

INTEGRATION

MEDICAL

News for Vancouver Island

EDUCATION

SCIENCE



FACULTY OF MEDICINE



University of Victoria

Summer 2015

More than a stroke of luck, research into cancer drug shows it may help stroke victims

The rapidly growing population in Canada—and worldwide—of people with diabetes has many implications for healthcare, including that diabetics are not only more likely to have a stroke, but when they do, the odds are higher that they will be left with a long-term disability.

Research being done in Dr. Craig Brown's Division of Medical Sciences lab at the University of Victoria, is one bright spot in the battle against post-stroke damage.

Brown, a neuroscientist, and his team of seven researchers, determined that a drug used to fight cancer may improve recovery rates for diabetics who have had a stroke.

"I'm very excited," says Brown, who earned his MSc and PhD degrees at the University of Calgary. "We've known about this for a while. Now we have to build on the research. The hope is that it can be applicable to humans."

Working with mice, Brown and his team, over about 3 years, discovered that following a stroke, diabetic mice have leakier blood vessels in their brains than post-stroke mice without diabetes. The leakier blood vessels caused more proteins and other harmful components of the blood to infiltrate the brain. Normally, such leakage is strictly controlled to protect brain health, Brown says. In their work, Brown's team found that leaky vessels were caused by excessive vascular endothelial growth factor (VEGF) signalling, a process that regulates blood vessels' growth and permeability.

In the last few decades, drugs known as VEGF inhibitors have been developed to inhibit the growth and spread of new blood vessels in cancerous tumours. Seeing the potential, Brown's team researched which VEGF signalling inhibitors used in cancer treatment had been used successfully in the brain. Several drugs were tested in the lab, with Semaxanib (SU5416) eventually being the drug used to lower blood vessel leaking, says Patrick Reeson, PhD candidate in the DMSC's neuroscience graduate program.

VEGF played a major role in the research. "In stroke, a region of the brain experiences very low oxygen due to the interruption of blood flow, thus leading to an increase in VEGF signalling," Reeson explains. "Normally in stroke, the increase in VEGF does not lead to new vessels being formed but is helpful in promoting recovery in the surviving brain. In diabetics this pathway becomes dysfunctional, with over-expression of VEGF signalling, leading to leakier blood vessels."

Use of Semaxanib also brought about another effect in the mice. "We also found it reduced the loss of connections between neurons

and improved the functional use of the impaired limb in mice," Reeson says. "This happened even when the drug was given 2.5 days after stroke. While clot-busting drugs can significantly reduce the damage done by a stroke, they can only be given within a few hours after the initial blockage. Because our treatment works at much later time points, the majority of potential diabetic patients could be eligible. Secondly we found that the same treatment was not helpful in non-diabetic mice."

The results of the 3 years of research were rewarding but measured, Reeson adds. "It really is gradual. For example when we first saw that the drug decreased the leakiness of blood vessels in diabetics, while exciting, the first step was to repeat the experiment several times," he says. "We analyzed this research question from many levels; from the nanometer scale structure of blood vessels, to the molecular level of signalling proteins, to the structural level of neural circuits and blood vessels, and finally to behaviour of animals."

The new goal is to replicate the research with other animal models of stroke and diabetes, with the end goal being humans, Brown says. Meanwhile, he and his team continue their experiments around vascular diseases and how the brain rewires itself to support post-stroke recovery.

Other diseases that might interfere with recovery after stroke include hypertension, obesity and chronic inflammation, Reeson notes. As well, diabetics face a higher risk for many forms of cognitive impairment, including vascular dementia and Alzheimer's disease. "The mechanisms behind these different but interrelated diseases are still debated, but leaky blood vessels are definitely a promising candidate and a current area of research in the lab," Reeson says.

Brown's study, published in the "[Journal of Neuroscience](#)", was funded by the Canadian Institutes of Health Research, Heart and Stroke Foundation of B.C. and Yukon, Michael Smith Foundation for Health Research, Natural Sciences and Engineering Research Council of Canada and Canada Foundation for Innovation.



INSIDE: The latest information on Curriculum Renewal

Award winning faculty and students

Our faculty and students continue to garner external awards in recognition of their outstanding achievements. We offer our warmest congratulations to them all!

Below is a listing of some notable achievements from the past several months:

Senior instructor **Mr. Kurt McBurney** is the 2015 recipient of the **Dr. Bruce Crawford Teaching Award**. This annual award is presented by the third year IMP students to the teacher, preceptor or tutor who has made the most profound and positive impact on their first two years of medical training.

In January, **Year 3 Teaching Awards**, selected by fourth year IMP students based on teaching done during their third year, were presented to:

- **Dr. Heather Robertson** for her outstanding dedication, enthusiasm and respect as a clerkship preceptor.
- **Dr. Ashley Jewett** and **Dr. Shelly Mark** for the outstanding dedication, enthusiasm and respect that these Vancouver Island residents demonstrated in teaching students.
- **Emergency Medicine clerkship** acknowledging the rotation as the most efficient, supportive, and engaging learning environment for clinical clerk medical students.

Dr. Tom Rimmer received UVic's **Distinguished Alumni Award for Medical Sciences**. A family physician in Duncan since 2000, Dr. Rimmer has gained national recognition for outstanding patient care, exemplary contributions to the health and well-being of the community and dedication to family medicine, research and teaching. He helped launch a maternity clinic in the Cowichan District Hospital and he's a mentor for physicians transitioning to electronic medical records.

DMSC postgraduates **Christine Fontaine** and **Leigh Wicki-Stordeur** each received the coveted **NSERC Vanier Canada Graduate Scholarship**. This scholarship is given to students who have achieved exceptional success in their studies and who demonstrate high potential in the pursuit of a Doctoral program in a Canadian university, as well as leadership skills. A high-level steering committee, assisted by an international review committee ensures that the most intelligent and gifted students are chosen as recipients of the scholarships. Awards allow students to fully concentrate on their studies and work with the best research mentors in their chosen field in Canada.

There were a long list of significant awards presented to DMSC students this year:

- **Andrew Boyce** – James A and Laurette Agnew Memorial Scholarship (& Award) & Presidents Research Scholarship
- **Christine Fontaine** – James A and Laurette Agnew Memorial Scholarship (& Award) & NSERC Vanier Canada Graduate Scholarship
- **Alicia Meconi** – CIHR Frederick Banting and Charles Best Canada Graduate Scholarship, David Strong Research Scholarship, James A and Laurette Agnew Memorial Scholarship (& Award) & Presidents Research Scholarship
- **Patrick Reeson** – James A and Laurette Agnew Memorial Scholarship (& Award) & UVic Graduate Award
- **Juan Sanghez-Arias** – UVic Masters Fellowship
- **Stephanie Taylor** – James A and Laurette Agnew Memorial Scholarship (& Award) & UVic Graduate Award
- **Leigh Wicki-Stordeur** – Edythe Hembroff-Schleicher Scholarship, James A and Laurette Agnew Memorial Scholarship (& Award) & NSERC Vanier Canada Graduate Scholarship
- **Ryan Wortman** – CIHR Frederick Banting and Charles Best Canada Graduate Scholarship, David Strong Research Scholarship, James A and Laurette Agnew Memorial Scholarship (& Award) & UVic Graduate Award

IMP student **Jessica Nathan** from the Class of 2016, was one of four recipients of the **HSBC Emerging Leader Scholarship** and one of 20 recipients of the **Wesbrook Scholar**. The Premier Undergraduate Scholarships and Wesbrook Scholars are UBC's most prestigious designations given to senior students with outstanding academics, and leadership and involvement in student and community activities.

[The 2014-2015 IMP student scholarship recipients this year were:](#)

- **Jessica Belle** – Robert W. Ford Scholarship in Medicine
- **Tiell Brown-Bentley** – Albert Hung Chao Hong Scholarship
- **Sarah Campos** – Basil Boulton Scholarship
- **Katrina Genuis** – Robert W. Ford Scholarship in Medicine
- **Talveen Gill** – Robert N. & Patricia Young Scholarship
- **Darcy Good** – Kaare Norgaard Scholarship
- **Aimee Kernick** – Robert W. Ford Scholarship in Medicine
- **Eric McGinnis** – Albert Hung Chao Hong Scholarship
- **Jessica Nathan** – HSBC Emergency in Leader Scholarship, Robert W. Ford Scholarship in Medicine & UBC Webbrook Scholar
- **Matthew Ness** – Robert W. Ford Scholarship in Medicine
- **Kesh Smith** – Robert W. Ford Scholarship in Medicine
- **George Wharmby** – Albert Hung Chao Hong Scholarship
- **Christopher Wright** – Eva Hannah Parlee Scholarship & Robert N. & Patricia Young Scholarship

Curriculum changes on the horizon

There have been many changes in health care and in society since the current MDUP curriculum was last renewed in 1997 including an aging population, increasing burden of chronic disease, growing diversity of the Canadian population, advances in science and technology, and new models of health care delivery. These changes, and others, will continue to impact the practice of medicine.

Why renew our curriculum?

Our current curriculum is a very good curriculum. We graduate exemplary MDs year after year. However, as the only medical school in BC, we must ensure that our medical graduates are able to meet the full spectrum of current and future health care needs of society, including physicians for rural and remote areas and clinician scientists.

In the Association of Faculties of Medicine of Canada (AFMC)'s "Future of Medical Education" project, there were a number of recommendations about the curriculum of medical schools across Canada and how they would have to change to meet future needs. Our renewed curriculum embraces all of these recommendations, in addition to addressing previous accreditation feedback.

What has been renewed?

For the full details on what is entailed in the renewed curriculum visit www.cr.med.ubc.ca. Here is a snapshot of some key renewal items.

Curriculum. The renewed curriculum is made up of fewer, more integrated courses that developmentally spiral content. The spiral-based curriculum means that concepts will be periodically revisited, reinforced, and built upon so that students can absorb information in a more meaningful way. There is also the addition of new courses and a move from Problem-based Learning to Case-based Learning.

IMP's Dr. Kathy Gaul who is Course Co-Lead for MEDD 422 says "the curriculum is based on a defined set of competencies that are necessary to equip students for postgraduate training". Gaul explains that "all aspects of the renewed curriculum, from individual educational activity objectives to year-level milestones, are directed by and towards these overall competencies."

Assessment. The renewed curriculum will be assessed in a coordinated, programmatic way with a defined set of assessment methods (OSCE, Workplace-based Assessment, Portfolio and Written examinations) used throughout the MDUP. In addition to the programmatic approach to assessment, there will be two new assessment methods that haven't been used before in the MDUP: Portfolios and Progress Tests.

When

The launch of Year 1 of the Renewed Curriculum starts August 24, 2015 in Vancouver and then four months later at the distributed sites in January, 2016. This Class of 2019 will be the first cohort to experience the renewed curriculum at every stage of their studies.

Regional Associate Dean Dr. Bruce Wright adds "processes for continuous quality improvement have been embedded into the renewed curriculum. There will be opportunities throughout the coming year to provide feedback on the renewed curriculum. Please participate. This feedback will enable us to make ongoing improvements."

If you'd like more information on the renewed curriculum please contact mdcurric.renew@ubc.ca or visit www.cr.med.ubc.ca.

New simulation centre drives teams together



When the new Centre for Interprofessional Clinical Simulation Learning (CICSL) opens this September, many learners, medical residents, and health professionals will be able to take advantage of a large new learning space in the Coronation Annex at the Royal Jubilee Hospital.

The 3,337 square-foot CICSL contains three simulation labs for patient care, trauma and operating room scenarios, debriefing rooms, observation booths where instructors can manipulate mannequins to simulate medical conditions, offices and change rooms.

"This is a real jewel for the Island," says **Dr. Brian Farrell**, Chief of Emergency Medicine at Victoria General Hospital, a UBC clinical assistant professor and a simulation instructor. "This will be a hub. Lots of great work will take place here."

The CICSL had its genesis more than five years ago with a working group that included UBC's Faculty of Medicine (which includes the Island Medical Program), UVic's School of Nursing and Island Health. In 2012, the feasibility study was completed, followed by the confirmation of the location for the centre and the facility design in 2013. Construction started in August 2014. In addition to UBC Faculty of Medicine undergraduate students (Island Medical Program) and postgraduate residents, UVic nursing students, and other practicing professionals such as nurses, physicians, respiratory technologists, physiotherapists will use the CICSL.

Interprofessional team training is expected to take place. Like the field of aviation, human performance in healthcare is strongly influenced by the situational context (the interaction between the task, the environment, and the behavior of team members). In aviation, more than 50 years of research has shown that superior cognitive and technical skills are not enough to ensure safety: effective teamwork skills are a must.

"We don't want to see this centre sit empty," says Farrell. The CICSL's lifelike training mannequins "never sleep" so Farrell envisions the CICSL being used in the evenings or on weekends.

Dr. Maureen Ryan, a registered nurse with a PhD in Nursing and assistant teaching professor at UVic's School of Nursing, and

Dr. Angela Enright, a retired anesthesiologist, worked with Farrell to design training sessions.

Island Health and the UBC Faculty of Medicine has had a training site in Nanaimo with a well-used simulation lab for several years. That jam-packed, one-room space, has served students well. "I understand great things have been accomplished in the Human Factors Simulation Laboratory at the Nanaimo Regional General Hospital," Ryan says. She's looking forward to working with the CICSL partners and allied disciplines to explore how each profession contributes to the healthcare team in caring for patients.

Ryan is also enthused over greater research opportunities, thanks to the expanded space and equipment in the CICSL. She foresees a mix of healthcare professionals, working together to improve care in areas such as patient transfer, urgent situations, pain control and even in Do Not Resuscitate scenarios. "All learners will have a sense of their role. Before, they studied in silos. Now we can manipulate training and build simulation scenarios that involve healthcare teams – the way care is provided in hospitals," Ryan says.

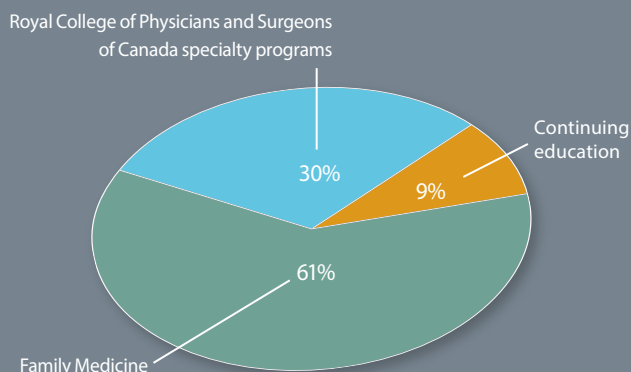
And both Ryan and Farrell are anticipating the revelations coming from the debrief rooms. "The debrief is where learners get insight into their own learning," Ryan says.

Working on mannequins, instead of humans, gives learners the latitude to experiment, but Farrell says that the follow-up discussion between simulations participants is when mistakes and victories will be painstakingly dissected. "The debrief room is where the really important learning happens," he says. Bolstering the debrief discussion will be video content from the training, which as Ryan points out, very effectively highlights missteps.

"Everyone who has used simulation, loved it," Farrell says. "They're begging for more."

In September, their wish will come true.

What the IMP Class of 2015 is doing



IMP graduates for primary care

The Class of 2015 was highly successful in the Canadian Residency Matching Service (CaRMS). A good majority, more than 60 percent of this class, has matched to Family Medicine. The rest of matched students ranked to Royal College programs which ranged from Urology to Internal Medicine.

In order to meet societal health needs, the ratio of generalist practitioners in BC, and across Canada, must be higher than that of specialists which is reflected in the allocation of IMP graduates.



E. Paul Zehr, PhD

Introductions:

E. Paul Zehr

In this issue Paul Zehr, a Professor of Neuroscience and Kinesiology and Director of the Centre for Biomedical Research, tells us about his work as a medical educator and leader on Vancouver Island.

What is your educational background? What is the focus of your research?

My original training was in kinesiology because I was fascinated by the effortless and sublime nature of human movement. That got me interested in the nervous system controlling the movements and took me into the field of Neuroscience where I got a PhD from the University of Alberta in 1998. My current work is focused on understanding spinal cord mechanisms that help coordinate arm and leg movement during human walking and then developing clinical rehabilitative interventions based on that knowledge to improve walking ability after stroke and spinal cord injury.

Why did you choose your area of research?

My experiences in martial arts as an early teen got me into science (that fascination with human movement) and my earliest research projects actually were in the science of martial arts. Soon into my research career I realized I was more interested in helping people who had lost function (like after a stroke) regain abilities through rehabilitation than I was in helping elite athletes get even better. So I have steadily been increasing the clinical content of my research program to help as many people as we can. For example, my earlier studies in people without injury showed us that rhythmic arm swing during walking actually supports neurological function of the legs during walking. This parallels many observations in quadrupeds like our pet dogs and cats—which is interesting all by itself. Importantly, this has a clinical application in post stroke rehabilitation where we take these ideas and are now testing therapies like arm and leg cycling where arm activity can be used to help retrain walking. I like to say that the arms can give the legs a helping hand.

What is the most gratifying aspect of your work as a researcher in this field?

The best parts by far are seeing my trainees progress in their careers and seeing how many lives our work can actually touch and improve.

Are you involved in teaching IMP or other students? Do you have graduate students/postdocs?

Yes, I give several lectures on spinal cord function in the Foundations of Medicine for year 2 and typically tutor the brain and behaviour block. I usually have between 3-6 trainees in my lab at any given time. I really enjoy seeing them experience the wonder you get from measuring activity in the nervous system and then applying basic science knowledge to affect clinical outcomes.

Do you have a favourite quote and/or an inspirational mentor?

My favorite quote is actually from a 16th century sword master named Miyamoto Musashi (1584-1645) "The true science of martial arts means practicing them in such a way that they will be useful at any time, and to teach them in such a way that they will be useful in all things." There's a lot of philosophy contained in very few words there. My most inspirational mentor is actually my own martial arts teacher who lives in Tokyo, Japan. He lives, breathes, and demonstrates the philosophy that deep respect for others should be at the fore of our behaviours at all times. Over the years my work with my teacher has steadily improved and enhanced my own teaching and mentoring practice as a professor and scientist.

Anything else you wish to share?

I think many people actually know this, but I have a huge passion for communicating science to the general public. I am constantly active in this area through writing books, blogs, magazine and newspaper articles and in encouraging other scientists, academics, and clinicians to make public engagement an important part of their own work.

To read more about Zehr go to his website: www.zehr.ca.

IMP graduates for Vancouver Island

IMP graduates, now more than ever, have many opportunities to pursue their residency training on Vancouver Island. Including Pediatrics, which will begin this summer, eight new UBC postgraduate training programs have been introduced since the Island Medical Program began in 2004. These residencies include four specialty training sites (Pediatrics, Psychiatry, Emergency Medicine and Internal Medicine) three Family Practice sites (including Aboriginal) and an International Medical Graduate site. Like the rationale for launching the Island Medical Program, establishing residency training opportunities on the Island increases the likelihood that graduates will eventually practice here.

This year, 15 percent of IMP grads chose to complete residencies on Vancouver Island. Over 60 percent of the class will remain in BC.





Bucket list beckons: Daphne Williams

Daphne Williams

(DPAS) course for first and second year medical students, Williams is gearing up for the next passage of her life.

“Now I can fulfill my bucket list,” says Williams, who retired in June. The Highlands resident has many interests: gardening, kayaking, playing her piano or harp and book club chatter. There will also be more time for her one-year-old grandson and 97-year-old mother.

A 1970 graduate of the University of Victoria’s nursing program, Williams, an Alberta native, later moved into mental health work, abuse prevention and developed resources for high-risk patients.

Daphne Williams has spent over four decades in a variety of nursing, counselling and education settings. After 10 years as a tutor with the Island Medical Program’s Doctor, Patient and Society

Her broad knowledge positioned her well as a guide for IMP students.

“My work involved medicine in a social context,” she says of her DPAS decade. She and her students examined social, cultural, political and economic factors and the effect they had on patients. “You can’t understand a cell if you don’t understand the environment in which it lives,” says Williams, who often referenced her own experiences. “We think of our DPAS group as a homeroom, where people can be who they really are and share their thoughts.”

Williams, who comes from a family of medical professionals, has helped hundreds of future physicians examine issues as varied as patients who use alternative medicine to health concerns of refugees. Through it all, she’s been impressed by the very clever, motivated and well-rounded IMP students and her fantastic co-workers. “It’s been a privilege to be around their minds, a career high and a great way to end my career,” she says.

Her parting wish: “I would like updates from my students.”

Really Good Stuff

The May issue of [Medical Education](#) features not one but two studies by our IMP faculty and students!

In the first article, **Dr. Patricia Seymour** and **Dr. Maggie Watt** explain how they used the Professional Competencies Toolkit to address several questions including how to develop doctors who are self-aware and self-critical in their practice of medicine ([see page 518](#)).



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Image: The centre of a large animate poster culminating the teacher-student partnership workshop results.



2

Then students Teresa Rodriguez and Yi A Liu, and Dr. Kiran Veerapen describe how they explored the teacher-student partnership of giving and receiving of feedback that resulted in developing a fun, new teaching resource ([see page 536](#)).



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