

The provincial government, through the New Brunswick Innovation Foundation (NBIF), has awarded 188 students with New Brunswick Graduate Scholarships. The students received a total of \$1.2 million from the foundation, an additional \$686,000 from their host institutions and \$1.7 million from national granting agencies.. The full story can be viewed at [Major investments being made in innovation-based study, research.](#)

(Photo: Dr. David Burns, Minister Rick Doucette, Premier Brian Gallant, Minister Ed Doherty, Dr. Robert MacKinnon and NBIF recipients)

Dr. Chang (pictured above) received the [New Brunswick Innovation Foundation R3 Innovation award](#) at the gala dinner on March 23. The award celebrates the innovations of New Brunswick’s leading applied researchers. The full story can be viewed at [UNB researcher nabs innovation prize for pioneering work on energy systems.](#)

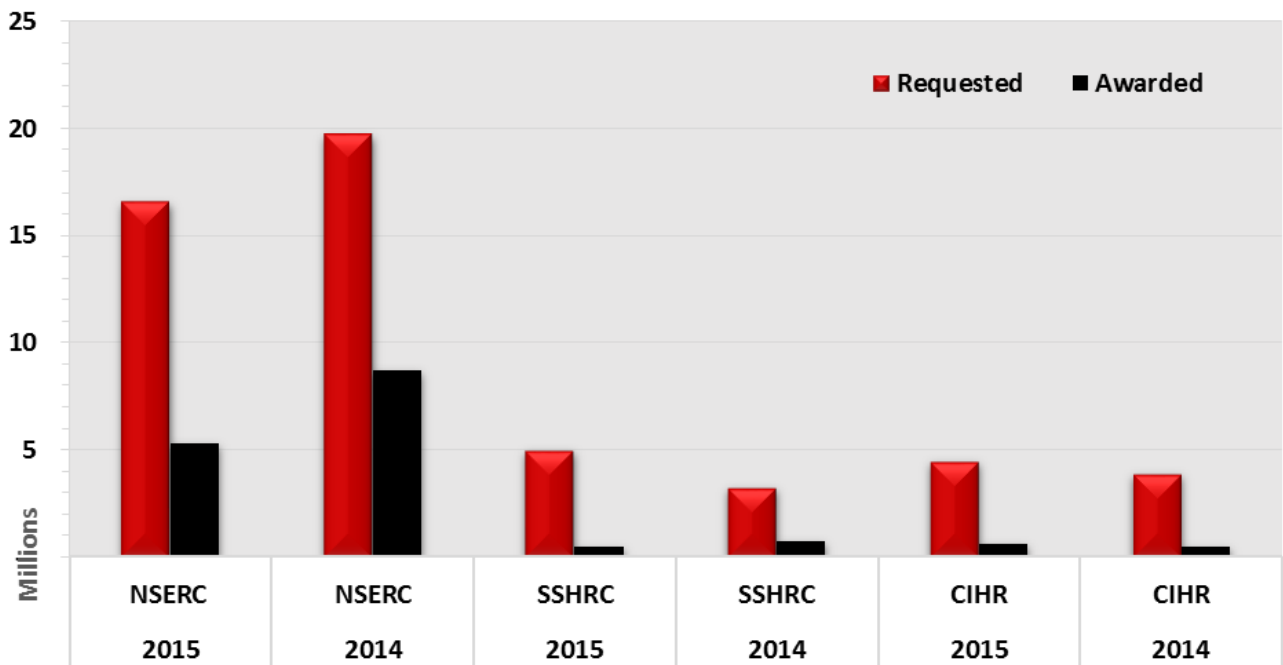
This edition of Research Matters highlights Tri-Council results and innovation activities from Fiscal Year 2015–16 as found in the Table of Contents below.

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Tri-Council—2015 Results

Submissions	Program	Submitted	Requested	Successful	Awarded	Success Rate	Funding Rate
NSERC	CRD	2	1,052,000	2	1,052,000	100.0%	100.0%
	Strategic Project	0	0	0	0	0.0%	0.0%
	RTI	9	875,241	0	0	0.0%	0.0%
	Discovery	48	13,733,672	30	3,907,000	62.5%	28.4%
	Engage & Engage Plus	16	386,900	12	287,500	75.0%	74.3%
	Other	8	504,964	2	28,574	25.0%	5.7%
	Total NSERC		83	16,552,777	46	5,275,074	55.4%
SSHRC	Insight	6	1,416,233	2	442,095	33.3%	31.2%
	Other	21	3,568,787	1	38,616	4.8%	1.1%
	Total SSHRC	27	4,985,020	3	480,711	11.1%	9.6%
CIHR	Foundation Scheme	3	LOI	0	0	0.0%	0.0%
	Transitional OG	4	2,266,597	0	0	0.0%	0.0%
	Other	7	2,190,391	2	600,175	28.6%	27.4%
	Total CIHR	14	4,456,988	2	600,175	14.3%	13.5%

Tri-Council 2014 vs. 2015



Institutional Funding

Canada Research Chairs

UNB received \$1.8 million for our 12 *active* Canada Research Chairs (CRCs) in 2015-16. During the year, Dr. Michael Haan left the University at the completion of his first term, thus ending the Tier 2 Chair in Population & Social Policy. UNB submitted a successful CRC renewal for Dr. Bruce Balcom (Physics) as the Tier 1 Chair in Materials Science Magnetic Resonance Imaging, thus making him UNB's first 3rd-term Canada Research Chairholder. Dr. Karen Kidd (former Tier 2 Chair) was awarded a new Tier 1 Chair in Chemical Contamination of Food Webs, and Dr. Scott Pavey was awarded a new Tier 2 Chair in Aquatic Molecular Ecology and Ecological Genomics. Ending the year on a positive note.

Canada Research Chairs

UNB's CRC contingent as of April 30, 2016:

	Name	Department/Faculty	CRC in...	Tier
1	Bruce Balcom	Physics	Materials Science Magnetic Resonance Imaging	1
2	José Domene	Education	School to Work Transition	2
3	Karen Kidd	Biology	Chemical Contamination of Food Webs	1
4	Elizabeth Mancke	History	Atlantic Canada Studies	1
5	Yonghao Ni	Chemical Engineering	Pulp and Paper Science and Engineering	1
6	Lucia O'Sullivan	Psychology	Adolescent Sexual Health Behaviour	2
7	Scott Pavey	Biology	Aquatic Molecular Ecology and Ecological Genomics	2
8	Paul Peters	Sociology	Spatial and Social Inequalities in Health and Health Service Delivery	2
9	John Spray	Earth Sciences	Planetary Materials	1
10	Doug Willms	Education	Literacy and Human Development	1
11	Yun Zhang	Geodesy & Geomatics Engineering	Advanced Geomatics Image Processing	2
12	Ying Zheng	Chemical Engineering	Chemical Process and Catalysis	2

Intellectual Property Management, Technology and Knowledge Transfer

The Industry-Government Services (IGS) division of the Office of Research Services connects businesses to researchers and guides research to market. In fiscal years 2015 and 2016 , IGS:

- Obtained \$144,814.60 in total awards from Springboard Atlantic Inc. to assist in moving technologies through the commercialization process: two (2) Marketing Support awards (totalling \$26,215) assisting the Departments of Geodesy and Geomatics Engineering and Chemical Engineering; four (4) Patent & Legal Awards (totalling \$39,750) assisting the Departments of Geodesy and Geomatics Engineering and Chemical Engineering; three (3) Proof of Concept Awards (totalling \$54,820) assisting the Departments of Geodesy and Geomatics Engineering and Chemical Engineering; and four (4) Industry Engagement awards (totalling \$24,089.60), which included assistance to the Institute of Biomedical Engineering and the Faculty of Arts, and also assisted with a Research Video that demonstrated the expertise and successes of a number of departments and faculties. Facilitated 75 IRAP Network Member Agreements with faculty.
- Managed 34 new invention disclosures.
- Entered into 24 technology transfer agreements with industry.
- Assisted with 1 new UNB spin-off company (licensed assigned IP into the company).
- Filed 20 patent applications.
- Had 23 previous patent applications issue as registered patents.
- Received licensing revenues of \$198,123.66.
- Hosted or assisted with 9 industry workshops.

Technology and Knowledge Transfer					
Fiscal Year (May 1 – April 30)	2011-12	2012-13	2013-14	2014-15	2015-16
Disclosures	12	13	15 ₍₁₎	14	20
Patent Applications Filed	19	30	19 ₍₁₎	13	7
Patents Issued	5	6	6	8	15
License Agreements	7	3	5 ₍₁₎	12	12
License Revenue ⁽²⁾	\$1,944,444.96	\$64,801.38	\$107,625.06	\$106,713.23	\$91,410.43
Spin-offs Created	1	0	1 ₍₃₎	1 ₍₃₎	0
Note #1: because of a delay in reporting, three items (disclosures, patent applications filed, and license agreements) were underreported in the previous 2013-14 report.					
Note #2: previous reporting combined both license revenues and patent reimbursements; only license revenues are now reported.					
Note #3: two (2) spin-offs were reported in 2013-14; this should have been 1 spin-off in 2013-14 and 1 spin-off in 2014-15. Spin-offs represent companies created through licensing of IP assigned to UNB by inventors, not all UNB-related start-up companies.					

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 16-year period from May 1, 2000 to April 30, 2016, UNB has: managed 276 invention disclosures;

- Filed patent applications for 94 separate technologies (many of these technologies filed in multiple jurisdictions);
- Had 76 patents issue;
- Filed 18 Section 9 trade-marks for the University;
- Completed 137 technology transfer deals;
- Secured licensing revenues and patent reimbursements of over \$4.5 million;
- Assisted in the creation of 20 UNB spin-off companies.

Industrial Research Assistantship Program (National Research Council)

Since 2006, UNB, through ORS, has been providing short-term technical assistance to Canadian companies under the NRC IRAP Contribution to Organization (C2Org) Program, and (from 2012-14) through the Digital Technology Adoption Pilot Program (DTAPP).

The objective of the C2Org initiative is to support the innovative needs of Canadian SMEs through the provision of short term technical assistance from faculty and staff of the University. UNB provides the expertise of its faculty, staff and associates to meet industry needs for advice on technical issues that include, but are not limited to:

- On-site troubleshooting of issues in manufacturing, packaging, testing, etc.
- Initial assessment of new product concepts or standards
- Literature searches
- Technology searches and reviews
- Selection of equipment
- Assisting with preparation of technical research methodologies
- Preliminary market research as part of a product development process
- Technical training of company staff
- Seminars on specific technical issues of interest to industry
- Ad-hoc advice

The DTAPP initiative was to support productivity growth of Canadian SMEs across all sectors through the adoption of digital technologies.

UNB is able to provide these services thanks to the support of the National Research Council's Industrial Research & Assistance Program (NRC-IRAP).

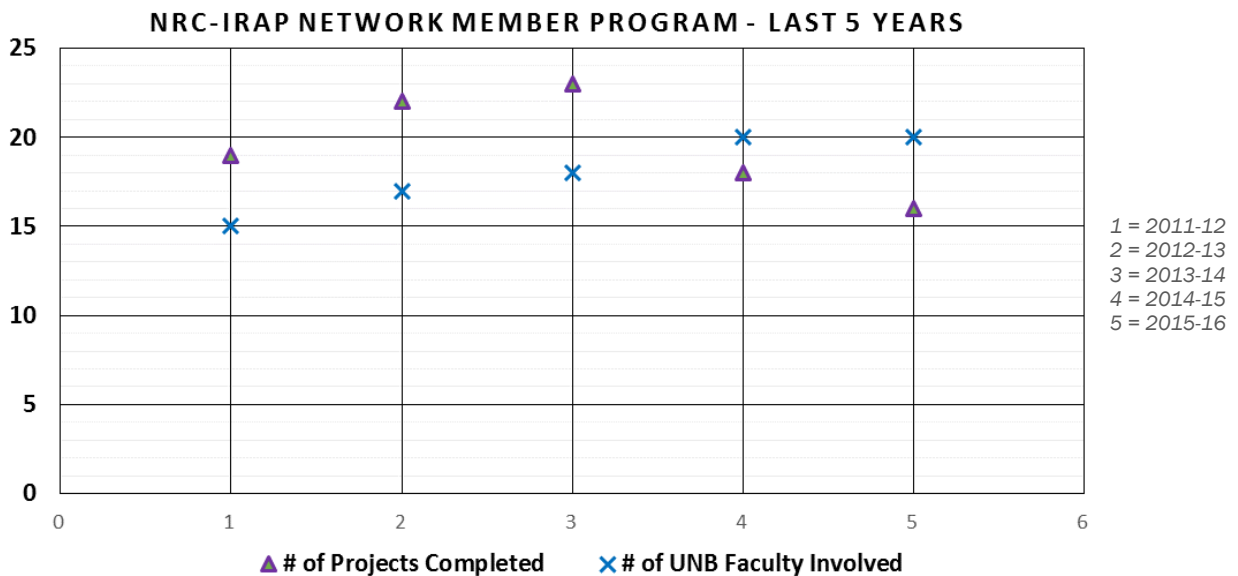
For the 2015-16 fiscal year, a total of 16 consultation projects, involving 20 researchers were completed worth a total of \$49,104.

Since inception a total of 167 projects have been completed under this program and through the Office of Research Services

NRC-IRAP Network Member Program

Fiscal Year	# of Projects Completed	# of UNB Faculty Involved
2011-12	19	15
2012-13	*22	17
2013-14	23	18
2014-15	18	20
2015-16	16	20

* One DTAPP project included in IRAP



It is important to note that separate from the NRC- IRAP C2Org Program administered by ORS and reported above, the Wood Science & Technology Centre in the Faculty of Forestry & Environmental Management administers a C2Org Program specific to its industry sector.



Mitacs Academic Partner Report for the University of New Brunswick—F2015-16 Results

As a Mitacs full partner, University of New Brunswick accessed the following programs in 2015-16:

- **Accelerate: 81** Accelerate internship units submitted, valued at **\$1,108,333**;
- **Elevate: 0** Fellowships awarded, valued at **\$0** over two years;
- **Globalink Research Internship: 15** international interns hosted at University of New Brunswick in Summer 2015, value at **\$180,000**;
- **Globalink Graduate Fellowships: No Fellowship awarded**, valued at **\$0**;
- **Globalink Research Awards: 1** project awarded, valued at **\$5,000**;
- **Globalink Partnership Awards: 0** projects awarded, valued at **\$0**;
- **Step: 76** graduate students and postdoctoral fellow attended professional skills training workshops, valued at **\$30,400**.

The total value to the University of New Brunswick in 2015-16 is **\$1,323,733**.

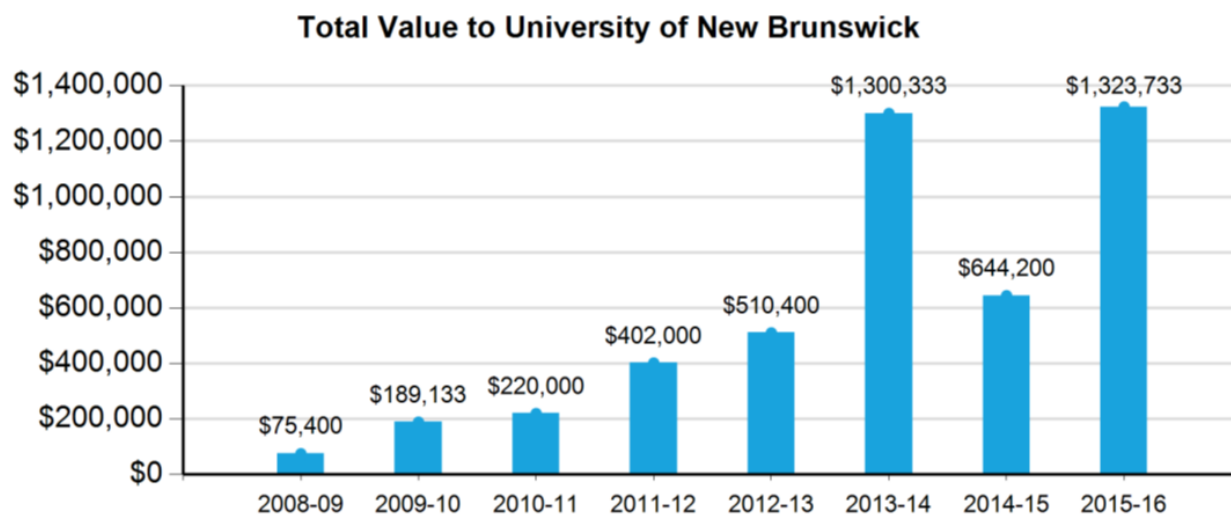
\$390,762 in cash was disbursed to the University of New Brunswick during the 2015-16 fiscal year. This total includes program funding that had been awarded (but no disbursed) in previous fiscal years, as well as funding installments that are disbursed over multiple years.

The **total estimated value** to the University of New Brunswick in the last eight years is **\$4,665,199**. A total of **\$2,455,626** in cash has been sent to the University of New Brunswick over the past eight years.

Mitacs thanks the **University of New Brunswick**, the Government of New Brunswick, and the Government of Canada for their support.

www.mitacs.ca

Mitacs Programs: 2008—2016





New Brunswick Innovation Foundation (NBIF) – 2016 UNB RAI Report

The Research Assistantships Initiative (RAI) is a joint initiative between NBIF and the New Brunswick Department of Post-Secondary Education, Training and Labor (PETL). It provides applied researchers some of the funding they need to hire undergraduate and graduate student research assistants. Researchers may apply for more than one assistant.

Researchers can be funded for more than one graduate research assistantship in any specific round. Graduate Research Assistantships are awarded at \$10,000 each. Undergraduate Assistantships are \$5,000 each. RAI contributions can be used to top up other funding sources and can be allocated to one or more students. Funding is advanced to the college or university first, and then disbursed to the student(s) in the form of a salary, fellowship or stipend. Ideally, all funds are to be used within one year, however, any unused funding is automatically extended for one additional year with NBIF approval. RAI funding is not transferable to other colleges or universities.

- ◆ Total applicants: 74 (\$2,215,000) / total students applied 273
- ◆ Total funded: 23 (\$485 000) / 6 students funded
- ◆ Total undergraduate students funded: 16
- ◆ Total graduate level students funded: 40

Overall (including all NB Universities and Colleges) NBIF was able to fund 39% of the applications in the 2016 round.

www.nbif.ca

Institution	Traditional RAI	Student Innovation Challenge Recipients	Number of Undergrads	Number of Grads	Total \$
UNB	\$480,000	\$5000	16	40	\$485,000



NB Health Research Foundation (NBHRF) - Financial Contributions to UNB

Included are the financial contributions of the New Brunswick Health Research Foundation (NBHRF) to UNB as a post-secondary institution in the Province of New Brunswick during fiscal years 2014-2015 and 2015-2016.

NBHRF is the primary funder for the health research enterprise in the province of New Brunswick. For specific information regarding each programs (given for one up to three years), visit <http://www.nbhrf.com/research-funding-programs>

Programs	CA\$ 2014-15	CA\$ 2015-16	Investigators	Number of Undergrads	Number of Graduates
Grants					
Establishment	239,228	225,500	7	na	na
Bridge	61,344	50,000	4	na	na
Strategic Initiative	35,000	240,258	5	na	na
Workshop	35,489	6,623	3	na	na
CIHR-SPOR-MSSU	1,447,970	1,082,276	group	na	na
CIHR-SPOR-PIHCI	150,000	200,000	group	na	na
CIHR-SPOR-NCD-CHILD	0	100,000	1	na	na
CIHR-PHSI	187,284	0	1	na	na
CIHR-eHIPP	0	426,388	1	na	na
Salary Awards					
Summer Studentship	43,672	46,052	na	15	na
MSc Studentships	35,700	87,550	na	0	6
PhD Studentships	50,000	20,000	na	0	3
Postdoctoral Fellowships	36,750	38,250	na	0	2
MSSU awards	55,900	87,000	na	1	4
Chair	490,000	515,000	2	na	na

Overall, NBHRF and partners funded \$2,843,337 in 2014-2015 and \$3,124,897 in 2015-2016 to UNB health researchers and their undergraduate and graduate students. Those funds also supported projects and created jobs such as, but not limited to, technicians, research assistants and/or research associates.

The value of those grants and awards includes the matching and leveraging portion of funds obtained by other parties such as private partners, federal granting bodies and national agencies and health charities.

www.nbhrf.com

Research Ranking Results

The Research Ranking exercise, completed on a bi-annual 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 designation of Professor, Associate Professor, Assistant Professor, Honorary Research Professor, Research Associate and Senior Research Associate. Researchers in other designations (such as Postdoctoral Fellows, Adjunct Professors, etc.) may also

choose to participate. Once the data is collected, a committee reviews the submissions from each academic unit and assigns a ranking of 1 through 7 to each unit based on their submission. A ranking of 1 signifies research excellence, while a ranking of 6 signifies extremely low research performance (7 signifies non-compliance).

The results from the last round which closed on August 31, 2015 are reported below.

Fredericton Campus

Department/Faculty	2007-09	2009-11	2011-13	2013-15
Anthropology	5	4	4	4
Biology	1	1	1	1
Business Administration	5	5	4	5
Chemical Engineering	1	2	2	1
Chemistry	2*	2	2	2
Civil Engineering	2	2	2	2
Classics & Ancient History	6	5	6	5
Computer Science	3	3	2	2
Culture & Language Studies	4	4	5	4
Earth Sciences	1	2	2	2
Economics	5	5	4	4
Education	4	3	3	2
Electrical & Computer Eng.	1	1	1	1
English	2	2	2	2
FOREM	1	1	2	1
French	5	5	4	3
GGE	1*	1	1	1
History	1	1	2	1
Kinesiology	3	4	2	2
Law	4	4	4	4
Mathematics & Statistics	3	3	2	2
Mechanical Eng.	2*	2	2	2
Nursing	4	3	3	3
Philosophy	4	4	4	4
Physics	1	2	2	2
Political Science	4	4	4	4
Psychology	2	2	1	1
Renaissance College	**	**	**	4
Sociology	3	2	2	2

Saint John Campus

Department/Faculty	2007-09	2009-11	2011-13	2013-15
Biology	1*	1	1	1
Business	6	5	5	4
Computer Science & Applied Stats	3	3	3	3
Engineering	6	6	6	N/A
History & Politics	5	5	4	4
Humanities & Languages	5	4	5	5
Mathematical Sciences	3	2	4	4
Nursing & Health Sciences	6	5	3	3
Physical Sciences	***	***	***	***
Psychology	4	5	4	3
Social Science	5	4	4	4

* star rankings were only used in 2007- 2009

** not included in these years

*** now included in Physics and Chemistry UNBF



Research Outputs

The Research Output Indicators measure each institution’s success in publishing in the peer reviewed academic literature. We are reporting comparative rankings in the total number of publications produced by UNB based on ReSearch InfSOURCE Inc’s statistics. The ranking position is based on all universities assessed, however, we are only reporting the rankings for our selected peer group of comprehensive universities. ReSearch InfSOURCE Inc’s statistics are based on publication data obtained from Observatoire des sciences des technologies’ (OST) Canadian bibliometric which contains data from SCI-Expanded, SSCI and AHCI databases of Thompson Reuters; and faculty data obtained from Statistics Canada and the ReSearch InfSOURCE University R&D Database.

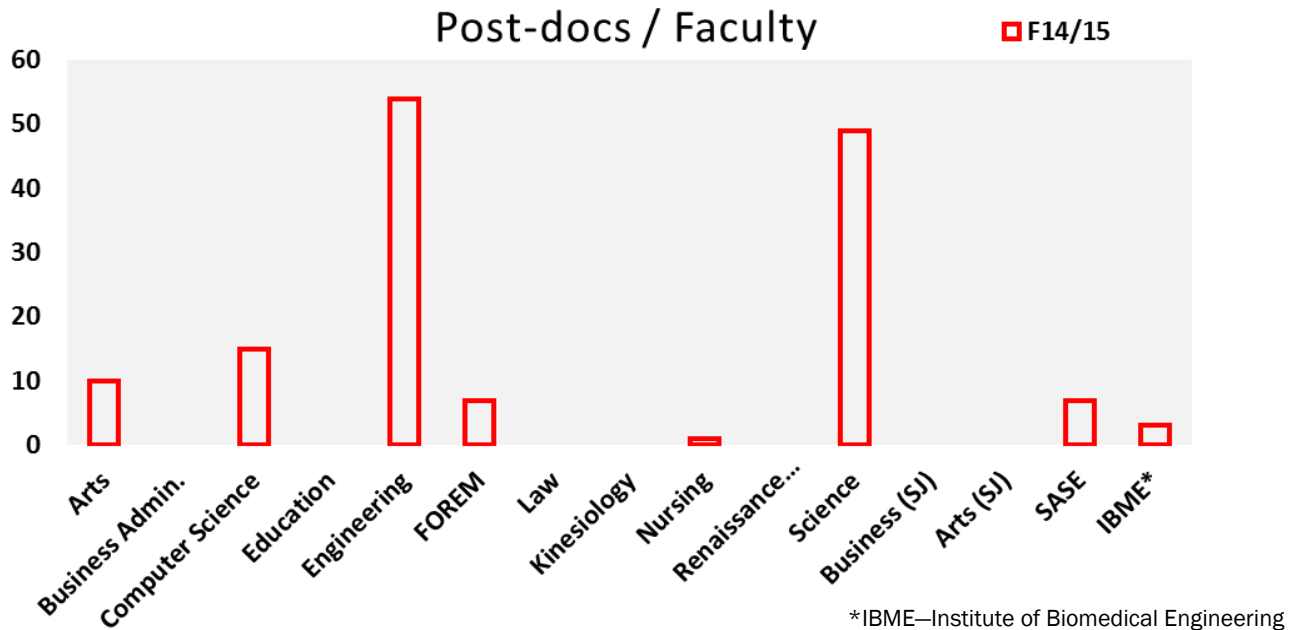
1. “Total Number of Publications” includes articles, notes and reviews published by researchers affiliated with Canadian universities and research hospitals in 12,232 peer-reviewed scientific international journals covering natural sciences, health science, and social science and humanities.
2. “Publication Intensity” is defined as the total number of publications per full-time faculty (full, associate and assistant faculty positions only were included). It is estimated that there is, on average, a minimum 2-year publication lag time.
3. “Publication Impact” points are based on the Average Relative Impact Factor (ARIF) which was developed and provided by OST. It is based on a measure of perceived impact of research through a calculation of citations received by journals. The impact factor does not measure the specific number of citations per article (ie direct impact), but rather, is a measure of the probability of being cited (ie perceived impact). OST developed the ARIF to compare the impact factor from several specialities because an article’s probability of being cited is not the same for all fields. The ARIF does not include journals on the Humanities.

Research Output Indicators											
YEAR	Waterloo	Guelph	Victoria	Simon F	Carleton	York	UQM	UNB	Concordia	Windsor	Regina
Total Number of Publications- RANK											
2011	11	16	18	17	21	19	24	25	22	27	28
2012	10	16	18	17	21	19	24	26	22	27	30
2013	10	17	18	16	20	19	24	26	22	27	28
2014	10	15	18	15	20	19	24	27	23	26	29
2015	10	16	18	17	21	19	24	26	22	28	29
Publication Intensity - RANK											
2011	6	12	14	13	24	29	37	21	22	23	20
2012	6	11	13	14	19	33	37	21	22	23	25
2013	6	12	13	14	19	34	39	20	25	27	22
2014	7	12	15	14	20	30	37	24	26	25	21
2015	6	13	14	15	21	31	38	23	37	26	24
Publication Impact - RANK											
2011	17	16	18	3	11	15	24	38	22	34	37
2012	12	18	15	4	28	11	26	45	27	39	34
2013	17	20	14	6	31	11	27	43	34	39	19
2014	22	25	9	4	30	16	33	42	31	37	20
2015	19	25	12	10	30	26	24	37	35	27	33

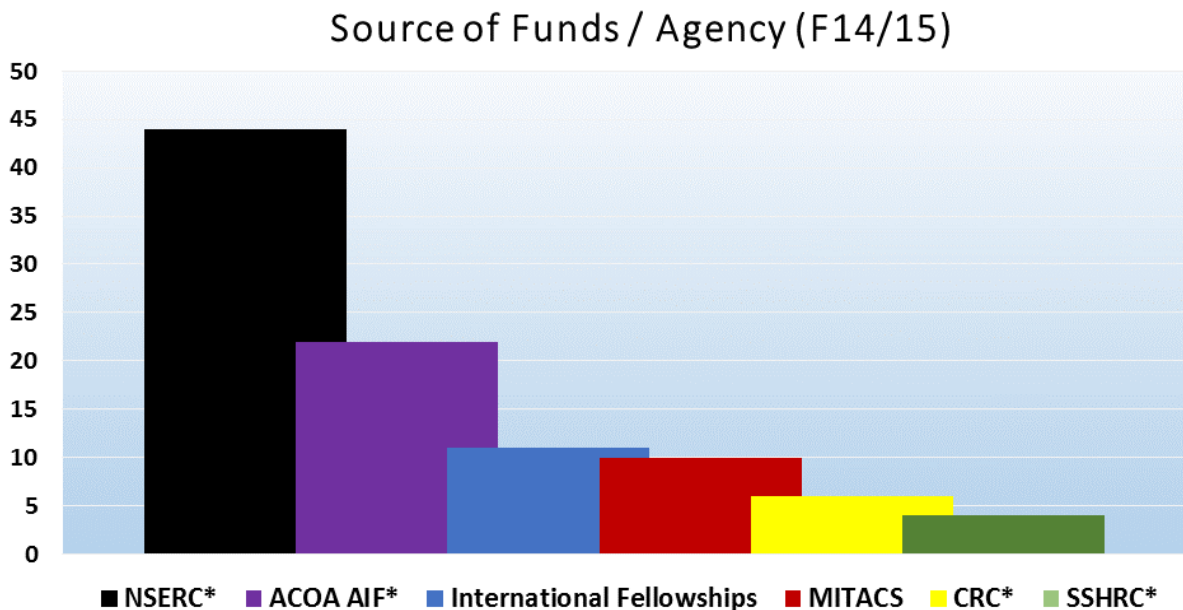
Postdoctoral Fellows – Correction

Correction - In the section on Postdoctoral Fellows in the Grad Student Success/Spring 2016 newsletter (page 3), we indicated that “There were 81 Postdoctoral Fellows at the university in F2014-15 compared to 123 in F2013-14. Post-docs were down in F14-15 due to a variety of different areas, including the completion of large strategic programs, and changes to the immigration visa policy, which we are lobbying to improve these methods and streamline the process.” In fact, there were 146 Postdoctoral Fellows at the university in F2014-15 compared to 123 in F2013-14.

The below diagram shows the number of post-docs across all faculties, with highest numbers in Engineering and Science.



In Fiscal 2014-15, 97 out of the 146 Post-docs came from the following six source of funds.



*NSERC—Natural Sciences and Engineering Research Council of Canada
 *ACOA—Atlantic Canada Opportunities Agency
 *CRC—Canadian Research Chair
 *SSHRC—Social Sciences and Humanities Research Council