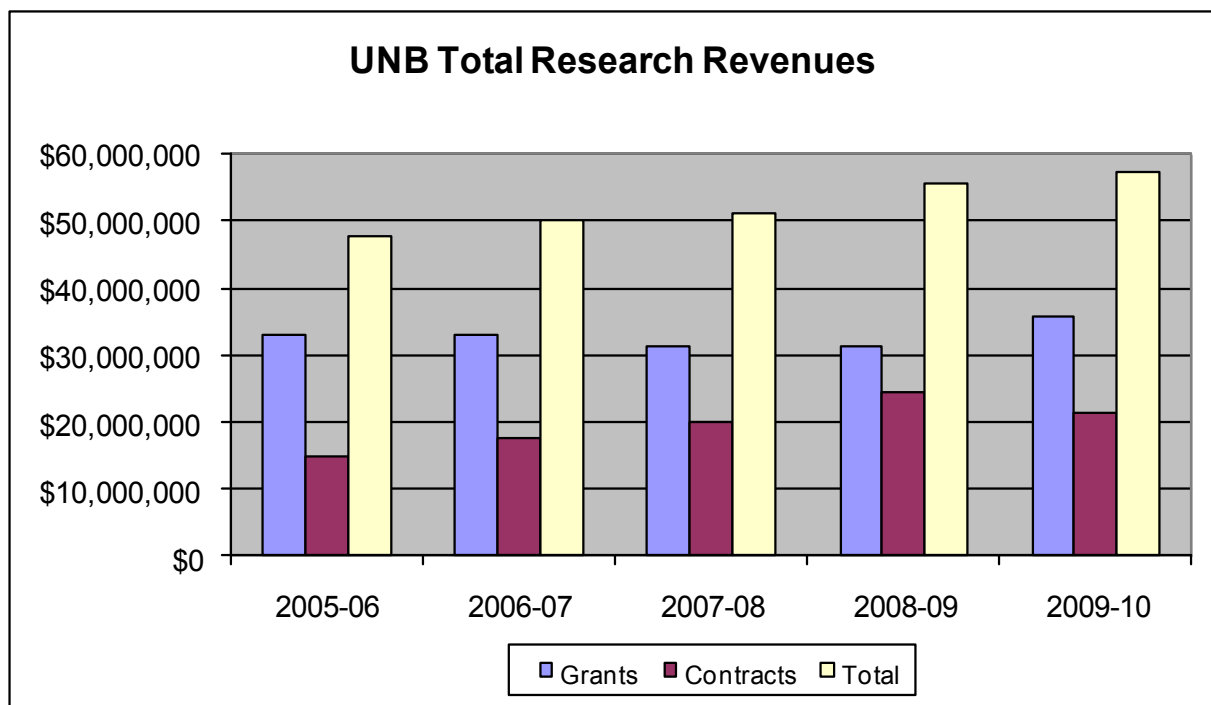
*Dwight Ball
Executive Director (ORS)*

and 2007 (see page 17).

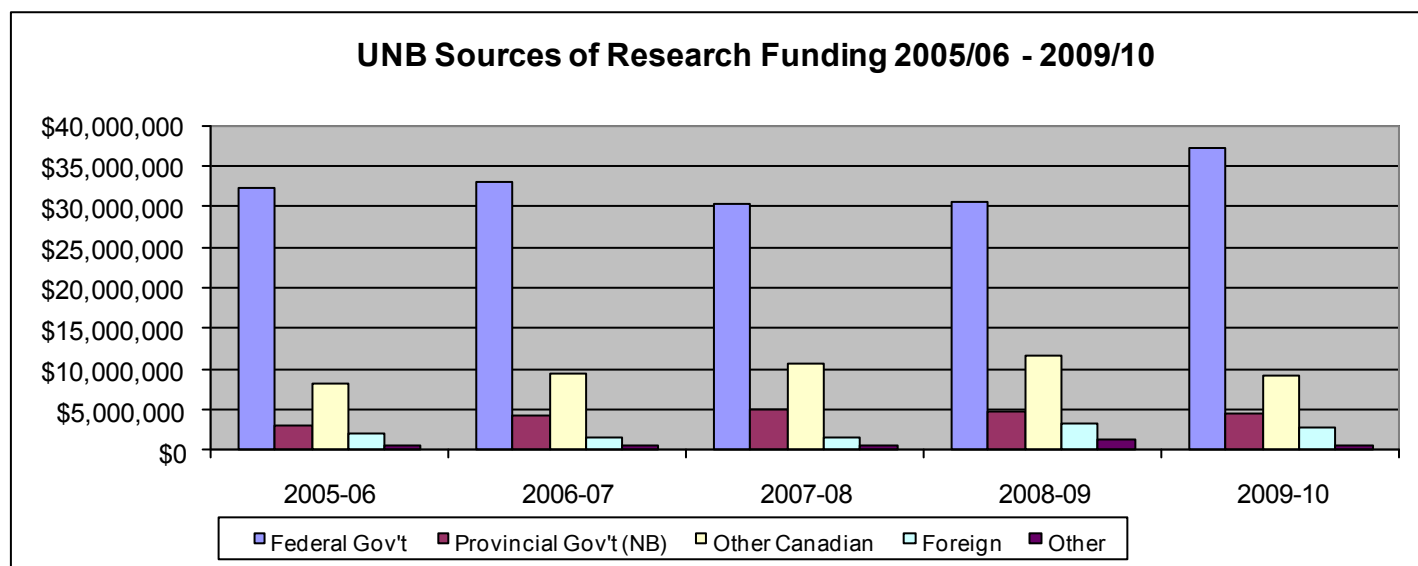
New to the report this year are: 1) the details of our Tri-Council successes; 2) full details of our Intellectual Property Management, Technology Transfer and Knowledge Transfer successes given that 2009-10 was the tenth anniversary of the program; and 3) the details of research revenues by academic unit.

Research Revenue

The University has again seen growth in its research revenues. In fiscal year 2009-10, that growth amounted to 2.7%; \$57,262,296 vs \$55,751,213 in the previous year. Notable is the 14.2% growth in grant revenue to \$35,863,612 from \$31,402,805. Our growth in grant revenues breaks the trend of flat numbers entrenched since the 2005-06 fiscal year. However, contract revenues declined last year by 12%, bringing them back to a level slightly above 2007-08. This decline is not surprising given the economic climate of the last fiscal year precipitated by the collapse of October 2008.

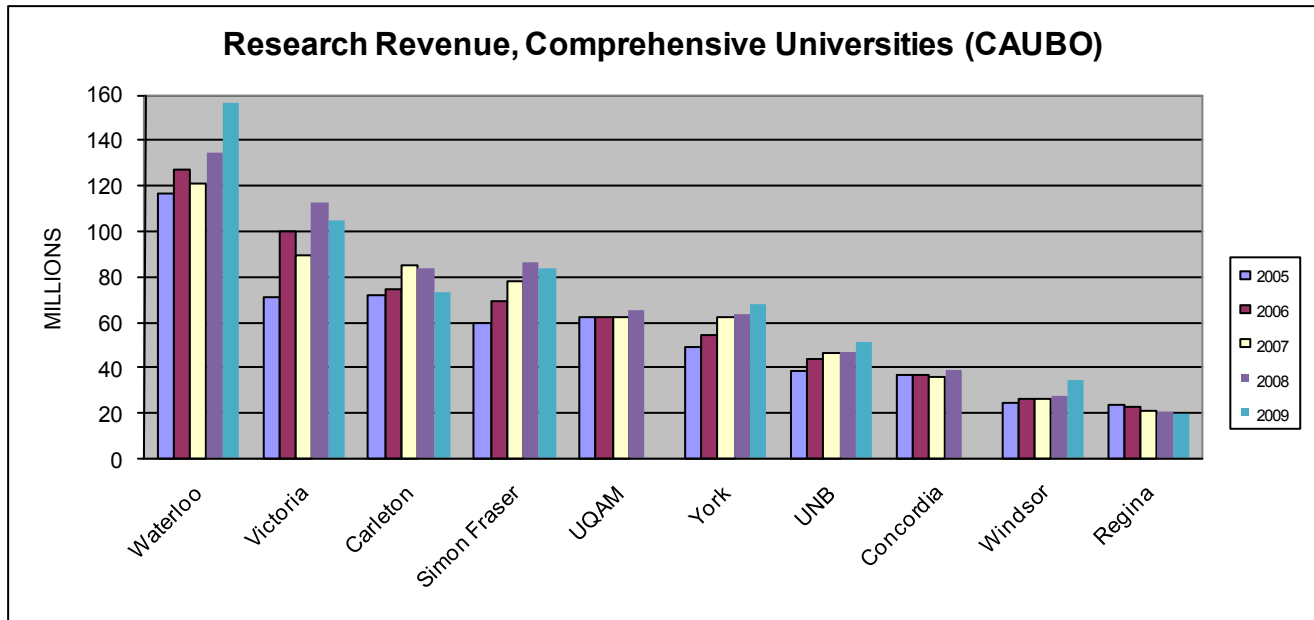


Worthy of note is our growth in Tri-Council research funding for the year compared to the 2008-09 fiscal year. At \$15,432,664 for 2009-10 vs. \$11,574,195 in 2008-09, we saw an increase of 33.34%. NSERC funding showed the largest growth at 34.4%, but both SSHRC and CIHR funding also jumped very considerably at 29.78% and 29.37% respectively. Additional reference is made to these figures on page 9 under “Tri-Council Funding”. This growth positively impacted our Federal Government revenues depicted below.

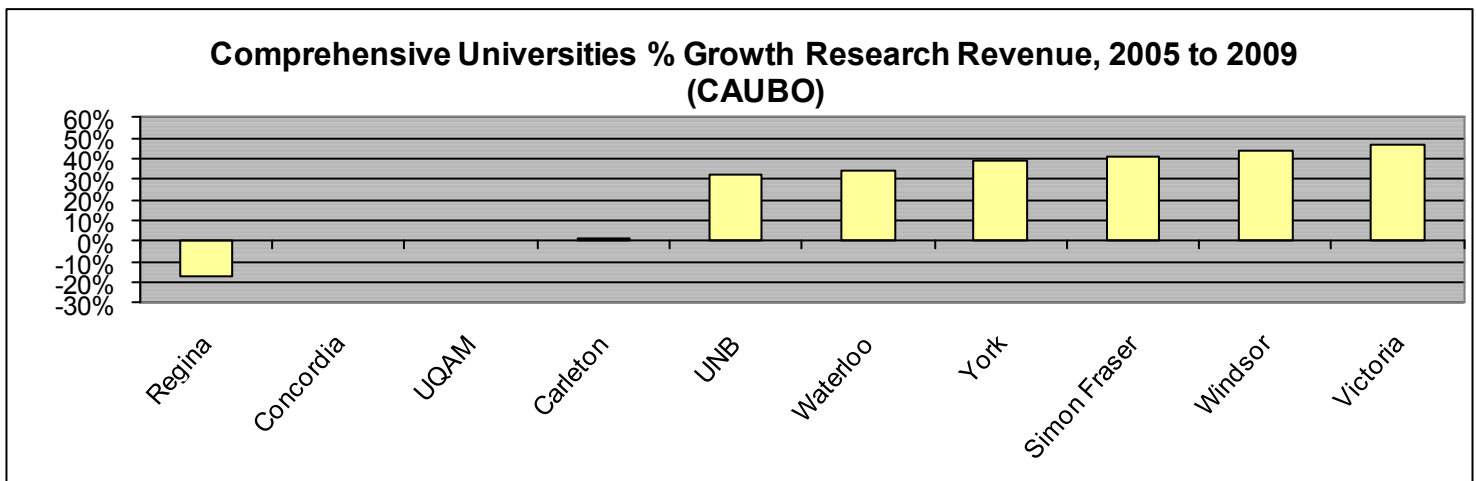


Research Revenue (continued)

The Canadian Association of University Business Officers (CAUBO) compiles research-related revenues based on mutually agreed upon definitions. It is this number that is used for inter-institutional comparisons. In the fiscal year 2009-10, UNB's preliminary CAUBO number was \$54,214,875. The inter-institutional comparative revenues graphed below are one year in arrears due to reporting and publication delays. UNB places seventh in its commonly reported peer group with steady growth except in fiscal year 2007-08 (2008). Note that Quebec university numbers have yet to be published for 2008-09 (2009).



Based on CAUBO statistics, UNB ranks well amongst its peer group of comprehensive universities in terms of longer-term growth. However, in the 2005-2009 comparison, we have dropped below the University of Waterloo, compared to our 2004-2008 ranking. Statistics for universities in Quebec have not yet been reported for 2009. The positions occupied below for Concordia and UQAM are those occupied by them based from the 2004-2008 statistics.



Research Revenue (continued)

Research Revenue per Generating Unit

The following table is new to this year's report. It attributes research revenues by generating unit during the fiscal year. Note that other research revenues are generated by the university but are not reported on this table (e.g., the Indirect Costs of Research grants).

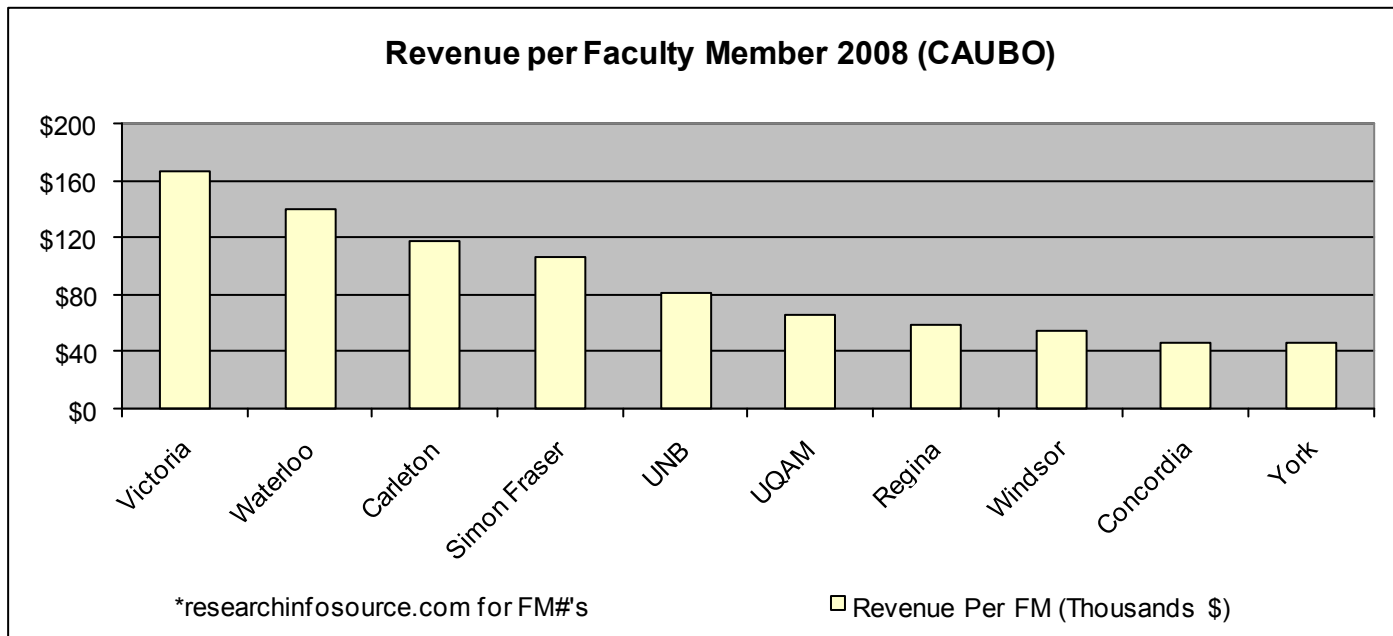
Research Revenues per Generating Unit (\$)					
UNIT	Grants	Contracts	Independent Centres	Other	Total
ADMINISTRATION (F)	58,000	163,324			221,324
ARTS (F)					
Arts	200,000				200,000
Anthropology	94,830				94,830
Classics	31,564				31,564
Economics	7,081				7,081
English	148,299			500	148,799
History	272,457				272,457
Conflict Studies/Gregg Centre	164,950	13,522		13,559	192,032
Philosophy	5,000				5,000
Political Science	18,016			10,468	28,484
Psychology	175,426	1,963			173,463
French	2,740				2,740
Culture & Language				12,000	12,000
Sociology	791,391	94			791,485
COMPUTER SCIENCE (F)	960,861	930,842			1,891,703
EDUCATION (F)	1,168,844	598,888		100,000	1,867,732
ENGINEERING (F)					
Chemical Engineering	1,126,041	1,750,901		144,736	3,021,678
Civil Engineering	493,875	709,148			1,203,023
Electrical Engineering	1,612,566	429,563			2,042,129
Mechanical Engineering	276,390	85,308		18,000	379,698
Geodesy & Geomatics	1,128,053	625,023			1,753,076
J Herbert Smith ACOA chair	14,001			142,616	156,617
FORESTRY (F)	1,422,022	1,923,447		16,447	3,361,916
KINESIOLOGY (F)	146,111	72,783			218,894
LAW (F)		259,391		5,335	264,726

Research Revenues per Generating Unit (continued)

Research Revenues per Generating Unit (\$)					
UNIT	Grants	Contracts	Independent Centres	Other	Total
NURSING (F)	1,168,502	32,296		15,000	1,215,797
SCIENCE (F)					
Math & Stats	391,454			1,300	392,754
Biology	2,295,942	396,957		28,101	2,721,000
Chemistry	1,124,653	60,384		10,574	1,195,612
Geology	1,741,209	2,694,676		20,880	4,456,765
Physics	747,145	700,569			1,447,714
BIOMEDICAL (F)	714,861	1,386,118		14,360	2,115,339
CHRONIC ILLNESS (F)	163,102	1,000			164,102
CRISP (F)	180,134	42,150			222,284
RIVERS INSTITUTE (F & SJ)	341,434	694,466		7,500	1,043,400
SCHOOL OF GRAD STUDIES	3,301,186				3,301,186
HIL (ELECTRONIC TEXT CENTRE) (F)	225,616				225,616
CNER (F)			850,196		850,196
CADMI MICROELECTRONICS (F)			101,409		101,409
ARTS (SJ)					
Arts	62,000				62,000
History & Politics	24,000				24,000
Social Science	21,949	6,875			28,824
Criminal Justice Studies	8,911				8,911
Psychology	17,275				17,275
BUSINESS (SJ)	14,134	270,595		16,480	301,209
SCIENCE & ENGINEERING (SJ)					
Biology	1,770,015	642,293		22,912	2,435,219
Physical Sciences	84,000			17,515	101,515
Nursing/Health Sciences	18,043				18,043
Math/Stats/CS	34,066	183,919			217,986

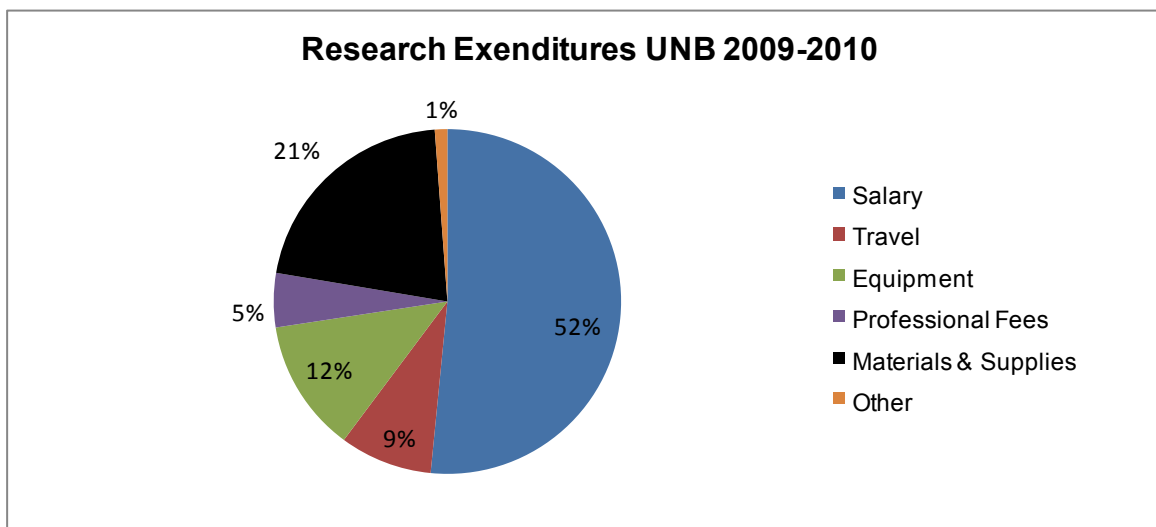
Research Revenue (continued)

At the time of preparation of this report, Re\$earch Info Source Inc. had not yet published statistics quantifying the number of faculty members at the various universities. As a result, we have reprinted the research revenue per faculty member graph presented in last year's report.



Research Expenditures

The majority of the research funding received by UNB goes back into the New Brunswick economy through salaries. In 2009-10, \$24.8 million was spent on student and non-student salaries. Equipment, materials and supplies consumed almost \$16.1 million and travel \$4.2 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, accreditation and intellectual property management. The amount UNB receives from this program is contingent on our level of tri-council funding based on a three-year rolling average. The university's allocation for 2009-10 was \$3,543,060, and the allocation for the 2010-11 fiscal year is \$3,595,243.

Tri-Council Funding

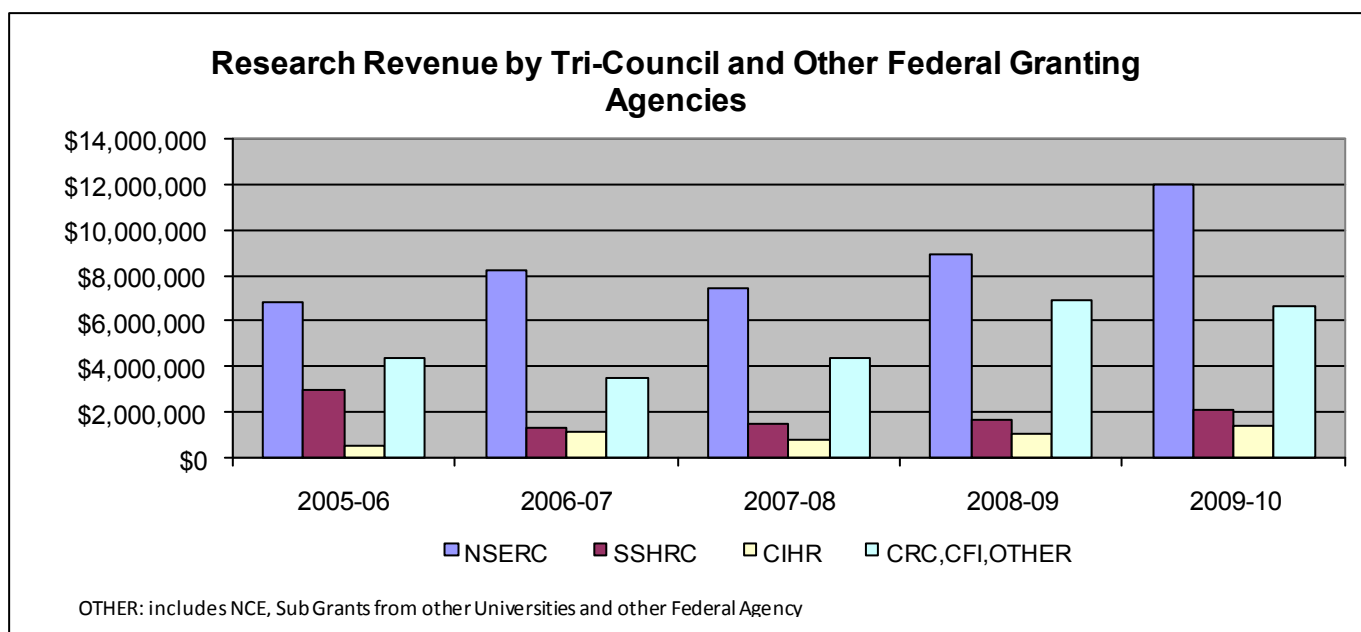
As reported herein, the increased growth in our Tri-Council funding for the 2009-10 fiscal year by 33.34 % is particularly noteworthy. The state of our Tri-Council awards is important to UNB in part because these figures are the basis of our Indirect Costs of Research Program grant and our allocation of Canada Research Chairs.

In addition to our growth in Tri-Council funding, it is worth noting that UNB now hosts four NSERC Strategic Networks:

1. Canadian Integrated Multi-Trophic Aquaculture Network (CIMTAN) led by Dr. Thierry Chopin, Dept of Biology—SJ
2. Wind Energy Strategic Network (WESNet) led by Dr. Liuchen Chang, Dept of Electrical and Computer Engineering
3. Innovative Wood Products and Building Systems (NEWBuildS) led by Dr. Y. H. Chui, Wood Science & Technology Centre, FOREM; and
4. Canadian Capture Fisheries Research Network led by Dr. Robert Stephenson, Depts of Biology—SJ & F

The fact that we host four such networks is noteworthy as this is a disproportionately high number in comparison to our size or by any other comparator for that matter. The University of British Columbia hosts five such networks, McGill University four and the University of Guelph hosts three. In addition, UBC and Guelph partner in hosting one additional network.

It must also be pointed out that researchers at UNB have, over the years, consistently played important roles in a long list of both Networks of Centres of Excellence (NCE) as well as NSERC Strategic Networks and SSHRC Community-University Research Alliances (CURA) and Major Collaborative Research Initiatives (MCRI).



Tri-Council Success

Grants from the Tri-Council are a very important component of UNB's research activities. The details of our successes and lack thereof are being continuously scrutinized. To that end, below are the details of our submissions and awards for NSERC, SSHRC and CIHR for **the calendar year 2009** (as such, totals will differ from those presented for *fiscal year 2009-10*).

Tri-Council - 2009 Results							
Submissions	Program	Submitted	Requested	Successful	Awarded	Success Rate	Funding Rate
NSERC	CRD	1	\$230,000	0	\$0	0.00%	0.00%
	Strategic Project	10	\$3,951,391	3	\$931,521	30.00%	23.57%
	RTI	24	\$1,575,810	6	\$286,555	25.00%	18.18%
	Discovery	62	\$14,627,853	32	\$4,465,000	51.61%	30.52%
	Other	20	\$13,640,360	8	\$12,025,786	40.00%	88.16%
	Total NSERC		117	\$34,025,414	49	\$17,708,862	41.88%
SSHRC	SRG	25	\$2,329,749	7	\$269,723	28.00%	11.60%
	Other	12	\$2,118,604	4	\$1,330,437	33.30%	62.80%
	Total SSHRC	37	\$4,448,353	11	\$1,600,160	29.70%	36.00%
CIHR	OOG	7	\$1,880,908	1	\$487,290	14.29%	25.91%
	Other	10	\$1,676,339	5	\$1,286,705	50.00%	76.76%
	Total CIHR	17	\$3,557,247	6	\$1,773,995	35.29%	49.87%

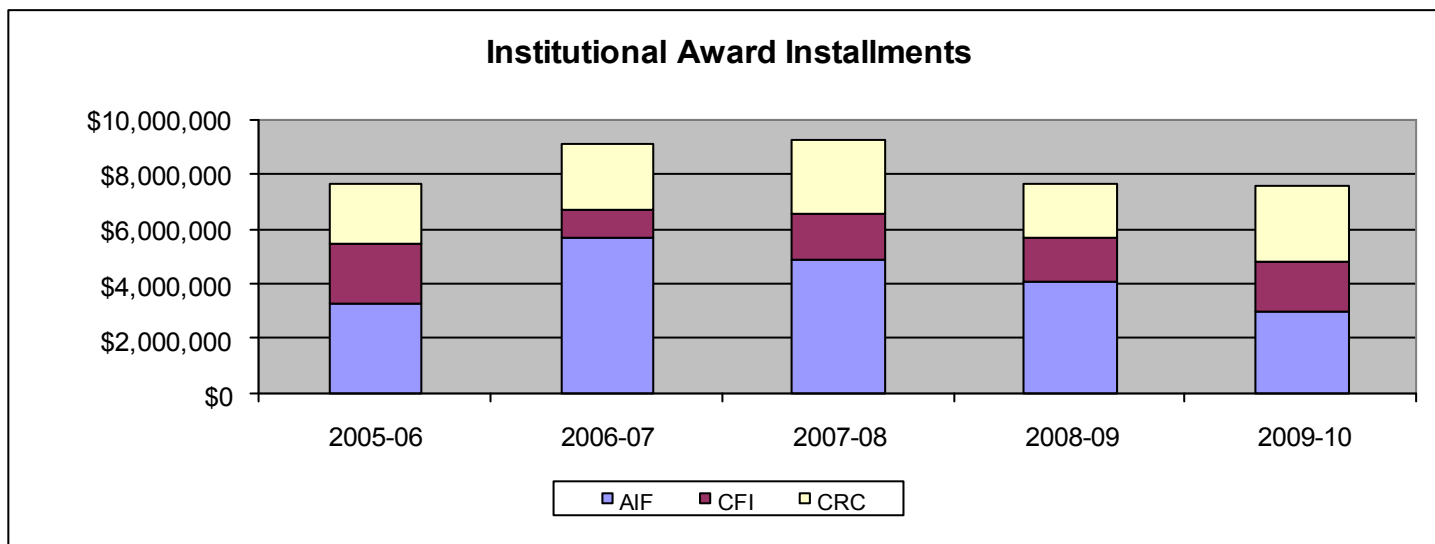
CRD - Collaborative Research Development

RTI - Research Tools & Instruments

SRG - Standard Research Grants

OOG - Open Operating Grants

Institutional Funding



Atlantic Innovation Fund (AIF)

The Atlantic Canada Opportunities Agency announced project approvals for the Round 7 applications in January 2010. Four UNB-led projects were approved:

Dr. Kenneth Kent (Computer Science) was awarded \$3 million towards a \$5 million project to enhance the processing power and speed of computer systems for commercial research performance benefits.

Dr. Chris McGibbon (IBME) was awarded \$1.9 million as part of a \$2.8 million project aimed at developing a toolkit for performance assessment of muscle impairment.

The Centre for Nuclear Energy Research will receive approximately \$1.3 million towards a \$1.7 million project to develop and potentially commercialize instrumentation to monitor the condition of steel piping systems, designed to increase efficiency and security in nuclear and non-nuclear facilities.

The Limerick Pulp & Paper Centre, under the leadership of Dr. Yonghao Ni, will receive \$1 million towards a \$1.6 million project to research methods to increase pulp yield and strength as well as develop new technology for the production of conductive packaging materials.

As well, UNB researchers are playing key roles in the following projects led by others:

Drs. Adam and Anna Chrzanowski (GGE) are helping C-Core of Newfoundland to combine three existing technologies to create a unique space-ground-subsurface method of monitoring critical infrastructure for structural stability and security purposes.

Dr. Richard Nicki (Psychology-F) will help Spielo Manufacturing research and develop a new class of entertainment games based on the principles of responsible gaming.

Dr. Dan Quiring (FOREM) will help the Nova Scotia Agricultural College conduct research into the prevention of needle loss in balsam fir Christmas trees attempting to discover the technology needed to prevent needle loss.

Canada Foundation for Innovation (CFI)

In 2009-10, UNB was successful in having nine new CFI projects approved at a value of \$1.3 million plus an additional \$390,000 in Infrastructure Operating Funds. UNB researchers are leading 34 active CFI infrastructure projects involving \$6.6 million from CFI and \$9.2 million from matching sources.

Institutional Funding (continued)

Canada Research Chairs (CRC)

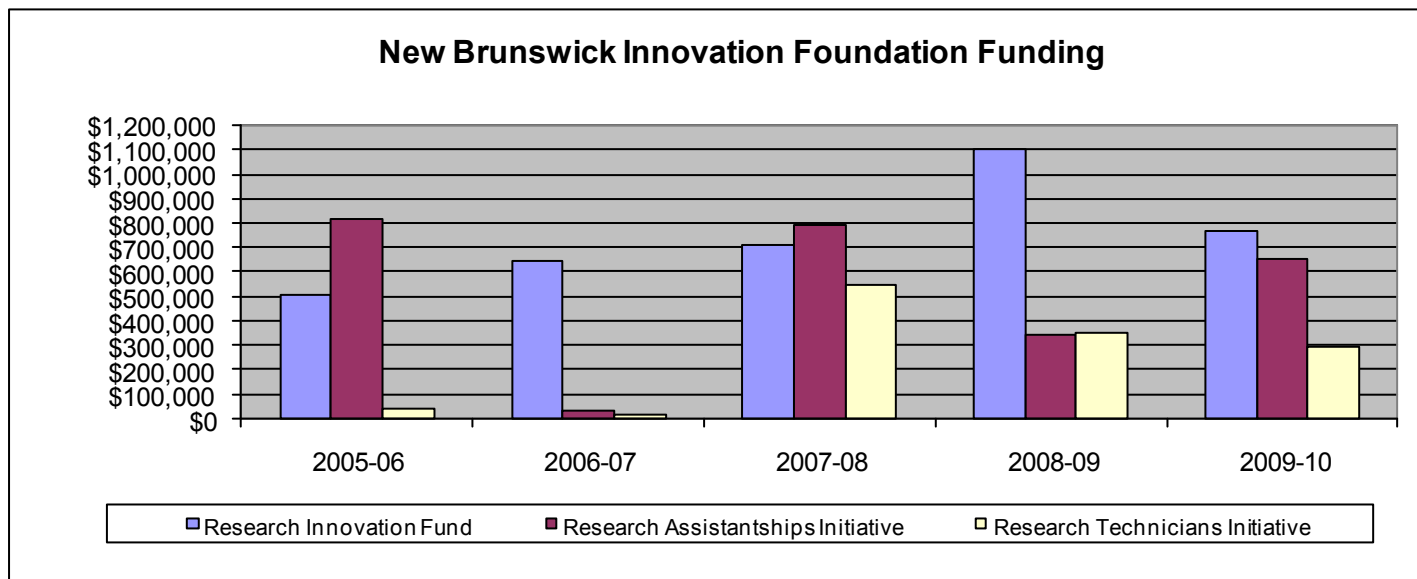
UNB received almost \$2.3 million for our 17 active Canada Research Chairs in 2009-10. During the fiscal year, Dr. Karen Kidd (Biology—SJ) was successful in the renewal of her Tier 2 Chair for a second five-year term, and Dr. Doug Willms (Education) continues as a Tier 1 Chair for another seven-year term. Also in 2009-10, the university was successful with two Tier 2 Chair nominations, one in Education (Dr. José Domene) and one in Biology—SJ (Dr. Christopher Martyniuk). Dr. Margaret Conrad retired at the end of her first term as the Tier 1 Chair in Atlantic Canada Studies.

UNB's CRC contingent as of April 30, 2010:

	Name	Department/Faculty	CRC in...	Tier
1	Bruce Balcom	Physics/Chemistry	Materials Science MRI	1
2	Rick Cunjak	Biology (F)	River Ecosystem Science	1
3	José Domene	Education	School to Work Transition	2
4	Karen Kidd	Biology (SJ)	Chemical Contamination of Food Webs	2
5	Nicole Letourneau	Nursing	Healthy Child Development	2
6	Kerry MacQuarrie	Civil Eng.	Groundwater-Surface Water Interaction	2
7	Christopher Martyniuk	Biology (SJ)	Aquatic Molecular Ecology	2
8	Kelly Munkittrick	Biology (SJ)	Ecosystem Health Assessment	1
9	Yonghao Ni	Chem./Chem. Eng.	Pulp and Paper Science and Engineering	1
10	Lucia O'Sullivan	Psychology	Adolescent Sexual Health Behaviour	2
11	Barbara Paterson	Nursing	Chronic Illness	1
12	Om Rajora	Forestry & Env. Mgmt.	Forest and Conservation Genomics and Biotechnology	1
13	Gary Saunders	Biology (F)	Molecular Systematics and Biodiversity	2
14	John Spray	Geology	Planetary Materials	1
15	Mihaela Ulieru	Computer Science	Adaptive Information Infrastructures for the e-Society	2
16	Doug Willms	Education	Literacy and Human Development	1
17	Yun Zhang	Geodesy & Geomatics Eng.	Advanced Geomatics Image Processing	2

New Brunswick Innovation Foundation

The Foundation continues to be a strong supporter of UNB research. A substantial drop in revenues received under the Research Innovation Fund during the fiscal year was partially offset by strong growth in revenues from the Research Assistantship Initiative.



Industrial Research Assistantship Program (National Research Council)

Since 2006, UNB has been providing technical assistance to Canadian companies, usually at no cost to the company. This program allows a company to access faculty and staff from both our campuses. The service is designated for instances where the provision of a few days of scientific/technical expertise will be sufficient to solve a problem or advance an opportunity.

UNB is able to provide these services thanks to the support of the National Research Council's Industrial Research and Assistance Program (NRC-IRAP). NRC-IRAP and UNB are encouraging the university's faculty and staff to respond to the technical needs of companies and to encourage university-industry interaction.

For the 2009-10 fiscal year, we entered into contracts with 25 companies worth a total of \$80,000. For the four years that the program has been in operation, UNB has been involved in 79 such projects.

Intellectual Property Management, Technology Transfer 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 2009-10, IGS:

- Obtained the following awards (\$85,000 total) from Springboard Atlantic Inc. to assist in moving technologies through the commercialization process:
 - three \$20,000 Proof-of-Concept awards (Electrical & Computer Engineering, Geodesy & Geomatics Engineering, Chemical Engineering)
 - two \$10,000 Patent & Legal Awards (Electrical & Computer Engineering, Geodesy & Geomatics Engineering)
 - one \$5,000 Pilot Proof-of-Concept award (Faculty of Business—SJ)
- Entered into 14 technology transfer agreements with industry.
- Filed 27 new patents and saw 4 previous patent applications issued.
- Filed 2 new Section 9 trademarks.
- Assisted in the creation of three start-up companies.
- Provided services to Université de Moncton, University of Prince Edward Island and the New Brunswick Community College, including the provision of advice on: starting spin-off companies, financial strategies for ACOA AIF submissions, licensing royalty rates, and strategic research plans.

Technology & Knowledge Transfer						
	2005-06	2006-07	2007-08	2008-09	2009-10	2000-2010
Disclosures	21	21	18	15	14	190
Patents Filed	19	19	22	22	27	154*
Patents Issued	1	8	7	6	4	31
Total Patents Pending	35	46	56	64	68	n/a
License Agreements	8	16	10	14	14	93
Gross Revenue Received	\$204,813	\$303,701	\$269,107	\$448,991	\$287,190	\$2,178,797
Start-ups Created	0	1	2	2	3	17

* covers 61 separate technologies



Intellectual Property Management, Technology Transfer and Knowledge Transfer (continued)

UNB’s track record as measured by the common metrics for IP Management, Technology and Knowledge Transfer is very good. The tables below report the number of formal disclosures made by researchers, the number of patent applications filed and the number of licence agreements executed at UNB, normalized for size based on research expenditures. The metrics, reported for the 2006-07 and 2008-09 fiscal years, compare UNB to the Canadian and United States averages. While we have slipped in the number of disclosures, the number of patents filed and licence agreements consummated are very strong. Granted, disclosures are the front end of the transfer “pipeline” so a decline in this metric is concerning.

Since the establishment of the Intellectual Property Management Program within the Office of Research Services in late 1999, UNB has been active in transferring technologies into the marketplace, with a strong focus on industry collaboration. In the 10 -year period from 2000-2010, UNB has:

- Managed 190 invention disclosures
- Filed 46 US Provisional, 38 Canadian, 42 Non-US Provisional and 28 Other (European, PCT, etc.) patent applications (154 in total for 61 separate technologies)
- Seen 31 patents issued to date
- Filed 11 Section 9 trademarks for the University
- Completed 93 technology transfer deals
- Secured licensing revenues and patent reimbursements of over 2.1 million
- Assisted in the creation of 17 UNB spin-off companies
- Seen UNB start-up companies raise over \$60 million in venture capital investments

Technology and Knowledge Transfer (Universities)							
(Per \$million Research Expenditures)							
Metric (2007)	UNB	Canada	U.S.A	Metric (2009)	UNB	Canada	U.S.A
Disclosures	.42	.36	.40	Disclosures	.27	.35	.38
Patents Filed	.38	.17	.24	Patents Filed	.39	.16	.23
License Agreements	.32	.13	.10	License Agreements	.27	.13	.10

Source: AUTM Licensing Survey FY 2007, July 18, 2008

Source: AUTM Licensing Survey FY 2009, July 15, 2010

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 academic units 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, Senior Research Associate and Research Associate.

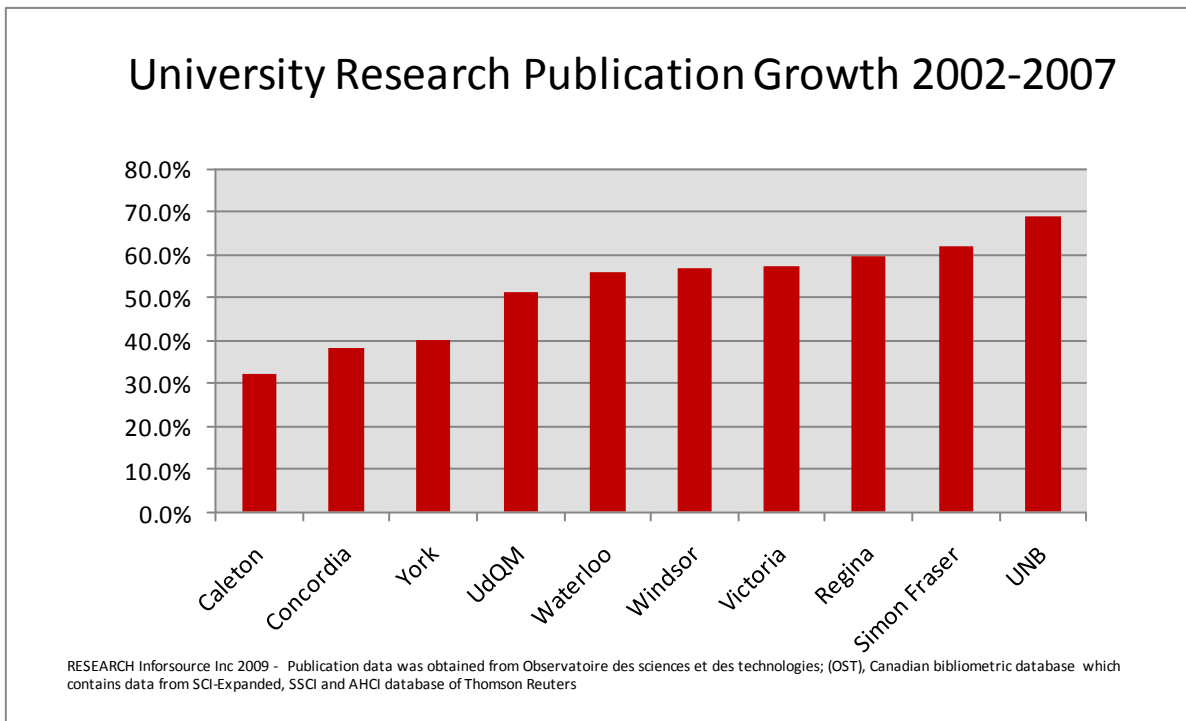
Once the data is collected, a committee reviews the submissions per academic unit and assign a ranking of 1 through 10 to each unit based on their submission. A ranking of 1 signifies research excellence, while a ranking of 10 signifies extremely low research performance.

The on-line portal for the current ranking period (July 1, 2009–June 30, 2011) is available and will be open until August 31, 2011.

Fredericton Campus									
Department / Faculty	Final Ranking				Department / Faculty	Final Ranking			
	2001-03	2003-05	2005-07	2007-09		2001-03	2003-05	2005-07	2007-09
Administration	5	4	4	5	French	5	6	5	5
Anthropology	4	5	5	5	GGE	1	1	1	1*
Biology	2	2	1	1	Geology	1	1	1	1
Chemical Eng.	1	2	1	1	History	1	1	1	1
Chemistry	1	1	1	2*	Kinesiology	4	4	4	3
Civil Eng.	2	2	2	2	Law	4	5	4	4
Classics & Ancient History	7	8	7	6	Mathematics & Statistics	5	4	3	3
Computer Science	2	2	3	3	Mechanical Eng.	1	1	1	2*
Culture and Language Studies	7	10	6	4	Nursing	5	4	4	4
Economics	5	4	5	5	Philosophy	6	7	6	4
Education	4	4	3	4	Physics	3	2	1	1
Electrical & Computer Eng.	3	2	2	1	Political Science	5	3	3	4
English	2	2	2	2	Psychology	3	3	2	2
Forestry & Environmental Mgmt.	2	1	1	1	Sociology	5	3	4	3
*1 Highest rank department for Fredericton Campus					*2 Denotes a department that is less than 1, but higher than 2				
Saint John Campus									
Department / Faculty	Final Ranking				Department / Faculty	Final Ranking			
	2001-03	2003-05	2005-07	2007-09		2001-03	2003-05	2005-07	2007-09
Biology	1	1	1	1*	Mathematical Sciences	5	5	3	3
Business	7	6	6	6	Nursing	7	7	6	6
CS & Applied Statistics	2	2	2	3	Physical Sciences	5	5	6	n/a
Engineering	4	5	5	6	Psychology	5	5	5	4
History & Politics	4	4	4	5	Social Sciences	5	5	6	5
Humanities & Languages	5	5	5	5					
*1 Highest rank department for Saint John Campus					n/a Department no longer exists				

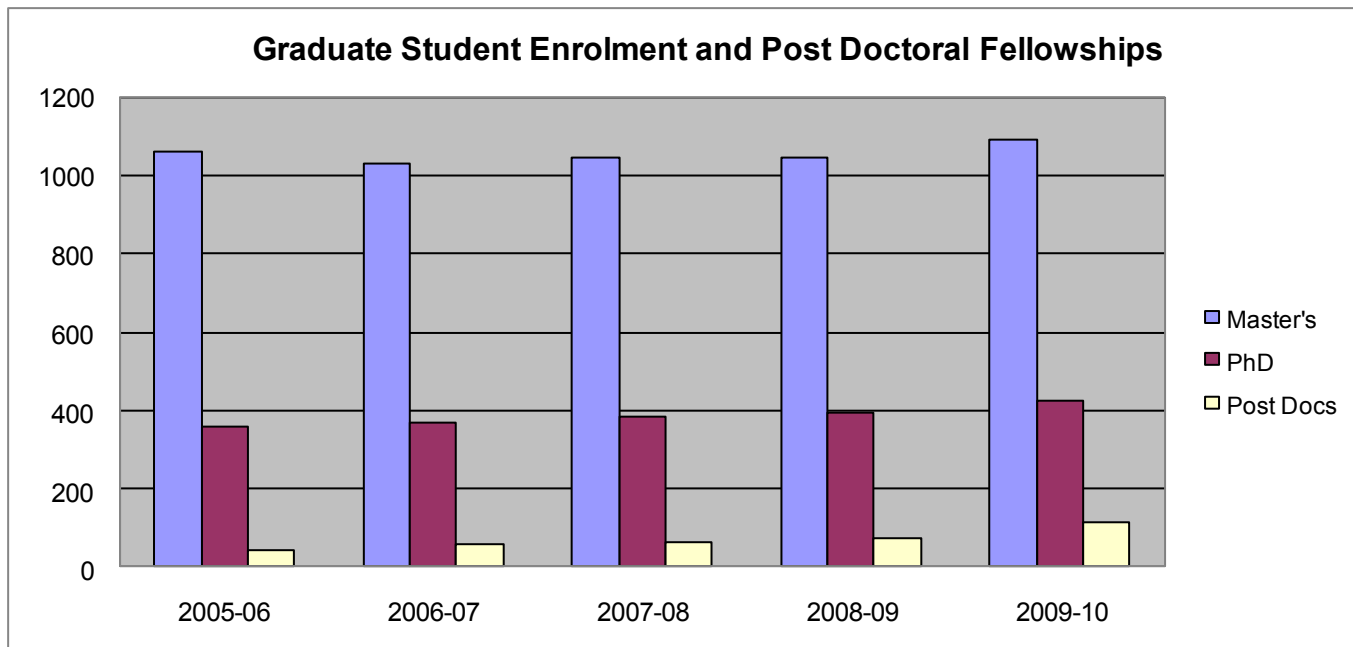
Research Outputs

A classic metric for quantifying research output is research publications. RESEARCH Info Source Inc. publishes such a metric and in 2009 named UNB as having the largest percentage change in the comprehensive university group in the number of research publications between 2002 and 2007. Their comparison included full service universities that they have named in their Top 50 list in terms of research revenues in Canada.



School of Graduate Studies

After a few years of relatively little growth in the number of Master students, in 2009-10, UNB saw a 4.4% growth in their numbers. The number of Doctoral students continued to see annual growth, with a 7.6% increase in the last fiscal year. The number of Post-Doctoral Fellows, which has grown consistently and appreciably, saw a very large increase last year of 61.1% to 116 Fellows.



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:

- Canadian Research Institute for Social Policy
- Canadian Rivers Institute
- Chronic Illness Research Institute
- Institute of Biomedical Engineering

Member, Board of Directors:

- AARMS
- ACENet
- BioAtlantech
- Canadian Research Knowledge Network
- Huntsman Marine Science Centre
- International Aquaculture Innovation Centre
- Kings Landing
- Muriel McQueen Ferguson Centre for Family Violence Research
- National Research Council, IIT (Advisory Board)
- New Brunswick Innovation Foundation
- New Brunswick Health Research Foundation
- Populomix Cancer Research Institute

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, UNBF Asbestos Steering Committee
- Chair, Biohazards Safety Committee, UNB
- Member, Directors Plus
- Member, Board of Directors, Construction Technology Centre Atlantic
- Member, Board of Directors, CADMI Microelectronics Inc.
- Member, Advisory Board, Huntsman Marine Science Centre
- Representative of the VP Research, Board of Directors, Centre for Nuclear Energy Research
- Representative of the VP Research, Advisory Board, Wood Science and Technology Centre

(Member, Board of Directors, continued)

- Springboard (Treasurer)
- SSHRC Council

Member:

- Steering Committee, Atlantic Aboriginal Economic Development Integrated Research Program
- Governance Committee, Canadian Research Knowledge Network (Chair)
- Executive Committee, SSHRC
- Expert Panel on SSHRC Program Architecture Renewal

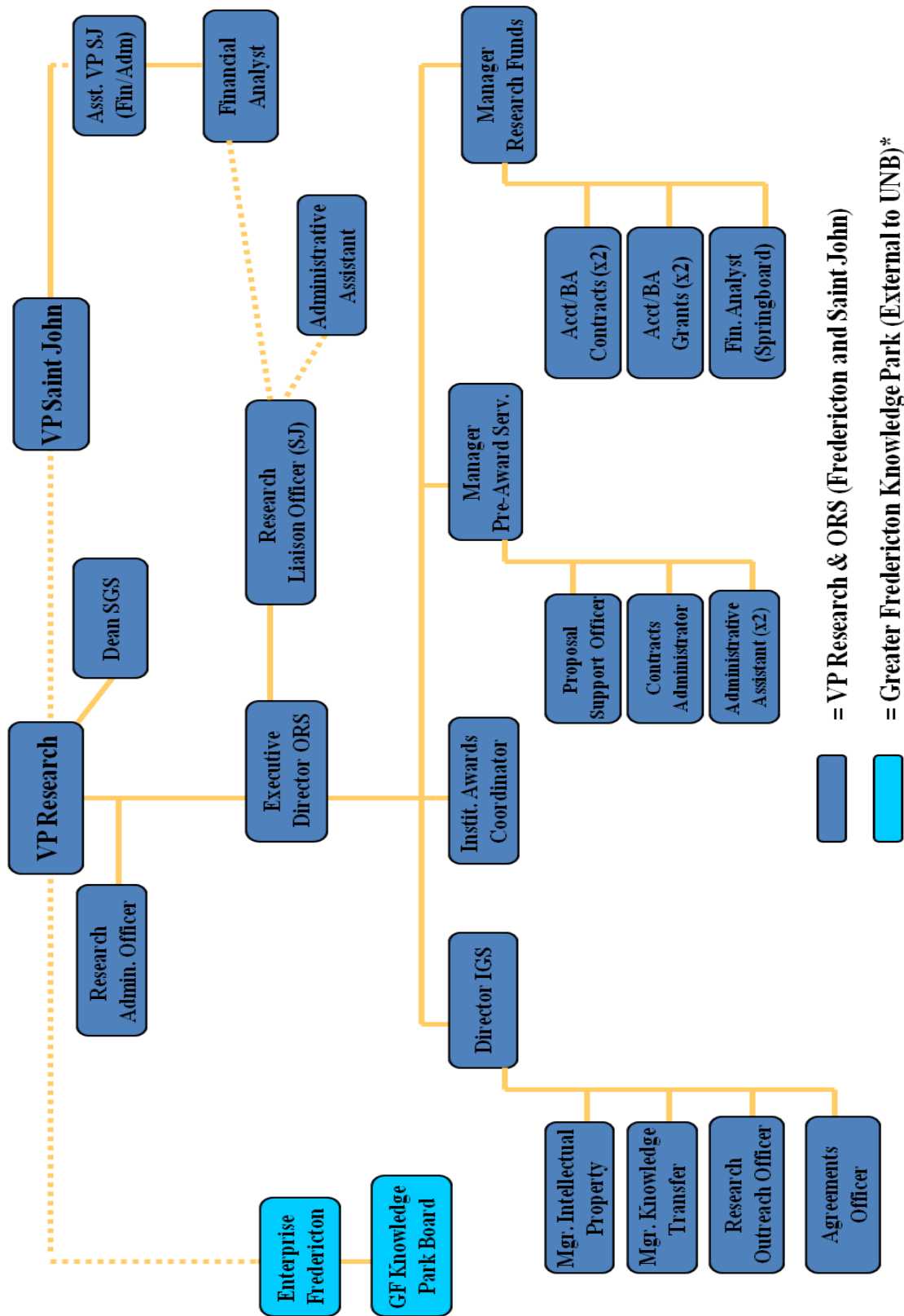
In addition, the VP (Research) holds several positions related to his academic interests:

- Treasurer, Canadian Committee on Labour History
- Chair, Publications Committee, Canadian Committee on Labour History
- Editor, Canadian Social History Series, University of Toronto Press
- Member, Editorial Board, *Acadiensis*
- Member, Editorial Board, *Labour/le Travail*
- Member, Advisory Board, *Labour History* (Australia)
- Member, Advisory Board, *Socialist History* (UK)
- Member, H-Canada Editorial Board

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

- Member, Society of Research Administrators International
- Member, 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
- Member, Association of Professional Engineers & Geoscientists of New Brunswick
- Certified Geologist, State of Maine
- Member, Cultivation Committee, NB Association for Community Living

VP (Research)/Office of Research Services Organizational Chart



* Note: UNB's VP Research is the President of the GF Knowledge Park Board.

University Research Scholars 2009: Dr. Liuchen Chang & Dr. Ying Zheng

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. Liuchen Chang

Dr. Chang is a world leader in the field of renewable energy conversion and distributed electric power systems. His research record is exemplary and he is recognized as an authority on power converters for renewable energy systems including wind energy, solar energy and marine energy systems.



Dr. Liuchen Chang with Drs. John McLaughlin, Gregory Kealey and Michel Couturier

Dr. Chang has published over 140 articles in refereed journals and conference proceedings, as well as 20 other publications including two books. He has served on several grant selection committees and is passionately committed to graduate training and research mentoring. He has supervised a total of 15 Ph.D. students, 23 M.Sc.E. students, as well as several post doctoral fellows and visiting research associates.

Since joining UNB in 1992, Dr. Chang has attracted over \$10M in sponsored research. As lead investigator Dr. Chang established in 2008 the Canadian Wind Energy Strategic Network with a total of over \$6M in support from NSERC and industrial sponsors. The purpose of the network is to promote wind energy as a viable energy supplement in Canada's energy portfolio, to solve technical challenges for deploying wind energy systems throughout Canada, and to empower the Canadian manufacturing sector to pursue international markets in related technologies.

The network is the first of its kind in Canada and comprises leading researchers from 16 universities across Canada working in collaboration with 15 industrial partners.

Dr. Chang exemplifies the qualities of both a University Research Scholar and an ambassador for UNB. He has been a tireless mentor for students and has earned the great respect of his colleagues for his gentle but confident leadership.

University Research Scholars 2009 (continued)**Dr. Ying Zheng**

Since joining UNB in 1999, Dr. Zheng has conducted novel research and scholarly work and has maintained a high level of academic competence. To date, she has successfully established a UNB Hydroprocessing Laboratory with the support of industry and local government. This is a unique research center in eastern Canada that focuses on upgrading technology for transportation fuels. Research collaborations with private companies, national laboratories and university research groups have also been established.

For the past five years, numerous research accomplishments have been made: 80 refereed publications were generated, and six US/Canadian patents were obtained and are being considered for commercialization. On the training side, Dr. Zheng has successfully attracted research funding/contracts to train 38 graduate students who are currently either working for Canadian companies or pursuing further education.

Her accomplishments are recognized internationally as she was awarded a Humboldt Research Fellowship in 2007 and an honored professorship by Xi'an Shiyu University in China.



Dr. Ying Zheng with Drs. John McLaughlin, Gregory Kealey and Michel Couturier

UNB Research Success Stories in 2009-10

UNB Receives \$296,000 for Environmental Projects

May 8, 2009

UNB New Release

The University of New Brunswick has received \$296,000 from the Government of New Brunswick's Environmental Trust Fund for a series of projects that will benefit the province.

Ten projects, developed by specific organizations in partnership with UNB, received the following support from the ETF:

- Climate Change Adaptation, Mitigation and Preparation in New Brunswick (\$50,000)
- Trends in Climatic Data Under Changing Climatic Conditions (\$59,500)
- Assessment of Canadian Regional Climate Model Scenarios for New Brunswick (\$30,000)
- Migration of Environmental Data into a Spatially Referenced Database (\$50,000)
- Aboriginal Environmental Monitor Training Program (\$15,000)
- State of the Environment Report for the St. John River (\$25,000)
- Assessment of Mercury in Brook Trout from Lakes in New Brunswick (\$6,000)
- Tools for Landuse Planning and Management in a Changing Climate: Modeling Temperatures in New Brunswick Riv-

ers Measuring Ecological Processes and Biodiversity in New Brunswick Headwater Lakes (\$20,000)

- Measuring Ecological Processes and Biodiversity in New Brunswick Headwater Lakes (\$25,000) - Geophysical Methods for Assessing Groundwater Flow Paths and Vulnerability in Agricultural Areas of New Brunswick (\$15,000)

Environment Minister Roland Haché said these projects and others funded by the ETF will benefit the entire province.

"Through these ETF projects, New Brunswick will foster environmental sustainability and ensure that communities around the province continue to be healthy places to live, be attractive to residents and be drivers of economic growth."

Tony Secco, vice-president academic for UNB Fredericton, said funding partnerships between the university and the province help UNB maintain its national reputation. They also help contribute to the experience of students at UNB.

"Research partnerships such as these are vital to the future success of New Brunswick," he said. "They allow UNB's faculty, staff and students to provide research leadership and help define eco-

"Through these ETF projects, New Brunswick will foster environmental sustainability and ensure that communities around the province continue to be healthy places to live, be attractive to residents and be drivers of economic growth."

- NB Environment Minister Roland Haché

nomics, social, and cultural strategies for the province."

More information on the ETF and the Government of New Brunswick's Climate Change Action Plan is available online (<http://www.gnb.ca/0009/index-e.asp>).

New Brunswick Researchers Receive Award of Excellence for Developing Innovative Aquaculture Practice

June 2, 2009

UNB News Release

Dr. Thierry Chopin, from the University of New Brunswick in Saint John, and Dr. Shawn Robinson, from Fisheries and Oceans Canada St. Andrews Biological Station, are the recipients of the 2009 Aquaculture Association of Canada Research Award of Excellence for taking the concept of Integrated Multi-Trophic Aquaculture (IMTA) from the laboratory to the realm of commercial production. IMTA is a practice that uses an ecosystem approach to aquaculture by growing multiple species that complement each other – like finfish, mussels and seaweeds.

Drs. Chopin and Robinson became interested in aquaculture in the late 1990s when they realized that the significant amount of byproducts generated by fed finfish aquaculture, such as salmon, could be used to provide nutrients and enhance the cultivation of extractive species, such as seaweeds (kelps and dulse) and invertebrates (suspension feeders such as mussels, and deposit feeders such as sea urchins, sea cucumbers and sea worms).

Through IMTA, some of the food, nutrients and energy considered lost in finfish monoculture are recaptured and converted into crops of commercial value, while biomitigation takes place.

“With this process, all the cultivation components have an economic value, as well as a key role in environmental and societal services and benefits,” said Dr. Chopin. “The harvesting of the different types of crops participates in the recapturing of nutrients and carbon from the coastal ecosystem. Companies practicing IMTA could be rewarded through a system of nutrient and carbon trading credits.” Moreover, the evolution in aquaculture practices contributes to modifying people’s perceptions of this food production system, which is anticipated to become even more prevalent in the future in order to satisfy human population with increasing seafood consumption.

In 2000, Drs. Chopin and Robinson assembled an inter-disciplinary team to investigate the different, complex and inter-related aspects of IMTA. This team included natural and socio-economic scientists and graduate students at the University of New Brunswick and the DFO St. Andrews Biological Station, and industrial partners (Heritage Salmon Ltd. - now Cooke Aquaculture Inc., Acadian Seaplants Limited and Ocean Nutrition Canada). Between 2001 and 2006, the team received funding from AquaNet, Canada’s Network of Centres of Excellence for Aquaculture, and the New Brunswick Innovation Foundation. Since 2006, the project has expanded from research and development to

“With this process, all the cultivation components have an economic value, as well as a key role in environmental and societal services and benefits.”

- Dr. Thierry Chopin, University of New Brunswick researcher

commercialization with the support of the Atlantic Canada Opportunities Agency’s Atlantic Innovation Fund.

Drs. Chopin and Robinson have always emphasized the need for scientific research and commercial IMTA to develop together. “Our goal is to produce a more efficient and environmentally benign practice that the Canadian aquaculture industry can evolve into, one that is rooted in ecosystem-based processes,” said Dr. Robinson. “All of the team’s research to-date indicates that this is entirely plausible.”

The Research Award of Excellence was recently presented to Drs. Chopin and Robinson in Nanaimo, B.C., during the Aquaculture Association of Canada’s annual meeting. The award recognizes high quality, innovative and current research that has had a significant impact on the aquaculture industry in Canada.

UNB Helps Develop New Federal Program for Business

June 12, 2009

UNB News Release

A new federal government program will help small- and medium size firms across Canada grow while also providing information technology internships to students.

The new Industry Canada program, called the Small Business Internship Program (SBIP), was announced Friday morning at the University of New Brunswick Saint John.

UNB is pleased to have been part of the pilot project that led to the development of SBIP, which provide 400 students nationwide with employment annually and will receive \$17.5 million in funding through 2014 under the Government of Canada's Youth Employment Strategy.

Under the SBIP, businesses will be able to hire a student for a 12- week period to help them establish an e-commerce project related to their business. SBIP will reimburse up to 75 per cent of each participating businesses eligible salary and benefit costs for the student.

Saint John MP Rodney Weston announced the new program on behalf of The Honourable Diane Ablonczy, minister of state (small business and tourism).

"SBIP will help numerous businesses here in Saint John grow through the power of information and communications technologies and e-commerce," said Weston.

UNB Saint John's Electronic Commerce

Centre developed the foundation for the new federal program based on research it has conducted over the past several years with small- and medium-size firms.

Daniel Doiron, Director of the centre, said that research has shown that while many firms have websites, less than half of those with an Internet presence use the sites to perform secure e-commerce transactions with customers.

"Most businesses that have taken their sites to the next step by adding e-commerce have done so with the help of a facilitator," he said. "The SBIP program will enable students to be that facilitator."

In addition to helping design the new federal program, the centre will also help deliver it in New Brunswick and Prince Edward Island.

It's not the first time the centre has gone into the local and regional communities to help businesses. The E-Commerce Centre has recently completed a round of 50 community visits across Atlantic Canada designed to help local firms improve the way they leverage the Internet to grow their firms.

"As New Brunswick's national comprehensive university, we have an important role to play in helping grow the local, regional and national economy," said Doiron.

Robert MacKinnon, vice-president of UNB Saint John, said he's pleased with

"SBIP [Small Business Internship Program] will help numerous businesses here in Saint John grow through the power of information and communications technologies and e-commerce"

- Honourable Rodney Weston, Member of Parliament for Saint John

the role UNB played in the development of the SBIP.

"UNB Saint John was a pioneer when we introduced an electronic commerce program and an Electronic Commerce Centre more than a decade ago," he said. "This Centre has found a way to apply the research that we do at UNB to assist small and medium sized businesses to compete in an increasingly competitive global environment. We are proud of the work done through the centre."

Established in 1785, UNB is one of the oldest public universities in North America. It's also one of the top five comprehensive universities in Canada, according to *Maclean's magazine*. UNB has more than 12,000 students from over 100 countries. As the largest research institution in New Brunswick, UNB conducts 80 per cent of the province's university research. It has more than 3,500 faculty and staff, and an annual operating budget of more than \$163 million. UNB's two main campuses are located in Fredericton and Saint John, N.B.

UNB Researchers Look at Carbon Storage to Reduce Greenhouse Gases

June 24, 2009

UNB News Release 09-103

Researchers at the University of New Brunswick are to look into possible options for reducing New Brunswick's industrial emissions of greenhouse gases such as carbon dioxide (CO₂).

The atmospheric build-up of these greenhouse gases is generally agreed by scientists to be one of the significant causes of climate change.

David Keighley, with the department of geology at UNB's Fredericton campus, says increasing temperatures in many parts of the world have contributed to glaciers melting, sea levels rising, changes in plant and animal habitats, and other global impacts.

"One possible way to reduce the negative impacts of higher atmospheric concentrations of CO₂ is to capture and store the gas before it gets released into the air," said Dr. Keighley.

With a financial investment of \$71,000 from the New Brunswick Climate Change Secretariat and Irving Oil, Dr. Keighley and a research associate will undertake a preliminary study that will evaluate the potential in New Brunswick for permanently storing large volumes of CO₂ in what geologists call deep saline reservoirs. These reservoirs are in rocks isolated over a kilometer deep in the subsurface and contain non-potable, salty water. They are considered to be among the most suitable areas in Eastern Canada for storing CO₂.

"The commitment to explore opportunities for underground storage

of carbon was made in the New Brunswick Climate Change Action plan," said Environment Minister T.J. Burke.

"By supporting this project, we are addressing that commitment and exploring new ways to achieve greenhouse gas emission reductions."

The research team will start their investigations in late July. They will focus their work from Sussex to south of Moncton, in the rocks associated with the oil and gas fields at these locations, and deep underneath the Bay of Fundy.

If they are successful in identifying sites with carbon storage potential, additional research will be required in order to further evaluate the geological conditions. If the storage potential is confirmed, then specific storage proposals can be considered in the future. Currently there is no subsurface carbon storage anywhere in Eastern Canada.

"As we explore energy projects that perform both economically and environmentally, we have continued to focus on reducing our carbon footprint through energy efficiency and innovation," said Kevin Scott, commercial director of refining growth for Irving Oil. "The challenge with reducing carbon dioxide is that mitigation methods and technology are still in the early stages of development; however, we recognize the importance of finding feasible solutions to this challenge and responding to the aspirations of the broader community. Along with the province, we are pleased to be partnering with the researchers at UNB on this project."

"As we explore energy projects that perform both economically and environmentally, we have continued to focus on reducing our carbon footprint through energy efficiency and innovation.[...] we are pleased to be partnering with the researchers at UNB on this project."

- Kevin Scott, commercial director of refining growth for Irving Oil

Dr. Keighley says a lot of environmental, economic, and scientific -technological considerations are going to have to come together before carbon storage can become an option.

"If all this works out, then the people of New Brunswick will have another way of meeting the demand to reduce greenhouse gas emissions."

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Public Policy has Deep Roots in Provincial Labour History

August 14, 2009

UNB News Release: 09-112

Today's headlines have a long history, say the organizers of a conference on public policy and labour history at the University of New Brunswick.

The event brings together local researchers, community leaders, national and international experts to discuss how the deep roots of labour in New Brunswick have continued to serve the needs of provincial workers and influence public policy.

The conference, Informing Public Policy: Socio-economic and Historical Perspectives on Labour in New Brunswick, runs September 1 and 2 at the Wu Centre on UNB's Fredericton campus. Participants are drawn from all parts of the province and also feature keynote speakers from Laval, Harvard and Concordia universities.

"As New Brunswick continues to build and sustain a vibrant society in the 21st century, it's crucial that we learn about the hard won achievements of the past and their part in shaping provincial history," said conference organizer Professor Linda Kealey of the University of New Brunswick.

"The impact of labour history on the future development of public policy cannot be underestimated," added Professor Nicole Lang of the Université de Moncton, who is also one of the lead organizers for the event. "New Brunswick is full of dualities urban and rural, French and English, north and

south, traditional and innovative, all of which influence how we sustain ourselves as a provincial community."

The conference is a major event associated with "Re-Connecting with the History of Labour in New Brunswick: Historical Perspectives on Contemporary Issues," a Community-University Research Alliance (CURA) project supported by the Social Sciences and Humanities Research Council of Canada and led by researchers at the University of New Brunswick and the Université de Moncton.

Sessions at the two-day event include topics that underline the connections between the issues facing the province in both the past and the present:

- The Crisis in the Forest Industry
- The Making of Labour Law and Public Policy
- The Ongoing Crisis in Nursing
- What Workers Need to Know: A Labour Education
- L'Acadie at Work: The Survival and Development of Acadian Communities

Other highlights of the conference include the official launch of the New Brunswick Museum Nursing History Exhibition, a labour and business documents display by the Provincial Archives of New Brunswick, and multimedia and research poster displays by graduate students.

A Keynote Public Lecture by Elaine Bernard of Harvard University, entitled Creating the Future by Understanding the Past, takes place on Tuesday

"As New Brunswick continues to build and sustain a vibrant society in the 21st century, it's crucial that we learn about the hard won achievements of the past and their part in shaping provincial history."

- Dr. Linda Kealey, University of New Brunswick professor & conference organizer

evening, Sept. 1, at 7 p.m. at the Wu Centre with reception to follow.

Speakers will present in both English and French, and simultaneous translation is provided.

More information about the conference may be found at www.informingpublicpolicy.ca

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UNB Professor to Lead Forest Industry Research Network

September 23, 2009
UNB News Release: 09-129

Canada is a world leader in the production of wood building products, but in recent years this key manufacturing sector has faced unprecedented challenges. The current crisis has resulted in numerous permanent mill closures across the country.

With challenges comes opportunities and for Ying Hei Chui, forestry professor at the University of New Brunswick in Fredericton, the opportunity came when he was selected by Natural Sciences and Engineering Research Council (NSERC) of Canada to be the scientific director of the Innovative Wood Products and Building Systems Strategic Network.

Dr. Chui is one of four directors selected to lead a pan-Canadian, multi-disciplinary research network under NSERC's Forest Sector R&D Initiative.

The other three strategic networks that are part of this initiative are the Value Chain Modeling Strategic Network, the Innovative Green Papers Strategic Network, and the Biomaterials and Chemicals Strategic Network. All four networks will be devoted to developing next-generation solutions for the Canadian forest sector. They will address priority research elements identified by FPInnovations in their Flagship Innovation Program.

"The goal of our network is to increase the use of wood products in non-

residential and mid-rise building construction in Canada and overseas markets," said Dr. Chui.

In North America alone it is estimated that wood's share in the mid-rise and non-residential construction markets is about 10 per cent, but wood's market share could be as high as 57 per cent. This will translate into additional revenue of about \$3 billion per year for the wood industry. Increased growth in non-traditional construction represents a logical goal for the wood industry to pursue, says Dr. Chui.

"It is very important to the future of our forest industry that wood is able to capture a bigger market share in the mid-rise and non-residential construction sectors," said Dr. Chui. "The success of the proposed research network will not only help to diversify the industry's wood products and services and broaden its markets, but it will help bring together a group of leading researchers in a broad range of disciplines, including structural and fire engineering, wood science, architecture, building science, that will form the technical backbone for future Canadian wood and construction industries."

Dr. Chui brings over 20 years of research and administrative experience to this new network. He has published over 200 technical papers and is recognized across the world for his research on performance of structural wood systems and engineered wood products. He held the position of director of the Wood Science and

"The success of the proposed research network will not only help to diversify the industry's wood products and services and broaden its markets, but it will help bring together a group of leading researchers in a broad range of disciplines..."

- Dr. Ying Hei Chui, University of New Brunswick professor, director of the NSERC Innovative Wood Products and Building Systems Strategic Network

Technology Centre at UNB between 1997 and 2008. He is an active member of the ForValueNet research network and works as a researcher and professor at UNB.

Dr. Chui's network will include a team of researchers from universities across the country, and they will collaborate closely with FPInnovations scientists. The team has already received a \$108,000 grant from NSERC to begin the preliminary work, and they are currently preparing a proposal to NSERC for additional funding to conduct the research activities. If the proposal is successful, the network research will likely begin in 2010 and is expected to be complete by 2015.

For more information, please contact Dr. Chui at yhc@unb.ca, or (506) 453-4942.

Three UNB Researchers Receive CRC Nods

September 23, 2009
UNB News Release

The University of New Brunswick's reputation as a leader in aquaculture and education research was further enhanced today.

Gary Goodyear, Minister of State (Science and Technology), announced more than \$1.8 million in federal support for two new Canada Research Chairs (CRC) and a CRC renewal in these areas.



Jose Domene, faculty of education at UNB Fredericton, is the new Canada Research Chair in School to Work Transition. His research involves examining the links between social supports, physical/psychological health and the transition from post-secondary school to full-time employment. His work has the potential to inform future social policy, educational programming and counseling practices to ensure that more young adults successfully finish their schooling and enter the work force.



Beginning in 2010, **Christopher Martyniuk** will be the new Canada Research Chair in Aquatic Molecular Ecology. Dr. Martyniuk is coming to UNB from the University of Florida. Based in the department of biology and the Canadian Rivers Institute at UNB Saint John, he will look at the effects that aquatic contaminants from municipal and industrial sources have on fish reproduction and health. His research will help increase understanding of how such aquatic toxicants affect wildlife and human health around the world.



Karen Kidd, department of biology and Canadian Rivers Institute at UNB Saint John, has had her Canada Research Chair in Chemical Contamination of Food Webs renewed. Her research involves understanding the factors that

affect the accumulation of persistent pollutants through freshwater food webs, and the effects on human stressors, such as municipal effluents, on aquatic organisms and their food webs. Her work provides much-needed information to assess the risks these pollutants pose to human health and the health of fish-eating wildlife.

As Tier 2 chairs, each will receive \$500,000 from the Canada Research Chairs program over the next five years. In addition, the Canada Foundation for Innovation will provide an additional \$333,409 in infrastructure funding; \$72,411 to Dr. Domene, \$151,274 to Dr. Martyniuk, and \$109,724 to Dr. Kidd.

Profiles of these, and all of UNB's Canada Research Chairs, are located at <http://www.chairs-chaires.gc.ca/>. Select chairholders.

The Canada Research Chairs Program was established by the Government of Canada in 2000.

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The government of Canada news release is located at <http://www.chairs-chaires.gc.ca/home-accueil-eng.aspx>.

UNB Professor to Study Plants Grown in Space

November 17, 2009
UNB News Release

It's been years in the making and yesterday, Rod Savidge, UNB tree physiologist, watched as the Space Shuttle Atlantis launched approximately 18 plants into space.

Dr. Savidge is the principal investigator for the APEX-Cambium experiment, which will help determine the role

gravity plays in trees forming different kinds of wood.

The goal of this research is to improve knowledge of fundamental biological processes in trees. Despite all the money spent on forestry research, relatively little focuses on basic physiology, says Dr. Savidge. "We don't understand how trees make wood."

During his stay in space, Canadian

Space Agency (CSA) Astronaut Bob Thirsk will be conducting the study funded by the CSA. After the plants return to Earth, they will be delivered to UNB and Dr. Savidge and his team will compare the space plants with samples grown here on Earth. For more information on Dr. Savidge's experiment, visit <http://www.asc-csa.gc.ca/eng/sciences/apex.asp>

UNB Receives \$752,223 From CFI in Support of Four of Its Top Researchers

December 18, 2009
UNB News Release 09-209

Four research projects at the University of New Brunswick in Fredericton have been given a boost thanks to a recent funding announcement from the Canada Foundation for Innovation (CFI). UNB was awarded \$752,223 for projects led by John Hughes Clarke, Jason Addison, Michael Thomas and Stacey Reading.

Dr. Hughes Clarke, professor of geodesy and geomatics engineering, received \$396,415 toward his research in ocean mapping and arctic operations. Dr. Addison, professor of biology, was given \$100,895 for his analysis of population genetic structure of marine invertebrates. \$234,588 will go towards a laboratory facility where Dr. Thomas, professor of civil engineering, will research sustainable concrete construction. Finally, Dr. Reading, professor of kinesiology, received \$20,325 for his research in the prevention, rehabilitation and treatment of vascular complications of diabetes mellitus.

"This contribution from CFI will help us continue to produce leading research for the province, country and beyond," said Greg Kealey, provost and vice-

president research at UNB. "We look forward to continued collaboration with the federal and provincial governments to attract world-class researchers to our province."

"The investments being announced today at UNB will further enhance our country's reputation as a destination of choice for outstanding researchers," said Dr. Eliot Phillipson, President and CEO of the CFI. "They will make our universities even more competitive when it comes to attracting the best and brightest researchers from around the world."

The CFI continues to support cutting-edge research infrastructure that helps stimulate various sectors of our economy associated with such capital projects. It is estimated that every dollar invested directly in research yields over \$7 in economic benefits including spin off jobs.

The CFI announced a total of \$59,394,902 in new funds to support 262 projects at 40 institutions across Canada. The investment was approved by the CFI's Board of Directors in November 17, 2009, following a rigorous merit-review process. A total of \$45,688,386 was awarded under the Leaders Opportunity Fund, which

provides infrastructure support to Canadian institutions so they can attract and retain the very best of today and tomorrow's leading researchers at a time of intense international competition for knowledge workers. The remaining \$13,706,516 was awarded under the Infrastructure Operating Fund, a complementary program that assists research institutions with the incremental operating and maintenance costs associated with new infrastructure projects. For a complete list of the projects awarded, please visit www.innovation.ca

Established in 1785, UNB is one of the oldest public universities in North America. With more than 12,500 students from more than 100 countries, UNB has the best student-to-faculty ratio of Canada's comprehensive universities, according to Maclean's magazine. As the largest research institution in New Brunswick, UNB conducts over 75 per cent of the province's university research. The university has more than 3,500 faculty and staff, and an annual operating budget of more than \$160 million. UNB's two main campuses are located in Fredericton and Saint John, New Brunswick.

UNB Research Gets a Boost from AIF Funding

January 29, 2010

UNB News Release: 10-087

Three researchers at the University of New Brunswick received a total of \$5.8 million from Round VII of the Atlantic Innovation Fund (AIF) delivered through the Atlantic Canada Opportunities Agency (ACOA).

For UNB researcher Kenneth Kent, this means the creation of a new centre that will work to make computer systems faster.

The demands for faster processing speeds are important today in commercial/research computing, but they have reached their practical limit. Currently, IBM, Oracle and Microsoft are racing to develop new competitive multicore solutions to achieve high-performance results.

With the AIF investment, Dr. Kent and his team will create a set of software tools and techniques to run IBM's J9 Java Virtual Machine more efficiently on massive multicore systems.

Dr. Kent said this project brings short-term and long-term opportunities to UNB. "By teaming with IBM to enhance Java Virtual Machine technologies we are providing a hands-on industrial/research learning environment and building a critical mass for the establishment of an IBM Centre of Advanced Study," said Dr. Kent. "This centre will act as a vehicle for future projects between the Faculty of Computer Science and IBM beyond the life of the AIF-funded project."

Through the creation of a Centre of Enhanced Study, in partnership with IBM, UNB will attract research and development staff to Fredericton. The centre will have approximately 20 staff and provide research opportunities to more than 20 graduate students, which will position UNB to be a world leader in research and development in Java Virtual Machine technology.

This project, with total estimated costs of \$5.1 million, will receive approximately \$3 million from the AIF over a four-year period.

The Round VII of AIF also funded two other UNB projects. Chris McGibbon, professor of kinesiology, received \$1.9 million towards the development of a toolkit to perform the assessment of muscle impairment; Yonghao Ni, professor of chemical engineering and chemistry, and Huining Xiao, professor of chemical engineering, received \$976,000 to develop new technology for the production of value-added products from hemicelluloses in pulp mill waste streams. In addition, Andy Justason from the Centre for Nuclear Energy Research, owned by UNB and the Research & Productivity Council, was awarded \$1.2 million to develop two new corrosion monitoring instruments to be used for predictive maintenance in nuclear plants and other heavy industrial facilities.

Greg Kealey, vice-president research and provost at UNB, said funding support such as the AIF is what allows UNB to be the leading research institution in the province.

"This significant investment from ACOA will allow our researchers to embark on important projects that will attract more people to Fredericton, create better opportunities for our students, and create solutions for medical, industrial and technological challenges within our nation and beyond," said Dr. Kealey. "The AIF is one of ACOA's most creative and innovative programs and has brought universities and the private sector together in creative relationships to develop the Atlantic economy."

The announcement was made this week in Moncton by Keith Ashfield, Minister of National Revenue, Minister of the ACOA and Minister for the Atlantic Gateway. It was part of a series of announcements highlighting 30 innovative R&D projects selected from

"Productivity and innovation are key factors in Canada's economic success. The Atlantic Innovation Fund is an important catalyst for building research and development capacity in our region. "

- Honourable Keith Ashfield, Member of Parliament for Fredericton

across Atlantic Canada that will benefit from AIF support available under Round VII of the program.

"Productivity and innovation are key factors in Canada's economic success," said Minister Ashfield. "The Atlantic Innovation Fund is an important catalyst for building research and development capacity in our region. This latest round of funding ensures that more research will continue to be undertaken, and more innovative ideas commercialized, so that Atlantic businesses continue to grow, adapt, diversify and become more competitive."

Under Round VII of the AIF, research and development across Atlantic Canada is benefiting from a federal investment of \$62.4 million, \$19.6 of which will be invested right here in New Brunswick.

Established in 1785, UNB is one of the oldest public universities in North America. With more than 12,500 students from more than 100 countries, UNB has the best student-to-faculty ratio of Canada's comprehensive universities, according to Maclean's magazine. As the largest research institution in New Brunswick, UNB conducts over 75 per cent of the province's university research. The university has more than 3,500 faculty and staff, and an annual operating budget of more than \$160 million. UNB's two main campuses are located in Fredericton and Saint John, New Brunswick.

Two UNB-Led Research Projects Awarded Over \$10 Million from NSERC

February 5, 2010

UNB News Release: 10-105

Thierry Chopin from the University of New Brunswick in Saint John and Ying-Hei Chui from UNB Fredericton are two of 11 Canadian researchers who will be leading Strategic Research Networks recently awarded by the Natural Sciences and Engineering Research Council of Canada (NSERC).

Dr. Chopin is the scientific director of the NSERC Canadian Integrated Multi-Trophic Aquaculture Network (CIMTAN), which was awarded \$5 million over the next five years. Aquaculture production, which already supplies over 47 per cent of the seafood consumed worldwide, has increased rapidly over the last few decades, making it the fastest growing global food production sector. However, there are concerns regarding environmental, economic and social impacts associated with aquaculture.

An innovative solution for the environmental sustainability, economic stability and societal acceptability of aquaculture is integrated multi-trophic aquaculture (IMTA). IMTA combines the cultivation of fed species (e.g. finfish) with inorganic extractive species (e.g. seaweeds) and organic extractive species (e.g. suspension- and deposit feeders) for a balanced ecosystem management approach. Canada is at the forefront of the research and development of this concept.

CIMTAN will conduct research on environmental system performance, biomitigation efficiency and species interactions; system design and engineering; and economic analysis and social implications. CIMTAN will aim at creating the conditions for increased economic opportunities in rural coastal regions, including First Nations communities, providing sustainable, quality seafood to Canadians, concomitant with increased societal acceptance of the aquaculture sector and public policy development for improved government decision-making.

"CIMTAN is a network of 26 scientists from

eight universities, six Fisheries and Oceans Canada (DFO) laboratories, one provincial laboratory and three industrial partners, spread over six provinces," explains Dr. Chopin.

"With \$5 million from NSERC, \$1.1 million from DFO and significant cash and in-kind contributions from all CIMTAN members, it is a \$9.6-million budget over five years, which will allow us to take IMTA from a common sense concept to commercialization, while providing interdisciplinary training to 114 highly qualified personnel."

Dr. Chui is the scientific director of the NSERC Strategic Network in Innovative Wood Products and Building Systems, which was awarded \$5.3 million over five years. This new network will work closely with FPInnovations, the national research arm of the forest products industry to increase the use of wood in mid-rise and non-residential buildings in Canada and other markets. Relative to other materials, wood products have many advantages for mid-rise urban construction. These include reduced construction time; lighter weight, which minimizes cost on foundation; and being a 'green' carbon-neutral, low production energy option.

The research network, called NEWBuildS will create advanced technologies and technical tools that accelerate further developments in wood products and construction industries. NEWBuildS will investigate the use of traditional light wood frame methods in mid-rise construction for residential, as well as heavier systems built with engineered wood products and innovative approaches that combine wood with other materials to create hybrid systems.

Around 40 Canadian researchers with expertise in architectural, structural, fire, serviceability, acoustic, and durability aspects of building design and performance will conduct leading research to provide solutions that meet the needs of society, sustain key industries and train high level experts of tomorrow. Besides Dr. Chui, the UNB researchers involved are Ian Smith and Meng Gong from UNB's faculty of forestry

and environmental management.

"Currently there is worldwide interest in using wood as a primary structural material to construct mid to high-rise buildings, said Dr. Chui.

"This interest has presented the Canadian wood industry with huge market opportunity. Whether the wood industry is able to seize this opportunity and expand beyond the low-rise residential building market will depend on the development of innovative construction technologies and wood-based building systems that meet the performance requirements stipulated by building codes for those types of buildings."

Greg Kealey, UNB's provost and vice-president (research), says NSERC has historically supported UNB's efforts to transfer their research findings to the community.

"As one of Canada's top comprehensive research universities, UNB is particularly strong at research partnerships," said Dr. Kealey. "Hence, we are well-equipped to lead NSERC programs aimed at nurturing industry-university relationships."

The grants from NSERC, totalling \$56 million over five years will support 11 research networks focused on areas of social and economic importance. This announcement brings UNB's total of network grants to three, which is among the top in Canada. The grants were awarded in Ottawa this week by Tony Clement, Minister of Industry.

"Our government's investments in science and technology are creating jobs, stimulating the economy and improving Canadians' quality of life," noted Mr. Clement. "We are investing more in innovation than ever before in Canada's history. By supporting the research being done by these networks, we are building the economy of tomorrow and helping our universities blaze the way to greater long-term prosperity and innovation that will benefit Canadians for years to come."

Two UNB Researchers Receive Major Health Research Grants

March 1, 2010

UNB News Release: 10-121

Two University of New Brunswick researchers have received research grants of close to \$1 million to carry out projects that will improve health services for New Brunswickers.

The funding was awarded through the Canadian Institutes of Health Research (CIHR) Partnerships for Health System Improvement (PHSI) program and the New Brunswick Health Research Foundation, a funding partner in the PHSI program.

Judith Wuest received \$484,950 over three years to examine the feasibility of a primary health-care intervention for women who have left abusive partners in the past three years. Nicole Letourneau received \$499,829 over three years to study telephone-based support programs for new mothers suffering from postpartum depression (PPD).

Dr. Wuest and Dr. Letourneau are researchers and professors in the faculty of nursing at UNB Fredericton. "These grants are a testament to the critical work that Nicole and Judy are doing in the areas of women's health, mental health, and family and community services, and in influencing public policy and social change," said Greg Kealey, UNB's provost and vice-president (research). "Both researchers are contributing significantly to UNB's rapid growth in external research funding which has exceeded \$50 million in each of the past two years."

Dr. Wuest's research project will evaluate a nurse-led health intervention delivered in collaboration with existing domestic violence outreach services. She has partnered with the New Brunswick Women's Issues Branch, the New Brunswick Department of Health, and Liberty Lane Inc., which collectively are providing in-kind contributions of close to \$50,000. These partners will also provide direction for the research and become the first users of the new knowledge.

"One in three Canadian women experiences abuse from a male partner," said Dr. Wuest. "Women who experience abuse have more physical and mental health problems than other Canadian women. Health services focusing on prevention and building capacity

for managing health problems associated with domestic violence are important for improving health and reducing health-care costs. Yet, interventions to address the physical and mental health issues of women after leaving have not been developed."

The proposed intervention is based on previous CIHR-funded research by Dr. Wuest and colleagues that looked at reports from abused women of the priority health challenges, strengths for managing health, and factors that obstruct their efforts. This research identified that finding new, cost-effective ways to improve the health of women after leaving is important for planning policy and services for this priority, at-risk group.

Dr. Letourneau's research project addresses postpartum depression, which is the most frequent illness experienced by new mothers, affecting nearly one in seven.

Her team includes health researchers at the University of Alberta, UNB, the University of Toronto and the IWK Childrens' Hospital, and decision-makers with the Public Health Agency of Canada and three divisions of the New Brunswick Department of Health, including the Primary Health Care Unit, Office of the Chief Medical Officer of Health, and Mental Health and Primary Care Services. She has also established a community advisory committee of regional experts in mental health and health services

"Mothers with PPD experience symptoms of low mood, loss of energy, agitation, insomnia or tiredness, excessive guilt, confusion, and thoughts of self harm," said Dr. Letourneau. "Less than half of women with PPD get the support they need. In our previous research, these mothers reported that peer support is most needed."

In Phase 1 of the project, an accessible telephone-based peer-support intervention will be developed for mothers affected by postpartum depression. In Phase 2, the effectiveness and acceptability of the intervention will be tested and the support program will be adapted to promote sustainable and effective telephone-based support for these vulnerable women.

It is anticipated that this innovative intervention has the potential to provide more affordable, acceptable, accessible, and timely care to mothers in New Brunswick suffering with PPD. This research will also serve as a model for integrating peer support into mental health services in other regions in Canada.

The projects are two of 19 that received \$11 million from CIHR and its partners.

"These research projects target the emerging health needs of Canadians and will provide results tailored to the needs of health policy decision-makers," said Keith Ashfield, Member of Parliament for Fredericton, on behalf of Leona Aglukkaq, Minister of Health. "Our government is committed to working with our provincial and territorial counterparts who are responsible for health care delivery by supporting innovative, solution-based research."

The New Brunswick Health Research Foundation, a major partner in the UNB PHSI grants, was created in July 2008 with a mandate to co-ordinate, support and promote health research in New Brunswick.

"The success of Dr. Wuest and Dr. Letourneau through the rigorous review process is an indication of the high-quality health research we undertake in this province, said Robert Simpson, executive director of NBHRF. "As New Brunswickers, we will benefit not only from the results of the research, but also through the training the research will provide to students and young researchers involved with these projects."

Established in 1785, UNB is one of the oldest public universities in North America. With more than 12,500 students from more than 100 countries, UNB has the best student-to-faculty ratio of Canada's comprehensive universities, according to Maclean's magazine. As the largest research institution in New Brunswick, UNB conducts over 75 per cent of the province's university research. The university has more than 3,500 faculty and staff, and an annual operating budget of more than \$160 million. UNB's two main campuses are located in Fredericton and Saint John, N.B.

UNB Grad Students Making a Difference on Land, in Water, and in Outer Space

March 24, 2010

UNB News Release: 10-134

Three University of New Brunswick graduate students are working on solutions to some important economic, health and safety issues here on Earth and in outer space.

Their research has earned them 2009 Michael Smith Foreign Study Supplements, which are awarded under the federal government's Canada Graduate Scholarships Program. Valued at \$6,000 each, they are designed to help offset the costs of undertaking research studies outside Canada.

The recipients are:

James Hogan, master of science in mechanical engineering at UNB Fredericton, is looking at ways to protect infrastructure and astronauts in space. He is researching the effects of high-speed impact of space materials to help test and conceive new shielding technologies.

"High-speed projectiles whizzing around above the Earth can collide with space infrastructure at speeds of up to 72 kilometres per second," said Mr. Hogan. "Potentially, these projectiles could cause catastrophic damage, even though some are as small as one millimetre in diameter or less."

Mr. Hogan is using accelerator technologies located at the UNB Planetary and Space Science Centre's new High-speed Impact Research and Technology facility. He is currently in France collaborating with colleagues at the Institut Franco-Allemand de Recherches de Saint-Louis deploying electromagnetic launch systems to simulate space collisions. The goal of this research is to achieve impact velocities in the lab beyond eight kilometres per second to more realistically copy impact conditions in space.

He is jointly supervised by John Spray of the

Planetary and Space Science Centre and Robert Rogers of the department of mechanical engineering.

Aaron Frenette, master of science in biology at UNB Fredericton, is trying to increase cod farming in Atlantic Canada. He was in Iceland in December collecting parasites (Loma morhua) from Atlantic cod to compare them with parasites from cod here in Atlantic Canada.

"Loma morhua is limiting the production potential of Atlantic cod across the North Atlantic Ocean and it is essential that differences in these parasites be identified to ensure efficient and accurate diagnosis of infection," said Mr. Frenette.

Mr. Frenette's supervisors are Michael Duffy and Michael Burt in UNB Fredericton's department of biology. The team has adopted a multifaceted approach for limiting Loma morhua transmission to cod by identifying genetically resistant families, identifying drugs that can block or eliminate parasite infections, and testing methods to vaccinate cod and prevent parasite infections. The project will enhance productivity of cod aquaculture operations for additional economic diversity and economic gain in Canada.

Jonathan Keow, master of science in biology at UNB Fredericton, is working on a novel approach to tag specific proteins in live embryos.

As a single-celled embryo develops into a complex organism, many processes must occur to change the shape, develop structures and regulate the function of the developing embryo.

"The matrix metalloproteinases are a family of proteins responsible for many of these processes during animal development, and also in adult systems," explained Mr. Keow. "The regulation of this family of proteins is not well understood, and their misregulation

leads to a variety of pathologies, ranging from lethal birth defects to common ailments such as osteoarthritis, heart disease and cancer metastasis."

Next month, Mr. Keow will be travelling to The Scripps Research Institute in La Jolla, Calif., to conduct his research. His project aims to use current molecular biology and biochemical methods to analyze the regulatory mechanisms that control the activity of matrix metalloproteinases and develop a reliable method to tag these proteins in living organisms.

His supervisor is Bryan Crawford in the department of biology at UNB Fredericton.

The Canada Graduate Scholarships – Michael Smith Foreign Study Supplements Program supports high-calibre Canadian graduate students as they pursue research experiences at institutions outside of Canada. The program is open to students who hold active Canada Graduate Scholarships and are pursuing master's or doctoral degrees. The supplements are awarded by the Natural Sciences and Engineering Research Council, the Social Sciences and Humanities Research Council and the Canadian Institutes of Health Research.

Established in 1785, UNB is one of the oldest public universities in North America. With more than 12,500 students from more than 100 countries, UNB has the best student-to-faculty ratio of Canada's comprehensive universities, according to Maclean's magazine. As the largest research institution in New Brunswick, UNB conducts over 75 per cent of the province's university research. The university has more than 3,500 faculty and staff, and an annual operating budget of more than \$160 million. UNB's two main campuses are located in Fredericton and Saint John, New Brunswick.

UNB Researcher Working to Enhance Cod Aquaculture in Atlantic Canada

March 24, 2010

UNB News Release: 10-134

The collapse of the wild cod fishery off the east coast of Canada has led to a surge of interest in Atlantic cod farming.

Cod aquaculture has the potential to stimulate Atlantic Canada's economy through research and innovation, economic diversity and employment, especially in communities that relied heavily on the wild cod fishery.

However, as with all new farming endeavours, parasites can cause challenges in mass cultivation of plant or animal species. One that impacts cod farming is Loma morhua, a microscopic parasite that hampers fish cultivation at levels below that required for industry development.

This is where the University of New Brunswick's marine parasitology program and research scientist Michael Duffy come into the picture. Dr. Duffy and his research team are investigating the level of infection and impact of Loma on growth and mortality of farmed cod.

Aaron Frenette, a graduate student on the research team, has developed a test to diagnose Loma and to monitor infection levels. This is an important first step to assess impacts and options to bring Loma infections under control.

"Loma has been around for a while," said Dr. Duffy. "It occurs naturally in wild cod, and is located in the internal organs and gills of fish. But it's only since introducing cod to aquaculture that this has

become a big problem. The high stocking densities in aquaculture sites lead to heavy parasite infections that can cause impaired growth and high mortality in farmed cod."

In the worst cases, Loma can infect 100 per cent of cod in sea cages and impede the farmer's ability to achieve peak production.

Infected cod do not pose any health threat to humans, but many fish don't live long enough to get to the size needed for distribution in the consumer market.

Dr. Duffy's research team has also adopted a multi-faceted approach to limit parasite transmission among cod at aquaculture sites and identify genetically resistant fish for use in breeding programs. They will also identify drugs that can block or eliminate parasite infections and will test methods to vaccinate cod and prevent parasite infections.

The project recently received \$442,476 from the Natural Sciences and Engineering Research Council's Strategic Project Grants program. This funding will support continuation of work initiated by UNB and provide industry with research that will help identify solutions and tools that can enhance cod aquaculture development and economic opportunities for Atlantic Canada.

"Our project will train researchers in an area of priority towards establishing a significant cod aquaculture industry in Canada," said Dr. Duffy. "Aquaculture specialists and infectious disease spe-

"Aquaculture specialists and infectious disease specialists are integral to Canada's future successes in this target area for benefit to Canada's economy, conservation of native species in the ocean environment (wild cod), and contributions to food demands in global society."

- Dr. Michael Duffy, University of New Brunswick professor

cialists are integral to Canada's future successes in this target area for benefit to Canada's economy, conservation of native species in the ocean environment (wild cod), and contributions to food demands in global society."

The project has received substantial in-kind and logistical support from Fisheries and Oceans Canada and industrial sponsor Kelly Cove Salmon Ltd., a division of Cooke Aquaculture Inc. Dr. Duffy's co-researchers on the project are Drs. Tillmann Benfey, UNB; Lucy Lee, Wilfrid Laurier University; and Nels Bols, University of Waterloo.

UNB is one of the only universities in Canada that has research expertise and specialization in marine parasitology. Established in 1785, it is one of the oldest public universities in North America. As the largest research institution in New Brunswick, UNB conducts over 75 per cent of the province's university research.

UNB Researcher Receives \$1.4 Million to Continue Work in Paper Production

March 29, 2010

UNB News Release: 10-136

According to Yonghao Ni, director of the Limerick Pulp and Paper Research and Education Centre at the University of New Brunswick, the Canadian pulp and paper industry needs research and innovation to stay competitive in the world market.

“Pulp and paper is Canada’s largest manufacturing industry and has been a world leader in technological advances,” said Dr. Ni. “However, its dominance is being challenged by emerging countries like Brazil and Indonesia where trees are growing much faster and labour costs are much lower than in Canada.

“To increase the competitiveness of the Canadian pulp and paper industry, new processes and technologies need to be developed.”

This has been the focus of Dr. Ni’s work. He holds the Canada Research Chair (CRC) in Pulp and Paper Science and Engineering. Today an announcement was held to recognize the Government of Canada’s commitment of \$1.4 million to Dr. Ni for a second, seven-year term CRC renewal, effective Dec. 1, 2009.

A professor of chemistry and chemical engineering, Dr. Ni is highly respected worldwide for his innovations in environmentally-friendly bleaching pulps for paper production. His current research involves the development and

refinement of chemical processes to improve the efficiency of pulp and paper production.

As Canada Research Chair, he has been able to further his work in decreasing production costs, improving production efficiencies and reducing the environmental impact of the pulp and paper industry. He has also advanced fundamental knowledge in pulp and paper science and engineering and has transferred new technologies and novel process concepts to mills, across Canada including here in New Brunswick.

“The calibre and importance of Yonghao Ni’s outstanding work in the pulp and paper domain provides yet another example of how UNB is a national and world leader in many research areas,” said Greg Kealey, UNB provost and vice-president (research). “Sixteen researchers at UNB are current Canada Research Chairs and we are very grateful for this program’s ongoing support in our people.”

This renewed Canada Research Chair is part of a total of \$165.5 million in funding for 187 Canada Research Chairs newly awarded or renewed at 44 Canadian universities announced on March 26, 2010 by the Honourable Gary Goodyear, Minister of State (Science and Technology). The funding announced includes \$8.8 million from the Canada Foundation for Innovation (CFI) for research infrastructure.

“Our government is investing in

“The calibre and importance of Yonghao Ni’s outstanding work in the pulp and paper domain provides yet another example of how UNB is a national and world leader in many research areas.”

- Dr. Gregory Kealey, UNB Provost and Vice-President Research

research and development to create jobs, strengthen the economy, and improve the quality of life of Canadians,” said Minister Ashfield. “The Canada Research Chairs program is helping our universities develop and attract and retain talented people, strengthening our capacity for leading-edge research, while building economic opportunities and the jobs of the future for Canadians.”

Established in 1785, UNB is one of the oldest public universities in North America. With more than 12,500 students from more than 100 countries, UNB has the best student-to-faculty ratio of Canada’s comprehensive universities, according to Maclean’s magazine. As the largest research institution in New Brunswick, UNB conducts over 75 per cent of the province’s university research. The university has more than 3,500 faculty and staff, and an annual operating budget of more than \$160 million. UNB’s two main campuses are located in Fredericton and Saint John, New Brunswick.

Collaborative Research Partnership for Sustainable Forest Management Receives Funding Boost from Federal Government

April 6, 2010

UNB News Release: 10-137

Industry, universities, and environmental organizations have teamed up to establish a collaborative process to discuss sustainable forest management in New Brunswick.

The Collaborative Research Partnership for Sustainable Forest Management received more than \$990,000 from the Social Sciences and Humanities Research Council of Canada (SSHRC) under its Community-University Research Alliance (CURA). The grant supports a collaborative process among academic, conservation and environmental not-for-profit organizations, and the forest industry.

“Our government is investing in research, innovation and training that benefits Canadians by supporting partnerships between community organizations,” said Keith Ashfield, MP for Fredericton and Minister of National Revenue. “This new research partnership will help New Brunswickers working in the forestry sector by helping to make the industry more economically and environmentally sustainable.”

Don Floyd, interim dean of the faculty of forestry and environmental management at the University of New Brunswick in Fredericton says he’s grateful for SSHRC’s support, which has allowed a variety of partners to advance sustainable forest management in New Brunswick.

“New Brunswick is confronting some very important challenges in our forest sector, from the effects of climate change to global industry restructuring,” said Dr. Floyd. “We think it is essential that the environmental community, the forest products industry and the university seek new ways to work together. We have identified important areas of agreement where we believe we can make significant progress.”

The partnership began with an invitation from J.D. Irving, Limited to representatives of environmental and conservation non-profit organizations and professors and researchers at UNB Fredericton. This group began dis-

cussing current sustainable forest management practices and research areas of common interests in New Brunswick. New Brunswick’s forests sustain clean water, habitat as well as jobs for people. Fostering a better understanding of the environmental, social, economic impacts of the forests is a worthwhile priority.

The process called the Forest Collaborative, focused on learning from each other to develop on-the-ground activities to advance common interests. The shared vision of vibrant communities, profitable renewable resource-based industries and resilient ecosystems drives the desire to increase the ability to collaborate and implement innovative solutions. The process is assisted by an independent facilitator. The partners in this process identified projects under three themes that require further collaborative research, shared learning, and knowledge dissemination:

- developing strategies for conserving important habitats and forest community types across private and public ownerships;
- increasing forest sustainability (environmental, social and economic) in New Brunswick through improved communication, participation, and transparency and increasing FSC certified forest in New Brunswick; and
- developing broader and deeper collaborative leadership skills, knowledge, and practices with institutions in the forest sector in New Brunswick.

Blake Brunson, chief forester for J.D. Irving, Limited says his company believes that good science and environmental performance is good business. The New Brunswick Forest Collaborative provides a welcome opportunity to exchange ideas and share information with science-based environmental groups.

“Sustaining jobs, the environment and communities in today’s competitive global market means we have to find innovative ways to work together,” said Mr. Brunson. “We look forward to participating in the work of the Forest Collaborative to make New Brunswick the best place – environmentally and economically – to live and operate a sustainable

“The environmental organizations participating in this process are eager to find ways to achieve improved forest conservation and resolve conflicts over the use and conservation of our New Brunswick forests”

- Roberta Clowater, executive director of the Canadian Parks and Wilderness Society – NB Chapter

business. We appreciate the CURA funding and thank the participants for their collaborative efforts.”

Partners in the funded project include: The Atlantic Canada Conservation Data Centre; Bird Studies Canada; Canadian Parks and Wilderness Society - NB Chapter; Fundy Model Forest, J.D. Irving, Limited; Nature Conservancy of Canada (Atlantic Region); Nature Trust of New Brunswick; RESOLVE, and the UNB faculty of forestry and environmental management, l’Université de Moncton, and Natural Resources Canada-Canadian Forest Service (CFS).

“The environmental organizations participating in this process are eager to find ways to achieve improved forest conservation and resolve conflicts over the use and conservation of our New Brunswick forests,” said Roberta Clowater, executive director of the Canadian Parks and Wilderness Society – NB Chapter. “We would like to express our appreciation to SSHRC for providing this funding, which will increase our capacity to participate in new research and to work collaboratively with representatives of the universities, CFS and J.D. Irving Ltd.”

For more information, contact: Natasha Ashfield (506) 458-7969- University of New Brunswick Gary Toft (613) 943-7599- Minister of State (Science and Technology) Mary Keith (506) 632-7777- JD Irving, Limited Roberta Clowater (506) 452-9902- CPAWS-NB

UNB Student Creating Guidelines for Improved Forest Practices

April 28, 2010

UNB News Release: 10-146

A PhD student at the University of New Brunswick in Fredericton is working to develop a set of guidelines for the forest industry that will allow a balance between protecting forest soils and utilizing biomass (tree limbs and tops) as a source of bio-energy.

Forests are an extremely valuable natural resource in large part because of their renewability. However, even though they are renewable, forests are still sensitive to disturbances.

“Forest machinery can reach up to 40 metric tons once loaded,” said Eric Labelle, UNB PhD candidate. “Unlike our province’s highways, the natural bearing capacity of soils is most often not sufficient to withstand high loadings, especially under wet conditions.”

Large forest machinery such as forwarders and skidders transport trees out of the forest, making dozens of trips over forest trails.

These machine operating trails, located directly on forest soil, can quickly become rutted and compacted by traffic thus interrupting the normal exchange of water, air, and nutrients that allow trees and plants to grow.

In Atlantic Canada and in many other areas throughout the world, harvesting

equipment travels on trails usually covered by tree limbs. This debris acts as a brush mat, which disperses machine load over a greater area thereby reducing the risk of soil disturbances.

Currently this brush mat is left on the forest floor to decompose, but with the fluctuating prices of fossil fuels combined with the need to reduce carbon emissions, there is growing interest in utilizing a portion of this brush mat as a source of bio-energy instead.

Mr. Labelle, along with his supervisor Dirk Jaeger, professor of forestry and environmental management at UNB, are in the process of determining the minimum amount of brush that should be left on machine operating trails for effective soil protection, allowing the remaining brush to potentially be used for bio-energy operations. Mr. Labelle and Dr. Jaeger are now investigating the effects brush mats with different thicknesses have on ground pressure.

Previous studies have proven the benefit of using brush mats on trails for prolonging trail drivability and reducing disturbance, but no one has determined how much brush is actually needed says Mr. Labelle.

“Knowing the minimum amount of brush required on machine operating trails will protect forest soils against compaction and rutting caused by heavy load, while allowing remaining brush to be used for

other uses such as bio-energy generation.”

Once the research is complete, a set of best management practices will be developed and forestry companies will have a better understanding of how to use biomass as a new source of income without compromising forest soil productivity.

This research is being supported by the Natural Science and Engineering Research Council (NSERC), FPInnovations, the New Brunswick Innovation Foundation (NBIF), the University of New Brunswick Research Fund, the New Brunswick Department of Transportation, and Debly Forest Services Ltd.

Established in 1785, UNB is one of the oldest public universities in North America. With more than 12,500 full- and part-time students from more than 100 countries, UNB has the best student-to-faculty ratio of Canada’s comprehensive universities, according to Maclean’s magazine. As the largest research institution in New Brunswick, UNB conducts over 75 per cent of the province’s university research. The university has an annual operating budget of more than \$165 million and annually employs more than 3,500 faculty, staff and students. UNB’s two main campuses are located in Fredericton and Saint John, New Brunswick.

UNB Students Awarded Over \$1.3 Million in National Graduate Scholarship Competition

April 28, 2010

UNB News Release: 10-146

Natalie Weigum and Nathan Wilbur are two UNB students who have been given a boost to pursue their research thanks to the 2010 Natural Sciences and Engineering Research Council of Canada (NSERC) graduate scholarship competition.

A total of 39 students on UNB's Fredericton and Saint John campuses were recently awarded scholarships from NSERC totalling more than \$1.3 million to pursue graduate studies and research at the master's and doctoral levels.

John Neville, associate dean of graduate studies at UNB, says the success rate of UNB students in this national competition was very high this year.

"Our students saw an 85 per cent success rate amongst those applications that were forwarded to Ottawa from UNB," said Dr. Neville. "All of us at the School of Graduate Studies are proud of these students and wish them continued success in their studies and research."

Ms. Weigum, who is graduating from UNB in May with an honours degree in physics and chemistry, was awarded a \$25,000 Julie Payette scholarship through NSERC.

"I'm interested in researching the effects that atmospheric aerosols have on our climate," said Ms. Weigum. "I'm hoping my research will improve our ability to measure the effects these aerosols have

on global warming and climate change."

Ms. Weigum, who was born and raised in Fredericton, N.B., will be attending the University of Oxford in England this coming fall to pursue her PhD in atmospheric physics and says the NSERC scholarship has made the financial burden of going to school and living in England much easier.

Mr. Wilbur, originally from Hampton, N.B., is finishing his first year of a master's degree in civil engineering. He was awarded \$17,500 from NSERC to continue his research in protecting fish habitat in New Brunswick's rivers.

"By using thermal sensors from a helicopter, we're in the process of mapping cold water sources along rivers in the Miramichi area," said Mr. Wilbur. "It's important that we know where these areas are, so we can go into the water and see how the fish are benefitting from the cold water sources."

Mr. Wilbur says we need to be careful when developing around water. "Salmon and trout are particularly sensitive and their success indicates ecosystem health", said Mr. Wilbur. "The increased development close to our river systems has made me increasingly interested in protecting fish and their habitats, which is why I've chosen this area of research."

NSERC awarded more than 2,800 scholarships to students at the master's, doctoral and postdoctoral levels across Canada.

"The financial support provided allows the students to focus on their research and achieve significant results more quickly."

- Dr. John Neville, associate dean of graduate studies at UNB

Dr. Neville says the NSERC program encourages UNB's top students in the natural sciences and engineering to pursue advanced studies and research.

"The financial support provided allows the students to focus on their research and achieve significant results more quickly."

Established in 1785, UNB is one of the oldest public universities in North America. With more than 12,500 full- and part-time students from more than 100 countries, UNB has the best student-to-faculty ratio of Canada's comprehensive universities, according to Maclean's magazine. As the largest research institution in New Brunswick, UNB conducts over 75 per cent of the province's university research. The university has an annual operating budget of more than \$165 million and annually employs more than 3,500 faculty, staff and students. UNB's two main campuses are located in Fredericton and Saint John, New Brunswick.

UNB Saint John Research Chair in Canada-Wide Effort to Develop Semantic Infrastructure for Knowledge Discovery in Biomedicine; Nearly \$1 Million Committed To Project

April 30, 2010

UNB News Release: 10-147

Even with huge investments in infrastructure for biomedical research, a key challenge is the time it takes to find the right data and identify how to analyze it. In many ways, the web world is becoming more cluttered and it can be difficult to isolate that elusive, yet critical, piece of information that can unlock an important discovery. Advanced technologies for describing the meaning of published data are set to revolutionize the way in which research is carried out.

Chris Baker, Innovatia Research Chair at the University of New Brunswick in Saint John, and a team of Canadian researchers have received funding for a project that could revolutionize the way biomedical researchers share and access information.

Canada's Advanced Research and Innovation Network, CANARIE, has funded the Canadian Bioinformatics Resources As Semantic Services project (C-BRASS) with \$927,000 to develop better IT resources for biomedical researchers. The project will deploy semantic technologies nationwide to help scientists find online databases and web services and to run in-silico analyses on an integrated intelligent network. Courses will be established to train highly-qualified Canadian personnel in these new Web 2.0 and Web 3.0 technologies. To the layperson, semantic technologies are those that help identify meanings and contexts of words so that knowledge can be exchanged quickly and easily by humans and machines alike. These technologies,

along with other new media subject areas are part of a new field of study known as web science.

"As these new technologies become standardized the importance of face-to-face communication and training for users cannot be underestimated," said Chris Baker. "A common understanding of how these standards evolve will allow us to build an efficient national network so that research can have greater impact and faster." C-BRASS will allow machines to make many of the complex decisions about where and how to retrieve and analyze data, leaving the researcher free to focus on what the results mean and how this new knowledge can be used to improve the health of Canadians.

The project is a multi-centre initiative between the University of British Columbia, Carleton University and UNB.

"On a daily basis it becomes more difficult for biomedical scientists to find newly published information required to further their biomedical research and data analysis," said Dr. Baker. "This can have a real impact in advancing health research in the country."

"We are limited by our ability to access the algorithms and the data we need on for in-silico research. The C-BRASS funding and SADI framework come at a critical time and we look forward to sharing these innovations with bioinformatics resource providers and the life science community at large."

Guy Bujold, a strategic advisor with CANARIE, says the exciting part about the C

"The C-BRASS funding and SADI framework come at a critical time and we look forward to sharing these innovations with bioinformatics resource providers and the life science community at large."

- Dr. Chris Baker, Innovatia Research Chair at UNB (Saint John campus)

-BRASS project is that it will allow researcher to be researchers, rather than IT experts expected to figure out complicated technical issues.

"C-BRASS will enable researchers to focus on their own important discoveries and innovation and that's something CANARIE is absolutely committed to supporting," said Mr. Bujold.

C-BRASS is part of CANARIE's flagship Network-Enabled Platform (NEP) Program, which to-date has awarded \$27 million in funding to almost 20 IT research projects across the country. The NEP Program funds the development of tools and software that help researchers, in a wide range of disciplines, to fully exploit the massive amounts of data and research that flow along the CANARIE Network.

UNB Researchers to Create Guidelines for Safety & Integrity of Critical Infrastructure

April 30, 2010

UNB News Release: 10-147

There is growing worldwide demand to monitor and protect against hazards such as ground movement and security threats to critical infrastructure such as dams, power plants, bridges, airports, mines, pipelines and oil and gas installations.

By combining new survey technologies with integrated analysis of structural and ground deformation, a new research initiative at the University of New Brunswick in Fredericton will provide a better method of monitoring these types of infrastructure for stability and security purposes.

UNB's Canadian Centre for Geodetics Engineering (CCGE) has partnered with the Centre for Cold Ocean Resources Engineering (C-CORE), a not-for-profit R&D corporation specializing in engineering solutions and located in Saint John's N.L., to study the integrity and security of critical infrastructure.

From UNB, Anna Szostak-Chrzanowski will lead this research project and Adam Chrzanowski will be a key participant.

"There are many unknowns in predicting stability of large structures," said Dr. Szostak-Chrzanowski. "It's important to constantly monitor and test these types of infrastructure in order to provide early warning and develop prediction methods for any future developments."

This four-year research project has a

total estimated cost of \$5.3 million. Funding was secured after a \$2.2 million commitment from the Atlantic Innovation Fund Round VII, which recently invested \$62.4 million into R&D in Atlantic Canada. Dr. Szostak-Chrzanowski and her team will be able to provide physical interpretation of ground and structural deformations by actually combining high precision monitoring measurements with the knowledge of material parameters and relationship between the acting loads and observed displacements.

"The observations of displacements on the ground surface will permit us, for example, to see what changes are undergoing in the rock strata due to mining activity," said Dr. Szostak-Chrzanowski.

She says what makes this research unique is their level of expertise in monitoring and modeling of deformations.

"We're going to know more than just whether the behaviour of existing structure is safe or not," said Dr. Szostak-Chrzanowski. "We will be able to provide information on the predicted deformation for a better design and operation of future structures."

The research will lead to a set of guidelines, which the researchers are hoping will be adopted by government and industry.

Dr. Szostak-Chrzanowski and her team at CCGE specialize in geodetic and engineering surveys of high precision, deformation monitoring and analysis, and numerical modeling of structural and

"We're going to know more than just whether the behaviour of existing structure is safe or not...We will be able to provide information on the predicted deformation for a better design and operation of future structures."

- Dr. Anna Szostak-Chrzanowski,
UNB, principal investigator

ground deformations. They have worked on projects all over the world including Canada, USA, Chile, Peru, Poland, Venezuela and right here in New Brunswick on the Mactaquac dam and in potash mines near Sussex.

Established in 1785, UNB is one of the oldest public universities in North America. With more than 12,500 full- and part-time students from more than 100 countries, UNB has the best student-to-faculty ratio of Canada's comprehensive universities, according to Maclean's magazine. As the largest research institution in New Brunswick, UNB conducts over 75 per cent of the province's university research. The university has an annual operating budget of more than \$165 million and annually employs more than 3,500 faculty, staff and students. UNB's two main campuses are located in Fredericton and Saint John, New Brunswick.

New Grants Funded at UNB, 2009-10

ACEnet

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Atlantic Health Sciences Corporation

Loretta Secco

Atlantic Metropolis Centre

Gregory Marquis

Canada Research Chair Secretariat

Jose Domene

Karen Kidd

Christopher Martyniuk

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Canadian Council on Learning

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Christopher Martyniuk

Christopher McFarlane

Stacey Reading

Gary Saunders

Michael Thomas

Douglas Willms

Huining Xiao

Canadian Health Services Research Foundation

Edmund Biden

Canadian Institutes of Health Research

Donna Bulman

Mary McKenna

Nicole Letourneau (4)

William Morrison

Barbara Paterson

Judith Wuest

Canadian Space Agency

John Spray

Canadian Tree Fund

Marek Krasowski

Canadian Women's Foundation

Rina Arseneault

CANARIE Inc.

Christopher Baker

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Conservation Council of New Brunswick

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David Kubien

Harrison McCain Foundation

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Les Cwynar

Ghislain Deslongchamps

Christopher Gray

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Remy Rochette

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NB Department of Agriculture, Fisheries & Aquaculture

Yvan Pelletier

NB Department of Education, Training & Labour

Elizabeth Sloat

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Ellen Carusetta

NB Department of Social Development

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New Grants Funded at UNB, 2009-10 (continued)**NB Health Research Foundation**

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NB Innovation Foundation

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NB Population Growth Secretariat

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