Social sciences and humanities research rising

Marianne Ignace (left) and Judith Marcuse have been working for years to foster linkages between academic and non-academic partners in their respective fields. Now, with $2.5 million each from the Social Sciences and Humanities Research Council, they will use their intellectual leadership to take these partnerships to the next level and achieve a major impact on the well-being of communities.

Revitalizing Aboriginal languages

Marianne Ignace has made it her life’s work to collaborate with West Coast First Nations communities to preserve and teach Aboriginal languages and cultures—and that work has never been more urgent.

“First Nations languages in British Columbia and Yukon Territory are in a critical state of decline,” says the SFU anthropology, linguistics and First Nations studies associate professor and director of SFU’s new First Nations Language Centre (FNLC).

“The death of each elder who speaks the language represents the irretrievable loss of specific indigenous ways of speaking, of seeing the world and of communicating about the land and the physical and social environment.”

But thanks to a major new initiative led by Ignace with a $2.5-million project grant from the Social Sciences and Humanities Research Council of Canada (SSHRC), there is fresh hope for the region’s indigenous languages and the heritages they help preserve.

Harnessing art for social change

“Art and its values, the sheer experience of it, can open doors to a magical, transformative energy—energy which is profoundly potent, clarifying and affirming for individuals and community.”

When Judith Marcuse wrote those words more than a decade ago she herself had spent 30 years opening doors as a pioneer in the field of art for social change (ASC) and a creative force in Vancouver’s dance and cultural communities.

She opened still more doors in 2008 when she founded the International Centre for Art and Social Change (ICASC), a unique partnership between SFU and her non-profit arts company Judith Marcuse Projects to support ASC in communities around the world.

And now that partnership is bringing the emerging ASC discipline from the margins to the mainstream with Marcuse’s leadership of “Arts for Social Change: A Research Partnership in Teaching, Evaluation, and Capacity-Building.”

The five-year initiative will receive a $2.5-million grant from the Social Sciences and Humanities Research Council of Canada (SSHRC).

“This is the first large scale, systemic project of its kind,” says Marcuse, an adjunct professor with SFU’s Faculty of Education. “It will benefit not only artist-researchers but also community organizations using arts-based practices as a tool for their work.

“Canadian scholars, practitioners, funders and policy-makers have virtually no nationally focused, integrated resources to inform them about practices and strategies for teaching and learning,” she says. “And they have no models for evaluation or the creation of inclusive, sustainable partnerships in the ASC field. We hope our work will ultimately fill that need.”

Marcuse’s team will use avenues including ICASC to explore and research various aspects of ASC, creating learning resources and facilitating interdisciplinary synergies between partners.

SFU education assistant professor Lynn Fels will coordinate knowledge mobilization, documenting and disseminating research processes to help smooth the progress of knowledge integration between participants.

The university will facilitate communication between partners and oversee financial management and administration.
Each year, my office hosts a reception to celebrate SFU researchers. It’s one of my favorite events because although I routinely present on our research successes in Ottawa and abroad, many SFU colleagues are unaware of our collective achievements.

According to the latest world university rankings, SFU’s reputation is catching up to the quality and impact of its research efforts. This year, SFU leapt ahead 38 spots in the QS World University ranking—the largest increase of any Canadian university—to place 244th in the world and 12th in Canada. The Times Higher Education (TSE) and Shanghai Jiao rankings similarly place SFU among the world’s top 300 universities and among the top 13 in Canada in overall performance. Considering that SFU is an adolescent compared to most Canadian universities on these lists, this is a clear indicator of future potential.

Among universities under age 50, QS ranks SFU 3rd in North America and 30th in the world, while TSE ranks us 7th in North America and 26th in the world. Normalizing by field, Higher Education Strategy Associates ranks SFU 6th in science and engineering and 10th in social sciences and humanities among Canadian universities—the only one without a medical school to rank in the top 10 in both categories. You can find links to all these rankings and more on my website www.sfu.ca/vresearch. Collectively, these rankings exhibit a consistent rise in SFU’s reputation, however it is measured.

So how did we do it? Quite simply, SFU has earned its reputation through demonstrated performance and research impact. We began with a healthy landscape of individual scholarship and an institutional ethos amenable to risk. Then we took it to the next level by building capacity in thematic areas and filling gaps in support to the social sciences and humanities, students, digitization and open-source initiatives and so on. Along the way, we’ve adjusted to the shifting research landscape to be ready to seize opportunities posed by an increasing emphasis on engaged scholarship.

For example, as public demand intensifies for research that improves social, environmental and economic well-being, there is a trend toward funding of projects that take a collective, multidisciplinary and/or cross-sectoral approach to contemporary challenges. A recent program structure overhaul by the Social Sciences and Humanities Research Council of Canada (SSHRC) reflects this trend. It emphasizes support for new collaborative approaches to complex issues through the Insight program; building relationships and networks for knowledge mobilization through the Connection program; and developing new partnerships (Partnership Development grants) and supporting mature ones (Partnership grants).

SFU rocks in this area. In the latest SSHRC Insight and Partnership competitions, our researchers achieved a much higher success rate than the national average. SFU was awarded both of its partnership grant applications. They include one led by Judith Marcuse researching arts for social change and another led by Marianne Ignace focused on Aboriginal language revitalization. These two extraordinary initiatives, which were years in the making, exemplify the power of community engagement. Two new SFU-led partnerships, one in Chinese archaeology and one in adolescent crime, are under development thanks to SSHRC Partnership Development grants. And one of SFU’s formal partnerships, Intellectual Property for Cultural Heritage (IPinCH), led by archaeologist George Nicholas, has received SSHRC’s first Partnership Award for its community-based initiatives with Aboriginal groups and its exceptional research impact.

We’re also doing well in the Natural Sciences and Engineering Research Council (NSERC) and Canadian Institutes of Health Research (CIHR) competitions. For example, despite not having a medical school, SFU received five more Canada Research Chairs in the CIHR category in the latest reallocation. And this year, we obtained our first $1.5-million CREATE grant—and the first CREATE grant to be done with an international university, the University of Bielefeld in Germany—led by Cenk Sahinalp. It will increase training opportunities for graduate students of both institutions in big-data management for the biological sciences.

Behind all of these stellar results are the individual efforts of faculty, students, technicians, grant facilitators, research services and research accounting staff, librarians, communicators and many more who support SFU’s research enterprise.

‘Behind all of these stellar results are the individual efforts of faculty, students, technicians, grant facilitators, research services and research accounting staff, librarians, communicators and many more who support SFU’s research enterprise.’
Revitalizing Aboriginal languages

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The seven-year project is a partnership between the FNLC and 22 community-based First Nations groups that are dedicated to maintaining and revitalizing indigenous dialects.

Community language practitioners including elders, community linguists, research learners and educators will engage with indigenous and non-indigenous academic researchers to co-produce knowledge and practices that address the challenges of language loss and revitalization.

Specifically, the project will:

- Develop, share and practice innovative ways of language documentation that combine linguistic and indigenous methodologies and fill gaps in existing data.
- Conduct linguistic, ethnographic and psychological “language in use” research in First Nations communities among current speakers, semi-speakers and second-language learners to inform new ways of assessing fluency and proficiency.
- Create interactive digital-media apps for language learning, based on technology developed by the Stavros Niarchos Foundation Centre for Hellenic Studies at SFU to produce the acclaimed Odysseas Greek language iPhone and iPad apps.
- Develop protocols and procedures for the digitization, safe storage and access of language materials.
- Conduct linguistic, ethnographic and psychological “language in use” research in First Nations communities among current speakers, semi-speakers and second-language learners to inform new ways of assessing fluency and proficiency. Councils.

“This project exemplifies SFU’s community-engaged research vision,” says VP Research Mario Pinto.

“It emphasizes building close community connections, fostering interdisciplinary research and knowledge mobilization while acknowledging and respecting Aboriginal peoples and cultures.”

“And by training Aboriginal graduate students and engaging Aboriginal and non-Aboriginal researchers from multidisciplinary fields within First Nations communities, it also advances the objectives of SFU’s Aboriginal Strategic Plan.”

Preserving and teaching indigenous languages in B.C. and the Yukon “is a huge challenge,” says Ignace. The region’s 30 or so First Nations languages are among the most complex intellectual structures on Earth involving eight separate linguistic families, some of which are as distinctive from each other as Japanese is from English.

“And that challenge has been compounded historically by a chronic lack of government funding for Aboriginal language preservation and education. This SSHRC grant will help us turn the tide.”

The project is a gratifying milestone for Ignace, who came to SFU from her native Germany in the late 1970s to pursue a PhD on Haida discourse and social organization.

That research ignited an enduring passion for First Nations language and culture and led her to B.C.’s interior to conduct research with Aboriginal communities in the Shuswap area, where she ultimately married a chief of the Shuswap Nation.

In 1988, she and her husband Ron Ignace founded SFU’s Kamloops satellite campus on Tk'emlups Indian Band lands. Featuring courses on the history, languages and culture of First Nations people, the award-winning program graduated some 500 Aboriginal and non-Aboriginal students before deteriorating infrastructure and unsustainable program costs prompted its closure in 2010.

(SFU continues to offer courses in Kamloops for Tk'emlups members and local First Nations communities on a cost-recovery basis.)

At the same time, Ignace learned and taught her own eight children the Shuswap Nation’s Secwepemc language and began working with other First Nations communities to revitalize their languages.

“We have a lot of work to do,” says Ignace.

“But I’m optimistic this new project will have a major impact on the preservation and revitalization of our Aboriginal languages and the cultures they sustain, for generations to come.”

Harnessing art for social change

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“This partnership aligns perfectly with SFU’s strategic vision to be Canada’s leading engaged university and with our strategic research plan’s focus on pedagogy,” says VP Research Mario Pinto.

“Judith and her team are creating a space for inquiry, dialogue, reflection and action on arts for social change that will further develop and promote sustainable, active and creative communities, both at home and abroad.”

For Marcuse, the project culminates a lifetime at the intersection of arts and social change. The daughter of a musician mother and scientist father, her passion for social engagement was ignited at an early age.

The celebrated dancer, choreographer and producer has maintained that passion through a career that spans more than 40 years and includes hundreds of original dance, theatre, opera, film, television and other works as well as two major Canadian choreography awards and an SFU honorary degree (in 2000).

In 1995, Marcuse launched three major projects with and for youth, including workshops, live productions that toured nationally and film production.

The five-year projects explored issues of teen suicide, youth experience of violence in their lives and environmental and social injustice, opening up new dialogue for social change between young people, families and teachers.

For the next 16 years, Marcuse led multiple community-based ASC projects across Canada. She also began to build connections with those doing ASC work worldwide, including organizing a symposium at SFU in 2004 that attracted 300 attendees from 26 countries and a festival that hosted 20,000 visitors during the UN’s World Urban Forum.

As an Ashoka International Senior Fellow, she is linked with changemakers from a variety of sectors around the world.

Says Marcuse, “Knowledge exchange, the sharing of resources and the development of expertise and collaboration across professional, institutional and other silos drive our work in this very dynamic and expanding field.”
A first for SFU—and NSERC’s CREATE program

Young academics aiming to become experts in managing and analyzing big data in molecular biology will benefit from a $1.5-million Collaborative Research and Training Experience (CREATE) grant from the Natural Sciences and Engineering Research Council (NSERC).

SFU’s first CREATE grant—also the first under this program to be run jointly with an international institution—is being awarded to School of Computing Science professor and Canada Research Chair Cenk Sahinalp.

It’s part of $24 million in new funding announced last summer for the three-year-old CREATE program, to help graduate students and postdoctoral fellows attain valuable job skills in the fields of physics, biology and medicine through 15 new training networks across the country.

Researchers from SFU and Germany’s Bielefeld University will collaborate on the six-year Computational Methods for the Analysis of the Dynamics and Diversity of Genomes project, dubbed MADD-GEN, to address the massive growth of experimental data that often surpasses what computer designers can handle.

Until now, the typical solution was to acquire more computers and establish bigger clusters, leading to larger and more complex systems.

But computer scientists are discovering that large data sets don’t necessarily need to be processed in conventional ways.

And Sahinalp suggests relevant results can still be drawn through data “sketches” or summaries.

“This research focuses on computational genomics and genome sequencing—

determining through computer analysis the complete DNA sequence of all the hereditary information contained in an organism at one time,” says Sahinalp.

The researchers intend to develop a systematic, computational approach to genome sequencing by producing new tools and techniques to address systems, methods and delivery of molecular data analysis.

Genome sequencing may prove to be an important diagnostic tool for certain diseases such as cancer, says Sahinalp. He and his team hope to improve how cancer research data is handled and delivered to biomedical scientists by implementing new methods and algorithms—

including algorithms that understand external memory and communication issues.

Approximately 15-20 graduate students are expected to go through the SFU program, which will include 10 principal investigators led by Sahinalp.

The program aims to produce a new crop of computer science experts who are knowledgeable about developments in cloud and multicore computing, computer systems technology and new concepts in machine learning.

Bielefeld University is receiving funding from the German Research Foundation. Both SFU and Bielefeld are among their countries’ leading institutions in bioinformatics expertise. By joining forces, they can provide their students with a broader range of skills and international internship opportunities and prepare them to become leaders in the global computational biology sector.

The project also capitalizes on Sahinalp’s partnerships with the Vancouver Prostate Centre and the BC Cancer Agency. SFU’s IRMACS Centre will facilitate interaction between the participants.

SFU scientists are also involved in a University of Toronto-led CREATE project, the Medicinal Chemistry Network in Epigenetics Training (ChemNET) program. ChemNET is designed to give chemistry graduate students and postdoctoral fellows practical medicinal and biological chemistry training in epigenetics within a global open access public-private partnership.

SFU chemists Robert Young, David Vocadlo and Mario Pinto, the university’s VP Research, are working with researchers from the University of Toronto, University of British Columbia and University of Montreal on ChemNET. Its students will train in universities across Canada, and obtain hands-on experience through an industry internship and a two-month intensive practical training program on modern techniques in molecular biology.

ChemNET’s goal is to produce versatile medicinal-biological chemists uniquely equipped to anticipate the needs of Canada’s evolving chemistry and pharmaceutical sectors, comprising a blend of industrial chemistry, contract research-chemistry organizations, small start-up companies, and academic drug-discovery centres.

It will also contribute to open-access science by making available to all researchers the chemical tools developed by its trainees.
GreenTech embraces environmental toxicology

SFU’s GreenTech Exchange holds monthly networking and learning events featuring leaders in the green technology field.

All of us are contaminated with hundreds of human-made toxins.

Even newborns around the planet are adulterated with more than 200 potentially deadly industrial pollutants, according to the U.S. non-profit Environmental Working Group.

Growing concern over this global reality is behind the rapidly developing field of environmental toxicology, addressing the harmful effects of chemical, physical and biological agents on people and other living organisms.

And it was on the minds of 90 plus participants attending the July GreenTech Exchange Forum at SFU Harbour Centre to hear an expert panel discuss environmental toxicology and remediation and how it’s connected to the green economy.

“I was impressed by how many people showed up,” says forum moderator Felix Breden, a geneticist and executive director of SFU’s Interdisciplinary Research in the Mathematical and Computational Sciences (IRMACS) Centre.

“SFU was an early leader in this field,” adds Breden. “We were among the first to offer an environmental toxicology (ET) masters program more than a decade ago.

“We also have programs related to toxicology and the environment in the Faculty of Health Sciences and the School of Resource Management.

“And we have people who are leaders in ET research such as health scientist Bruce Lanphear, an internationally recognized expert on toxic pollutants and their impact on kids.”

The panelists at the evening event were:

- Alan McCammon, a geoscientist specializing in contaminant hydrogeology with the B.C. environment ministry’s land remediation (contaminated sites) section.
- Francisco Perelló, an industrial engineer and partner with Keystone Environmental and head of the firm’s technology group who coordinates consultant programs and manages large-scale environmental engineering projects.
- Rostam Namdari, an SFU adjunct toxicology professor and scientific director at Xenon Pharmaceuticals.
- Shannon Bard, an SFU adjunct biology professor and head of risk assessment and biological services department at Keystone Environmental.

Although most of the attendees from academia, government and business were involved in the green technology sector, panelists stressed that protecting human and environmental health is a critical component of all major enterprises.

“Green due diligence is not only required—it’s essential to protecting both our natural surroundings and the finances and reputations of project stakeholders,” says Breden.

That, he says, requires making informed decisions to ameliorate ecological risk through impact assessment, emergency preparedness and environmental management.

SFU Innovation Office (IO) technology manager, Elmer Sum, led the launch of the GreenTech Exchange in March 2009 as a monthly networking and learning event.

The gatherings feature presentations from leaders in the green technology field, pitches from GreenTech ventures, and networking with business managers, innovators, professionals, investors, service providers, and government representatives.

Says Sum, “It is a wonderful vehicle for engaging the business-industry-investment community as well as cultivating relationships in potential market opportunities for our discoveries and innovations.”

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SFU research matters comes of age

Through the 50th anniversary campaign, $100 million of the $250-million goal is targeted toward SFU’s research enterprise so we can produce more of this magic.

This issue of Research Matters features stories of just a few of the many SFU researchers who are doing great things, from the SSHRC partnerships and NSERC CREATE training initiative previously mentioned to recent award recipients who have received Royal Society of Canada fellowships, the Order of B.C. and more.

And as we prepared to go to press, we received news of another major grant from Automotive Partnerships Canada and the Canada Foundation for Innovation (CFI), lead by Erik Kjeang, towards a $6.5-million SFU-Ballard Power Systems partnership in automotive technology research. The grant is the latest in a series of recent investments in state-of-the-art infrastructure that SFU has been able to attract based on our national and international reputation as a research and innovation leader. A reputation built by exceptional researchers who have actively sought out collaborations and partnerships to expand their own programs.

It’s a similar story at our SFU-led materials science hub led by Neil Branda of 4D Labs, which received $7.4 million from CFI. And then there is the health-tech cluster forming along the newly dubbed Innovation Boulevard between SFU’s Surrey campus and Surrey Memorial Hospital. Led by SFU’s Ryan D’Arcy and City of Surrey Mayor Dianne Watts, it includes a new digital health hub led by SFU entrepreneur Maryam Sadeghi to drive health innovation through SFU’s partnerships with Fraser Health.

SFU is also achieving remarkable success with its innovation strategy: its incubation, acceleration and venture-financing programs that extend across the innovation continuum. From faculty spin-out companies to student ventures, again behind these successes are numerous stories of individuals who are actively engaged in concerted effort.

SFU research has hit a milestone in its metamorphosis—it’s research income has increased by more than 200 per cent over the past 10 years and now tops $100 million. Its faculty research intensity ($ per full-time faculty member) has also more than doubled in that time. As it approaches its 50th anniversary in 2015, there is much to celebrate!”
What makes some kids violent and prone to delinquent behaviour as teenagers and a life of violent crime as adults, while others from similar backgrounds lead relatively happy, normal lives?

Bob McMahon has made it his life’s work to answer that question. For more than two decades he has strived to identify kids with severe conduct problems early on so they can be helped before behaviours such as bullying, fighting, vandalism, deceitfulness, theft and social defiance become deeply entrenched.

It’s what led the renowned U.S. clinical child psychologist to SFU three years ago to accept a $4.5-million LEEF B.C. Leadership Chair in Proactive Approaches to Reducing Risk for Violence Among Children and Youth, funded equally by SFU and the province.

And it will be the primary focus of McMahon’s newly opened Institute for the Reduction of Youth Violence at SFU’s Burnaby campus, supported by the Ministry of Children and Family Development and the Canada Foundation for Innovation (CFI).

The trans-disciplinary institute will team SFU psychology, criminology and health sciences researchers and grad students with developmental neurosciences and child health investigators at the B.C. Children’s Hospital-based Child and Family Research Institute and other university researchers in B.C. and beyond.

He cites U.S. research suggesting the cost of saving or preventing just one child from an “early-starter trajectory” is about $3.2 to $5.5 million.

“It’s $3.2 million in savings if you can prevent a single child from engaging in criminal behaviours, but $5.5 million if you can also help them graduate from high school and prevent them from developing serious substance-use problems.”

While there is considerable research on youth violence already, most of it has been conducted elsewhere and its applicability in Canada is unclear, particularly given the country’s multicultural population, says McMahon.

Homegrown research “will give us the enhanced ability to make informed decisions about the development of conduct problems in various Canadian populations,” he says.

“More importantly, it will assist us in developing, implementing and evaluating evidence-based interventions to reduce conduct problems in Canadian youth.”

The new institute “aligns perfectly with one of our current strategic research plan’s key integrative strategic research themes—culture, society and human behaviour,” says VP Research Mario Pinto.

It also strengthens and supports the university’s overall vision of engaging research, communities and students.

“Research is the primary focus of the institute,” says McMahon, “but that involves high levels of community engagement with youth and families, schools and social service and mental health agencies.”

“And student engagement is at the heart of our plan to train future researchers better versed in trans-disciplinary approaches to dealing with this problem. For example, my grad students and post doc are also signed up as trainees at CFRI, which is inherently multi-disciplinary.”

The new Institute will focus on three main goals:

- Examine risk and protective factors and the developmental pathways of youth violence, differentiating between “early starters” as young as age five—who have the worst long-term prognosis—and “late” or teenage starters who generally fare somewhat better in later life.
- Develop, implement and evaluate local evidence-based preventive and treatment interventions with children and youth throughout the developmental period, including youth who are involved with the juvenile justice system.
- Share the latest data on youth violence and interventions with researchers, community agencies, policy-makers and the public worldwide, both online and through public presentations and other knowledge-exchange strategies.

McMahon is excited by the opportunities and challenges ahead. And he hopes the Institute’s work will ultimately inform public policy regarding pathways to violent behaviour and provide recommendations for the effective allocation of resources to help kids at risk.

“The university and the folks at CFRI have been terrific in helping us get the institute up and running,” he says, “and I’m eager to move things forward.”
Another SFU Student Venture Wins Prize

SFU Venture Connection incubator client MetaOptima Technology Inc. has won the $40,000 Wavefront Wireless prize in the 2013 BCIC-New Ventures Competition. Its Molescope smartphone app enables the early detection of skin cancer through a self-screening imaging device, software, online consulting and specialist referrals. MetaOptima was co-founded by SFU grad Maryam Sadeghi. For more, visit http://i.sfu.ca/xWhJGs.

Are You Ready for Ignition?

SFU Venture Connection and SFU VentureLabs have partnered to host the Ignition Workshop Series for Vancouver entrepreneurs with support from Coast Capital Savings and the BCIC Acceleration Program. The free 10-part program, delivered by Rocket Builders, is designed to build the skills toolkit that startup founders or senior team members need to run a successful company. For more, email venture1@sfu.ca or visit http://i.sfu.ca/UOZFwq.

New Mentor-in-Residence: Guy Flavelle

Guy Flavelle is the newest member of SFU Venture Connection's mentor-in-residence (MIR) team, joining Jim Derbyshire, Stewart Marshall, Dave Thomas and Hugh MacNaught. Flavelle has worked with federal departments including Western Economic Diversification, Environment Canada and the Department of Industry. He also directed the Canadian Institute for Climate Studies, chaired the Maple Ridge Economic Advisory Commission and directs two private companies.

SFU Venture Connection Launches New Website

SFU Venture Connection has launched its new website—accessible at either ventureconnection.sfu.ca or www.sfu.ca/vc. It’s a great source for information on entrepreneurship activities, upcoming events and breaking news. Check it out!

Buyatab Wins Industry Award

SFU alumnus Matias Marquez’s company Buyatab Online, a leading international provider of eGift cards, has won a national industry award for its Cineplex eGift Card and marketing program. Buyatab graduated from the SFU Venture Connection incubator in 2012. For more, visit: http://i.sfu.ca/qsRiUP.

Five Hole For Food Crosses Pond

SFU Venture Connection intern, Richard Loat, founder and CEO of the cross-Canada road-hockey fundraising series Five Hole For Food, has brought his winning formula to the United Kingdom. Footy for Food held its inaugural football-for-food game in London in September with 2014 plans for games in Northern Ireland, Scotland and England. The MBA student’s charity has raised more than 200,000 kg of food for local food banks across Canada in the past three years. For more, visit: http://i.sfu.ca/iVKOXI.

Library hosts Royal Society

SFU’s Burnaby campus played host this fall to an expert panel created by the Royal Society of Canada (RSC) to investigate and report on the status and future of the country’s libraries and archives.

The SFU session was one of a series of public events taking place across the country.

“It was a very informative session,” says Chuck Eckman, dean of library services and university librarian.

“Expert panels such as this ensure that we have independent, comprehensive and evidence-based input into the development of public policies that will help determine the future of these valuable community resources.”

The panel’s broad mandate is to investigate the new reality of libraries in the 21st century and the importance of library services and archives to Canadians.

In particular, it intends to:

• Investigate what services Canadians, including Aboriginal Peoples and new immigrants, are currently receiving from libraries and archives.

• Explore what Canadian society expects of libraries and archives in the 21st century.

• Identify the necessary changes in resources, structures, and competencies to ensure libraries and archives serve the Canadian public good in the 21st century.

• Listen to and consult the multiple voices that contribute to community building and memory building.

• Demonstrate how deeply digital technology is revolutionizing the knowledge universe.

• Conceptualize the integration of the physical and the digital in library and archive spaces.

“Libraries and archives are indispensable to engaging the public in our research, which is key to SFU’s vision, research plan and open-access strategy,” says VP Research Mario Pinto.

“The SFU Library helps mobilize the knowledge we gain from our research for the benefit of our communities.

“It also supports public education through the Public Knowledge Project and data portals such as Komagata Maru Journey and A Brief Chronology of Chinese Canadian History.”

Award Winners

• Peter Anderson, communications associate professor, has been named to the Order of British Columbia for his pivotal roles in improving emergency communications for everything from provincial forest fires to global tsunamis.

• Patricia Mooney, Tier 1 Canada Research Chair in Semiconductor Physics, has been named a fellow of the Royal Society of Canada for her leadership in the fields of materials physics and semiconductor characterization.

• George Nicholas, archaeology professor and director of the Intellectual Property Issues in Cultural Heritage (IPInCH) project, has received the first SSHRC Partnership Award, worth $50,000, for advancing a new model of collaborative research that empowers and protects indigenous communities.

• John O’Neill, dean of health sciences, has been elected a fellow of the Canadian Academy of Health Sciences for his efforts in promoting health science, particularly Aboriginal health in Canada and HIV prevention in low- and middle-income countries.

• Owen Underhill, musical director/composer and contemporary arts professor, has been elected a fellow of the Royal Society of Canada for his contributions to West Coast contemporary music culture.
Ballard field trip highlights SFU-industry collaboration

This past summer, a group of 30 students and professors had the opportunity to visit SFU’s hydrogen fuel cell industry partners Ballard Power Systems and Mercedes-Benz at their facilities located adjacent to each other at a Burnaby industrial park.

“It was an invaluable source of information for them,” says Nastenka Calle Delgado, program coordinator for the Pacific Institute for Climate Solutions (PICS) at SFU, who arranged the visit for the VP Research office.

“They had the opportunity to learn how fuel cell technology has evolved since 1983 during the Ballard tour and to see the state-of-the-art technology Mercedes uses to manufacture fuel cells. The field trip was of particular interest to our graduate students who are carrying out innovative research in fuel cell technology and to students whose research focuses on the commercialization, acceptance and regulations of this new technology.”

SFU’s Fuel Cell Research Laboratory director Erik Kjøeang led the tour, which included participants from a diverse array of fields including chemistry, mechatronics, materials science, physics, resource and environmental management, business and public policy.

“It not only showcased research collaborations between SFU and industry,” says tour member and Associate VP Research, Norbert Haunerland, “it also highlighted the growth of fuel cell technology while presenting opportunities for student research in the field.”

SFU is a leader in hydrogen fuel cell research and collaborates with government agencies and the private sector, including Mercedes-Benz, Ballard Power Systems and the Automotive Fuel Cell Cooperation Corp. (AFCC), a joint venture between Daimler AG and the Ford Motor Company.

SFU’s research teams in the Faculty of Science and the Faculty of Applied Sciences include faculty members, postdoctoral fellows, graduate students and senior undergraduate students. The research has been supported by major grants from the Natural Sciences and Engineering Research Council of Canada, Automotive Partnership Canada (APC), the Canada Foundation for Innovation, Western Economic Diversification Canada, and AFCC.

Two years ago, researchers at SFU’s Surrey campus received almost $5 million in federal funding towards a $12-million project with Ballard and the University of Victoria to develop new fuel cell modules for commercial production, including a new generation of heavy-duty, extra-durable bus fuel cells that are less expensive to manufacture.

“Our strong multidisciplinary collaboration between chemistry and mechatronic systems engineering is bearing fruit,” says Kjøeang.

“The fuel cell is a mechatronic device, and the breadth of our research allows advances in chemistry to be engineered and implemented into Ballard’s products.”

And this October, Kjøeang was successful as principal investigator of a new $6.5-million research project that received $3.4 million from APC for sophisticated scanning tools that let scientists “see” directly inside hydrogen fuel cells.

The new nano x-ray computed tomography tools will become part of a unique-to-Canada fuel cell testing and characterization facility, expected to be operational next spring, that will further the ongoing research collaboration between Ballard and SFU.

Ballard is currently focused on developing and marketing fuel cells for industrial uses including buses, telecom back-up systems and forklifts, while Mercedes is producing next-generation fuel cell stacks in Burnaby that could be available in its sedans within the next few years.

Hydrogen fuel cells channel air and hydrogen through a membrane electrode assembly, which serves as a catalyst to produce electricity that can power everything from cellular phones to automobiles and backup-power units. Their only byproducts are heat and water.