Research News

- SFU is one of the top 50 universities in the world in computing science, according to the 2014 Shanghai Jiao Academic Ranking of World Universities. SFU is also ranked within the top 150 universities in the fields of Social Sciences and Economics/Business. Overall, SFU is positioned at 14th in Canada, 110th in N. America and 277th in the world.

- SFU welcomed Ed Holder, Minister of State (Science & Technology) to its Burnaby campus on August 26th. Minister Holder, accompanied by SFU President Andrew Petter and incoming Vice-President, Research Joy Johnson, toured the Machine Shop in the Faculty of Science. He met some of the machinists who support SFU research using state-of-the-art tools such as a 3D printer and laser cutter. Minister Holder also toured 4D LABS, where academic, industrial and government researchers engage with its team of scientists and world-class nanofabrication, nanoimaging, and LASIR user facilities to solve complex research problems. During his visit to SFU, Minister Holder hosted a small roundtable on academic-industrial research collaboration with several SFU participants, including President Petter, Joy Johnson and Innovation Office Director Michael Volker.

- The Office of Research Ethics (ORE) and SFU’s Intellectual Property Issues in Cultural Heritage (IPinCH) project recently co-hosted a workshop on community-based research. IPinCH members shared best practices from their participatory research with indigenous groups around the world. The workshop was the first step in a collaborative effort by ORE and IPinCH to foster campus-wide dialogue on engaging in ethically informed research.

- Sherri Ferguson, Director of the Environmental Medicine & Physiology Unit that houses Canada’s only civilian hypo-hyperbaric chamber, has obtained research trainee awards from Worksafe BC and the US Office of Naval Research to investigate the effect of high pressure on cognition and heart function in divers. The chamber is also used for research on pressure treatments for brain injuries, autism, diabetic neuropathy and wound treatment. It is currently the only facility in Canada to offer hyperbaric medicine and safety training, in compliance with Canadian standards.

- Rudy Reimer of First Nations Studies and Archaeology stars in a new “Wild Archaeology” documentary television series premiering on the Aboriginal Peoples Television Network in 2015/16. The series is aimed at showing how indigenous knowledge of Canada’s First Peoples is bringing life to our archaeological history.

- With funding from the Canada Foundation for Innovation (CFI) and the BC Knowledge Development Fund, computing scientist Uwe Glässer is setting up a new unique-to-Canada supercomputer lab that will enhance SFU’s high performance computing research capabilities. The new facility in the School of Criminology will enable Dr. Glässer, Patricia Brantingham and Martin Andresen of SFU’s Institute for Canadian Urban Research Studies to analyze sensitive law enforcement data from across the province on urban crime and maritime security.
• CFI has featured Robert McMahon’s research on youth violence in a Research in Action profile. McMahon is the Director of SFU’s Institute for the Reduction of Youth Violence, funded through CFI and the BC Leading Edge Endowment Fund. The institute promotes collaboration between provincial and federal agencies and researchers in Canada and around the world.

• This July, SFU’s Faculty of Education hosted the 9th Imaginative Education Research Group Conference on Imagination and Education. Dr. Kieran Egan, who founded the Imaginative Education Research Group and created a new theory and approach to teaching and learning, dedicated this year’s conference to showing how “proper attention to the imagination of students and teachers can greatly improve education.”

Research Grant Successes

• It was a resounding success for SFU in the 2014 NSERC Discovery grant competition. 84% of SFU researchers were successful in their applications, versus 64% nationally—a significant improvement over last year (65% SFU versus 59% nationally). In the established researchers renewing category, SFU led the country with a 97% success rate, versus the national average of 80%. The average individual Discovery grant rose by $2,000 to $33,000. Discovery Accelerator Supplements valued at $120,000 over three years were awarded to 11 SFU researchers from eight departments and schools. With just 125 researchers from across Canada each year peer-selected to receive the supplement, SFU secured a 9% share of the national allotment. In total, SFU will receive about $13 million of new monies from the 2014 NSERC competition versus $7 million last year.

• Three SFU researchers will receive $2.38 million in grants under the latest (2014-03) CIHR Operating grant competition. This results in an SFU success rate of 9% (with 32 applications submitted) versus the national success rate of 18%. The grantees are: Rosemary Cornell of Molecular Biology and Biochemistry, for a project to analyze the effect of mutations on the properties of an enzyme that is linked to cancer; Sharon Gorski (through the Genome Sciences Centre) for a study to elucidate a biological process called autophagy which is involved in human disease; and Robert Hogg of Health Sciences for a study on the burden and impacts of aging-related comorbidities among HIV-positive people in Canada.

• SFU researchers are key players in six of the 14 recently-announced $2.5-million SSHRC Partnership grants:

1. Landscapes of injustice – Nick Bromley of Geography and Brian Owen of the SFU Library are co-applicants on this University of Victoria-led partnership. SFU’s digitization expertise together with historic-legal studies will provide a comprehensive digital resource that will canvas the impact of the history of dispossession in the Japanese-Canadian experience.

2. Rural Policy Learning Commons – Sean Markey of the School of Resource and Environmental Management (REM) and the Centre for Sustainable Community Development is a co-applicant on this project, led by Brandon University. It aims to enhance Canadian prosperity by engaging communities in the search for innovative planning and policy solutions in rural and northern regions.
3. Adapting Canadian work and workplaces to respond to climate change – **John Calvert** of Health Sciences is a key player in this York University-led project to develop greener job and workplace skills and practices that help mitigate greenhouse gases in key Canadian industries.

4. OceanCanada – **Evelyn Pinkerton** of REM will participate in this UBC-led project to synthesize the social, economic, and biophysical knowledge about Canada’s oceans for shared understanding of the threats, challenges and opportunities facing Canada’s future.

5. Creating digital opportunity – SFU is participating in this project through the Centre for Policy Research on Science and Technology (CPROST). CPROST Associate Director, **Adam Holbrook** and researchers **Richard Smith** and **Brian Wixted** will examine the role of IT industries in Vancouver, as part of the research partnership on the digital economy that will investigate how Canada can best respond to the challenges presented by emerging opportunities in the sector.

6. Enhancing community participation in Canadians with physical disabilities – Gerontology professor **Habib Chaudhury** is a co-applicant in this seven-year, $2.6-million McMaster University-led project to develop, mobilize and evaluate theory- and evidence-based strategies to enhance community participation among disabled Canadians.

In addition, School of Public Policy director, **Nancy Olewiler**, is also serving as a collaborator on a six-year McGill University-led initiative to create an international research network to develop a new understanding of human-Earth relationships in the anthropocene (human era), grounded in contemporary science.

- SFU researchers are leading two new **SSHRC Partnership Development** grants:

  1. **Hul'q'umi'num' voices: Reclaiming the language of canoe culture** – **Donna Gerds** of Linguistics is leading this 3-year, $194,759 project with Royal Roads University and University of Victoria and partners Coast Salish Employment & Training Society and the Cowichan Valley Museum & Archives. The project supports the effort to reclaim the endangered Hul'q'umi'num' by developing learning resources and documenting the language as it relates to Coast Salish canoe culture. It aims to foster the connection between young researchers and the Elders who serve as their mentors, train Aboriginal youth in research methods and computer skills, and improve understanding of the language and culture.

  2. **Digitizing the wisdom of our elders** – **David Kaufman** of the Faculty of Education is leading this two-year, $188,673 project with partners the Burnaby Village Museum, Judith Marcuse Projects, the Port Moody Public Library and the Port Moody Station Museum. The goal of the project is to provide older adults with the powerful communication tool of digital storytelling through research and partnership development. (Dr. Marcuse, who is an adjunct professor of the Faculty of Education, also heads a five-year $2.5-million SSHRC Partnership Grant awarded last year on Art for Social Change.)
• **Felix Breden**, Director of IRMACS, has obtained funding from CANARIE’s Research Software Program to develop iReceptor, the world’s first platform to integrate immune receptor gene sequences across a number of international research centres. This will allow researchers to collaborate on the analysis of large-scale immunogenetic sequence databases to improve the design of vaccines and therapeutic antibodies.

**Research Awards & Honours**

• **Arthur Robson**, Canada Research Chair in Economic Theory and Evolution, has received the John Rae Prize from the Canadian Economics Association for outstanding research. His research seeks to understand how evolution influences the strategies that humans employ over time, under uncertainty and in interactions with each other.

• **Douglas Allen**, Burnaby Mountain Professor of Economics, was recently awarded the Douglas C. North Research Award by the International Society of New Institutional Economics. The award recognizes Allen’s book, *The Industrial Revolution*, as the best book published during the previous two years in the field of institutional economics.

• **David Vocadlo** has been elected by his peers to the new Royal Society of Canada College of New Scholars, Artists and Scientists. He will join up to 80 individuals across Canada who are within 15 years of the conferral of their PhD degree. Dr. Vocadlo has also been selected by the Royal Society to represent Canada at the Commonwealth Science Conference taking place in India in November 2014.

• SFU Mathematics professor **Abraham Punnen** and postdoctoral fellow **Daniel Karapetyan** recently won second place in the Canadian Operational Research Society Practice Prize Award for their work with BC Ferries. The pair’s mathematical modeling research helped the corporation make strategic decisions about vessel replacement and scheduling.

• **Andrew Wister**, Chair of the Department of Gerontology, has been appointed as the new Chair of the National Seniors Council, which provides advice to the federal government on matters relating to the wellbeing and quality of life of Canadian seniors.

• **Martin Bouchard** and **Eric Beauregard** of Criminology are the only Canadians on the *Journal of Criminal Justice Education’s* list of the top 39 most-published scholars in the hundreds of Criminal Justice Periodical Index journals in 2010-2011.

• For the second year in a row, Beedie School of Business professor **Ian McCarthy** has been ranked among the top 50 most influential professors on Twitter. Dr. McCarthy says that social media plays a prominent role in his research, “not only in terms of studies on the subject, but also in broadcasting my research to a wider audience.”

• Beedie School accounting professor **Irene Gordon** has received two awards for her contributions to the field of accounting: the George Baxter Award for Outstanding Contributions to the Canadian Academic Accounting Association and a Lifetime Membership award from the Certified General Accountants Association of BC.
• Beedie School associate professor Nilesh Saraf’s paper on large business software systems has been selected as one of 35 best and most highly cited research papers to be published over the past fifteen years in the top 300 management journals in the world.

• A 1996 paper that introduced a now well-known clustering algorithm to the data mining community, lead authored by computing scientist Martin Ester, has received the inaugural Test of Time Award from the Special Interest Group on Knowledge Discovery and Data Mining (Association for Computing Machinery). The award recognizes “outstanding papers from past KDD conferences beyond the last decade that have had an important impact on the data mining research community.”

• A 3D geo-visualization tool developed by Nick Hedley and Adam Fenech of SFU’s Spatial Interface Research Lab in the Faculty of Environment and University of PEI researchers has been selected as one of six semi-finalists in a competition sponsored by the Massachusetts Institute of Technology. CLIVE (Coast Impact Visualization Environment) helps users visualize the impacts of climate change on coastal areas.

• A CBC radio series on medical tourism that featured the research of SFU’s Medical Tourism Research Group, headed by associate professor of geography Valorie Crooks, has won the 2014 Dave Rogers, Association of Electronic Journals long feature award. Dr. Crooks notes, “having scholarly research covered by daily media sources such as CBC is a very important type of community engagement.” With funding from the Canadian Institutes for Health Research, the research group launched a new website this July, medicaltourismandme.com, an informational portal for consumers.

• Charlotte Waddell, the Director of SFU’s Children’s Health Policy Centre and a Canada Research Chair in Children’s Health Policy, presented to the Select Standing Committee on Children and Youth of the Legislative Assembly of BC, making recommendations for evidence-based interventions for children and youth with mental disorders.

• Three SFU faculty members appear on Thomson Reuter’s list of the world’s top researchers, defined as those with the most highly cited papers appearing in the top 1 per cent in their field. All three are from the Department of Molecular Biology and Biochemistry: Fiona Brinkman, which is especially notable as only one in nine on this list are women; and SFU alumni Marco Marra and Steven Jones, Director and Associate Director respectively of the Genome Sciences Centre. Canada ranks sixth by country with 89 names on the list (not including two with Canadian affiliations)—taking about 2.8 per cent of the global pie with about 0.05 per cent of the global population.

Innovation Updates

• The Zones of Incubation and Innovation (ZI²) is one of 15 projects that have been approved to advance in the selection process under the Canada Accelerator and Incubator Program (CAIP). ZI² is a consortium led by Ryerson University in partnership with SFU and the University of Ontario Institute of Technology. It builds on the institutions’ track records and well-established partnerships to extend entrepreneurship and commercialization in target sectors in Vancouver and Toronto, and links to international sites such as the Ryerson/SFU/Bombay Stock Exchange incubator in Mumbai, India.
• The above-noted incubator in Mumbai, launched this year as the first Canadian-led accelerator in India, has made Inc42 Magazine’s list of the top fifteen startup accelerators of India. Inc42 is an online startup magazine focused on India’s innovation ecosystem.

• VeloMetro and Fusion Genomics have joined the VentureLabs® technology business accelerator. VeloMetro is a Vancouver-based startup co-founded by SFU Beedie Management of Technology MBA student, Kody Baker. It’s developing an enclosed pedal-powered, electric- and solar-assisted urban commuter vehicle that’s cost-effective, environmentally friendly and fun to ride. Fusion Genomics, a BC Cancer Agency-affiliated spinout, was created to advance the development of a novel diagnostic assay for childhood sarcomas and to provide novel next-generation sequencing solutions. VentureLabs®, a member of the BC Innovation Council’s BC Acceleration Network, grows new ventures through the provision of entrepreneurial expertise, facilities and business development support.

• VentureLabs’ client company PHEMI Health Systems was awarded the “Most Promising Startup Award” at BCTIA’s 2014 Technology Impact Awards and “Emerging Life Sciences Company of the Year” at Life Sciences BC’s 2014 Life Sciences British Columbia Awards. The company was also selected by DigiBC as a Top 25 Innovative Technology Company for NextBC, made the 2014 Life Science Ready to Rocket list and was listed on TechVibes 20 as one of Canada’s most promising tech startups. Founded in 2013, PHEMI is a clinical workflow process automation and Big Data platform company that unlocks patient data to improve clinic productivity, patient outcomes, and medical research.

• SFU Venture Connection® and VentureLabs® concluded their 2013/14 Ignition Workshop Series in June. Over 700 people attended the 10-part workshop series, which helps to lay the groundwork for developing a successful tech startup company. The program focuses on sustainability, execution and results, with topics including product market fit, business models, financing, capital and pricing strategies and more. The series was supported in part by Coast Capital Savings, Venture Connection, VentureLabs and the B.C. Innovation Council, and was facilitated by Dave Thomas of Rocket Builders. The Ignition Workshop is set to return for 2014/15, with the first five sessions being delivered at SFU’s Surrey campus and potentially made available via video streaming.

• SFU student Christina Buiza has joined VentureLabs as a marketing and communications intern as part of the B.C. Innovation Council’s B.C. Innovator Skills Initiative. The initiative focuses on providing training for B.C. university students to develop on-the-job innovator skills that enable them to progress seamlessly from graduation to entrepreneurial and innovator roles in startup companies and industry.

• The productive collaboration between SFU’s 4D LABS and Burnaby-based company Cooledge Lighting was showcased in a recent Design Engineering article on Canadian university research labs that are open to working with business. 4D LABS is one of several SFU research facilities that have submitted profiles for CFI’s Research Facilities Navigator. The partnership between 4D LABS and Cooledge resulted in the launch of the company’s flexible LED light sheet last spring.