ANNUAL REPORT 2017-18

THE UNIVERSITY OF BRITISH COLUMBIA

Message from ICORD's Director

I'm pleased to present this annual report, covering the period April 1, 2017, to March 31, 2018. It's hard to believe that this is the fifth annual report with a message from me as Director. I am now very much looking forward to my next term as Director and the opportunities unfolding.

In this report, you will learn that ICORD received CFI funding, along with provincial matches and in-kind donations, allowing us to purchase equipment ranging from state-of-the-art microscopes, to impact devices, to outcome assessment tools. This equipment is important to test candidate treatments for spinal cord injury more quickly and in an array of clinically-relevant models. In addition, Dr. Cheryl Wellington also received a CFI award to purchase a new MRI that will be stationed in the Centre for Comparative Medicine at the UBC Point Grey Campus.

This past year, in collaboration with colleagues from UBC Pathology, ICORD launched a faculty search to fill the Edie Ehlers Chair in basic spinal cord injury research. I look forward to introducing a new colleague in next year's annual report! I also look forward to working with UBC's Department of Orthopedics, and the new School of Biomedical Engineering, on the recruitment of a new biomedical engineer who focusses on neural regeneration.

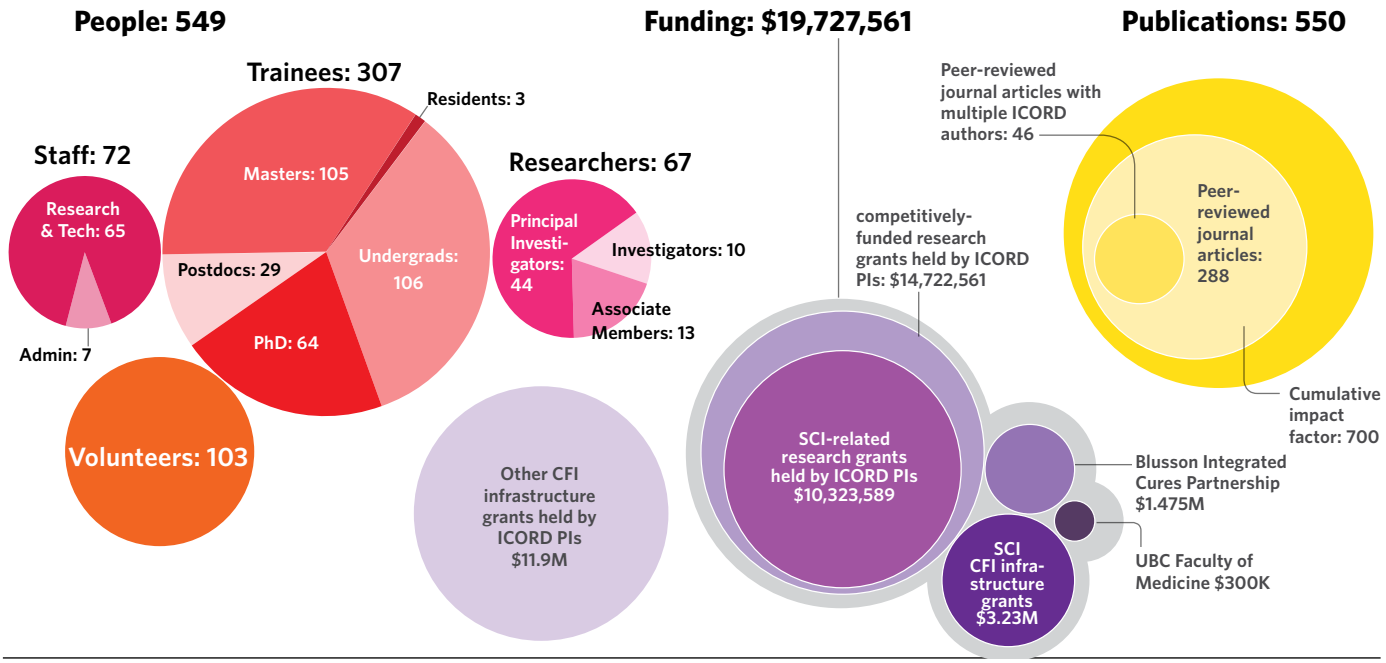
I am very proud to see a significant number of high impact publications this past year. The quality of research coming out of ICORD keeps getting better. I'm also pleased to see ICORD's reach extend further into the community, with the Yuel Family Physical Activity Research Centre faculty and staff making meaningful connections with the Vancouver and Surrey Park Boards to collaborate on creating accessible exercise programs in the community.

We had great successes in funding, too, which has become a real challenge in the past years. With the help of seed grants to generate pilot data, a $1:$12 return on investment was accomplished. This level of success would not have been possible without the unwavering support of the Rick Hansen Foundation, and the Blusson Integrated Cures Partnership it funds (see page 8, and note the blue badges throughout this report to get an idea how far this BICP funding is going!) We are very grateful for this and consider ourselves fortunate to have the Rick Hansen Institute, a network-building partner organization, sharing the Blusson Spinal Cord Centre with ICORD.

I believe I speak for all of us based at the Blusson Spinal Cord Centre when I say how grateful we all are to have been able to work together in this wonderful facility since the Fall of 2008, and look forward to celebrating the tenth anniversary of the space in the year to come.

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

ICORD at a glance, April 2017–March 2018



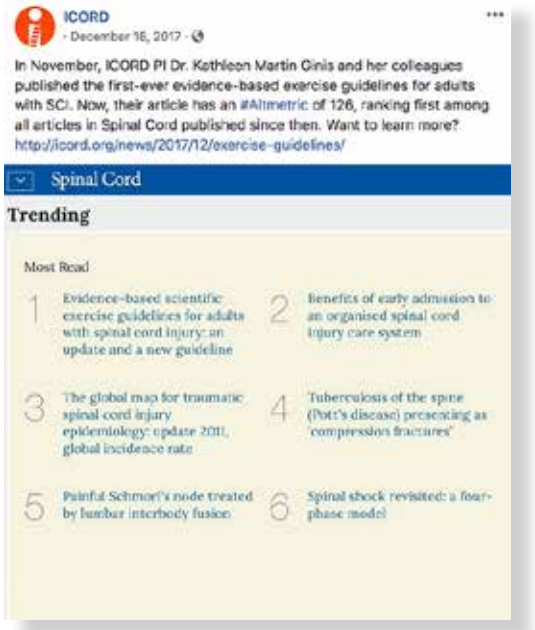
Highlights, 2017-18

infrastructure funding

ICORD researchers were successful in the latest **Canada Foundation for Innovation** funding competition announced in the fall of 2017. ICORD researcher **Dr. Cheryl Wellington** received $4.5 million for further development of a platform for investigating traumatic brain injury (TBI). The project stems from a technology invented at UBC called Closed Head Impact Model of Engineered Rotational Acceleration, which reliably produces diffuse axonal injury, the major pathology in human TBI. Dr. Wellington and her team (including Drs. **Peter Cripton, Wolfram Tetzlaff,** and **Piotr Kozlowski)** , are collaborating on a project to identify biomarkers for TBI and more accurately predict recovery and long-term consequences.
ICORD Director **Dr. Wolfram Tezlaff** along with colleagues Drs. **Peter Cripton,** Brian MacVicar, **Piotr Kozlowski, John Kramer, Andrei Krassioukov, Brian Kwon, Tom Oxland, Matt Ramer,** and **Chris West,** received $1.6 million to refine techniques for modelling and analyzing spinal cord injury. The project will develop the next generation of equipment to study fracture-dislocation injuries in experimental models, thus providing more clinically-relevant examples of the stresses on the spinal cord and the resulting tissue damage—essential information for the development of treatments and design of clinical trials to test treatments in humans. The researchers will use such models to search for biomarkers in cerebrospinal fluid, to conduct optical sectioning and 3D modelling to better examine healthy and damaged tissue, and to evaluate motor, cardiovascular, urological, and sensory outcome parameters in animal models.
Both CFI awards were matched by the British Columbia Knowledge Development Fund.

sci exercise guidelines

In November 2017, ICORD PI **Dr. Kathleen Martin Ginis** and her research team published the first-ever **evidence-based exercise guidelines** tailored specifically to people with SCI. This research filled a knowledge gap that had existed for far too long. “The WHO guidelines were never specifically tailored for people with SCI,” Dr. Martin Ginis said. “Not only were people with SCI essentially excluded from the systematic reviews that underpinned these specific physical activity guidelines for the general population, but the potential risks to the SCI population—including upper body overuse, skin breakdown, autonomic dysreflexia, and overheating—were not considered.”
Building on more than 200 previous studies, the new guidelines take all these factors – and many more, from cardiovascular fitness to bone health – into consideration, recommending twenty to thirty minutes of moderate to vigorous aerobic exercise two to three times per week for adults with SCI, along with strengthening exercises for major muscle groups twice per week. This study was published in ***Spinal Cord***, the official journal of the International Spinal Cord Society. It was partially funded by the Rick Hansen Institute.



community research night

Along with the **Rick Hansen Institute** and **Spinal Cord Injury BC,** ICORD co-hosted our first ever **Community Research Night** on February 21. We had a great turnout despite the snowy weather. There were 25 displays ranging from research studies recruiting for participants to community, to labs showing off their work, to community groups welcoming new members and recruiting volunteers. We are very grateful for the support of the **Blusson Integrated Cures Partnership,** Promosapien, and Uncle Fatih's Pizza (Cambie).

supported by Rick Hansen Foundation THROUGH THE Blusson Integrated Cures Partnership icord

3MT

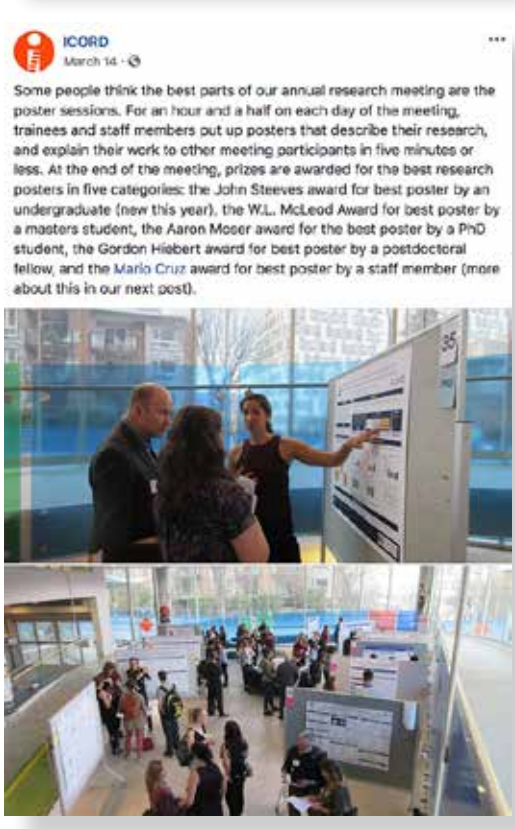
ICORD PhD student **Seth Tigchelaar** represented UBC in the international Universitas 21 3-Minute Thesis competition. The **3 Minute Thesis** (3MT) challenges graduate students to explain their research to a non-scientific audience in three minutes or fewer. Seth, who is working on his PhD with **Dr. Brian Kwon,** is studying how biomarkers can help predict the severity of spinal cord injury. In February 2018, he won his VCHRI 3MT heat, and was the highest-placed PhD student in UBC's 3MT competition last spring. He was the only Canadian competing against PhD students from prestigious universities all over the world in the international 3MT final Although he didn't win, this was a great opportunity for Seth to tell people around the world about his work at ICORD.

annual research meeting

ICORD held our fifteenth Annual Research Meeting on March 12 and 13. This year's program included plenary lectures, short research talks by ICORD and RHI researchers, and 51 poster presentations by ICORD staff and trainees from labs at UBC Vancouver, SFU, UBC Okanagan, and BCIT. Plenary lectures were presented by visiting speakers Dr. Zhigang He, of Harvard University (*From axon regeneration to functional restoration*) and Dr. Michael Boninger, of the University of Pittsburgh (*The hype and hope of assistive technology*). ICORD research talks were presented by **Drs. Stacy Elliott, Jacquelyn Cragg, Barry White, Brian Kwon, Cheryl Wellington, Kathleen Martin Ginis, Babak Sharifi, Ben Mortenson, Corree Laule & Wayne Moore, Alex Williams,** and **Chris Turner.** One of the highlights of every Annual Research Meeting is the chance for trainees and staff to present their research during poster sessions. ICORD is pleased to be able to present poster awards to Undergraduates (new this year), Masters, PhD, Postdoc, and staff. The overall quality of posters is always high, which leaves the judges with some difficult decisions. This year they had the honour of presenting the inaugural **Mario Cruz Staff Award,** in memory of former Ramer Lab Manager Mario Cruz, who died of cancer in 2016, to Krassioukov Lab clinical coordinator **Ms. Andrea Ramirez.** The Annual Research Meeting is supported by the **Blusson Integrated Cures Partnership.**

supported by Rick Hansen Foundation THROUGH THE Blusson Integrated Cures Partnership icord

popular paper



woman of distinction

ICORD
· January 19 ·

We're excited for ICORD researcher Dr. Stephanie Willerth, who has a chapter dedicated to her in "Women of Innovation." This new book recognizes the accomplishments and experiences of extraordinary women in engineering.

MAGAZINE.CIM.ORG

"I am not a professor by accident"

Stephanie Willerth works hard to achieve her goals and is not shy about...

successful students

ICORD
· June 1, 2017 ·

The Vancouver Coastal Health Research Institute announced the winners of its Trainee Awards, and three ICORDian's have claimed prizes! Read about Greg Duncan (Tetzlaff lab), Freda Warner (Kramer lab), Ali Williams (Lam lab), and all of the other talented young researchers supported by VCHRI.

Congratulations to all of the winners!

Vancouver Coastal Health Research Institute

TOP GRADUATING DOCTORAL STUDENT AWARD &

VCHRI.CA

Supporting Up-and-Coming Researchers: Trainee Awards 2017

neurohike

ICORD
· September 28, 2017 ·

ICORD PI Dr. Tania Lam and her very happy lab spent the weekend in Jasper presenting their research at "Neurohike" - an informal gathering of researchers interested in motor control, organized by the Sensorimotor Rehabilitation Neuroscience group at the University of Alberta.
This is a "family" photo of sorts, showing 3 generations of researchers: Dr. Jaynie Yang (far right) was Dr. Lam's PhD supervisor, and Dr. Lam is now supervising the 5 students behind her!

publication award

ICORD
· March 22 ·

ICORD researcher Dr. Brian Kwon received the 2018 American Spinal Injury Association Apple Award for his article "Spinal cord perfusion pressure predicts neurological recovery in acute spinal cord injury," published in American Academy of Neurology (AAN) along with ICORD co-authors Jordan Squair and Drs. John Street, Scott Paquette, Marcel Dvorak, and Chris West.

http://asia-spinalinjury.org/research-awards/apple/

excellence in education

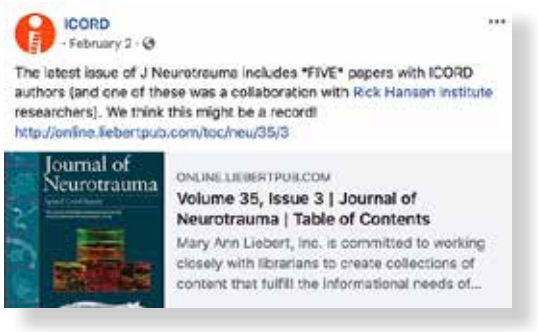
ICORD
· September 28, 2017 ·

ICORD researcher Dr. Corree Laule just won the UBC Faculty of Medicine Distinguished Achievement Award for Excellence in Education! The award recognizes Dr. Laule's significant contributions to health education in the areas of leadership, innovation, and/or scholarship of education.
She totally deserves it!

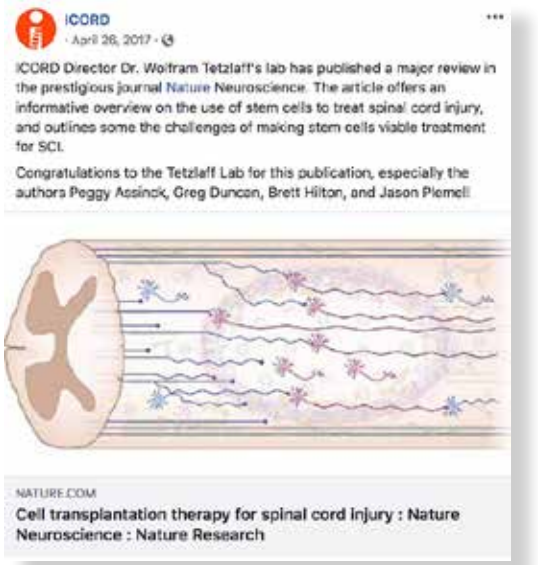
five papers in *j. neurotrauma*

ICORD researchers took over the February, 2018 issue of ***The Journal of Neurotrauma***. A total of five articles by ICORD researchers, including one collaboration with RHI, were published in the issue:

- *Spinal cord injury causes systolic dysfunction and cardiomyocyte atrophy* (**J Squair,** K DeVeau, K Harman, **M Poormasjedi-Meibod, B Hayes, J Liu,** D Magnuson, **A Krassioukov, C West**) [Katie DeVeau and Kathryn Harman came to ICORD in the summer of 2015 on a BICP-funded VISIT grant]
- *Predicting injury severity and neurological recovery after acute cervical spinal cord injury: Comparison of cerebrospinal fluid and magnetic resonance imaging biomarkers* (T Dalkilic, N Fallah, V Noonan, **S Salimi Elizei, K Dong,** L Belanger, L Ritchie, A Tsang, E Bourassa-Moreau, M Heran, **S Paquette,** T Ailon, N Dea, **J Street,** C Fisher, **M Dvorak, B Kwon**)
- *An autonomic neuroprosthesis: Noninvasive electrical spinal cord stimulation restores autonomic cardiovascular function in individuals with spinal cord injury* (**A Phillips, J Squair,** D Sayenko, V. R. Edgerton, Y Gerasimenko, **A Krassioukov**)
- *Incidence and natural progression of neurogenic shock after traumatic spinal cord injury* (**I Ruiz, J Squair, A Phillips,** C Lukac, D Huang, P Oxciano, **D Yan, A Krassioukov**)
- *Transient hypertension after spinal cord injury leads to cerebrovascular endothelial dysfunction and fibrosis* (**A Phillips, N Matin, M Jia, J Squair, A Monga, M Zheng, R Sachdeva, A Yung, S Hocaloski, S Elliott, P Kozlowski,** A Dorrance, I Laher, **P Ainslie, A Krassioukov**)



stem cell review article



BICP funding leads to major grant

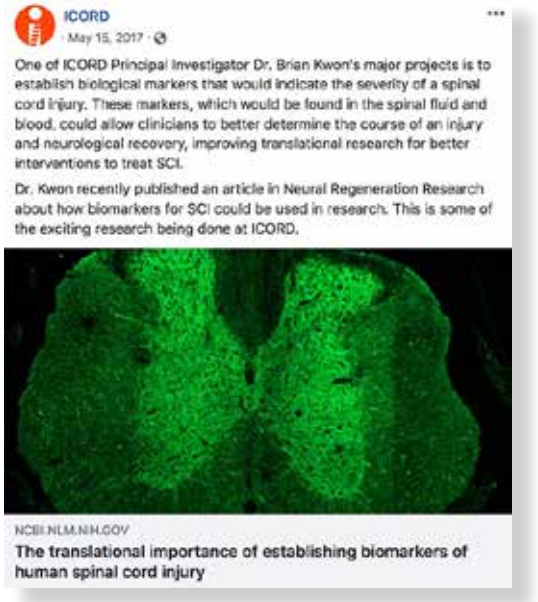
ICORD PIs **Drs. Christ West** and **Brian Kwon** were awarded US$1.926M by the **US Department of Defense** to study how changes to heart function following SCI can impact mobility. Their study, Offsetting cardiac dysfunction in acute spinal cord injury to optimize neurological outcome, will explore how the heart changes immediately at the time of injury and during the first hours-to-days after SCI. They will also investigate whether increasing the function of the heart improves spinal cord blood flow and motor outcomes.

Dr. West originally investigated a new model of changes to the heart following SCI in a project funded by a **BICP Seed Grant**. While it was previously thought that physical activity and gradual metabolic changes led to changes in heart function following SCI, Dr. West showed that some of these changes were immediate, and resulted from damage to the nervous system.

While current practice is to increase blood pressure in all patients with SCI to the same threshold, Drs. West and Kwon aim to demonstrate in their new study that individualized treatment could lead to better patient outcomes.

This research is being funded through a Translational Research Award by the United States Department of Defense Congressionally Directed Medical Research Programs, Spinal Cord Injury Research Program. The TRA specifically focuses on supporting research to accelerate the movement of promising ideas into clinical applications.

biomarkers in sci research



dragon's den success

ICORD
· June 2, 2017 ·

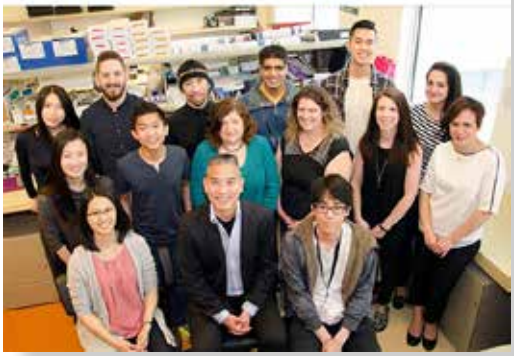
ICORD PI Dr. Aziz Ghahary won a "Dragon's Den" style competition held by Lumira Capital and the VGH & UBC Hospital Foundation! He pitched his new product, MeshFill, to a panel of investors. MeshFill is a liquid skin substitute that can help treat burn injuries and other hard-to-heal wounds. This prize money will go to further development of MeshFill and Dr. Ghahary's goal to improve the treatment of skin wounds.

VCHNEWS.CA
Congrats to Drs. Ghahary and Butskiy for slaying dragons to win research grant! - VCH News

msfhr grants & awards

ICORD
· August 23, 2017 ·

Congratulations to Drs. Andrei Krassioukov, Brian Kwon, David Granville, and Aziz Ghahary, who have received Innovation to Commercialization grants from Michael Smith Foundation for Health Research! http://icord.org/news/2017/08/icord-innovators-msfhr/



ICORD
· July 18, 2017 ·

ICORD is incredibly proud to announce that the Michael Smith Foundation for Health Research has given awards to five ICORDians in its latest round of Scholar and Research Trainee grants! Dr. Heather Gainforth, an ICORD investigator based at UBC Okanagan, won a Scholar Award for her project, "Improving the implementation and impact of evidence-based health promotion interventions in real world settings."

Four ICORDian postdocs also won Research Trainee awards: Drs. Catherine Jutzeler (Kramer Lab), Matthias Walter (Krassioukov Lab), Alexandra Williams (West Lab), and Matthew Zeglinski (Granville Lab).

Visit the announcement to learn about all of the amazing research happening in BC!

MSFHR.ORG
2017 Scholar and Research Trainees: MSFHR funds 53 exceptional health researchers | Michael Smith Foundation...

trainee symposium

ICORD added 11 new photos to the album: 2017 ICORD Trainee Symposium.
June 19, 2017 ·

Last week, we hosted the 7th Annual ICORD Trainee Symposium, a conference organized by students to showcase some of the amazing being done by the next generation of ICORDian researchers. Congratulations to the ICORD Trainee Committee for putting on such a successful event, with 120 attendees, 40 poster presenters, and 10 oral presenters. A special thanks to guest speakers Dr. Jeff Petruska, who traveled from the University of Louisville, and University of British Columbia's Dr. Brett Finlay for their excellent plenary talks.

This event was made possible by support from the Rick Hansen Foundation through the Blusson Integrated Cures Partnership.

admin office relocated

ICORD
· November 14, 2017 ·

You may have heard that Vancouver General Hospital is installing new surgical suites on the third floor of Jimmy Pattison Pavilion. As part of the project to find new homes for all the people currently working in JPP, UBC Digital Emergency Medicine will be moving into the BSCC next month, into the area on the third floor currently occupied by the ICORD admin group. After November 17, you'll find the Admin Team on the third floor, straight ahead when you exit the elevator.
Please note that the Admin office will be closed tomorrow and Thursday while we pack up and move.

Building capacity through the Blusson Integrated Cures Partnership

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 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.

With the support of the BICP, research towards a cure for SCI continued to be accelerated in 2017-18:

- The pre-clinical platform tested two potential treatments involving combinations of existing drugs. One of these may be a possible candidate for a clinical study, and requires further testing. Two animal model studies were undertaken this year—one on dislocation and the other on shear strength.
- The Biobank stored seven spinal cords as well as approximately 11,000 blood samples, and approximately 9,000 cerebrospinal fluid samples from 125 people.
- 11 seed grants were awarded. These Seed Grants provide ICORD researchers with funding support to gather data for novel areas of research, which can then provide the foundation for bigger projects and more funding. Seed grants from earlier years contributed to several new awards in 2017/18. At least ten seed grants from between May 2014 and May 2017 provided data used directly in twelve larger subsequent grants awarded in 2017/18.
- 39 trainees received travel awards to support travel costs to conferences, meetings, courses, or workshops. 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.

Travel grants from earlier years contributed to several new publications or awards in 2017/18:

- In October 2014, **Dr. Andrei Krassioukov r**eceived a $9,998 VISIT Scholarship to invite Kathryn Harman and Kathryn DeVeau of the University of Kentucky to his lab. This collaboration led to two publications:
  - **Squair JW,** DeVeau KM, Harman KA, **Poormasjedi-Meibod MS, Hayes B, Liu J,** Magnuson DSK, **Krassioukov AV, West CR.** "Spinal cord injury causes systolic dysfunction and cardiomyocyte atrophy." ***Journal of Neurotrauma*** 2018 Feb 1;35(3).
  - DeVeau KM, Harman KA, **Squair JW, Krassioukov AV, Magnuson DSK, West CR.** "A comparison of passive hindlimb cycling and active upper-limb exercise provides new insights into systolic dysfunction after spinal cord injury." ***American Journal of Physiology—Heart and Circulatory Physiology,*** 2017 Nov 1; 313(5).
- In April, 2015, **Dr. Carolyn Sparrey** received a $13,012.98 International Exchange Award to visit the California National Primate Research Center at the University of California Davis. Data from the research that she pursued there were used in a successful $143,830 NSERC Research Tools and Instruments Grant awarded in April, 2017.
- In April, 2016, **Dr. Stephanie Willerth** received a $15,000 International Exchange Award to take a sabbatical at the University of Wisconsin. This award protected Dr. Willerth's time for grant writing, leading to a $200,000 NSERC Collaborative Research and Discovery Grant in December 2017.

ICORD's Researchers

Principal Investigators

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

Dr. Paul Bishop | *Clinical Professor, 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, Occupational Science and Occupational Therapy, UBC* | **Focus:** Increasing participation through improved accessible equipment design.

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

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

Dr. Marcel Dvorak | *Professor, Orthopaedics, UBC; Head, Div. Spine, 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, 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, Occupational Science & Occupational Therapy, UBC* | **Focus:** Fatigue, pain, mobility, and employment among the SCI and traumatic brain injury populations.

Dr. Heather Gainforth | *Assistant Professor, Health and Exercise Sciences, UBC Okanagan* | **Focus:** behaviour change; health promotion; kinesiology; knowledge translation.

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

Dr. David Granville | *Professor, Pathology & Laboratory Medicine, UBC; Scholar of the Royal Society of Canada; Associate Director, BC Professional Firefighters' Burn and Wound Healing Research Laboratory, Plastic Surgery, 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, Biomedical Physiology and Kinesiology, SFU; Associate Member, 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. Reza Jalili | *Assistant Professor, 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, Radiology and Urologic Sciences, UBC; Associate Member, 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, 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, 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, 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, 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, Kinesiology, UBC; Associate Director, Education, ICORD* | **Focus:** Training functional community ambulation after SCI; robotic exoskeletons for rehabilitation.

Dr. Cornelia Laule | *Assistant Professor, 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, 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. William Miller | *Professor, 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, Physical Medicine & Rehabilitation, UBC* | **Focus:** Management of cardiovascular health and spasticity after SCI.

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

Dr. W. Ben Mortenson | *Associate 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, Orthopaedics and Mechanical Engineering, UBC; Associate Head – Research, Orthopaedics, UBC* | **Focus:** Evaluation of mechanical parameters to predict the degree of damage from SCI.

Dr. Catherine Pallen | *Professor, Pediatrics, and Associate Member, 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, 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, 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. Lynn Stothers | *Professor, 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, Orthopaedics, UBC* | **Focus:** Minimization and accurate recording of adverse events in SCI population.

Dr. Wolfram Tetzlaff | *John & Penny Ryan BC Leadership Chair in Spinal Cord Research; Professor, 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, Kinesiology, UBC* | **Focus:** Effects of physical activity, exercise, and training on cardiovascular health.

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

Dr. Christopher West | *Assistant Professor, 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.

Investigators

Philip Ainslie | *Professor, School of Health and Exercise Sciences, UBC Okanagan; Canada Research Chair in Cerebrovascular Physiology; Co-Director, Centre for Heart, Lung & Vascular Health, UBC-O.* | **Focus:** Cardiovascular health; cerebral blood flow regulation; cerebrovascular function.

Hugh Anton | *Clinical Professor, Physical Medicine and Rehabilitation, UBC; Clinical Research Coordinator, GF Strong Rehabilitation Centre* | **Focus:** community involvement; fatigue; outcome measures; physical medicine; quality of life; rehabilitation.

Mark Carpenter | *Professor, Kinesiology, UBC* | **Focus:** balance; EEG; falling; fear; postural control.

Anita Delongis | *Associate Professor, Psychology, UBC* | **Focus:** chronic disease; coping; mental health; social support; stress.

Tal Jarus | *Professor, Occupational Science and Occupational Therapy, UBC* | **Focus:** locomotor training; mental health; occupational performance.

Shannon Kolind | *Assistant Professor, Neurology, UBC* | **Focus:** axons; central nervous system; disease; inflammation; injury; MRI; myelin; neurodegeneration.

Tim O'Connor | *Professor, Cellular and Physiological Sciences, UBC* | **Focus:** neural development; regeneration.

Jane Roskams | *Professor, Zoology, UBC* | **Focus:** neural development; olfaction; regeneration.

William Sheel | *Professor, Kinesiology, UBC* | **Focus:** cardiovascular health; exercise; rehabilitation; respiration; sport cardiology.

Andrea Townson | *Clinical Associate Professor and Head, Physical Medicine and Rehabilitation, UBC: Medical Site Lead, GF Strong Rehab Centre; Attending Physician, SCI Rehabilitation Program, GF Strong Rehab Centre* | **Focus:** community involvement; fatigue; high tetraplegia; non-traumatic SCI; outcome measures; physical medicine.

Associate members

Mike Boyd | *Orthopaedic Surgery, UBC*

Romeo Chua | *Kinesiology, UBC*

Jens Coorssen | *Health Sciences & Biology, Brock University*

Kerry Delaney | *Biology, University of Victoria*

Tim Inglis | *Kinesiology, UBC*

Mohammad Javan | *Physiology, Tarbiat Modares University, Tehran, Iran*

Andrew Laing | *Kinesiology, University of Waterloo*

Nan Liu | *Rehabilitation Medicine, Peking University Third Hospital, Beijing, China*

Freda Miller | *Molecular Genetics and Physiology, University of Toronto & Hospital for Sick Children*

Michael Negraeff | *Anesthesiology, Pharmacology & Therapeutics, UBC*

Aaron Phillips | *Cardiac Sciences and Clinical Neurosciences, University of Calgary*

Paul Van Donkelaar | *Health & Exercise Sciences, UBC-O*

Rhonda Willms | *Physical Medicine and Rehabilitation, UBC*

Thank you for reading our 2017-18 Annual Report.

Contributors: Cheryl Niamath, Max Thompson, Adam Mesa, Simon Liem, Lowell McPhail, Matt Sahl

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

Contact us:
ICORD Administration
Third Floor, Blusson Spinal Cord Centre
818 West 10th Avenue, Vancouver, BC V5Z1M9
Telephone: 604-675-8810 | www.icord.org

Vancouver Coastal Health Research Institute
Healthier lives through discovery

THE UNIVERSITY OF BRITISH COLUMBIA
Faculty of Medicine

Like us on Facebook (search "ICORD")

Follow us on Twitter (@ICORD-SCI)