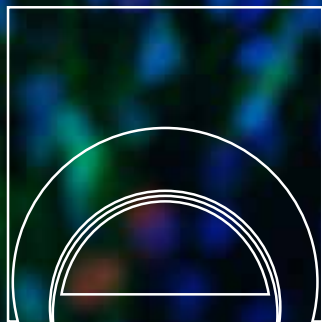
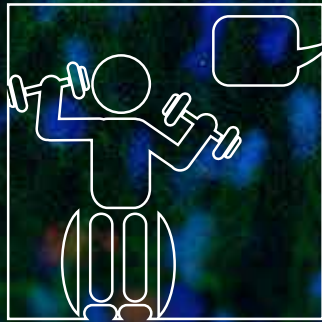
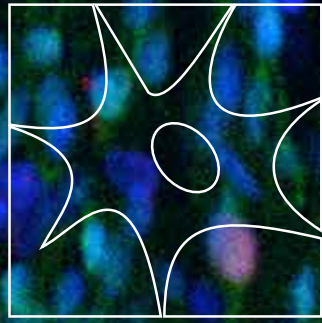




icord

Annual Report 2016-17



THE UNIVERSITY OF BRITISH COLUMBIA

# Message from ICORD's Director



At the end of ICORD's 2016 - 2017 year, we said thank you to our founding Director, Dr. John Steeves, as he entered retirement to become a Professor Emeritus. The occasion gave us the opportunity to reflect upon how ICORD has evolved since 1995, when Dr. Steeves formed CORD, a group of researchers dedicated to spinal cord

injury research in the UBC Faculty of Science. Our growth into a world-leading multi-disciplinary group, based in the Blusson Spinal Cord Centre, would not have been possible without his leadership and vision. In honour of his contributions to SCI research, ICORD's annual research meeting featured guest speakers connected to his career, many leading the way in their fields.

As Dr. Steeves takes his leave from ICORD, we see that his broad mission to improve the lives of people with SCI goes on, and it might be best illustrated by some of the last year's developments. Most significant, we welcomed five new researchers to our membership. In the spring of 2016, Dr. David Granville, a Professor in the Department of Pathology and Laboratory Medicine, brought his lab from St. Paul's Hospital to the BSCC, along with his expertise in wound healing and granzymes.

We were also fortunate to welcome our first members from the UBC Okanagan campus, all members of the School of Health and Exercise Sciences (SHES). Dr. Kathleen Martin Ginis, the Director of SCI Action Canada and an established SCI researcher who has collaborated with several ICORD members, became our newest Principal Investigator. Drs.

Heather Gainforth and Philip Ainslie joined as Investigators. And Dr. Paul van Donkelaar, SHES's Director, is now an Associate Member of ICORD. Their fields of study, which you will read about in this report, run the spectrum of SCI science from basic laboratory investigations to community-based research.

Outside of the world of academia, ICORD's community outreach was recognized this winter by the City of Vancouver, when the Physical Activity Research Centre won an Accessible City Award. Vancouver gave PARC the prize for its dedication to making exercise and fitness more accessible to those living with SCI in Vancouver. PARC's facilities on the ground floor of the BSCC have become an invaluable community hub to SCI peers for access to resources on physical activity and overall health. It also serves as the base for ICORD's research into the rehabilitative effects of exercise after SCI.

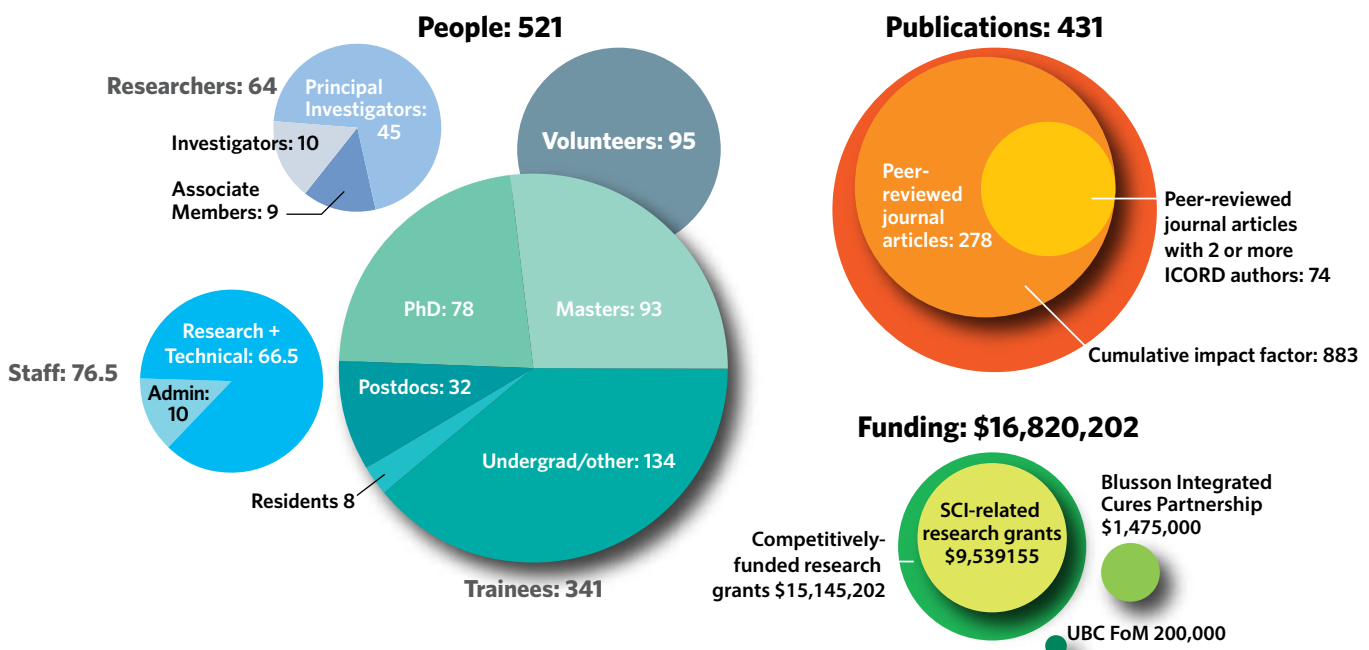
Looking ahead, we are already building on these accomplishments. Several of our new members have already benefited from the Seed Grants provided by the Blusson Integrated Cures Partnership, which allow ICORD researchers to explore new and untested ideas. With support of this funding, I've been fortunate enough to enter a pilot collaboration with Dr. Granville on how granzymes, which are protein-degrading enzymes, affect neuronal damage after a spinal injury. We hope to see many of these projects lead to a better understanding of SCI, and ultimately to translatable knowledge to improve the lives of those affected by SCI.

I am pleased to present our efforts over the previous year that move us closer towards our goal of making SCI preventable, liveable, and curable.

*Wolfram Tetzlaff*

WOLFRAM TETZLAFF, MD, PHD  
PROFESSOR, ZOOLOGY & SURGERY, UBC

## ICORD at a glance, 2016-17





# Highlights, 2016-17

## Study shows uninjured nerve cells can take over function of injured cells

In a study performed at ICORD, neuroscientists showed that uninjured nerve cells take over the function of injured nerve cells following SCI.

The paper, published on April 6, 2016, in the prestigious *Journal of Neuroscience*, clearly demonstrates that even a very small number of uninjured nerve cells in the spinal cord can take over the function of nerve cells damaged by SCI. Scientists have long suspected that this happens after SCI, but it hadn't been conclusively proven until this study.

Muscles and movement are controlled by nerve cells in the brain that project to the spinal cord. After SCI, these nerve cells are damaged, leading to paralysis. However, in some individuals with SCI, spontaneous recovery of motor function can occur. How this recovery occurs is poorly understood, but understanding it better could provide new targets for therapy. Brett Hilton, then a PhD candidate with ICORD Director and UBC professor Dr. Wolfram Tetzlaff, investigated the role of a specific nerve pathway, called the dorsolateral corticospinal tract, in bringing about spontaneous recovery following SCI. Using rodent models, they demonstrated that while this pathway has a relatively minor role in uninjured or healthy adults, it is able to substantiate significant recovery after a partial SCI that spares this tract.

"This research shows us that we should focus on uninjured neurons as a target for therapy," said Hilton. "Of course more work is needed, but as most SCI in humans are incomplete, and our work shows—in rodents at least—that even very small spared tracts can mediate recovery, this may be a promising target for therapeutic intervention in humans."

## "An extraordinarily generous thing"

ICORD is tremendously grateful for the generosity of the Northrop Family. To read how a gift from their late brother Allan prompted these awesome siblings to honour him with gifts of their own, visit [support.ubc.ca/successstories/supporting-spinal-cord-research-becomes-a-family-affair/](http://support.ubc.ca/successstories/supporting-spinal-cord-research-becomes-a-family-affair/)



## Founding Director retires

On April 5 and 6, ICORD hosted a spectacular scientific event to celebrate the career of our Founding Director, Dr. John Steeves, who will retire in 2017 after a distinguished 38-year career. In honour of John's profound contributions to ICORD, we hosted an exciting two-day SCI symposium featuring fifteen internationally renowned SCI experts who visited to share their research, either as speakers or session chairs. The symposium also featured 86 research posters by ICORD and RHI trainees and staff, which were presented in two poster sessions.



Clockwise from top left: Kathleen Martin Ginis and Kendra Todd at the first poster session; ICORD Director Wolfram Tetzlaff speaks to the group at the beginning of the day on April 5; John Chernesky (left) chats with Armin Curt (centre) and Catherine Jutzeler (right); all the visiting speakers & session chairs; John Steeves (right) with his PhD supervisor, Larry Jordan; the closing reception on April 6.

Looking back on the event, Dr. Steeves had this to say: "International speakers always provide unique insights and inspiring visions. The Symposium agenda provided a broad representation of the field of SCI research. But no less impressive, and very gratifying to me, were the range of the presentations by ICORD trainees. You all put your best efforts forward and our out-of-town visitors were very impressed. I am extremely grateful to the ICORD staff for creating an event that all could enjoy. I cherish your warm wishes for my retirement, although that has shown no signs of appearing on my near-term horizon. From time to time, you will all face frustrations in your research, but trust in yourself and your colleagues to overcome the challenges. As the founding Director of ICORD I am pleased at the growth of ICORD's contributions to the world. Your future looks very bright and I hope you will share your successes with me when I visit from time to time."

*We are grateful for the generous support of the Blusson Integrated Cures Partnership, VGH+UBC Hospital Foundation, Asterias Biotherapeutics, Rick Hansen Institute, Vancouver Coastal Health Research Institute, and the Lazy Gourmet.*

## PARC honoured by City of Vancouver

ICORD's Physical Activity Research Centre (PARC) was honoured with the 2017 Accessible City Award at the City of Vancouver Awards of Excellence ceremony on February 28. These awards recognize outstanding accomplishments made by individuals and organizations, and celebrate excellence in five categories of achievement that benefit everyone by making Vancouver more green, healthy, diverse, and accessible. PARC is a community-based research facility within ICORD, whose goal is to advance research to understand the best strategies for providing opportunities to participate in physical activity for people with complete or partial paralysis due to spinal cord dysfunction. The first of its kind in Canada, PARC is an innovative research gym, equipped with fully-accessible, state-of-the-art exercise equipment. Members of the SCI community use PARC to exercise and improve their well-being in an inclusive and supportive environment, while contributing to research into better rehabilitation strategies.

PARC Coordinator Megan Brousseau with research participant and volunteer Kyle Gieni accepted the award at the ceremony in February. They were accompanied by ICORD's Director, Dr. Wolfram Tetzlaff, as well as several research participants and staff members. "On behalf of ICORD, I'd like to thank Mayor Robertson and the City of Vancouver for this award," said Dr. Tetzlaff. "It's an honour to be recognized for what we are doing here at ICORD, and see the value and importance the City places on becoming more accessible for people with disabilities."



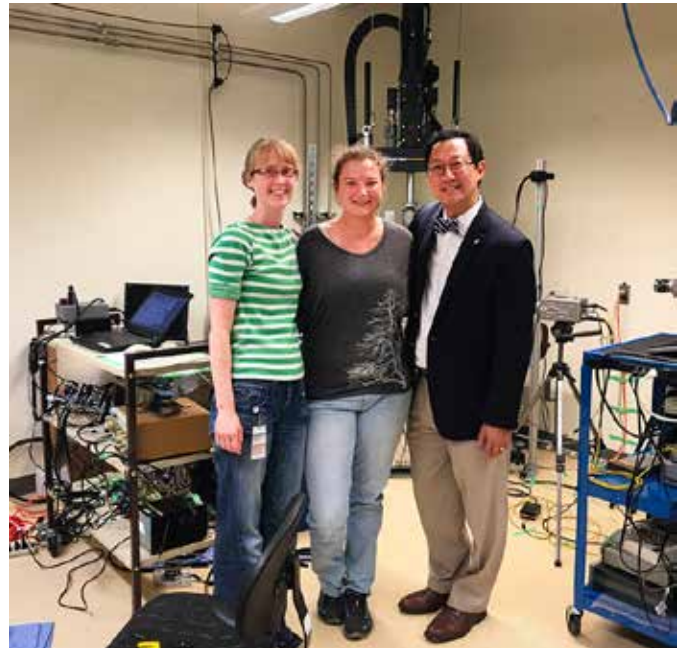
Megan and Kyle (centre) with Mayor Gregor Robertson (left) and Councillor Raymond Louie (right) at the award ceremony.

## We made a book

If you want to know about the 22-year history of our research centre or what we've been up to for the past five years, take a look at our new book, ***Making spinal cord injury preventable, livable, and curable: spinal cord injury research at ICORD, 2011-2016***. The 50-page PDF is available as a free download from our web site. Printed copies are also available – please contact us for details.

## UBC President visits

On August 29, 2016, newly-installed UBC President Santa Ono visited a number of ICORD's Discovery Science labs, where SCI research is done on wound healing, neuropathic pain, and cardiovascular health. Dr. Ono also visited the Human Locomotion lab and rehabilitation gym, where he received a demonstration of ICORD's Variable-Assist wearable bionic suit from Ekso Bionics, and also met some of the volunteers and participants at PARC.



Prof. Ono with visiting student Muriel Vuille (centre) and Research Engineer Angela Melnyk (left) in the Orthopaedic and Injury Biomechanics lab.

Since starting his position as the 15th President and Vice-Chancellor of UBC, Dr. Ono has not only demonstrated a passion for connecting with the university's many students and staff, but also its researchers. "One of the most compelling reasons I was drawn to UBC was the depth and breadth of its academic research, and I am deeply committed to advancing that research by working collaboratively with some of the world's leading scholars," Dr. Ono says.

## Another successful Autonomic Symposium and Café Scientifique

On February 22, 2017, ICORD PI Dr. Andrei Krassioukov hosted the 4th International Autonomic Symposium (IAS) at the Blusson Spinal Cord Centre. More than 180 people from around the world attended to discuss the conference's theme "Interfacing Man and Machine: Neuroprosthetics for managing autonomic function after spinal cord injury." The event featured three programs highlighting work on autonomic dysfunction by researchers, health care providers, and community members. The IAS's goal was to bring all of these groups together to inform and harmonize with each other's work. The day culminated with a sold-out Café Scientifique, which was a lively discussion between all attendees.



## Outside the box and into ICORD!

Vancouver Whitecaps FC defender Jordan Harvey visited ICORD in June, 2016 as part of the **Bell Outside the Box** promotion, which takes Whitecaps players out of their comfort zone to worlds outside of soccer. PARC volunteer Kyle Gieni took Jordan on a wheelchair tour of the Blusson Spinal Cord Centre to see some of the amazing people behind the research into improving the lives of people with SCI. The day ended with an exciting race up the atrium ramp between Kyle and Jordan! To watch the segment, visit: [bit.ly/2tGlfh4](http://bit.ly/2tGlfh4).



## A banner year for Trainees

We are very proud of the numerous ICORD trainees who were honoured with awards and scholarships in the past year, including:



**Dr. Jacquelyn Cragg**, a postdoctoral fellow working with ICORD PIs Drs. John Kramer and Wolfram Tetzlaff, won the Society in Science – Branco Weiss Fellowship for postdoctoral studies in July, 2016. She joined physicists, biologists, social scientists, and other researchers from around the world in accepting the prestigious award given

by ETH Zurich (Swiss Federal Institute of Technology). She was the only recipient from Canada in 2016. This fellowship will support Dr. Cragg's SCI research for up to five years. She will be investigating whether pain medication can alter the course of neurological recovery. Her previous research found that patients receiving anticonvulsants, a class of medications used to manage neuropathic pain, achieved greater recovery of muscle strength compared to patients administered other types of medications.



**Jordan Squair**, an MD/PhD student supervised by ICORD PIs Dr. Andrei Krassioukov and Dr. Christopher West won the Killam Doctoral Scholarship in 2016. Jordan is working on new methods to improve the control of the heart and blood vessels following SCI. Using pharmacological and non-pharmacological strategies, Jordan aims

to protect aims to protect myelin—the nerve cell's outer coating—and restore the brain's control of the heart and blood vessels. Improving this control is expected to reduce the severity of such cardiovascular conditions as autonomic dysreflexia and orthostatic hypotension. This research is providing new insights into our understanding of heart and blood vessel function after SCI, with the ultimate goal of improving the lives of Canadians living with SCI.



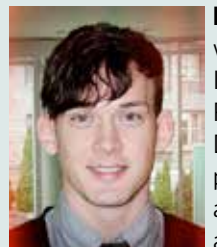
PhD student **Cameron Gee** won the Four-Year Fellowship from UBC's School of Kinesiology and a Mitacs Accelerate Award, both of which will help bring an exciting collaborative research project to ICORD. Under the supervision of Dr. Christopher West, Gee will receive

funding and support from Mitacs, the Canadian Sport Institute Pacific (CSI Pacific), and Wheelchair Rugby Canada to study methods and interventions for enhancing the cardiovascular function and sport performance of Canadian athletes with SCI. The goal of the project is to help Canada's wheelchair rugby team prepare for the Tokyo 2020 Paralympics.



Dr. David Granville and **Dr. Keerit Tauh**, a third year cardiac surgery resident, who is completing an MSc in Dr. Granville's lab, were awarded \$25,000 from the Transplant Research Foundation of British Columbia.

The BCTRF grant will go towards investigating the role of granzyme K in cardiac allograft vasculopathy (CAV), an accelerated form of coronary artery disease, which can occur after a heart transplant. CAV is the major cause of organ failure in transplant recipients one year after transplantation. Previous studies suggest Granzyme K is involved in vascular inflammation, but it has never been studied in vivo. Drs. Granville and Tauh will investigate whether inhibition of this enzyme can suppress inflammation and alleviate CAV.



**Dr. Aaron Phillips**, a postdoctoral fellow working with Dr. Andrei Krassioukov and Investigator Dr. Phil Ainslie, won a Killam Postdoctoral Fellow Research Prize in 2016. Dr. Phillips is dedicated to understanding, preventing, and managing strokes as well as other cerebrovascular conditions such as vascular-cognitive decline. The primary clinical population he focuses on is people

with SCI, due to the devastating affect this condition exerts on not only motor and sensory function but also the autonomic nervous system. Over his career, he hopes to better identify the causes of these issues, and develop strategies to improve the quality and quantity of life for people with neurological conditions such as spinal cord injury.

# Building capacity through the **Blusson Integrated Cures Partnership**

supported by



Rick Hansen  
Foundation

THROUGH THE

**Blusson Integrated  
Cures Partnership**

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Rick Hansen Institute  
Institut Rick Hansen

ICORD and the Rick Hansen Institute are working together to identify new treatments for SCI and apply existing treatments for other neurological disorders, injuries, and diseases, to SCI. Funded by the Rick Hansen Foundation,

the Blusson Integrated Cures Partnership (BICP) provides ten years of stable funding for several multi-year research projects, new faculty positions within ICORD, international exchanges to encourage collaboration, such research-related events as the Annual Research Meeting and seminar series, and a consumer-engagement strategy to provide people with SCI and their supporters with evidence-based information about the healthcare, services, and resources available to best support recovery after SCI and increase consumer involvement in the research process. Here are some examples of the impact of this generous support:

ICORD PI **Dr. Brian Kwon leveraged funding from the BICP to win two major grants.** Dr. Kwon received a \$1.9 million grant from the **United States Department of Defense** based on work done with a BICP-funded ICORD Seed Grant of \$20,000. The project, "Near Infrared Spectroscopy [NIRS] for Non-Invasive Monitoring of the Injured Spinal Cord," will study the effectiveness of NIRS, an optical technique used for a number of medical diagnostics, in monitoring SCI. Dr. Kwon also leveraged \$186,000 in funding from the BICP to create a successful proposal for the **Mitacs Accelerate** program. Dr. Kwon will receive \$413,000 to support trainees associated with the Rick Hansen Institute-supported Brain Canada Biomarker Initiative. His three-year study, "Biomarkers for Crossing the Translational Divide in Acute Spinal Cord Injury", has three objectives: first, to expand currently limited knowledge of what happens biologically in the spinal cords of human SCI patients; second, to establish biomarkers that identify severity of injury to the spinal cord; and third, to create biomarker linkages with an intermediary model where novel therapies can be developed for eventual human clinical trials.

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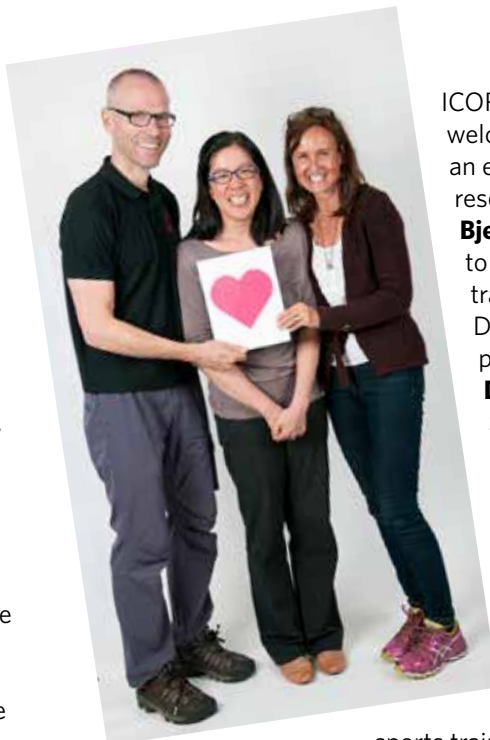


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ICORD had the privilege of welcoming **Dr. Anna Bjerkefors**, an esteemed physical activity researcher, and **Mats-Erik Bjerkefors**, a physical trainer, to ICORD in July 2016. They traveled from Sweden to join Dr. Tania Lam in a research project as part of the **BICP Distinguished Visiting Scholar Program**.

Anna is physical therapist and lecturer at the Swedish School of Sport and Health Sciences with a specialty in spinal cord injury, and she holds a doctorate in neuroscience. Her husband, Mats-Erik Bjerkefors, is a

sports trainer based at the RG Aktiv

Rehabilitating (Active Rehabilitation) at Bosön, a sports complex outside of Stockholm. For more than 20 years, they have built their work together upon the idea that physical activity is possible and crucial for everybody with SCI to maintain health and quality of life. The Bjerkefors were joined by Swedish physiotherapist **Anna-Carin Lagerström** to conduct a four-day workshop with Dr. Lam on "Exercising with a Spinal Cord Injury" for PARC students and SCI peers. Anna-Carin is the co-author of "The art of healthy living with physical impairments," a guidebook to healthy lifestyle, nutrition, mindfulness, and exercise for people with disabilities. Dr. Lam and Dr. Chris West also delivered guest lectures during this workshop.



The Bjerkefors with Dr. Lam (top); The Bjerkefors conducting the "Exercising with a Spinal Cord Injury" workshop (above).

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In the summer of 2016, **Dr. Lynn Stothers** completed a **study on SCI in rural Uganda** with her colleague Dr. Andrew Macnab of BC Children's Hospital, and the Health Education

Agency (HEADA) of Uganda. With the help of a **BICP-funded International Travel Award** given to Dr. Stothers, the team conducted a survey to gather information on how people with SCI, their families, health care providers, and the community deal with SCI in a developing country. Dr. Macnab, Ronald Mukisa, and a team from HEADA gathered data in the Sheema District of western Uganda, a region still developing health infrastructure to serve a dispersed rural population. The team created a questionnaire based on the **Rick Hansen Institute's SCI Community Survey**, which has been used across Canada to identify the needs for people living with SCI. Many of the villages in Sheema were difficult to access, but the researchers were able to meet and interview 30 people who were living with SCI, as well as 250 community members and 40 people from village health teams (VHTs). VHT members are volunteers trained by government to address specific health care issues in communities. One of the key findings was that there is a significant need for strategies to prevent SCI and to enhance home care. Unfortunately, survivors of SCI are discharged from hospitals



with little or no follow-up arrangements. The survey revealed that many were not aware of important secondary complications that can compromise the health of patients with SCI, such as cardiovascular disease and urological problems. The overall goal is to use the information obtained from this survey to identify how best to train the VHTs to provide priorities of care defined by the World Health Organization in the community as a way to promote prevention of transport-related SCI.

"We believe the research in the Sheema community will provide the basis from which we can develop support programs to help improve home care in other developing countries around the world," says Dr. Stothers.



**ICORD Seed Grants** are part of the BICP's goal to support the **Best and Brightest** of SCI research.

Finding funding for research is never an easy task, especially when exploring new and untested ideas. With these Seed Grants, our investigators get support to gather data for novel areas of research, which can then provide the foundation for bigger projects and more funding. In the most recent round of Seed Grants, **Dr. Tania Lam**, together with **Dr. Lynn Stothers** and postdoctoral research fellow Dr. Amanda Chisholm, received \$20,000 to examine whether rehabilitation training with robotic exoskeletons can aid bladder health. Maintaining urological health is identified as a top priority for people with SCI to improve quality of life. This project will hopefully give evidence for an intervention that will help people with SCI do this.

#### Other Seed Grants awarded in 2016:

**Dr. John Kramer** - \$20,000 Re-purposing anticonvulsants to improve neurological outcomes after SCI: The effect of type, timing, and dosage.

**Dr. David Wilson** - \$20,000 Assessment of intervertebral disc degeneration using weightbearing open MRI.

**Dr. Wolfram Tetzlaff** - \$20,000 Anti-sense oligonucleotides for the knock down of PTEN and SOCS3.

**Dr. Wayne Moore** - \$20,000 Histopathologic studies of human SCI.

**Dr. Philip Ainslie** - \$20,000 Providing a clinically-relevant link between cerebrovascular decline and sleep-related disordered breathing after spinal cord injury: foundational data for the future.

**Dr. David Granville** - \$20,000 Granzyme B: A novel therapeutic target for promoting spinal cord repair.

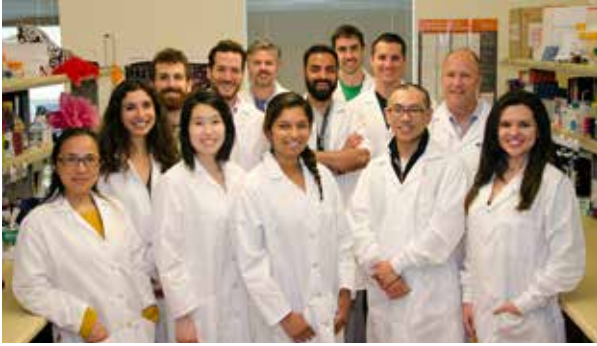
**Dr. Andrei Krassioukov** - \$20,000 Combined neuroprosthetic and neuroprotective approach to promote restoration and recovery of autonomic circuitry.

**Dr. Matt Ramer** - \$10,000 Oxygen-independent induction of the hypoxia response for neural regeneration.



Trainee travel awards support travel costs to conferences, meetings, courses, or workshops for ICORD trainees. This provides trainees with the opportunity to share their research with national and international counterparts, as well as giving them the chance to network with experts in their fields. Thanks to the BICP, **33 trainee travel awards** were funded in 2016-17.

# New researchers



Above: members of the Granville Lab. Below (clockwise from top left): Drs. Martin Ginis, van Donkelaar, Gainforth, and Ainslie



## Dr. David Granville

In April 2016, ICORD had the pleasure of welcoming Dr. David Granville to its team of Principal Investigators. Dr. Granville and his group moved their lab from St. Paul's Hospital to the Blusson Spinal Cord Centre to continue their research on tissue injury and wound healing.

Dr. Granville's team will be expanding on the work it has done on pressure ulcers with the Rick Hansen Institute and looks forward to applying its expertise in Granzymes to areas related to spinal cord injury.

Much of Dr. Granville's latest work is built upon his identification of the role of Granzymes (Granule-secreted enzymes) in the pathogenesis of conditions associated with impaired healing and inflammation, including pressure and diabetic ulcers, aneurysms, nerve damage, vascular dysfunction, and burn injury. Granzymes are protein-degrading enzymes that the immune system can use to target and eliminate unwanted cells in the body, but their accumulation in wounds can damage the extracellular matrix that is required for healing to occur.

Dr. Granville made waves in international media in 2014 when he published a paper in *Aging Cell*, which identified the role of Granzyme B in skin damage caused by sun exposure and explained how this enzyme contributed to collagen breakdown in the skin.

Prior to becoming a Professor in the Department of Pathology and Laboratory Medicine at the University of British Columbia, Dr. Granville worked at QLT Inc., where his research supported the development and approval of Visudyne® as the first treatment for age-related macular degeneration, the leading cause of blindness in the elderly. In

2001, Dr. Granville relocated to the Scripps Research Institute in La Jolla, California, where his research identified a novel therapeutic approach for attenuating ischemia and reperfusion injury. His work has garnered him numerous awards and has resulted in the filing of 30 patents since joining UBC, of which, his trainees are inventors on all of them.

## UBC-Okanagan researchers

Four researchers from UBC Okanagan joined ICORD's ranks in the Fall of 2016. From the School of Health and Exercise Sciences, Drs. Philip Ainslie, Heather Gainforth, Kathleen Martin Ginis, and Paul van Donkelaar are ICORD's newest members. "We believe that finding treatments for spinal cord injury requires a collaborative, interdisciplinary approach," says ICORD Director Dr. Wolfram Tetzlaff. "This is why we are so happy to be joined by such eminent investigators, who work in basic, clinical, and social research. Such diversity along with the strengthened connection between campuses will be a valuable asset."

Professor van Donkelaar joins ICORD as an Associate Member. His research spans from basic science to clinical studies with a focus on human brain function. He is currently collaborating with ICORD's Dr. Peter Crompton on a project examining helmet design to reduce the effects of head impacts in contact sports.

Professor Martin Ginis is ICORD's newest Principal Investigator. She is a distinguished SCI researcher and the Director of SCI Action Canada, which promotes the physical activity of people with SCI. SCI Action Canada brings together university researchers and community organizations around the country to develop and share evidence-based strategies, practices, and tools that can help people with SCI live more active lives. Dr. Martin Ginis's work addresses the psychosocial mechanisms and consequences of physical-activity behaviour change, particularly in the SCI community. She has several ongoing collaborations with ICORD, including work with Dr. Andrei Krassioukov on the CHOICES Project. She is also the Principal Investigator for the Canadian Disability Participation Project with ICORD co-investigators, Drs. Gary Birch, Jaimie Borisoff, Janice Eng, Susan Forwell, William Miller, and Ben Mortenson.

Professor Ainslie joins ICORD as an Investigator. He studies the integrated mechanisms which regulate human cerebral blood flow in health and disease, the influence of environmental stress, and the effects of exercise training on cerebrovascular function. He holds a Canada Research Chair and is the co-director of the Centre for Heart, Lung & Vascular Health at UBC Okanagan.

Assistant Professor Gainforth also joins ICORD as an Investigator. She comes from a background in Health Promotion, Knowledge Translation, and Kinesiology, and her research is directed toward closing the gap between health behaviour change research and practice, through the dissemination of evidence-based health promotion interventions in general and special populations.

These are the first faculty members from UBC Okanagan to join ICORD.



# ICORD's Principal Investigators

**Dr. Gary Birch** | Executive Director, Neil Squire Society; Adjunct Professor, Dept. of Electrical and Computer Engineering, UBC | **Focus:** Ensuring assistive technology is accessible to people with disabilities.

**Dr. Paul Bishop** | Clinical Professor, Dept. of Orthopaedics, UBC | **Focus:** Biological mechanisms of spinal nerve root injury and myelopathy.

**Dr. Jaimie Borisoff** | Canada Research Chair in Rehabilitation Engineering Design; Research Director, British Columbia Institute of Technology; Adjunct Professor, Dept. of Occupational Science and Occupational Therapy, UBC | **Focus:** Increasing participation through improved accessible equipment design.

**Dr. Victoria Claydon** | Associate Professor, Dept. of Biomedical Physiology and Kinesiology, SFU | **Focus:** Impact of cardiovascular dysfunction on the quality of life of people with SCI.

**Dr. Peter Crompton** | Co-director, Orthopaedic and Injury Biomechanics Group, UBC; Professor and Associate Head – External, Dept. of Mechanical Engineering, UBC; Associate Member, Dept. of Orthopaedics, UBC | **Focus:** Mechanical and computational models of SCI; injury prevention.

**Dr. Marcel Dvorak** | Professor, Dept. of Orthopaedics, UBC; Head, Div. Spine, Dept. of Orthopaedics, UBC; Cordula and Günter Paetzold Chair in Clinical SCI Research, UBC; Scientific Director, Rick Hansen Institute; Medical Director, Combined Neurosurgical and Orthopaedic Spine Program (CNOSP), Vancouver General Hospital; Co-Chair, Spine Trauma Study Group | **Focus:** Adult traumatic spine injury surgery; optimizing clinical decision-making in acute SCI.

**Dr. Stacy Elliott** | Clinical Professor, Depts. of Psychiatry and Urologic Sciences, UBC; Medical Director, BC Centre for Sexual Medicine; Co-director, Vancouver Sperm Retrieval Clinic; Medical Director, Men's Sexual Assessment and Rehabilitation Service, Prostate Centre; Physician Consultant, GF Strong Sexual Health Rehabilitation Service | **Focus:** Sexual health after SCI; autonomic dysfunction during sexual activity, pregnancy, and childbirth.

**Dr. Janice Eng** | Professor, Dept. of Physical Therapy, UBC | **Focus:** Web-based technologies designed to provide the SCI community with information about recovery and evidence-based treatments.

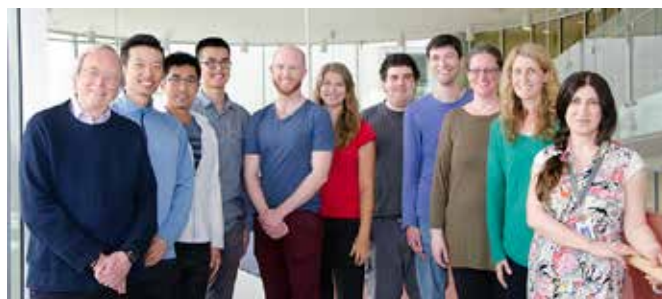
**Dr. Susan Forwell** | Associate Professor and Head, Dept. of Occupational Science & Occupational Therapy, UBC | **Focus:** Fatigue, pain, mobility, and employment among the SCI and traumatic brain injury populations.

**Dr. Aziz Ghahary** | Director, BC Professional Fire Fighters' Burn and Wound Healing Research Group; Professor, Dept. of Surgery, Associate Member, Dermatology & Skin Sciences, UBC | **Focus:** Development of therapeutics for chronic non-healing wounds and autoimmune diseases.

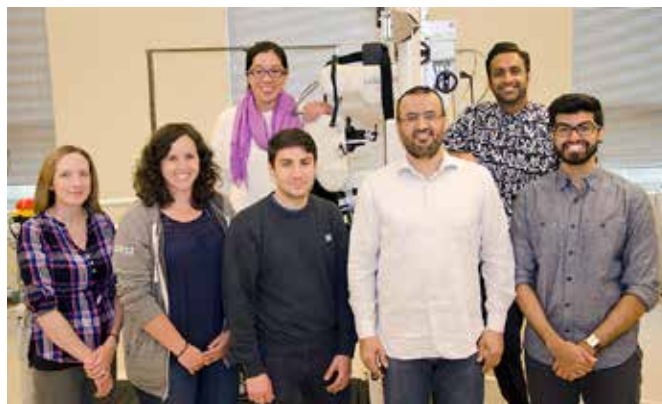
**Dr. David Granville** | Professor, Dept. of Pathology & Laboratory Medicine, UBC; Scholar of the Royal Society of Canada; Associate Director, BC Professional Firefighters' Burn and Wound Healing Research Laboratory, Div. Plastic Surgery, Dept. of Surgery,



Dr. Stacy Elliott (left) and the Sexual Health team



Dr. Wayne Moore (left) and Dr. Corree Laule (second from right) with the members of their labs.



Dr. Tania Lam Lab (back row, left) with members of her Human Locomotion Research Lab.



Dr. John Kramer (right) with members of his research group.

UBC; Founder and Chief Scientific Officer, viDA Therapeutics Inc.; Adjunct Professor, Institute of Molecular Biology and Biochemistry, SFU | **Focus:** Role of granzymes in the healing of injured tissue, inflammation, and neuronal damage.

**Dr. Andy Hoffer** | Professor, Dept. of Biomedical Physiology and Kinesiology, SFU; Associate Member, School of Engineering Science, SFU; Founder and Chief Scientific Officer, Lungpacer Medical Inc. | **Focus:** Prevention of the loss of voluntary diaphragm function in acute SCI; restoring diaphragm in ventilator-dependent, chronic SCI patients.

**Dr. Sandra Hundza** | Associate Professor, Dept. of Exercise Science, University of Victoria; Adjunct Professor, Island Medical Program, Faculty of Medicine, University of Victoria | **Focus:** Neural control of human movement and motor rehabilitation after SCI.

**Dr. Reza Jalili** | Assistant Professor, Dept. of Surgery, UBC | **Focus:** Management of pressure ulcers and other chronic, non-healing wounds; improving cell viability and functionality in tissue wounds with an optimal extracellular matrix.

**Dr. Piotr Kozlowski** | Associate Director, Magnetic Resonance Imaging Research Centre, UBC; Associate Professor, Depts. of Radiology and Urologic Sciences, UBC; Associate Member, Dept. of Physics and Astronomy, UBC; Research Scientist, Vancouver Prostate Centre | **Focus:** Magnetic resonance imaging for the measurement of white matter damage.

**Dr. John Kramer** | Assistant Professor, School of Kinesiology, UBC; Scholar, Michael Smith Foundation for Health Research | **Focus:** Neuropathic pain medication and neurological recovery in SCI; open-access clinical trial data.

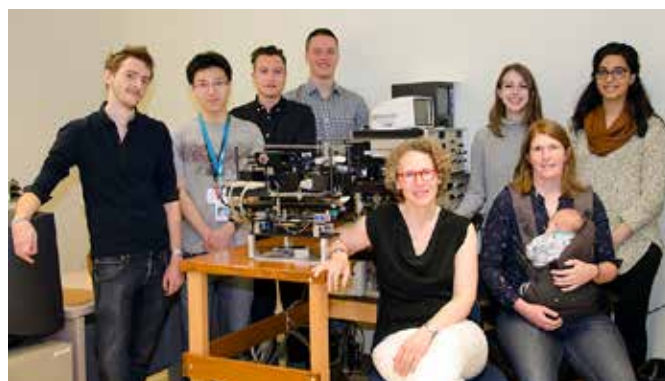
**Dr. Andrei Krassioukov** | Professor, Dept. of Medicine, Div. Physical Medicine & Rehabilitation, UBC; Spinal Cord Injury Rehab Rehabilitation Chair and Associate Director, Rehabilitation Research, ICORD; Staff physician, Spinal Cord Program, GF Strong Rehabilitation Centre; Adjunct Professor, Depts. of Physical Medicine and Rehabilitation, University of Western Ontario; Chair of International Autonomic Standards Committee, ASIA/ISCOS | **Focus:** Management of autonomic dysreflexia after SCI; development and implementation of international Paralympic classifications.

**Dr. Brian Kwon** | Canada Research Chair in Spinal Cord Injury; Professor, Dept. of Orthopaedics, UBC; Spine Surgeon, Vancouver Spine Program, Vancouver General Hospital; Associate Director, Clinical Research, ICORD; Director, Vancouver Spine Research Program, Marcel Dvorak Chair in Spine Trauma, Vancouver General Hospital | **Focus:** Proteomic, metabolomic, and genomic changes occurring after acute SCI; International SCI Biobank.

**Dr. Tania Lam** | Associate Professor, School of Kinesiology, UBC; Associate Director, Education, ICORD | **Focus:** Training functional community ambulation after SCI; robotic exoskeletons for rehabilitation.

**Dr. Cornelia Laule** | Assistant Professor, Dept. of Radiology and Pathology & Laboratory Medicine, UBC | **Focus:** Magnetic resonance imaging for quantitative measurements of myelin in the brain and spinal cord.

**Dr. Kathleen Martin Ginis** | Professor, School of Health & Exercise Sciences, UBC Okanagan; Director, SCI Action Canada; Principal Investigator, Canadian Disability Participation Project; Fellow, National Academy of Kinesiology | **Focus:** Physical activity behaviour change after SCI; increasing physical activity participation in the SCI community.



Dr. Miriam Spering (centre) with members of the Visual Performance and Oculomotor Mobility Lab.



Dr. Brian Kwon (centre) with members of his research lab.

**Dr. William Miller** | Professor, Dept. of Occupational Science & Occupational Therapy, UBC; Associate Dean, Health Professions Education, UBC | **Focus:** Optimizing mobility through the use of assistive technology.

**Dr. Patricia Mills** | Clinical Assistant Professor, Dept. of Medicine, Div. Physical Medicine & Rehabilitation, UBC | **Focus:** Management of cardiovascular health and spasticity after SCI.

**Dr. Wayne Moore** | Clinical Professor, Dept. of Pathology & Laboratory Medicine, UBC | **Focus:** Basic histopathology and immunopathology behind SCI; pathogenesis of multiple sclerosis.

**Dr. W. Ben Mortenson** | Assistant Professor, Dept. of Occupational Science & Occupational Therapy, UBC; Adjunct Professor, SFU | **Focus:** Community participation among those with SCI; scooter-skills training on safety and participation.

**Dr. Mark Nigro** | Director, Provincial Organ Retrieval Program; Surgical Director of Renal Transplant, Vancouver General Hospital; Co-Director, Vancouver Ejaculatory Dysfunction Clinic; Clinical Professor, Dept. of Urologic Sciences, UBC | **Focus:** Home monitoring to reduce urinary tract infections.

**Dr. Ipek Oruc** | Assistant Professor, Dept. of Ophthalmology & Visual Sciences, UBC | **Focus:** Brain mechanisms behind higher-level vision; visual dysfunction caused by brain disorders (e.g., prosopagnosia, autism spectrum disorder).

**Dr. Tom Oxland** | Professor, Depts. of Orthopaedics and Mechanical Engineering, UBC; Associate Head – Research, Dept. of Orthopaedics, UBC | **Focus:** Evaluation of mechanical parameters to predict the degree of damage from SCI.



**Dr. Catherine Pallen** | Professor, Dept. of Pediatrics, and Associate Member, Dept. of Pathology & Laboratory Medicine, UBC; | **Focus:** Protein tyrosine phosphatase alpha regulation of oligodendrocyte differentiation and influence on myelination.

**Dr. Scott Paquette** | Clinical Assistant Professor, Dept. of Surgery, UBC | **Focus:** Spinal tumours and SCI; spine education and fellowship curriculum development.

**Dr. Matt Ramer** | BC Neurotrauma Chair, ICORD; Associate Professor, Dept. of Zoology, UBC | **Focus:** Function of the transcription factor ATF3 in the injured nervous system; mechanisms of neuropathic pain after SCI.

**Dr. Bonita Sawatzky** | Associate Professor, Dept. of Orthopaedics, UBC | **Focus:** Optimizing wheelchair functionality and use; longitudinal study of adults with Arthrogryposis Multiplex Congenita.

**Dr. Carolyn Sparrey** | Assistant Professor, Mechatronics System Engineering, School of Engineering Science, SFU | **Focus:** Improvement of animal injury models; wheelchair safety engineering.

**Dr. Miriam Spering** | Assistant Professor, Dept. of Ophthalmology & Visual Sciences, UBC | **Focus:** Visual cues to the brain for the control of movement; impact of neurological damage on vision and related motor responses.

**Dr. John Steeves** | Founding Director and Professor, ICORD; Chair, SCOPE | **Focus:** Arm and hand rehabilitation after SCI; guidelines for clinical trials; translational research.

**Dr. Lynn Stothers** | Professor, Dept. of Urologic Sciences, and Member, Depts. of Healthcare and Epidemiology, and Anesthesiology, Pharmacology and Therapeutics, UBC | **Focus:** Improvement of bladder health after SCI.

**Dr. John Street** | Assistant Professor, Dept. of Orthopaedics, UBC | **Focus:** Minimization and accurate recording of adverse events in SCI population.

**Dr. Wolfram Tetzlaff** | John and Penny Ryan BC Leadership Chair in Spinal Cord Research; Professor, Depts. of Zoology and Surgery, UBC; Director, ICORD | **Focus:** Protection against secondary neural damage after SCI; facilitation of neural repair.

**Dr. Darren Warburton** | Co-Director, Physical Activity Line; Co-Director, Physical Activity Promotion and Chronic Disease Prevention Unit, UBC; Professor, School of Kinesiology, UBC | **Focus:** Effects of physical activity, exercise, and training on cardiovascular health.

**Dr. Cheryl Wellington** | Professor, Dept. of Pathology and Laboratory Medicine, UBC | **Focus:** Mechanisms of neurodegeneration and injuries to the central nervous system.

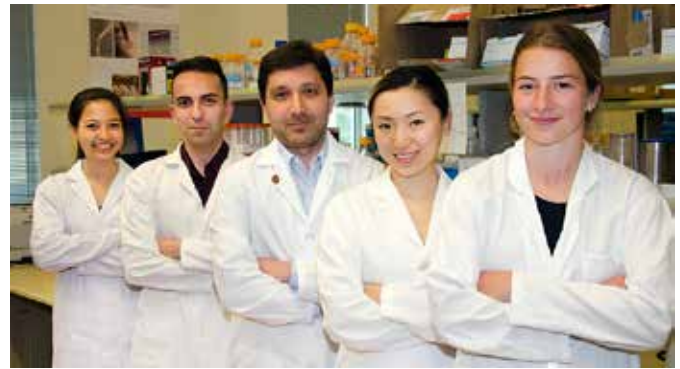
**Dr. Christopher West** | Assistant Professor, School of Kinesiology, UBC; Scholar, Michael Smith Foundation for Health Research | **Focus:** Mechanisms of changes to cardiovascular health in response to SCI; physical activity and exercises to mitigate cardiovascular damage.

**Dr. David Whitehurst** | Assistant Professor, Faculty of Health Sciences, SFU | **Focus:** Health economics; quality-of-life assessments for SCI population.

**Dr. Stephanie Willerth** | Associate Professor, Mechanical Engineering and Division of Medical Sciences, University of Victoria; Member, Centre for Advanced Materials & Related Technology | **Focus:** Personalized neural tissue and biomaterial scaffolds for the treatment of neurological damage caused by SCI.

**Dr. David Wilson** | Associate Professor, Dept. of Orthopaedics; Associate Member, Dept. of Mechanical Engineering, UBC | **Focus:** Joint mechanics; improvement of surgical treatments for SCI.

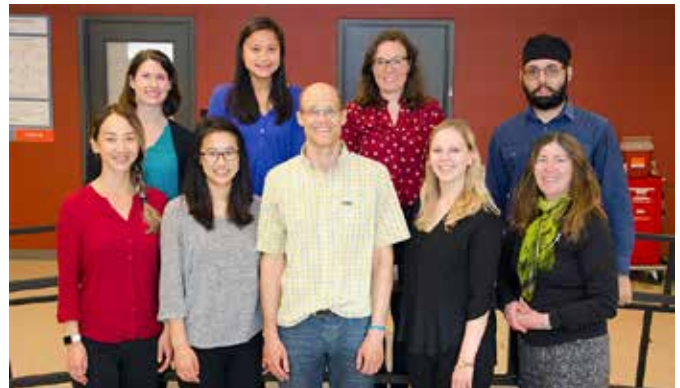
**Dr. E. Paul Zehr** | Professor & Director, Centre for Biomedical Research, Division of Medical Sciences, School of Exercise Science, University of Victoria | **Focus:** Neural control of ambulation; science communication.



Dr. Reza Jalili (centre) with members of his research lab.



Dr. Andrei Krassioukov (front row, centre) with members of the Autonomic Research Lab.



Dr. Ben Mortenson (front row, centre) with members of his research team.

# Spinal Chord Gala supports research and the arts

The eighth annual **Spinal Chord Gala**, co-hosted by **ICORD** and the **Vancouver Cantata Singers**, took place on October 22, 2016. This fun event raised more than \$38,000, to support both organizations. If you were there, thank you for coming! We are very grateful to all our guests and to our generous sponsors for helping to make this another successful event.



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Dr. Brian Kwon



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Promosapien / Make; PuSh International Performing Arts Festival;  
Rack Attack; Rogue Kitchen & Wetbar; Roots Canada; Semperviva  
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Singers; Vancouver Canucks; Vancouver fitBody Bootcamp;  
Vancouver Marriott Pinnacle; Vancouver Opera; Vancouver Water  
Adventures Ltd.; Vancouver Whitecaps FC; Whistler Adaptive  
Sports Program; Wild Rice Restaurant; Yoga Buttons

Thank you for reading our 2016-17 Annual Report.

**Contributors:** Cheryl Niamath, Simon Liem, Lowell McPhail, Matt Sahl, Martin Dee, Butter Studios.

For additional copies of this report or any other ICORD publication, please call 604-675-8844 or email [admin@icord.org](mailto:admin@icord.org).

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