

Faculty of Science Strategic Plan Evaluation 2015-2020

VISION

Fostering discovery. Engaging community. Inspiring humanity.

MISSION

The Faculty of Science is a hub of research and teaching excellence fostering scientific discovery and preparing global thinkers to advance knowledge and human progress. Our students learn from and work with outstanding faculty members, and benefit from leading-edge research facilities. Our scientists collaborate with colleagues around the world in academia, industry and government, and also engage with the community at large through extensive outreach activities and media.

STRATEGIC PRIORITIES

The 2015-2020 Strategic Plan outlined five focus areas, each with their own list of priorities: Teaching & Learning; Research; Student Success; Investing in People; and Engagement & Outreach. Updates were submitted from Department Chairs, staff in the Dean's Office, and others to the Communications Manager. Their responses for each priority item are summarized below.

EVALUATION OF STRATEGIC PRIORITIES ACHIEVEMENTS

FOCUS: TEACHING & LEARNING

Offer distinctive programs delivered in a culture guided by the scholarship of teaching and learning.

2015-2020 STRATEGIC PLAN EVALUATION

TEACHING & LEARNING	ACHIEVED	PARTIALLY ACHIEVED	NOT ACHIEVED
1. Develop innovative and appealing academic programs that reflect the aspirations of students, as corroborated by rising undergraduate enrolments, both domestic (by 15% in five years) and international (by 50% in five years) and rising admit averages of registrants.		✓	
2. Promote alignment of course learning outcomes, teaching and learning activities, and assessments, to be confirmed in curriculum reviews.	✓		
3. Strengthen tenure and promotion criteria for teaching excellence to recognize scholarship of teaching and learning, particularly for alternate stream faculty		✓	
4. Recognize teaching excellence through internal and external award nominations, with the aim of at least one faculty member winning a major external teaching award within the next five years. <i>*Data was not available for this section.</i>			

Priorities

- 1. Develop innovative and appealing academic programs that reflect the aspirations of students, as corroborated by rising undergraduate enrolments, both domestic (by 15% in five years) and international (by 50% in five years), and rising admit averages of registrants.**

While several innovative academic programs were developed, they were varied in their appeal to students. The Faculty saw an 8.609% increase in enrolment between 2015/2016.

It is unlikely that this growth was related to the development of innovative academic programs. The overall registrations were comprised of domestic and international intake enrolments. The domestic enrolment intakes declined by – 8.102% while the international enrolment intake grew by 115.56%. The widely varied enrolment rates would suggest that programs were unrelated to enrolment growth. **See Appendix 1 for full breakdown of enrolment data.*

Key programming takeaways:

- Integrated Science was not successful with students and did not achieve enough enrolment to feasibly continue.
- Actuarial Science has been popular and grown well. In its second year, its

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enrolment intake grew by 300% overall. The third year (19/20), while demonstrating slower growth, is still a healthy 29%.

- Neuroscience, developed jointly with the Faculty of Health, has just had its first intake of 18 students which we anticipate will see healthy growth with subsequent adjustment.

2. Promote alignment of course learning outcomes, teaching and learning activities, and assessments, to be confirmed in curriculum reviews.

The following programs have completed Cyclical Program Reviews in the Faculty of Science during the 2015-2020 Period. 18 Month follow-up report date is indicated.

Department	Degree	Date	18 Month	Next CPR
Math and Statistics	BA, BSc, MSc, PhD	2015	2017	2020
Geography	BSc	2016	2018	2022
Biology	BSc, MSc, PhD	2016	2017	2022
Physics and Astronomy	BSc, MSc, PhD	2017	2019	2023

Department of Mathematics & Statistics

CPR recommendations:

- Program structures could be simplified; made a number of specific recommendations related to streams and courses.
- New courses focusing on statistical learning have been implemented, including MATH 3333 and MATH 6650, which will be key for the department's next CPR.
- Department worked with Lassonde faculties to design CLOs for service math courses and analyzed students' performance in different assessments.

Department of Chemistry

CPR recommendations:

- Hiring two alternate stream faculty members.
- Increase employment of learning outcomes by enforcing Senate requirements for course outlines that include learning outcomes for each course.
- Secure chemistry service teaching for the department so that all chemistry courses are taught by members of the Department of Chemistry.
- Combine cyclical review with CSC accreditation.

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- Accredit Biochemistry program.
- Expand use of co-ops.

Department of Biology

CPR recommendations:

- Remedy the lack of adequate fourth-year lab courses, especially for students not pursuing the research thesis or practicum.
- Enhance counselling and advising for first year undergraduates, possibly including online resources.
- Discuss the purpose, nature, and length of graduate programs, especially the MSc. Not all students are planning to complete a PhD, and a different approach to completion may be warranted.
- Encourage instructors to take advantage of professional development opportunities to enhance their classes.
- Incorporate interactive options to deepen student engagement.
- Research and reduce the most common and/or tractable causes for extension requests.
- Improve lines of communication between graduate students, GPD, and Chair.
- Review the allocation of TA hours among courses toward training and ongoing mentoring.

2019 Departmental Retreat recommendations:

- Ensure students learn the following essential skills from biology programs: Critical scientific thinking; oral and written communication skills; computational and statistical skills; soft skills (time management, teamwork and collaboration, accountability), and scientific literacy.
- Establish a Biology Curriculum Working Group to examine the current curriculum and to determine how these essential skills can be introduced into all four years of biology curriculum, in consultation with course directors.

Department of Physics & Astronomy:

- The Department undertook finalization of learning outcomes for the Undergraduate Programs in Physics and Astronomy, the Undergraduate Program in Biophysics, and the Graduate Program in Physics and Astronomy.
- Additionally, curriculum maps were created for each.

CPR recommendations:

- The Department should initiate a long range planning process to set faculty hiring priorities over the next 5 to 10 years.

3. Strengthen tenure and promotion criteria for teaching excellence to recognize

scholarship of teaching and learning, particularly for alternate stream faculty.

- The majority of units (aside from Chemistry) have specific language and criteria in their T&P documentation/criteria for Teaching Stream faculty members.

4. *Recognize teaching excellence through internal and external award nominations, with the aim of at least one faculty member winning a major external teaching award within the next five years.*

- The Faculty presents annual Internal Faculty Teaching and Graduate Mentorship Awards which are celebrated at the annual Honours and Awards Ceremony organized by the Dean’s Office. The University also presents its President’s University-Wide Teaching Awards, annually.
- In total, Faculty members received 17 internal awards over the period of 2015-2020. Nominations were not tracked. Faculty did not win any major external teaching awards. *See Appendix 2 for list of Faculty teaching awards.

FOCUS: RESEARCH

Foster research excellence through recruitment, recognition and support, thus making the Faculty a destination of choice for future scientists.

RESEARCH	ACHIEVED	PARTIALLY ACHIEVED	NOT ACHIEVED
1. Raise the number of research chair appointments (e.g., CRCs, YRCs, endowed chairs) and renew the professorial stream faculty complement, with a view to building ‘critical mass’ in select areas.	✓		
2. Increase the external funding for research by 50% within five years, from the 2014 level, from a diversity of sources including government, industry, foundations and philanthropy, in part by supporting strategic/team applications (e.g., CFI, ORF, CREATE, CFREF, Genome Canada).	✓		
3. Enable more faculty members across all ranks to receive major internal (e.g., President’s Research Excellence Award) and external honours (e.g., FRCS, Steacie).		✓	
4. Make continuous improvements to keep research infrastructure competitive and develop sustainable models for maintenance and support of major equipment.	✓		

Priorities

- 1. Raise the number of research chair appointments (e.g., CRCs, YRCs, endowed chairs) and renew the professorial stream faculty complement, with a view to building 'critical mass' in select areas.**

During the period of 2015-2020, the Faculty added:

- 7 CRCs
- 10 YRCs
- 1 IRC
- 2 Endowed Chairs
- 32 Professorial Stream Faculty

'Critical mass' clusters addressed:

- Vista group hiring (Zylberberg, Troje)
- Materials chemistry (Baumgartner, Caputo)
- Environmental chemistry (Young, VandenBoer)
- Actuarial Sciences (Cao, Su)

*See Appendix 3 for full list of professorial stream faculty hires.

- 2. Increase the external funding for research by 50% within five years, from the 2014 level, from a diversity of sources including government, industry, foundations and philanthropy, in part by supporting strategic/team applications (e.g., CFI, ORF, CREATE, CFREF, Genome Canada).**

There has been a steady increase in funding from 2014 to 2019. Relative to 2014, funding levels increased by at least 50% in 2017 and 2019. Some of our strategies for research intensification and to increase funding include:

- Increase industry-partnered research. To this end, the Advancement Officer and the Director, Research and Partnerships initiated and expanded the Sanofi Pasteur Partnership resulting in two large NSERC CRDs and the NSERC Industrial Research Chair. Numerous other smaller grants, including NSERC Engage and Mitacs, have also come out of the partnership.
- Provide enhanced support to "most-likely-to-succeed" CIHR applicants.
- Provide enhanced support to new hires and unsuccessful NSERC DG applicants.
- Work in partnership with SIRI to help ensure success of large institutional funding applications, e.g. NSERC CREATE, NFRF, CFI/ORF, ORF-RE, Genome Canada, CRCs including Canada 150 CRC.

*For a full breakdown of research funding, see Appendix 4.

3. Enable more faculty members across all ranks to receive major internal (e.g., President's Research Excellence Award) and external honours (e.g., FRCS, Steacie).

- While many faculty received internal and external honours, we do not have a centralized database storing awards and honours received by faculty, and unless notified, the Dean's Office is often unaware of awards received.

*For a list of known research awards, see Appendix 5.

4. Make continuous improvements to keep research infrastructure competitive, and develop sustainable models for maintenance and support of major equipment.

- Specialized equipment was purchased as part of the construction of the Life Sciences Building (2012).
- Two Technical Specialists were trained and assigned to the NMR and Imaging Facilities. A third Technical Specialist was hired to oversee the Mass Spec Facility.
- YSciCore was initiated.
- Websites were developed for each Facility highlighting the available equipment, the fee-for-service structure, and an on-line booking system.
- All these facilities have extended their services to York researchers as well as to neighbouring universities and industry. Sufficient revenue is generated to cover day-to-day operations and all maintenance and repair costs.
- Over the past five years, the Research Office has aggressively pursued all CFI/ORF funding opportunities. Faculty members from FSc have secured funding for ADERSIM, the emergency management simulation facility (\$1.2M), infrastructure for the nonhuman primate facility (\$3.1M) and equipment for CERN (\$900K). We use the CFI-JELF program not only to help new hires equip their labs but also to replace or purchase new equipment that can be shared by all FSc faculty members.
- The Research Office worked with CSBO during the renovations to Farquharson to purchase new state-of-the-art infrastructure to support research in muscle health.
- Requests for infrastructure are constant and the Research Services Office encourages and strongly supports submission of NSERC RTI applications. This is a highly competitive program and faculty have met with limited success.

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However, in past years, when there has been an FSc budget surplus, we have lobbied for and been success at redirecting a portion of the budget surplus to unsuccessful RTI equipment requests.

FOCUS: STUDENT SUCCESS

Boost the success of our students during their time at York and beyond.

STUDENT SUCCESS	ACHIEVED	PARTIALLY ACHIEVED	NOT ACHIEVED
1. Enhance opportunities for research (e.g., summer research awards) and experiential learning (e.g., Mitacs placements, co-op programs) for students at all levels.	✓		
2. Working with Bethune College, enhance and streamline undergraduate advising and support, with a view to improving retention and student satisfaction.		✓	
3. Raise funds for undergraduate and graduate scholarships/awards, with a view to recruiting and supporting top students.	✓		
4. Provide professional development opportunities for postdoctoral fellows and graduate students (e.g., media workshops, career panels and networking).	✓		

Priorities

1. Enhance opportunities for research (e.g., summer research awards) and experiential learning (e.g. Mitacs placements, co-op programs) for students at all levels.

- Enhanced NSERC USRA program with the creation of Dean’s University Research Awards (DURA) in 2015 with 6 to 25 awards given each summer (dependent on funds available).
- The York Science Scholars Awards was launched in 2018 for incoming students. The award includes an entrance scholarship and a summer research placement.
- FSc organizes the Annual Summer Undergraduate Research Conference for students in Science and other faculties who receive NSERC USRAs, DURAs, and York Science Scholar Awards.

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- PIs in FSc are increasingly partnering with local industries with research projects supported by Mitacs, NSERC Engage, NSERC CRD and OCE Voucher funding. Graduate students and PDFs gain valuable industry experience working on these projects.

Department of Mathematics & Statistics:

- Created new internship opportunities for students who are full-time, Honours students or specializing in Statistics.

Department of Chemistry:

- Made its co-op program more flexible and attractive by creating a series of 4-month internship courses.
- Chemistry faculty members secured large CREATE grants in atmospheric chemistry and mass spectrometry, which help train students in those areas.

Department of Biology:

- The department created the non-credit (pass/fail) research practicum course to allow Biology and Biochemistry undergraduate students the opportunity to gain research skills beyond their formal undergraduate lab courses through working in a faculty's research lab.

Department of Physics & Astronomy:

- The department worked to further experiential training through the provision of research opportunities, such as through USRA, DURA, RAY, and Work/Study positions.
- In a survey of students in 2nd year or higher conducted as part of the 2016 Cyclical Program Review, 53% of respondents stated that they had an opportunity to engage in research during their undergraduate careers, versus 22% in 2009.
- The Chair cultivated a relationship with the Major Collision Reconstruction Unit of the York Regional Police, ultimately leading to police funding to commence a paid internship program with FSc.

Department of Science & Technology Studies:

- No specific updates.

2. *Working with Bethune College, enhance and streamline undergraduate advising and support, with a view to improving retention and student satisfaction.*

- Established the BC1800 course, which helps teach academic skills. It is offered via Bethune College.

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- Between 2015-2018, there was a 3% improvement in retention rates for undergraduate students. *See Appendix 7 for a full breakdown of undergraduate retention data.
- 3. Raise funds for undergraduate and graduate scholarships/awards, with a view to recruiting and supporting top students.**
 - Since 2015, there were 218 donations that supported 48 unique student support funds for a total amount of \$1.18 million.
 - 4. Provide professional development opportunities for postdoctoral fellows and graduate students (e.g., media workshops, career panels and networking).**

Dean's Office:

- In December 2016, the Communications Manager hosted a media workshop for researchers on social media, developing an online brand, and increasing media coverage of their research.
- Since 2017, the York Science Communicator in Residence Program has offered six communication workshops open to all at York; residents also conducted training sessions with graduate students and postdocs to help them develop science communication skills.

FOCUS: INVESTING IN PEOPLE

Recruit, support promote top faculty and staff in a community that values individual contributions as well as teamwork.

INVESTING IN PEOPLE	ACHIEVED	PARTIALLY ACHIEVED	NOT ACHIEVED
1. Strengthen the sense of community, through Faculty-wide events/programs that promote cross-disciplinary intellectual and social interactions.	✓		
2. Ensure success of new faculty and staff through 'on-boarding', mentoring and professional development opportunities.	✓		
3. Promote recognition and visibility of Science faculty, staff, students and alumni through nominations for awards and honors.	✓		

Priorities

1. Strengthen the sense of community, through Faculty-wide events/programs that promote cross-disciplinary intellectual and social interactions

- In 2016, the Dean's Office established an annual December holiday reception for faculty and staff; the event includes long service recognition.
- In 2016, the Dean's Office established an annual summer BBQ luncheon for faculty and staff; the event includes service recognition.
- All faculty and staff were invited to an Observatory event in September 2019 to celebrate new one-metre telescope.
- In 2016, the Dean's Office established a regular "Science Unplugged" event to bring together faculty members, graduate students, postdoctoral fellows, alumni, and staff. The event features a series of short talks followed by networking. Six events have been held since 2016.
- In 2019, the Faculty held a lunch to congratulate all researchers for submitting grants in the past year.

2. Ensure success of new faculty and staff through 'on-boarding', mentoring and professional development opportunities.

For faculty:

- The Faculty has now implemented year-long on-boarding for new faculty and ensured all have mentors.

For staff:

- On-boarding has been completed for approximately 90% of new non-academic staff members.
- More than 75% of the administrative support staff have successfully completed the Admin YU program administered by Central Human Resources Talent Acquisition.
- There have been two successful staff retreats for CPM and YUSA staff.
- All CPM managers completed the ManagerYU program.

3. Promote recognition and visibility of Science faculty, staff, students and alumni through nominations for awards and honors.

Faculty members:

- The Dean's Office continues to present internal teaching and research excellence awards, as well as Dean's Special Recognition Awards on an annual basis at the Honours & Awards Ceremony.

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- FSc’s Research Services Office developed a comprehensive list of Canadian and International awards used to expand the number of awards applied for. The Office identifies strong candidates and works with SIRI to support and strengthen these nominations. The Office also encourages faculty members to nominate their colleagues for awards and we support these nominations by organizing letters of support and reviewing and revising documents.

Students:

- No updates.

Staff:

- We continue to nominate staff for the President’s Staff Recognition Awards.
*See Appendix 6 for number of nominations and awards by year.

Alumni:

- We continue to nominate alumni for the Bryden Alumni Awards. Since 2015, eight Science alumni have been nominated for the Bryden Alumni Awards, with 3 successful recipients.

FOCUS: ENGAGEMENT & OUTREACH

Engage effectively with the broader community and offer innovative outreach programs for youth and the public, thus raising the profile and impact of Science at York.

ENGAGEMENT AND OUTREACH	ACHIEVED	PARTIALLY ACHIEVED	NOT ACHIEVED
1. Engage with alumni, supporters and friends of the Faculty effectively and consistently to enhance their connections with and support for Science at York.		✓	
2. Offer exciting and innovative outreach programs for youth (e.g., SciX, Helix), high school teachers and the public, and establish a high-profile annual event (York Science Forum) that draws a large audience.	✓		
3. Raise the visibility of Science at York through extensive media engagement, by promoting coverage for our research, teaching and outreach efforts and pitching our scientists as expert commentators for breaking stories.	✓		

Priorities

1. Engage with alumni, supporters and friends of the Faculty effectively and consistently to enhance their connections with and support for Science at York.

- Approximately 30 Alumni Spotlights were added to the FSc website.
- An Annual Review is mailed/emailed to alumni and donors every year.
- Since 2017, an annual Luncheon has been held to celebrate new Carswell Scholars. Allan Carswell attends the event, which features presentations by the students.
- Alumni and donors are invited to annual Rogers Cup events at York.
- The Alumni Office created Scholars Hub, a public lecture series held at the Markham Library, which targets an alumni audience.
- Some alumni and donors are invited to the Faculty's York Science Forums and Science Unplugged events.
- The Faculty's Honours and Awards Ceremony features an alumnus as the keynote speaker.

2. Offer exciting and innovative outreach programs for youth (e.g., SciX, Helix), high school teachers and the public, and establish a high-profile annual event (York Science Forum) that draws a large audience.

- **Science Engagement Programs:**
 - Each year, Science Engagement Programs (SEP) offers between 35%-50% of new camps every summer and March Break.
 - SEP also established the high school Spark Lab Program as of 2017.
 - Established "Coding with Kids" program in 2018.
 - New workshops programming annually.
- **Dean's Office:**
 - In 2015, the Dean's Office established the York Science Forum, a free annual event that explores our most fascinating mysteries and discoveries in science. The event attracts hundreds of attendees and usually sells out.
 - The faculty continued with its successful Speaker's Bureau program, which allows schools and other community organizations to schedule talks by our professors on a wide variety of scientific topics. Between 2015-2020, 22 faculty members gave approximately 60 talks to local elementary and secondary schools and community organizations.

- **Department of Mathematics & Statistics:**
 - The Department offers York-Fields Math Circles, which receive \$7.5K in additional of funding from the Fields Institute.
 - The Department organizes winter and summer math camps.
 - Faculty members lead or take part in a number of outreach initiatives, including the Faculty's public lecture series at the Toronto Public Library, Science Speakers Bureau series, and York Science Forum.
 - Professor Hongmei Zhu runs a number of yearly outreach activities, including Science Rendezvous, Math Modeling Competition and Math Modelling Camp.

- **Department of Chemistry:**
 - In 2019, five Chemistry professors delivered public lectures at the Toronto Public Library.
 - The Chemistry Society at York, mentored by Hovig Kouyoumdjian, organizes a yearly 'Meet the Profs' and lab tour event.

- **Department of Biology:**
 - Prof. Sapna Sharma founded the SEEDS (Supporting Education, Empowerment and Development through Science) outreach program in 2015, which has provided science outreach activities to 500 refugees.
 - As of 2016, Robert Tsushima (Biology Chair) participates in the organizing committee for the annual York Region Science and Technology Fair (YRSTF) at York U.
 - In November 2019, Tsushima became a co-program director of SHAD York.
 - Tsushima has served as a national judge for the Sanofi Biogenius Challenge since 2013. FSc was set to host this event in April 2020 but it was cancelled due to COVID.

- **Department of Physics & Astronomy:**
 - The Allan I. Carswell Astronomical Observatory is heavily engaged in public education; observatory staff routinely give demonstrations and tours both on and off campus. The Observatory is always included in on-campus recruitment events, including the Biophysics Contest

Awards Celebration and the Evening for High School Physics Teachers.

- In 2018, a \$1.5 million gift from the Carswell Family Foundation and matching funds from the University established the Allan I. Carswell Chair for the Public Understanding of Astronomy. The first Chair is Professor Paul Delaney. The Chair devotes a significant portion of their time to science education and outreach. The Chair is believed to be unique in North America.
- The Department established the biennial York University Biophysics Contest for high school students in 2015/16. The event is seen not only as a device for recruitment but also as a means of encouraging more women to engage in physics.
- The Department hosts an Evening for High School Physics Teachers annually.
- The Department has engaged with the Fields Institute to offer an annual York-Fields public lecture on a topic at the interface of physics and mathematics. These talks have attracted considerable attention from within and outside of York University.
- Besides participating in FSc events with a high profile, the Department also mounts one-off events for the public. In 2020, a well-known professor, Katie Mack of North Carolina State University, gave the highly publicized lecture "Death of a Universe." High school teachers and students were invited. Prior to the lecture, half a dozen students were given an opportunity to interact face-to-face with Professor Mack.

- **Department of Science & Technology Studies:**

- No specific updates

3. *Raise the visibility of Science at York through extensive media engagement, by promoting coverage for our research, teaching and outreach efforts and pitching our scientists as expert commentators for breaking stories.*

- Year over year, York Media Relations distributed an average of 25 media releases and advisories annually on behalf of the Faculty of Science.
- Media releases shared news about new research findings, publications, funding, awards and honours, and upcoming events, while media advisories alerted media to upcoming York Science events or pitched faculty and

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students as expert commentators for external science-related events or announcements in the media.

- Most releases and advisories were supplemented by targeted pitching to select journalists via email to telephone.
- Due to this outreach, FSc received extensive national and international media attention (print, broadcast, and online) about our research and events and provided a broad range of expert commentary about external science-related discoveries and activities.

Appendix 1

Intake Enrolment data

Admissions (Academic Year)	15/16	16/17	17/18	18/19	19/20	15/16 vs 19/20
Overall Registrations (intake)	999	959	1,200	1,236	1,085	8.61%
Registrations 101-Domestic	572	516	671	567	520	-9.09%
Registrations 101- International	24	28	41	56	61	154.17 %
Registrations 105-Domestic	292	285	298	351	274	-6.16%
Registrations 105- International	111	130	190	262	230	107.21 %
Contextual notes	Labour disruption in March 2015	Lag effect of labour disruption	Strong Year	Labour Disruption (historic)	Lag effect	

□

Appendix 2

Teaching Awards

2015-2016

Senior-Tenure Stream Faculty	Scott Menary, Department of Physics and Astronomy
Non-Tenure Stream Faculty	Kyle Belozarov, Department of Biology
Richard Jarrell Excellence in Teaching for Teaching Assistants	Thuc-Nghi Pham, Department of Biology

2016-2017

Senior-Tenure Stream Faculty	Paula Wilson, Department of Biology
Richard Jarrell Award of Excellence for Teaching Assistants	Uzma Nadeem, Department of Biology
Richard Jarrell Excellence in Teaching for Teaching Assistants	David Miller, Department of Biology

2017-2018

Richard Jarrell Excellence in Teaching for Teaching Assistants	Mohammad Salem, Department of Biology
Richard Jarrell Excellence in Teaching for Teaching Assistants	Harjot Deol, Department of Biology
Excellence in Teaching Award: Non-Tenure Stream	Daniela Monaldi, Department of Science & Technology Studies
Excellence in Teaching Award: Junior Tenure Stream	James Elwick, Department of Science & Technology Studies

2018-2019

Excellence in Teaching Award: Junior Tenure Stream	Derek Jackson, Department of Chemistry
Excellence in Teaching Awards: Senior Tenure Stream	Patricia Lakin-Thomas, Department of Biology

2019-2020

Excellence in Teaching Awards: Senior Tenure Stream	Chris Lortie, Department of Biology
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Richard Jarrell Excellence in Teaching at the Graduate Level Award	Eleni Fegaras, Department of Biology
Richard Jarrell Excellence in Teaching at the Graduate Level Award	Nicholas Bragagnolo, Department of Chemistry
Excellence in Teaching Awards: Junior Tenure Stream	Nicole Nivillac, Department of Biology
University-Wide Teaching Award	Paula Wilson, Department of Biology

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Appendix 3

Professorial Stream Faculty Hires

2015-2016

- Yang Shen, Department of Mathematics & Statistics
- Peter Backx, Department of Biology
- Helene Mialet, Department of Science & Technology Studies

2016-2017

- Paul Skoufranis, Department of Mathematics & Statistics
- Patrick Ingram, Department of Mathematics & Statistics
- Raymond Kwong, Department of Biology
- Adam Muzzin, Department of Physics & Astronomy

2017-2018

- Chris Caputo, Department of Chemistry
- Thomas Baumgartner, Department of Chemistry
- Ryan Hili, Department of Chemistry
- Cora Young, Department of Chemistry
- Steven Connor, Department of Biology

2018-2019

- Niko Troje, Department of Biology
- Joel Zylberberg, Department of Physics & Astronomy
- Sandra Rehan, Department of Biology
- Ozzy Mermut, Department of Physics & Astronomy
- Deborah Harris, Department of Physics & Astronomy
- Conor Douglas, Department of Science & Technology Studies
- Iain Moyles, Department of Mathematics & Statistics

2019-2020

- Nik Kovich, Department of Biology
- Tao Zeng, Department of Chemistry
- Trevor VandenBoer, Department of Chemistry
- Claire David, Department of Physics & Astronomy
- Nassim Bozorgnia, Department of Physics & Astronomy
- Jude Kong, Department of Mathematics & Statistics

2020-2021

- Christine Le, Department of Chemistry

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- Pavlos Motakis, Department of Mathematics & Statistics
- Ryan Schott, Department of Biology
- Kevin McGregor, Department of Mathematics & Statistics
- Jingyi Cao, Department of Mathematics & Statistics; Actuarial
- Jianxi Su, Department of Mathematics & Statistics; Actuarial
- Elizabeth Clare, Department of Biology

Appendix 4

Research Funding

	2014	2015	2016	2017	2018	2019
Total Funding	\$11.9M	\$13,237,066	\$13,772,334	\$17,622,088	\$14,116,233	\$24,042,567
NSERC	\$8,057,838	\$6,134,086	\$4,032,905	\$4,886,628	\$10,092,079	\$5,005,739
NSERC CREAT	\$1,647,000	-	\$1,650,000			
CIHR	\$1,871,055	\$3,071,323	\$10,000	\$1,555,975	\$1,413,501.00	\$2,452,052
Mitacs	\$658,334	\$573,333	\$192,500	\$202,500	\$222,500	\$327,750
CFI/ORF		\$1,200,000 (ORF-LIF - Wu) \$546,170 CFI-JELF	\$1,402,886 (CFI-JELFs to Peng, Ifa, Backx)	\$4,962,706 (\$3.1 M CFI-IF Thilo & \$900 K	\$1,162,110	\$857,858
CFREF			\$778,500 From FoH			
Genome Canada		\$925,588				\$10,000,000
Government					\$549,569	
Industry			\$1,804,000 (in-kind IBM Cloud)	\$778,756	\$1,511,030	\$1,264,873
Other	\$1,372,315 Government + Industry	\$1,080,065	\$456,854	\$2,500,000 NSERC IRC J. Wu/Sanofi		
Donations			\$1,350,000 Simons Fdn. \$750,000 Carswell Fdn. \$330,000 Krembil Fdn.	\$500,000 Carswell Telescope		\$1,246,389.19 (\$907,092 Sloan to Eric Hessels) 2020 ~\$1M to Eric

Appendix 5

Research Awards – 2015-2020

Excellence in Research Awards 2015-16	
Established Research Awards	Norbert Bartel, Department of Physics and Astronomy
Early Career Research Award	Matthew Johnson, Department of Physics and Astronomy
Graduate Mentorship Award	Christopher Lortie, Department of Biology

Excellence in Research Awards 2016-17	
Established Research Awards	Ilijas Farah, Department of Mathematics & Statistics
Early Career Research Award	Sapna Sharma, Department of Biology
Graduate Mentorship Award	Derek Wilson, Department of Chemistry

Excellence in Research Awards 2018	
Established Research Awards	Gary Sweeney, Department of Biology
Early Career Research Award	Derek Wilson, Department of Chemistry
Graduate Mentorship Award	Arturo Orellana, Department of Chemistry

Excellence in Research Awards 2019	
Established Research Awards	Eric Hessels, Department of Physics & Astronomy
Early Career Research Award	Jennifer Chen, Department of Chemistry
Graduate Mentorship Award	Mark Bayfield, Department of Biology

University-Wide Awards

- Bridget Stutchbury (Biology): President's Research Excellence Award
- Sapna Sharma (Biology): President's Emerging Research Leadership Award (

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- Paul Delaney (PHAS) and Dawn Bazely (Biology) received the title of University Professor.
- Laurence Packer (Biology), Nantel Bergeron (Mathematics & Statistics), and Sergey Krylov were named Distinguished Research Professors.

External Awards

- Early Career Research Award from Ontario Ministry of Research and Innovation: Sapna Sharma (Biology); Jean Paul Paluzzi (Biology); Ryan Hili (Chemistry)
- NSERC E.W.R. Steacie Memorial Fellowship: Thilo Womelsdorf (Biology)
- Canadian Applied and Industrial Mathematics Society (CAIMS) -Fields Industrial Mathematics prize: Huaxiong Huang (Math & Stats)
- Petro Canada Young Investigator Award: Jean-Paul Paluzzi (Biology); Chris Caputo (Chemistry); Ryan Hili (Chemistry); Jennifer Chen (Chemistry)
- Doctor Honoris Causa from the University of Szeged, Hungary: Jianhong Wu (Math & Stats)
- Klumpke-Roberts Award from the Astronomical Society of the Pacific: Paul Delaney (PHAS)
- Best in Science grant from the Ontario Ministry of the Environment and Climate Change: Sapna Sharma (Biology)
- Honorary Doctor of Laws degree from Dalhousie University: Distinguished Research Professor Emeritus Ken Davey (Biology)
- John D. Reynolds Award for the Canadian Society for Immunology: Gillian Wu (Biology)
- Hélène Mialet (Science & Technology Studies) was named a Berggruen Fellow at the University of Southern California.
- Laurence Packer (Biology) was elected to the Fellowship of the Royal Entomological Society of London.
- Adjunct Faculty member Michael Organ (Chemistry) received the NSERC John C. Polanyi Award.
- Patrick Ingram (Mathematics & Statistics) received the G. de B. Robinson Award from the Canadian Mathematical Society.
- Jennifer Chen (Chemistry) was named to the Top 40 Under 40 Power List 2018 by the Analytical Scientist magazine.
- Jennifer Chen (Chemistry) won the 2018 Award for Outstanding Early-career Achievements in Nanoscience and Nanotechnology from [NanoOntario](#).
- Amro Zayed (Biology) was elected as the president of the Entomological Society of Ontario.
- Jianhong Wu (Mathematics and Statistics) won a 2018 CPAC Professional Achievement Award in recognition of his successful transition and outstanding achievements as an immigrant to Canada.
- Thomas Salisbury (Mathematics and Statistics) was named one of the Inaugural

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Class of Fellows of the Canadian Mathematical Society (CMS).

- Carol Bucking (Biology) received the 2019 Robert G. Boutlier New Investigator Award from the Canadian Society of Zoologists (CSZ).
- Former Dean Ray Jayawardhana (Physics and Astronomy) received the 2018 Dwight Nicholson Medal for Outreach.
- Christopher Caputo (Chemistry), was one of five early career researchers to receive Ontario's prestigious John Charles Polanyi Prize.
- Jennifer Chen (Biology) received the 2019 Fred Beamish Award from the Canadian Society for Chemistry.
- Joel Zylberberg (Physics and Astronomy) became an Associate Fellow of CIFAR.
- Cora Young (Chemistry) was named to the Talented 12 list of up-and-coming young scientists American Chemical Society.
- Jianhong Wu (Mathematics and Statistics) won the 2019 CAIMS-Fields Industrial Mathematics Prize.
- Neal Madras (Mathematics and Statistics) was appointed a member of the second inaugural class of Canadian Mathematical Society Fellows.
- H el ene Mialet (Science and Technology Studies) received a residential fellowship at the Centre for Advanced Study at the Norwegian Academy of Science & Letters.

Appendix 6

Staff Awards

- 2015: 5 nominees, 2 winners
- 2016: 8 nominees, 1 winner
- 2017: 9 nominees, no winners
- 2018: 2 nominees, no winners
- 2019: 3 nominees, 1 winner

Appendix 7 Retention Data



Figure 1: OIPA data from 2012-2018 for Retention Rates of New Yr 1 Full Time Nov 1st Undergrads. Retention of undergrads 2 Yr after first year enrollment improved during the 2015-2017 years of

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Strategic Plan from the historical percentages of 2012-2014. Also improving over this time is % remaining in the same program 2 yr later. *Data from Nov 1, 2019 not yet available.