

Annual Report on Research Activities at Saint Francis Xavier University – 2012-2013

Compiled by Dr. Richard Isnor, Associate Vice President Research and Graduate Studies – March 1, 2015.

This report was prepared to correspond with the template agreed upon by universities in Nova Scotia and the Department of Labour & Advanced Education, as of September of 2013. It is intended to report each January on the research activity of the previous year. For some areas, the reporting period is according to fiscal year (April 1, 2012 to March 31, 2013; e.g. funding statistics). In other areas, the reporting is according to academic year (September 1, 2012 to August 31, 2013; e.g. enrolments) or calendar year 2012 (e.g. publications). **Note:** This report contains data from years later than the reporting period in some instances, since it was prepared in early 2015 and later year's data was available.

Introduction

Research and outreach are fundamental to St. Francis Xavier's institutional role as a university and are recognized as one of the primary functions of the university's faculty. Research both informs and is intertwined with the university's role as an educational institution, and is an essential component of the university's commitment to service.

The *Major Research Objectives* of Saint Francis Xavier University's 2012-17 Strategic Research Plan (SRP) are:

- To build and enhance an environment that supports scholarly research in its many different forms, and meaningfully engages students in research experience;
- To facilitate synergy and increase research collaboration by building and supporting research clusters that reflect research strengths and areas of growth;
- To increase experiential training opportunities and skills development of highly qualified personnel by ensuring opportunities for productive research involvement of undergraduate and graduate students, and post-doctoral fellows;
- To develop research and disseminate knowledge at the regional, national and international levels;
- To strengthen the physical and technological infrastructure that supports high quality research by accessing funding opportunities;
- To support faculty applying to external research granting agencies, and continue to develop services and infrastructure that supports knowledge transfer and exchange; and
- To monitor institutional progress in advancing the research profile of the University and celebrate the research achievements of faculty and students.

The six *Major Research Themes or Research Clusters* of the St. Francis Xavier SRP are:

- Culture and Human Development
- Energy, Natural Resources and the Environment
- Human Health and Wellness
- Humanities
- Leadership and Organizational Development
- Public Policy, Governance and Social Justice

Research Activities

1. *Research Highlights (maximum 3)*

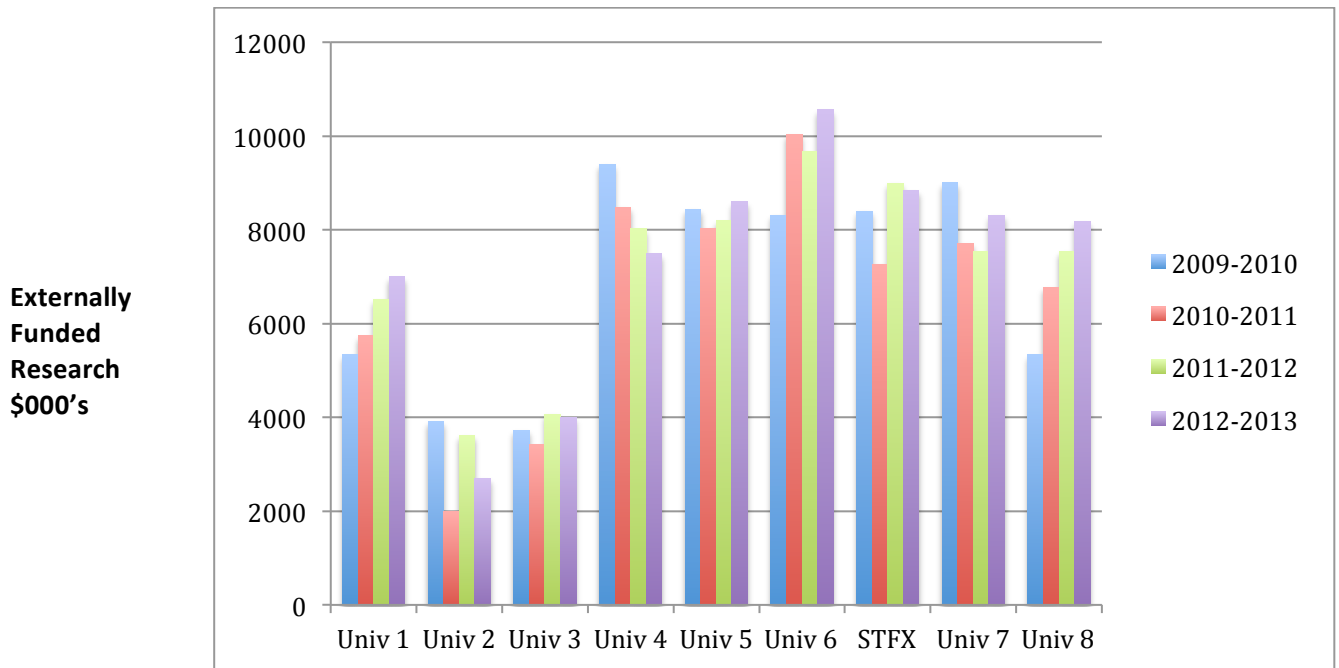
- **StFX's first PhD student in Adult Education receives top \$105,000 SSHRC grant to study young adults and how they perceive war and conflict.** Catherine Baillie Abidi, StFX's first PhD student in education, was awarded a three-year \$105,000 Joseph-Armand Bombardier Canada Graduate Scholarship Doctoral award from the Social Sciences and Humanities Research (SSHRC). She will focus her research on how young adults perceive war and conflict. Ms. Baillie Abidi is also planning to look at factors leading to interpersonal conflict. Her research may have implications for bullying and violence prevention. She is one of 14 PhD students in the first cohort of the Inter-University Doctoral Program in Education Studies, a shared venture among StFX, Acadia University, and Mount Saint Vincent University. Thanks to the collaboration established among the three universities, students are able to pursue a PhD in Educational Studies in Nova Scotia, helping build educational leadership in the province.
- **StFX research project studies financial literacy in First Nations youth.** A StFX research project aimed at developing a financial literacy program sensitive to the needs and financial decisions of youth in a local First Nations community has been launched by a team of StFX researchers, led by Business professor Dr. Mary Oxner. The Social Sciences and Humanities Research Council of Canada (SSHRC) awarded Dr. Oxner and her colleagues a \$62,218 Outreach Grant to help with the study. The purpose of the project is to prepare a program for the Paq'tnkek First Nation community to address financial literacy issues for youth aged 18 to 35. Her co-investigators include Business professors Drs. Tom Mahaffey and Ken MacAulay, and Dr. Joanne Tompkins from StFX's Faculty of Education. Financial literacy – the ability to discern financial choices, discuss money and financial issues, plan for the future, and respond to life events - is a pervasive problem and policy makers have identified the need for a Canadian financial literacy strategy. Recent programs have been developed to improve the financial literacy of high school-aged youth, the economically disadvantaged, investors, new parents, and retirees. This research outreach project extends a community-based, financial literacy program begun by StFX business faculty in 2004 to First Nations youth, a growing segment of the population who face significant financial decisions, which have long-term consequences. Following an initial phase of background research and focus group discussions, Dr. Oxner and her team will develop and deliver a series of financial literacy workshops for youth; disseminate the curriculum and workshops through traditional print media and online and interactive content; and disseminate the findings of curriculum evaluations to the appropriate community partners as part of a larger discussion of broad-based

strategies to improve the financial literacy of First Nations youth.

- StFX Earth Sciences professor launches research study on structural and chemical investigations of metal oxide-water systems under conditions of extreme temperature, pressure and radiation.** Dr. Alan Anderson has received \$307,320 over 4-years from the Natural Sciences and Engineering Research Council of Canada (NSERC) and Natural Resources Canada (NRCan) to study the structure and composition of selected metal oxide-water systems in hydrothermal diamond anvil cells at conditions of extreme temperature (300-700 degrees C), pressure, and radiation. The experiments, which will be carried out in partnership with Atomic Energy of Canada Ltd., will address questions pertaining to corrosion in supercritical water-cooled reactors. The anticipated results will significantly advance understanding of the interaction of aqueous fluids with candidate materials and the transport of corrosion products in aqueous fluids at conditions relevant to GEN IV (next generation nuclear energy systems). The research will also provide new thermochemical data for a database that is needed to quantitatively predict and control water chemistry in order to minimize material degradation and corrosion product transport at high temperatures.

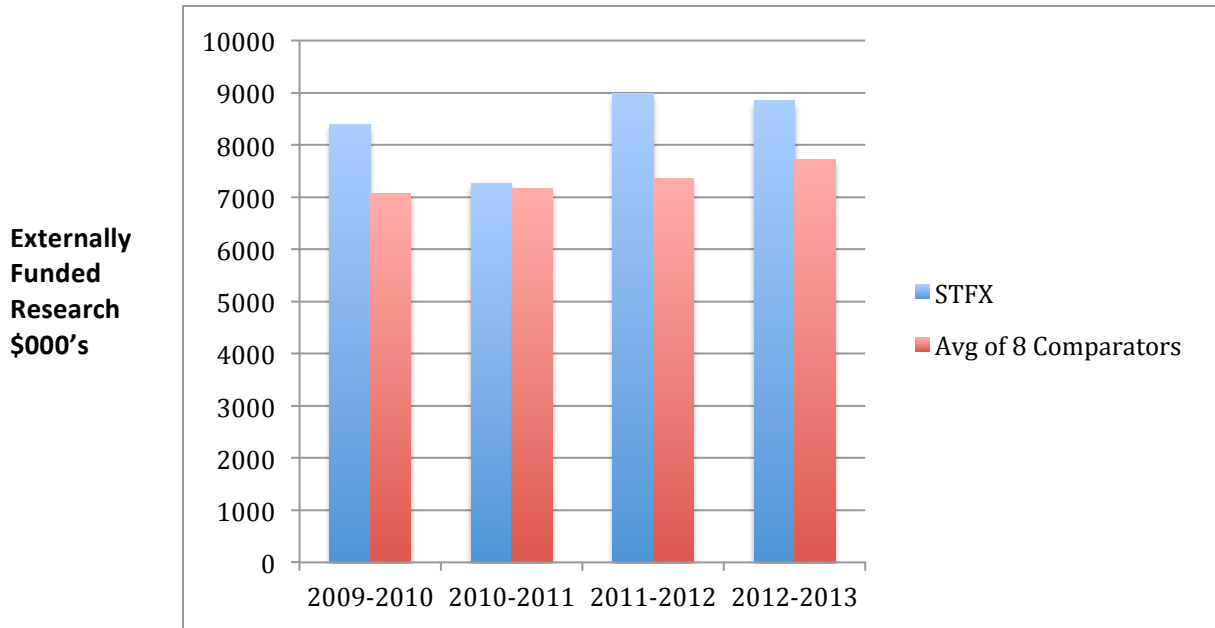
2. Research Funding

a) Total externally sponsored research at StFX relative to eight “comparator” Canadian Universities (2009-2012). Comparator universities were selected based upon comparable levels of total external research funding in 2009-2010 and/or regional considerations.



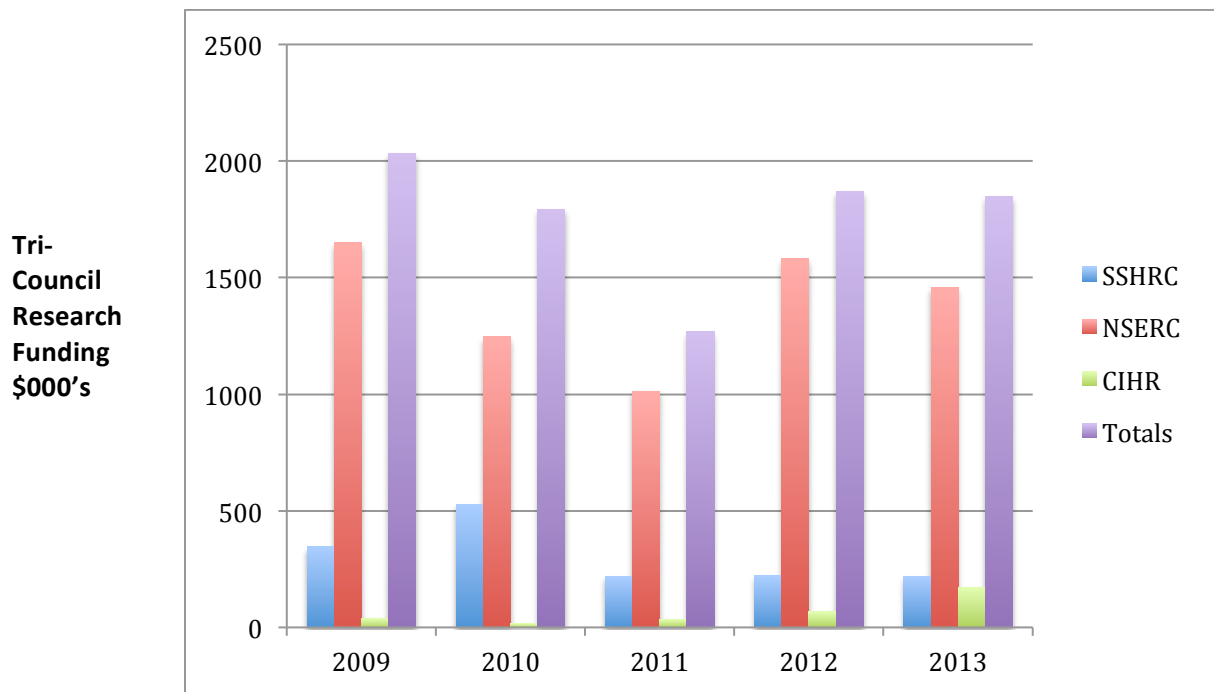
Source: CAUBO

Total externally sponsored research at StFX relative to average of eight “comparator” Canadian Universities (2009-2012).



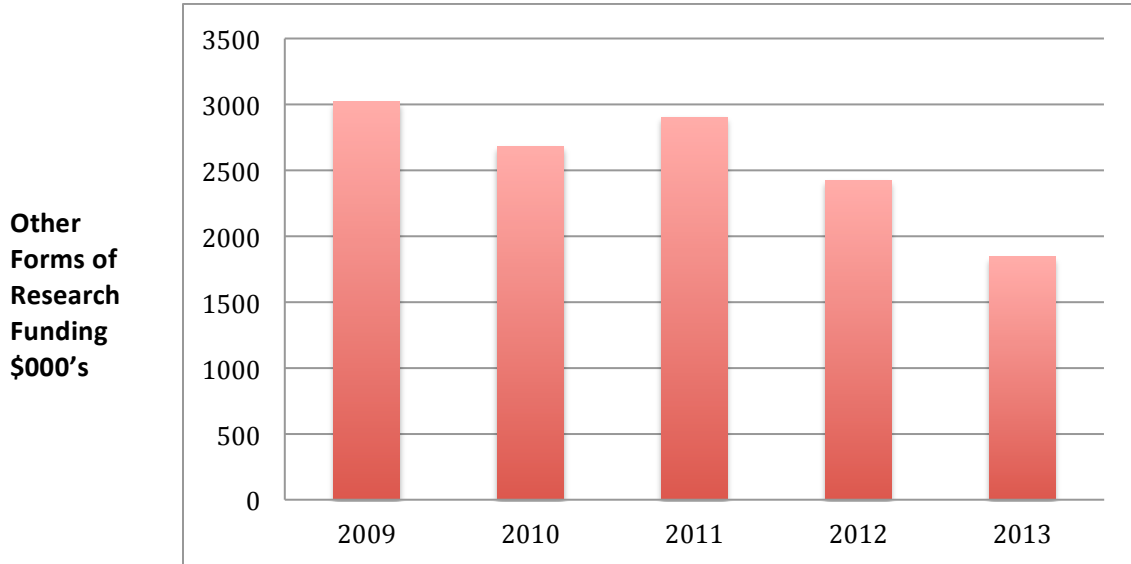
Source: CAUBO

b) Trends in Federal Tri-Council Funding at StFX (all values are 000's)



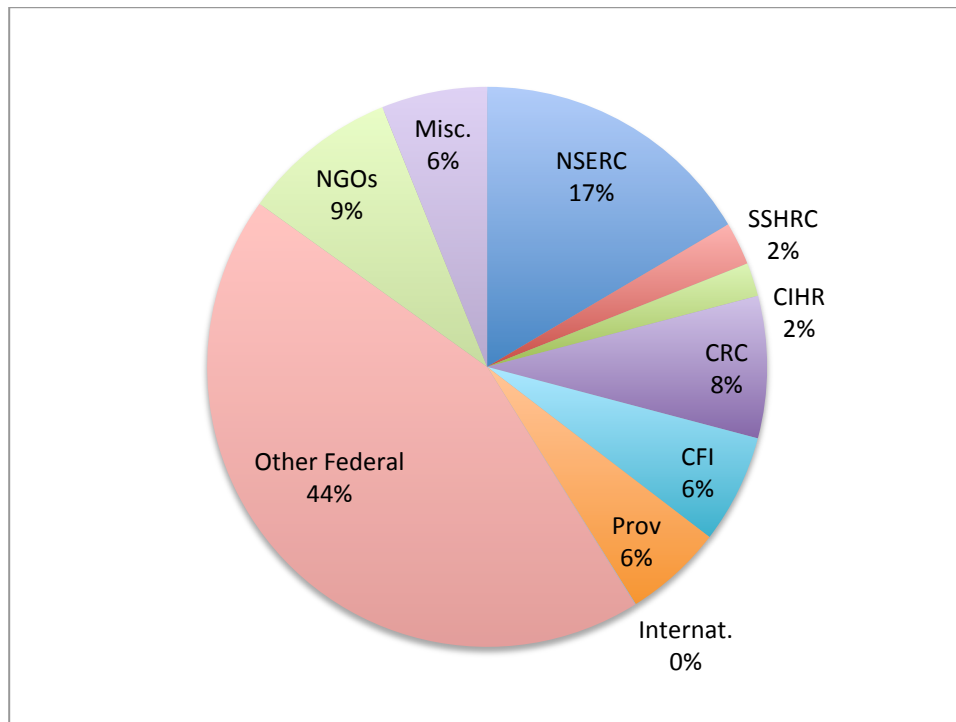
Source: CAUBO

c) Trends in Grant/Contract Funding from Other Sources Funding at StFX (e.g. Industry, NGO, Provincial, Government Depts).



Source: CAUBO

d) Key Sources of External Research Funding at STFX (2012-13)



Source: CAUBO

e) Research Universities of the Year (RUY) rankings: Research InfoSource (<http://www.researchinfosource.com/>) RUY rankings rate the top 50 Universities in Canada in terms of research impact relative to research funding. RUY rankings take into account both financial input and research output and impact/quality measures. The financial input measures are: total sponsored research income and research intensity. The research output and impact/quality measures are: total number of publications, publication intensity and publication impact.

Year	2009	2010	2011	2012	2013
STFX Rank	38	42	42	45	40

Research Universities of the Year (RUY): STFX Rankings for 2012-13

Externally sponsored research income	43
Research intensity (externally sponsored research \$/faculty member)	41
# of publications	42
Publication intensity (publications/faculty member)	44
Publication impact	22
Overall	40

Source: Research InfoSource

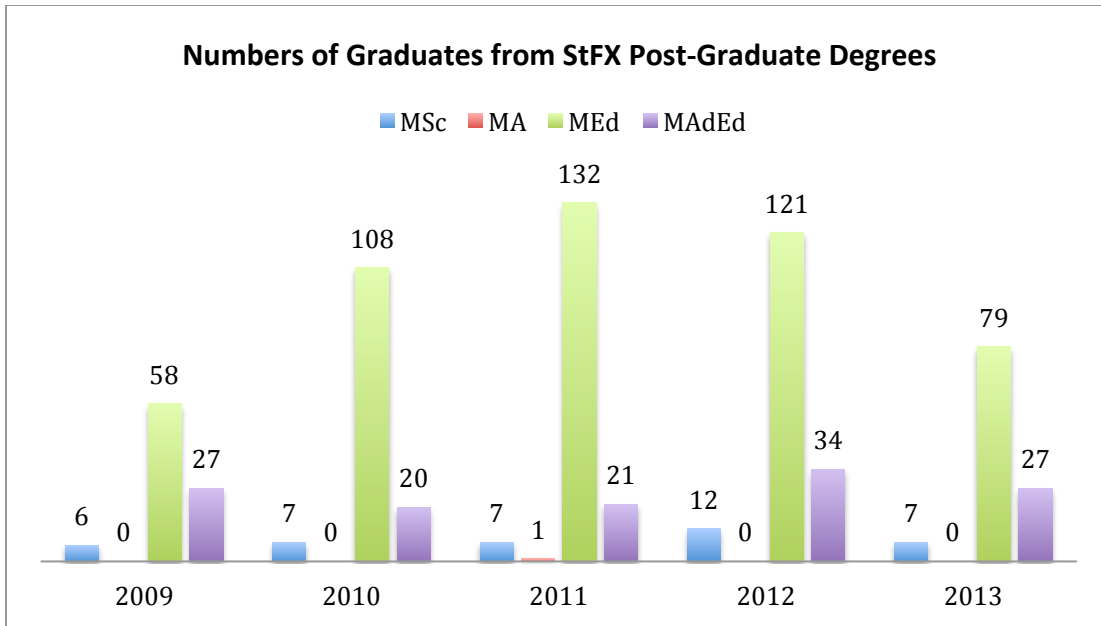
- In 2012-13, StFX had the 3rd highest annual positive growth in annual research funding of all Canadian universities (23.6%); it's publication impact (a measure of the perceived impact of research through a calculation of citations received by journals) rating was 22nd in the country.

3. Highly Qualified Personnel (HQP) Training

StFX is primarily focused on undergraduate research training across its four faculties of Science, Arts, Business, and Education. It also offers 8 graduate studies programs, including 1 joint PhD program (in Education established in 2011 jointly with Acadia and MSVU), as well as Masters of Education & Adult Education, Masters of Science in Biology, Chemistry, Earth Sciences, Computer Science; and Masters of Arts in Celtic Studies.

In 2012-2013 a number of StFX undergraduate students were awarded research scholarships and fellowships from the following sources:

Name of Research Scholarship/Fellowship	Number of Awards Made
NSERC USRA	12
Irving Research Mentorship	6
NSHRF Scotia Scholar	4
CIHR Health Professional Student Research Awards	2



- Service Learning is an important element of the StFX training and education experience. Many Service Learning experiences involve research-oriented activities and projects. In the 2012 academic year, StFX provided 812 undergraduate Service Learning experiences, including 65 involving International Students.

Highlights of HQP Production in 2012

- Dave Halligan, a 2012 StFX History graduate from Kingston, ON, won a two-year scholarship valued around \$35,000 to represent Canada in further studies at the University of Aberdeen Law School in Scotland, where he will complete his LL.B. Mr. Halligan was one of two recipients from a competitive field awarded the Justice Bertha Wilson Scholarship. The award, available to Canadian citizens, includes two years paid full tuition, valued at over £11,000 a year, an approximation of £22,000 or around \$35,000 Canadian.
- Kaleena Johnston of Powell River, BC, a 2012 StFX first class honours Human Kinetics graduate, was awarded a \$7,500 Peter Wright Award from the Canadian Scholarship Trust Foundation to under take master's of science degree in kinesiology this September at the University of Calgary. Ms. Johnston is one of 10 students from across the country to receive the award, presented for academic excellence in an undergraduate program and extracurricular achievements and contributions to the community.
- Christianne Macaulay, a 2012 StFX Psychology graduate, has become the first undergraduate student ever to win the prestigious Ken Bowers Student Research Award since its inception in 1991. Ms. Macaulay was awarded the distinction at the 2012 convention of the Canadian Psychological Association held in Halifax, NS on June 14-16, 2012. She received \$1,000 and was invited to describe her work in the fall edition of the Clinical Section newsletter, *The Canadian Clinical Psychologist*.

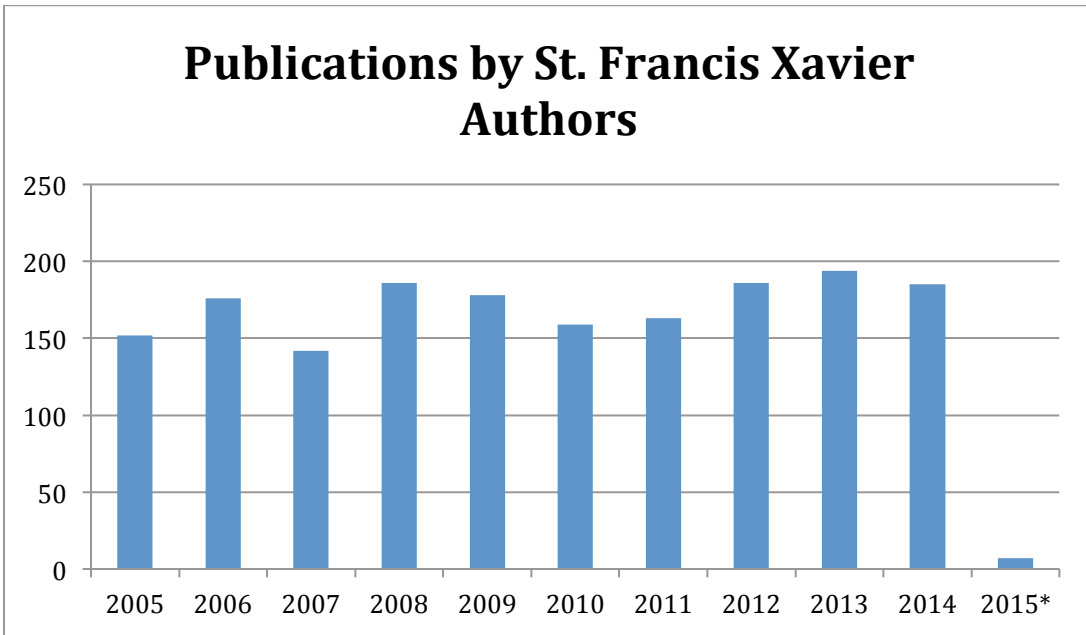
- Lizzy Hardy, a 2011 StFX Human Kinetics graduate, was awarded a one-year \$17,500 Joseph-Armand Bombardier Canada Graduate Scholarship (CGS) to study gender and sport as part of her master's degree at the University of Manitoba.

4. Industry Engagement (Springboard Atlantic Inc. performance indicators) 2012-13

1. Total Research Revenues (Annual)	7,500,000
2. Industry Engagement Activities	6
Total IRAP NMA Projects: (#)	0
IRAP DTAPP Projects (#)	0
Tri-Council Industry Partnerships (#)	3
–Interaction - #	0
–Engage - #	1
–IE(CCI), ARD - #	0
–ARTi #	0
–CRD - #	0
Other	2
Industry Partnership Scholarships (IPS, I-USRA, IRDF) - (#)	0
–CIHR POP - #	0
–SSHRC Partnerships (industry only)- #	0
Provincial Funds (Industry Project related):	
# of projects	2
\$ raised for those projects	40,000
Industry R&D Contracts (no sponsored funding) - (#)	1
Leases - Lab or incubation - (#)	0
Funds from industry contracts - (\$)	0
Admin Overhead generated - (\$)	0
Industry Internships generated by ILOs/TTOs - (#)	0
3. Workshops with Industry (#):	
Number of Workshops: (#)	3
4. ACOA AIF Projects:	
Number of AIF Projects Leading: (#)	0
Number of AIF Projects as Subcontract: (#)	0
Industry Funds leveraged: (\$)	0
Total Project Dollars: (\$)	0
5. Technology Transfer:	
Number of Tech Transfer Agreements: (#)	6
Revenues from Assignment, Option, Licensing and Royalty Agreements - \$	2862.4
New Spin Off Companies: (#)	0

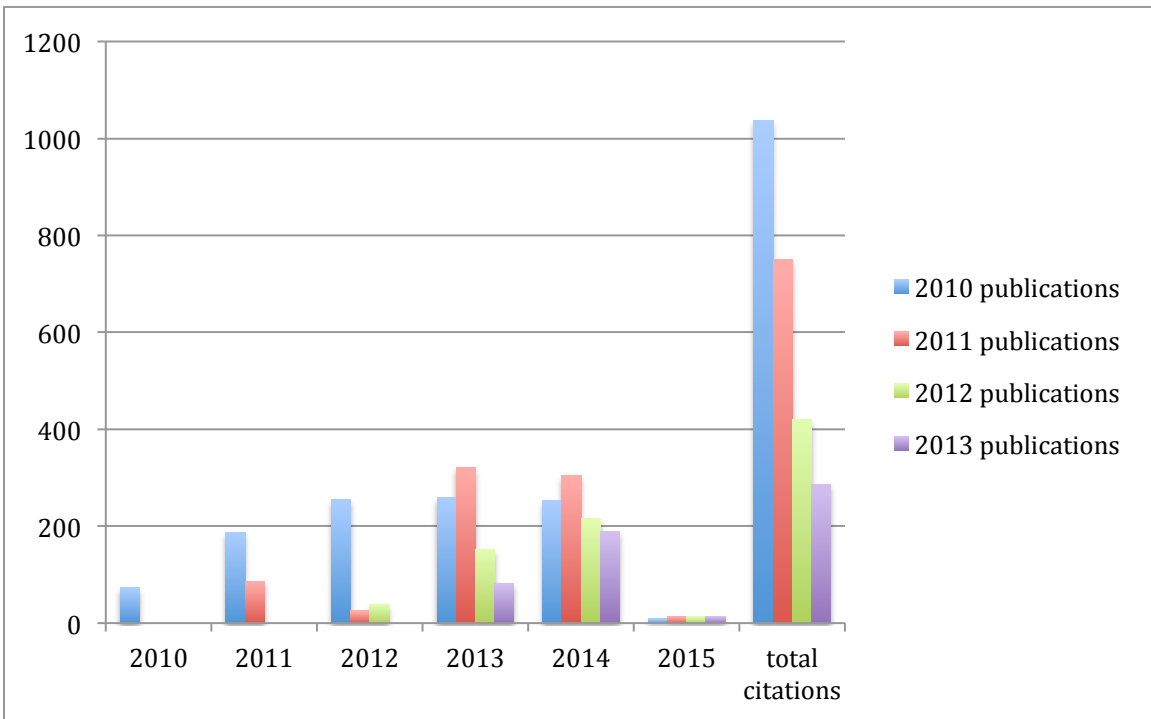
5. Knowledge Creation and Mobilization highlights- (includes publications)

Publication trends by authors from StFX as tracked by Web of Knowledge



Source: *Web of Knowledge Database*

Trends in number of citations of publications produced by StFX authors as tracked by Web of Knowledge



Source: *Web of Knowledge Database*

StFX Publications Tracked by Web of Knowledge, Scholarly Output by Type

	Article	Book Review	Editorial Material	Proceedings paper	Meeting Abstract	Review
2010 publications	117	14	10	7	5	2
2011 publications	127	13	5	8	2	2
2012 publications	132	25	9	6	2	4
2013 publications	129	18	17	8	12	5
2014 publications	143	19	10	2	4	2

Source: *Web of Knowledge Database*

Highlights from 2012 Publications

- Adult Education professor Dr. Leona English launches two books.** The scholarly contributions of StFX Adult Education professor Dr. Leona English were lauded on Oct. 11, 2012 when over 75 people gathered on the StFX campus to celebrate the launch of her two latest books, *Adult Education and Health*, and *Learning with Adults: A Critical Pedagogical Approach*. *Adult Education and Health* (University of Toronto Press 2012) is a comprehensive study of the theory and practice of health and adult education. The book provides the missing link for those seeking to better integrate their efforts in these two areas. Bringing together a distinguished interdisciplinary group of scholars and practitioners, the book speaks clearly to how teaching and learning insights can be used to improve health in clinical, higher education, and community settings. Among the 29 contributors are three from StFX, Maureen Coady, Jane Moseley, and Colleen Cameron. The second book, *Learning with Adults: A Critical Pedagogical Approach* (Sense Publications 2012), co-written with noted adult education theorist Peter Mayo (University of Malta), offers a critical perspective on issues of policy, participation, and governance in the education of adults. Writing in the wake of the UN conference on Adult Education, CONFINTEA VI, in Brazil in 2009, the authors reaffirm the central role of Adult Education in addressing worldwide crises and environmental degradation, and in creating a sustainable world for all. The book received very favorable international reviews.
- New Book on Health Literacy published by StFX professor of Human Nutrition.** Dr. Doris Gillis, chair of StFX's Human Nutrition Department, has published a celebrated new book that sheds light on international perspectives of health literacy. The book, *Health Literacy in Context: International Perspectives*, written with a Canadian and a British colleague, captures the richness in thinking about health literacy by presenting

perspectives of international researchers and practitioners who are working on health literacy in diverse settings and contexts. Health literacy is an important resource for managing and promoting health, whether as a patient navigating the health care system, a consumer trying to make informed choices in the grocery store, or a citizen advocating for more equitable access to healthy living conditions. Health literacy is capturing the attention of policy makers, practitioners and researchers around the world. Dr. Gillis' book is the first to draw together the perspectives on health literacy from international experts. This is a rapidly growing field of research and practice.

- **StFX anthropology professor publishes new book on Dimensions of Development.** For over two decades, including numerous on-the-ground research trips, StFX Anthropology professor Dr. Susan Vincent has traced the development of Allpachico, a village in the central highlands of Peru. The research is the basis of her book, *Dimensions of Development: History, Community, and Change in Allpachico, Peru* (published by the University of Toronto Press). In the book, Dr. Vincent, who specializes in the anthropology of development, examines four aid projects in the area, each following distinct international trends, which took place between 1984 and 2008. These trends in development practice are set within the context of wider state and global political and economic systems.
- **New book by Dr. Peter Clancy explores politics of the Scotian Basin on Canada's east coast.** The significance of offshore oil and gas development extends far beyond the discoveries and production platforms around Sable Island, according to a book published by StFX Political Science professor Dr. Peter Clancy. In *Offshore Petroleum Politics: Regulation and Risk in the Scotian Basin*, published in the autumn of 2011 by UBC Press, Dr. Clancy sees the oil and gas discoveries posing challenges to public policies of both the federal and provincial governments. For more than 40 years, oil and gas explorers have probed the continental shelf lands of Nova Scotia. Three waves of intensive investment have been punctuated by sudden slumps, owing to global market conditions, public policy changes and shifts in geological prospectivity. This study traces the fluctuations. The book covers a wide range of policy sub-sectors, from exploration and production licensing to strategies for onshore industrial supply, royalty and tax arrangements, onshore gas distribution within Nova Scotia, the rival liquid natural gas industry and a potential future challenge over offshore Aboriginal rights. Dr. Clancy also develops a model of oil and gas development to explain the shifting political coalitions and technical pressures faced by government agencies and corporations.

6. Research Collaborations highlights - internal, regional (Atlantic), national and/or international

- **StFX professor Dr. Dave Risk joins collaborative \$350,000 project to help create new technology for collecting environmental data.** A StFX researcher is part of a collaborative project that has received \$350,000 in funding from Carbon Management Canada Inc., a national Network of Centres of Excellence (CMC-NCE) for a three-year project to develop single-molecule level multi-species nanowire-based sensors for carbon emissions. Dr. Dave Risk, who leads the Flux Lab, one of the research facilities in StFX's Department of Earth Sciences, will conduct the research in collaboration with Dr. Harry Ruda, at the Center for Nanotechnology, at the University of Toronto. They intend

to develop small, inexpensive, robust, high sensitivity nanowire transistors as greenhouse gas sensors that have a range of carbon-based applications for large-scale measurements. The research will benefit the global community by creating new technology for collecting environmental data and further knowledge of global climate change. CMC-NCE is a nation-wide, university-led, multidisciplinary research network formed for the purpose of developing the insights, technologies, and highly qualified people necessary to reduce fossil fuel carbon emissions in Canada

- **StFX announces partnership with The Patient Safety Company Canada: Innovative community pharmacy collaborative research project gets industry backing.** An innovative research project to help enhance patient safety in community pharmacies has taken a big leap forward with the signing of a license agreement between St. Francis Xavier University and The Patient Safety Company Canada. The company has licensed SafetyNET-Rx, the first pharmacy-tailored standardized continuous quality improvement, or CQI, program of its kind in Canada. SafetyNET-Rx is an innovating CQI program designed to enhance medication error and near miss reporting and learning in community pharmacies. SafetyNET-Rx combines a common CQI process across pharmacies with the latest in web-based systems to provide pharmacy staff with the support (e.g., processes, training, and technology) needed to identify, report, and learn from medication errors and communicate such information to other pharmacies. The SafetyNET-Rx team is comprised of students and researchers from St. Francis Xavier University (Todd Boyle, Tom Mahaffey), Dalhousie University (Heidi Deal, Kellie Duggan, Andrea Scobie), University of Arizona (Neil MacKinnon), as well as The Nova Scotia College of Pharmacists (Bev Zwicker) and various non-profit organizations. Since 2008, the team has been awarded over ½ million dollars in funding from agencies such as the Canadian Foundation for Pharmacy, Social Sciences and Humanities Research Council of Canada, Canadian Institutes of Health Research, Innovacorp, and Springboard to develop the SafetyNET-Rx product.

7. Research Environment Highlights

- **StFX and eight other University partners in the Atlantic Computational Excellence Network (ACenet) receive major funding:** ACenet is a consortium of Atlantic Canadian Universities providing researchers with high performance computing (HPC) resources, collaboration and visualization tools, software, training, and support. The consortium, as a regional component of the national advanced computing organization Compute Canada, was awarded major funding to support its infrastructure and operations by the Major Science Initiatives (MSI) Program of the Canada Foundation for Innovation. As the Nova Scotian partners in the application, Dalhousie, STFX and SMU will share in \$2.99M of the CFI award, which was matched by NSRIT to the same amount.

8. Other success stories

- **StFX Economics Department scores major coup in attracting national conference to campus.** In an almost unheard-of coup, StFX has been awarded the opportunity to host a major national economics conference, a conference typically hosted only in major Canadian cities such as Montreal, Toronto and Vancouver. In June 2017, the StFX Department of Economics will host over 800 economists from across the country and

around the world for the 51st annual meeting of the Canadian Economics Association (CEA). Over four days, CEA participants will present latest research and attend state-of-the-art lectures from prominent practitioners, which have previously included Nobel Prize recipients and senior economic policy-makers. Affiliated organizations such as the Canadian Development Economics Study Group, the Progressive Economics Forum, and the Canadian Women Economists Network often choose to hold their meetings with the CEA. StFX Economics professor and local organizer, Dr. Greg Tkacz serves on the Executive Council of the CEA and was instrumental in attracting the conference to Antigonish. Attendance has been as high as 1,200 participants in the past.

- **St. Francis Xavier University researcher Dr. Todd Boyle awarded a Canada Research Chair in Quality Assurance in Community Pharmacy.** This award will allow Dr. Boyle to further develop his program of research on medication error reporting and learning in community pharmacies, and how quality improvement programs and information technology can help enhance such activities. The Canada Research Chairs program is designed to recognize and support exceptional researchers, acknowledged by their peers as having the potential to lead in their chosen field. Dr. Boyle has led an impressive program of research capacity development. This has included development of both regional and international partnerships with other researchers, working with professional bodies and community-based businesses, and mentoring and training of research assistants from undergraduate students to post-doctoral fellows. During the past five years, Dr. Boyle has been awarded over one million dollars in research awards, funding, and lab infrastructure from pharmacy, provincial, and federal agencies; such as a Canadian Institutes of Health Research Partnerships for Health System Improvement grant, considered Canada's premier health services and policy research competition. Key outcomes from the research program have been presented internationally, in addition to having been commercialized and marketed globally.