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MEDICINE

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**MAKING CONNECTIONS: THE DJAVAD MOWAFAGHIAN
CENTRE FOR BRAIN HEALTH,
UNITING RESEARCH AND CARE UNDER ONE ROOF**



07

*A cruel disease,
two maverick
approaches*



**DROWNING IS NOT THE
SAME THE WORLD OVER.**

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MESSAGE FROM THE VICE PROVOST HEALTH AND DEAN



When the University of British Columbia graduated its first group of 60 medical students 60 years ago, they received a medical education that conformed to the customs of the day.

Following the widely accepted Flexnerian doctrines, they spent most of their first two years immersed in the biomedical sciences, mostly through lectures and labs. In years 3 and 4, the focus moved to the skills and intricacies of clinical care, almost exclusively in tertiary-care settings.

The Faculty of Medicine was fortunate to have had excellent leaders since the beginning, and produced MDs who were the equals of their peers from more established medical schools in Toronto, Montreal and Halifax. But the Faculty, despite its relative youth, was hardly a trend-setter in those early days: UBC hewed to tradition in an understandable quest to achieve acceptance and recognition. Very little emphasis was placed on integrating science and clinical care; nor was much attention given to the value of teaching medicine in smaller

settings, such as doctor's offices, community clinics or small hospitals.

UBC's approach at the time was a classic example of "youth being wasted on the young," because some shortcomings of traditional medical education were becoming apparent. Medical students, we began to realize, were not necessarily capable of storing vast amounts of abstract scientific knowledge and calling it up a year or two later when needed in caring for patients. Tertiary care settings did not capture many of the dimensions of medical care, or provide students with exposure to many of the patient problems they would experience in their future clinical practice. In addition, medical students were at risk of graduating without a clear sense of their role in a health care team, nor did they have an opportunity to work with and appreciate the value of other health-related professions.

UBC began adjusting to these new trends in the early 1970s, and these adjustments have been gaining momentum in recent years. Clinical education was integrated into the first two years, so that students could begin making connections between science and patients from Day One. Some lecture time was replaced with small group problem-based learning tutorials, to challenge students to move from being passive recipients of knowledge to active participants in their own education. And a new course was created, "Doctor, Patients and Society," to explore the social determinants of health, evidence-based medicine, epidemiology, prevention, ethics and law, multiculturalism and marginalized populations.

And then, as we graduated our 50th class of MDs, we rocketed ahead of

most medical schools world-wide in the creation of a distributed medical education program, moving many of our students and their learning out of Vancouver and into smaller communities and care settings. The timing was particularly auspicious, coinciding with the societal need to give more emphasis to primary care in the education of our students. Around the same time, UBC began to focus on inter-professional training, so that our students will be able to perform effectively as part of a multi-disciplinary team. It's an ethos that has yet to embed itself in our canon, but UBC is working to make sure that happens sooner rather than later.

That's a long way to travel in 60 years – from "youth being wasted on the young" to "ahead of the curve." The challenge now will be to make sure we remain on the vanguard of medical education, through efforts such as the ongoing Curriculum Renewal, or Claudia Krebs' piloting of "flexible learning" for neuroanatomy (see page 14). No doubt, maintaining our position will require constant vigilance: continually monitoring (and forecasting) trends in medical education, the medical profession and the health care landscape; asking ourselves hard questions about our own program; and relying more than ever on the continued excellence of our educational leaders and teachers. But after 60 years of graduating MDs, we now have the credibility – and confidence – to lead the way. ■

*Gavin C.E. Stuart, MD, FRCSC
Vice Provost Health
Dean, Faculty of Medicine*

MAKING CONNECTIONS

THE OCTOPUS-LIKE DESIGN EASILY CATCHES THE EYES OF PEDESTRIANS, EVEN DRIVERS, ALONG UBC'S BUSY WESBROOK MALL: LONG, UNDULATING LINES, BAKED INTO GLASS, REACHING THREE STORIES HIGH.

It's no mere architectural conceit. Those lines, along with the circular nuclei from which they emanate, are a representation of neurons – the brain cells that thrive on their ability to connect with other neurons. Every thought, sensation, reaction and bodily function depends on that connectedness.

The larger-than-life imagery reflects the building's purpose – this is a place dedicated to brain health. But it also serves as metaphor for the ambitions of the people who work inside – this will be a place where research connects with care.

It is the home of the Djavad Mowafaghian Centre for Brain Health, the largest integrated brain centre in Canada. When it officially opened February 27, the building united under

one roof scientific and clinical expertise in neuroscience, psychiatry and neurology.

Named for Vancouver philanthropist **Djavad Mowafaghian** in honour of his \$15-million donation to UBC, the centre is a partnership between UBC and Vancouver Coastal Health. It houses clinics for Multiple Sclerosis, Alzheimer's disease, Parkinson's disease, and mood disorders. It provides space for scientists studying myriad questions, including the genetic underpinnings of neurodegenerative diseases, the brain's recovery from stroke, and the impact of exercise in forestalling cognitive decline. And it serves as an educational and training venue for hundreds of medical students and graduate students, who will benefit from the proximity of research to





patient care, the interdisciplinary networking, and the larger exam rooms to accommodate instructional activity.

“For individuals like me with brain-related conditions, this building exudes hope,” said **Marilyn Lenzen**, a North Vancouver resident, MS patient and participant in UBC-VCH research, and one of several speakers at the opening ceremony. “The atmosphere here is one of restlessness, of not being content with accepted, conventional treatments. I am proud to be part of that process of discovery, and gratified to see that even more patients will now be able to do the same.”

Construction of the \$70-million building was supported by the B.C. government (\$25 million), Industry Canada (\$10 million),

Canada Foundation for Innovation and matching funds from the BC Knowledge Development Fund (\$6.48 million), as well as by \$13.5 million in donations from **Charles Fipke**, the **Townsend family**, the **Borgland family**, and **Rudy North**. Construction began in October 2011.

Located directly in front of UBC Hospital, the 13,709 square-metre centre was designed by Stantec with patients in mind, including short walking distances, simplified way-finding and numerous places where patients can rest or pause.

“It’s especially meaningful for me to be here for this opening today, as I will head home after this event to attend the funeral of a family member, a retired doctor, who died this

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Clockwise from top left: Marilyn Lenzen, an MS patient and research participant, speaks at the opening ceremony; Jon Stoessl and Brian MacVicar, the centre's two new Co-Directors; members of the UBC Opera Ensemble perform at the Djava Mowafaghian Foundation's gala for the centre's opening; graduate students in the Centre for Applied Neurogenetics; one of the centre's light-filled walkways; Djava Mowafaghian. Photos by Don Erhardt and Martin Dee

past week after struggling with Alzheimer's disease," said the Honourable **Judith Guichon**, the Lieutenant Governor of British Columbia. "We know that there's a lot of hard work, and that answers will take time, patience and long hours. But little by little, pieces will be discovered, the keys to unlock the mystery will be found, and we will be able to improve the outcomes for so many."

Brain dysfunction affects one in three Canadians from early childhood to old age, costing more than \$30 billion annually. It's expected to overtake heart disease and cancer as the leading cause of death and disability in Canada by 2020.

A major clinical feature at the DMCBH is an expanded infusion room. Under the supervision of doctors and nurses, MS and Alzheimer's disease patients routinely receive intravenous medication infusions that may last five to eight hours. The new infusion room, with natural light, WiFi and space for family and visitors, represents a significant improvement for patient care. The facility also hosts the largest cohort of a national MS drug treatment trial, led by **Anthony Traboulsee**, an Associate Professor of Neurology.

The centre also will include a brain tissue and DNA bank, a state-of-the-art repository that preserves donated patient samples to help identify genetic risk factors for diseases.

The centre is being steered for its first few months by a trio of Co-Directors from the Faculty of Medicine:

> **Max Cynader**, a Professor in the Department of Ophthalmology and Director of the Brain Research Centre, who conceived and advocated for creation of an integrated brain health centre. Having seen his vision realized, he retires in July.

> **Jon Stoessl**, Professor and Head of the Division of Neurology and Director of the Pacific Parkinson's Research Centre, whose research involves using positron emission tomography to study Parkinson's disease and related disorders, the basis for complications arising from Parkinson's treatment, and the mechanisms of the placebo effect.

> **Brian MacVicar**, a Professor in the Department of Psychiatry, one of the world's pioneers in describing the activity of brain cells – not just neurons, but glial cells, thus contributing to a new appreciation for their essential roles in brain maintenance, protection and repair.

The centre's namesake, Djava Mowafaghian, was born in Tehran and settled in Vancouver in 1987. After establishing a company that developed and managed several office buildings, he created and funded the Djava Mowafaghian Foundation to improve the lives of children through health and education.

In his remarks at the opening ceremony, Mowafaghian drew upon the words of the 13th-century Iranian philosopher and poet Rumi, who wrote that a person can be continually reborn by new ideas.

"It is my hope that scientists working in this centre will be reborn every day – reborn with a new idea – so that thousands of suffering people who enter through the doors of the brain centre with brain disorders, pain, and tears in their eyes can later exit through the discharge doors with shining, smiling faces, hearts and mouths full of gratitude, and arms and legs swinging joyfully and pain-free," he said. "If UBC accepts me as a volunteer, it would be my great honour to be stationed at the discharge door of the brain centre, and to give each cured patient who leaves a long-stemmed rose and hug. The day I am able to do so will be one of the best and most rewarding days of my life." ■

A CRUEL DISEASE, TWO MAVERICK APPROACHES

Neil Cashman and Blair Leavitt have been willing to climb out onto separate limbs – perhaps farther than many colleagues would be willing to go – in their respective efforts to find a treatment for amyotrophic lateral sclerosis (ALS).

Dr. Cashman is parlaying his expertise in prions – a type of protein that, when misfolded, becomes toxic to brain tissue – to pursue the idea that another type of protein, called SOD1, behaves much the same way.

Dr. Leavitt, meanwhile, is challenging the notion that motor neurons are the only key to stopping the disease. He has found evidence that muscles themselves – which are easier targets for therapies – can have an “upstream” effect on motor neurons.

Neither scientist has had an easy time making his case. But they consider the risk worth taking, considering the cruel nature of their target: a disease that causes people to lose control of their muscles, and in most cases, die within three to five years after symptoms first appear.

Dr. Cashman, a Professor of Neurology and Canada Research Chair in Neurodegeneration and Protein Misfolding, says his work (some of it published in March 2014 in the *Proceedings of the National Academy of Sciences*) “represents a paradigm shift, and it’s always difficult to get over that kind of threshold.”

Dr. Leavitt, a Professor in the Department of Medical Genetics, spent three years from the time he first submitted

data to convince a journal (*Nature Communications*) to publish his findings in December 2013.

“Science is self-correcting, but it’s inherently conservative,” he says. “New ideas must have enough data before they oust the old. So, if something is out of the ordinary, it’s going to have to reach a higher bar. The papers that have been the easiest to publish in my career have been the least interesting... Then, when I have something that’s novel and exciting, it’s torture to get it published. But you have to accept that that’s part of the process.”

Underscoring that very point, Dr. Leavitt’s investigation began with an idea that turned out to be completely wrong.

A postdoctoral fellow, Kevin Park, noticed that one of the earliest changes in the hind limb muscle cells of mouse models of ALS was elevated levels of a transcription factor, *MyoD* – a protein that either promotes or represses the expression of other genes.

Dr. Park hypothesized that the increased levels of *MyoD* might be a protective response by the muscle cells. So he designed an experiment to overexpress *MyoD* in the muscles of

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Blair Leavitt.

Continued from
preceding page

mouse models of ALS, thinking this would slow down the disease.

The genes, encapsulated in a benign virus, were injected into the hind limb muscles, where the disease makes its first appearance. But instead of ameliorating their symptoms, it worsened them. The connections between motor neurons and muscles deteriorated more rapidly (known as denervation) and the motor neurons attached to the muscles were more likely to have degenerated.

When they looked at the muscles of the mice with increased levels of *MyoD*, they noticed that normally “slow-twitch” muscle fibres had been converted to the “fast-twitch” variety. Slow-twitch muscles rely on oxygen to contract more slowly but for longer periods; fast-twitch muscles rely on anaerobic respiration to contract quickly, but they also get fatigued sooner.

With that insight, they injected mice with another transcription factor, *MYOG*, which is highly expressed in slow-twitch muscles, to see if they could convert the muscles from fast-twitch to slow-twitch. When they administered *MYOG* gene therapy to ALS mice, it slowed denervation of the target muscles and prevented the death of motor neurons attached to those muscles.

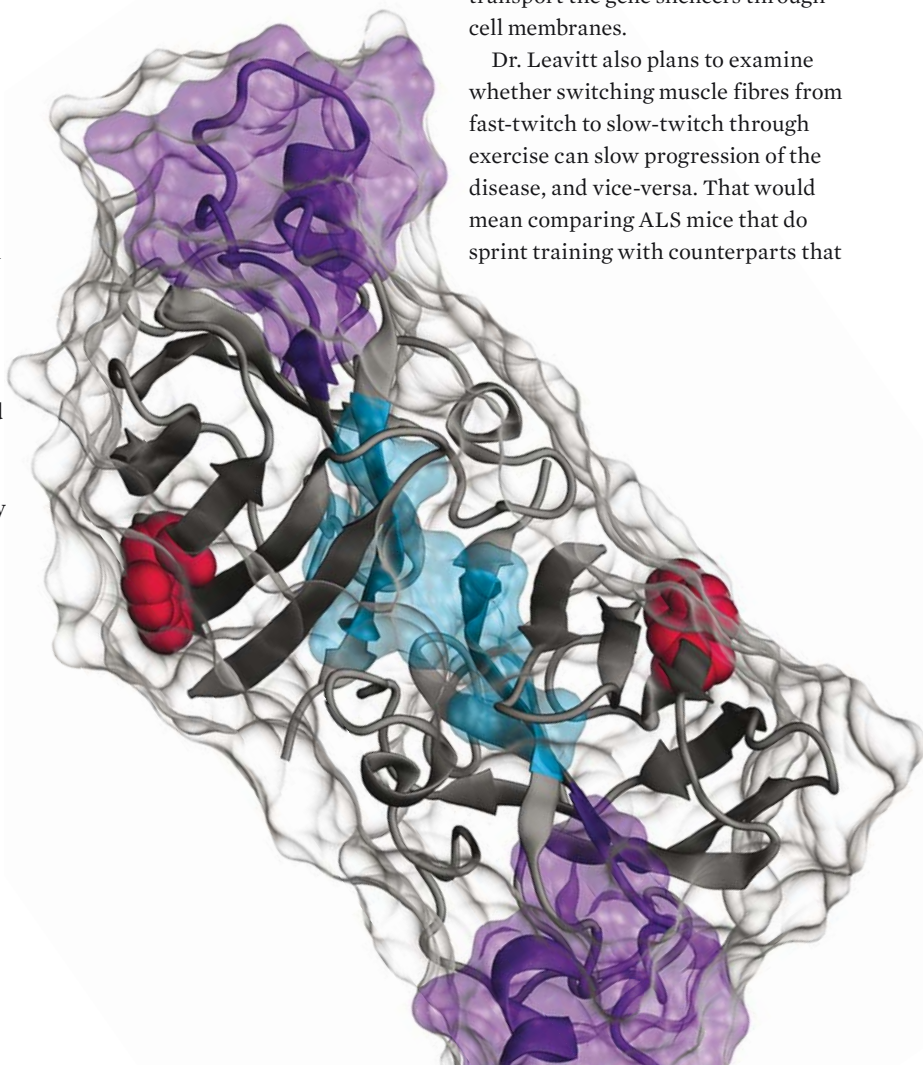
“In ALS we focus on the fact that motor neurons die, and most of the effort in the field has been focused on saving these cells directly,” says Dr. Leavitt, a Principal Investigator at the Centre for Molecular Medicine and Therapeutics, and a neurologist

at UBC Hospital who specializes in Huntington’s disease, ALS, and fronto-temporal dementia. “But motor neurons are just one part of the motor unit, which is like a circuit – a single unit made up of a motor neuron, the neuromuscular junctions and muscle fibres innervated by the motor neuron.

“So by treating cells other than the neuron itself, maybe you can actually protect the neuron. And the muscle is much easier to get to, therapeutically, than the central nervous system.”

Dr. Leavitt has a two-pronged plan to build off this finding. One prong will examine the effect of gene silencing agents that reduce levels of *MyoD*, because reducing expression of a gene is usually easier than promoting gene expression. He has already seen a significant benefit in the function and numbers of motor neurons, as well as survival, using this approach in ALS mice, and hopes to use the lipid nanoparticle delivery system, invented by UBC Professor **Pieter Cullis**, to transport the gene silencers through cell membranes.

Dr. Leavitt also plans to examine whether switching muscle fibres from fast-twitch to slow-twitch through exercise can slow progression of the disease, and vice-versa. That would mean comparing ALS mice that do sprint training with counterparts that





Neil Cashman.

exercise at a slower pace for longer periods. His hunch is supported by studies showing that high performance athletes have a higher incidence of ALS than otherwise similar non-athletes.

“If you do exercise that increases your fast-twitch muscles, you might make yourself more vulnerable to ALS,” he says. “And if you do exercise that increases your slow-twitch muscle fibres, that might be protective – and that could be turned into exercise therapy for ALS patients.”

Neil Cashman’s theory is focused on “template-directed misfolding” – a process by which a protein assumes an abnormal molecular shape, and by that very action, induces like proteins to do the same. It’s akin to a line of falling dominoes, except the action extends in all directions, much the way a virus propagates throughout an organism.

Dr. Cashman has spent much of his career studying how this happens with prion protein, a normally harmless protein prone to template-directed misfolding. When enough prion proteins misfold, they clump together and become toxic, leading most famously to Creutzfeldt-Jakob Disease, a fatal brain disorder in humans, or “mad cow disease” in cattle.

Dr. Cashman, academic director of the Vancouver Coastal Health ALS Centre, thinks a similar process is at work in ALS – not with prion protein, but with a protein called SOD1. If true, it would illuminate a central mystery of ALS. Only 2 per cent of cases can be traced to a genetic mutation that

produces a toxic version of SOD1. So why are motor neurons dying in people without that mutation?

When Dr. Cashman first found evidence of misfolded SOD1 in all types of ALS in 2007, he says it was almost heretical, and he couldn’t get it published in a high-impact journal. Within a few years, other scientists confirmed his findings, but “there is still scientific controversy as to whether SOD1 misfolding occurs in sporadic ALS.”

Even among those who accept the presence of misfolded SOD1 in ALS, Dr. Cashman stands out for flagging it as a final common pathway in all types of the disease, and for arguing that template-directed misfolding makes for an “infinite factory” of misfolded toxic SOD1.

“I’m convinced there is some prion-like process, in which a rogue, misfolded protein propagates by causing similar proteins to misfold in the same way,” he says. “Is it SOD1? I’m 95 per cent sure it is.”

The federal government, through the newly created Canada Brain Research Fund, was intrigued enough by Dr. Cashman’s hypothesis to award him and his collaborators a three-year, \$1.5 million grant to undertake a “molecular dissection” of SOD1 misfolding.

Dr. Cashman, along with Professor of Zoology **Jane Roskams**, will seek further proof that SOD1 misfolding can spread from nerve cell to nerve cell, down the spinal cord to motor neurons.

With **Jasna Kriz** and **Jean-Pierre Julien** at Université Laval in Quebec,

he will measure the effect of two antibodies (one developed by Dr. Cashman and the other by Dr. Julien) that bind to misfolded SOD1, neutralizing it and thus interrupting the domino-like misfolding process. The antibodies will be given to some ALS mice before symptoms appear, and to other ALS mice after the disease has already started to take its toll.

WHEN DR. CASHMAN FIRST FOUND EVIDENCE OF MISFOLDED SOD1 IN ALL TYPES OF ALS IN 2007, HE SAYS IT WAS ALMOST HERETICAL, AND HE COULDN’T GET IT PUBLISHED IN A HIGH-IMPACT JOURNAL.

Two other experiments are focused on proving whether an amino acid component of SOD1, tryptophan 32, is the trigger for SOD1 misfolding. Dr. Julien will breed mice without tryptophan 32 to see whether that deficiency blocks the misfolding process and enables ALS mice to resist disease symptoms. Dr. Cashman will manipulate tryptophan 32 in various ways to determine precisely what makes it a trigger.

“If you lack this amino acid, you don’t have the propagation,” he says. “It could be just a handful of atoms enabling this process, and if that’s the case, it would be a tempting target for a therapy.” ■

A representation of the SOD1 protein being studied by Neil Cashman. The red areas are the amino acid tryptophan 32, which Dr. Cashman believes is the trigger for SOD1 misfolding. The aqua and purple regions are binding sites for antibodies developed by Dr. Cashman. Illustration courtesy of Cashman Lab.



BASIC TRAINING

UBC TEST WAYS TO HELP WHEELCHAIR USERS
MAKE THE MOST OF THEIR DEVICES

By Brian Kladko

Communications Manager, UBC Faculty of Medicine



Clockwise from upper left:
Bill Miller; Communications
Manager Brian Kladko gets
prepped for exercises by
Dr. Miller and his collaborator,
Ed Giesbrecht; Kladko
attempting a ramp descent;
learning from the EPICWheels
app; rolling down a hallway;
traversing a bed of gravel
by repeated "wheelies."
Photos by Rob Shaer



The platform in front of me was only 15 centimetres high. But it might as well have been a 10-metre wall in an army training obstacle course: I was seated in a wheelchair.

Unlike most of the people who use this basement room in G.F. Strong Rehabilitation Centre, I could have easily stood up and stepped over it if I chose. But I wanted to appreciate the challenges posed to anyone who didn't have that choice.

To help me overcome those challenges, I was heeding the advice of EPICWheels, an application running on an electronic tablet on a small tray strapped to my lap.

EPICWheels is an experiment – at least for now – unfolding in B.C. and Manitoba, to determine whether a computer-based tutorial can improve the wheelchair handling skills of older adults.

It's one of two randomized controlled trials led by **Bill Miller**, Professor in the Department of Occupational Science and Occupational Therapy, about the efficacy of wheelchair training. The other, called WheelSeeU, is examining the impact of a training program led by older adults experienced in wheelchair use. The peer-trainer meets two learners (also 55 or older) in six, two-hour sessions, in Vancouver and Quebec City.

Both programs are designed to impart skills in a more cost-effective manner than the gold-standard of individualized training with professional therapists. EPICWheels (**Enhancing Participation in the Community by improving Wheelchair Skills**), is low-cost and convenient for users because it can be done at home. WheelSeeU (**Wheelchair Self-efficacy enhanced for Use**) is more costly, more complicated, and involves more effort by participants, but provides individualized goal-setting and customized task-specific practice.

But either program, in theory, would be a huge improvement over the current situation for most older adults who are prescribed a wheelchair. People who have broken a hip, or are suffering from progressive osteoarthritis, or have not fully recovered from a stroke rarely get the gold-standard treatment. Usually, they receive little or no instruction beyond transferring from the chair to the bed, toilet or car.

"There's a stereotyping going on – 'They're just going to get pushed around by their caregiver, so why waste the resources?'" says Dr. Miller, whose father spent most of his adult life in a wheelchair after contracting polio. "They are also victims of our low expectations – just because they may not be able to get up and down stairs, we write them off."

Compounding that stereotype, there may also be a lack of appreciation for wheelchair mobility skills, which don't come naturally.

It begins with proper ergonomics. After two years in a chair, shoulder joint pain and deconditioning is common, so users must learn how hard to push efficiently and how to relax.

"People push more often than they need to, and they just don't realize it," said **Ed Giesbrecht**, a PhD student in Rehabilitation Sciences, and one of the EPICWheels co-investigators.

Turning isn't difficult, but there are ways to do it better, such as making turns tighter (for navigating smaller spaces) or turning without slowing down (by sliding one's hand along a wall). Keeping a wheelchair straight on a side-sloping sidewalk can be frustrating without proper technique.

Then there are obstacles. Ramps are great, but it takes some strength to go up (leaning forward is key) and going down can be dangerous. And, of course, there are elevation changes – doorways, an elevator that doesn't line up with the floor, even stairs – that are best overcome by popping a wheelie. (Yes, wheelies are not just for showing off.)

In the Wheelchair Skills Testing Room at G.F. Strong, the EPICWheels tutorial led me through that technique with images, video and a pleasant narrator. With that newly acquired knowledge, I attempted going over a short ledge, then traversed several metres of gravel – the crunching sound was disconcerting, but I got through it.

I then tried the 15-centimetre ledge.

"Dude, you're not even close to getting over," the photographer helpfully observed.

Fortunately for my ego, a ledge that high is considered advanced (and isn't even covered by the tutorial).

"You've got to race at it, time your pop, then, once your casters land, you've got to lean forward and offload to get the back wheels up," Giesbrecht told me later.

Both studies, which began last year, are meant to test the feasibility of larger, multi-site trials, while also collecting preliminary results about the actual impact on wheelchair users. Dr. Miller, who is affiliated with Vancouver Coastal Health Research Institute, hopes the studies demonstrate an impact, because too many wheelchair users are socially isolated or overly dependent on caregivers, due to a lack of skills or confidence in using the device.

"If the belief in the ability to learn these skills is there, the more likely the behaviour will happen," he says. "We must find a way, with limited resources, to instill that belief." ■

INVESTIGATIONS+ BREAKTHROUGHS

CHALLENGING THE DIAGNOSIS OF ACUTE MOUNTAIN SICKNESS

Every August, during the full moon, 20,000 Nepalis embark on a hike to Lake Gosainkunda (elevation: 4,380 metres) to perform a ceremony in honour of the god Shiva. Most of them live at about 1,400 metres and make the trek over just a day or two, many of them clad only in saris and flip-flops.

“It’s sort of like a Himalyan Woodstock,” says **Michael Koehle**, an Associate Professor in the Division of Sports Medicine and the School of Kinesiology. “There is lots of alcohol and singing.”

It’s also a great laboratory for studying acute mountain sickness – a spectrum of ailments caused by the lack of oxygen (hypoxia) that includes headaches, vomiting or potentially fatal swelling of the brain or lungs. People with severe AMS can be given extra oxygen if it’s available, but the most reliable and easiest treatment is descending to lower elevations.

Dr. Koehle, who specializes in helping people who spend time at high elevation, has long had qualms about the most widely-used method of diagnosing acute mountain sickness, called the Lake Louise Score Questionnaire. So he co-directed a study during the pilgrimage to assess its reliability.

The questionnaire, valued for its simplicity under austere conditions,

asks people who are feeling ill to rate themselves in five areas – headache, nausea, weakness, dizziness and sleep quality. It was created at an annual conference on hypoxia held in Lake Louise, Alberta.

Dr. Koehle’s team used the questionnaire on nearly 500 pilgrims, and found that the sleep score did not coincide with the answers on the other four parts of the questionnaire. If sleep quality was removed from the questionnaire, the reliability of the overall score increased. His findings were published in January in the journal *High Altitude Medicine & Biology*.

Including the sleep score in the questionnaire, Dr. Koehle says, could lead to some people being treated unnecessarily, and others not getting treatment they need. Another tool for diagnosing AMS covers far more measurements or symptoms – not sleep quality – but calculating that score is difficult without a computer.

“Although people with AMS frequently do have trouble sleeping, that symptom can be affected by many other factors, including noise,

comfort and the mild dehydration that often occurs at high altitude,” says Dr. Koehle, who sees patients at UBC’s Allan McGavin Sports Medicine Centre. “And while the entire questionnaire is based on a self-assessment, rating the quality of your own sleep is particularly subjective. So I would recommend removing that from the questionnaire.” ■



Above: Jordan Guenette, Assistant Professor in the Department of Physical Therapy, examines a trekker for acute mountain sickness. **Below:** Michael Koehle (on right) watches a pilgrim being evacuated due to acute mountain sickness. Photos by Michael Koehle, Jim Rupert



GENETIC DISCOVERY HELPS NEWBORNS BEAT A LIFE-THREATENING CONDITION



A UBC researcher has uncovered a genetic cause of excess ammonia in the blood of newborns, increasing the chances that children can be treated before suffering permanent brain damage.

Hyperammonemia, a medical emergency affecting one in 10,000 infants, results from the body's inability to detoxify by-products of converting proteins into energy. The treatment varies according to the cause, but determining the origin of each case is often a challenge – it could be a rare genetic condition, an infection, or an adverse reaction to other medication, each with its own particular remedy.

Carglumic acid, already used to treat other genetically-caused forms of hyperammonemia, is costly and difficult to obtain. So the standard

response – until now – was to use it only when cheaper treatments failed or when lab tests confirmed the cause through a genetic analysis or detection of a particular biomarker pattern in the infant's blood. This process can take days, even weeks, during which irreversible brain damage can occur.

Clara van Karnebeek, a Clinical Assistant Professor in the Division of Biochemical Diseases in the Department of Pediatrics, used genomic analyses of children on three continents to find a new cause of hyperammonemia: a mutation in a previously undescribed gene that encodes carbonic anhydrase VA, a liver enzyme that plays an essential role in energy production and detoxification.

Dr. van Karnebeek's findings, published in the *American Journal of*

Human Genetics, also demonstrated that carglumic acid can effectively treat this form of hyperammonemia.

“Until now, deficiency of the carbonic anhydrase VA enzyme would not be recognized in a child with hyperammonemia, because this form of the condition wasn't known,” said Dr. van Karnebeek, an Associate Member of the Centre for Molecular Medicine and Therapeutics, an Associate Clinician Scientist at the Child and Family Research Institute, and Principal Investigator in the Treatable Intellectual Disability Endeavor in BC (TIDE BC) at BC Children's Hospital. “Now we can screen for it, and if we find the enzyme deficiency, we know what to do. These children no longer have to languish in neo-natal intensive care units without proper treatment.” ■



Clara van Karnebeek.

A DRUG THAT CAN REPAIR A BIRTH DEFECT

It's easy enough to spot aniridia within the first moments of an infant's life – those born with the genetic condition don't have an iris, the coloured ring that encircles the pupil.

Toddlers with aniridia need eye-glasses to see, sunglasses or darkened contact lenses to protect their eyes from overexposure, and cannot read small text. Their eyes are continually moving, making it difficult for them to focus, and have higher internal pressure (glaucoma), which damages the optic nerve as they get older. They are also prone to corneal damage in their teens and early adulthood. Eventually, most people with aniridia are considered legally blind, and must resort to Braille or expensive electronic aids to read.

Now a team of UBC and Vancouver Coastal Health scientists have developed a potential cure, and in the

process shown – for the first time – that a drug can repair a birth defect.

Aniridia, which occurs in about one in 5,000 people, is caused by the presence of a nonsense mutation – an extra “stop sign” on the gene that interrupts production of a protein crucial for eye development. The UBC-VCH team, led by Associate Professor of Ophthalmology and Visual Sciences **Cheryl Gregory-Evans**, focused on a drug, Ataluren, that is believed to have the power to override the extra stop sign, thus allowing the protein to be made.

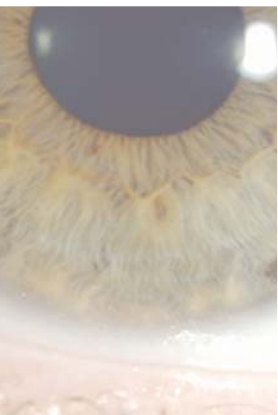
The UBC-VCH scientists initially thought the drug would work only *in utero* – giving it to a pregnant mother to prevent aniridia from ever arising in her fetus. But then they created specially formulated eye drops, which they call START, to two-week-old mice with aniridia, and found that it actually

reversed the damage they had been born with, restoring their vision. Their results were published in December in the *Journal of Clinical Investigation*.

The reversal of tissue damage in young mice fits with the fact that mammals' eyes aren't fully formed at birth.

“We were amazed to see how malleable the eye is after birth,” said Dr. Gregory-Evans, a neurobiologist at the Vancouver Coastal Health Research Institute. “This holds promise for treating other eye conditions caused by nonsense mutations, including some types of macular degeneration. And if it reverses damage in the eye, it raises the possibility of a cure for other congenital disorders. The challenge is getting it to the right place at the right time.”

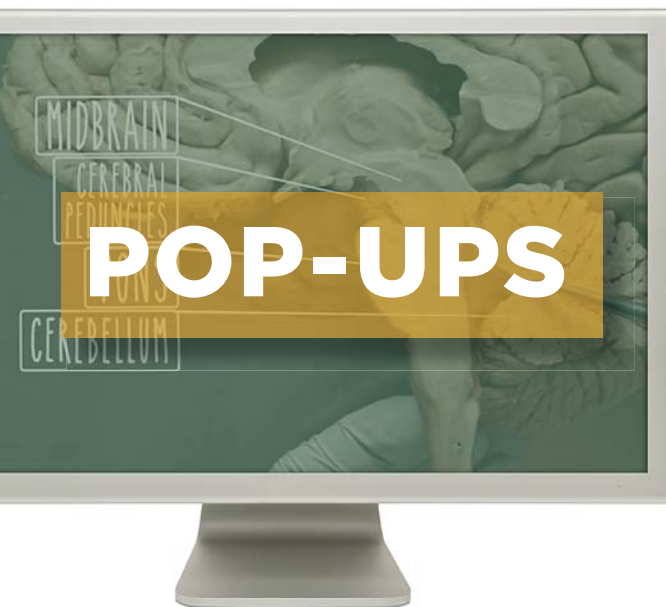
A small clinical trial with children and teens is expected to begin this year in Vancouver, the U.S. and the U.K. If START is proven to be safe and effective, children with aniridia would use the drops twice a day for the rest of their lives. ■



Top: A normal eye. **Bottom:** An eye of someone with aniridia. Photos courtesy of Kevin Gregory-Evans

Cheryl Gregory-Evans. Photo by Brian Kladko





AND CLOSE-UPS:

TO PREVENT COGNITIVE OVERLOAD, AN INSTRUCTOR DISSECTS NEUROANATOMY, AND RADICALLY REASSEMBLES IT

A gentle chime sounds over the PA system of the Multi-Purpose Lab, signaling the start of another weekly learning session in Brain & Behaviour.

But instead of starting off with an information-laden lecture, UBC's second-year medical students log in at their computers to answer a few multiple-choice questions, including: "The primary visual area of the cortex is supplied by..." and "A lesion of the right optic tracts will result in..."

On three of the questions, 90 per cent or more of the students answer correctly; on the fourth, 69 per cent select the right response.

Claudia Krebs is pleased. Though it's just one small piece of evidence, her experiment in flexible learning seems to be working.

A Senior Instructor in the Department of Cellular and Physiological Sciences, Dr. Krebs has dramatically revamped the neuroanatomy component of Brain & Behaviour. The re-working was one of 19 projects selected for funding by UBC's Flexible Learning Initiative, which aims to give

students more choice in when, where and how they learn.

Dr. Krebs sought to repair what she considered the major flaw with neuroanatomy: Students were being bombarded with information through lectures, not absorbing much of it, and getting very frustrated in the process.

For years, Dr. Krebs suspected that her efforts to make her lectures more approachable weren't overcoming students' "neurophobia" – the fear of learning about the brain and nervous system, in all their complexity.

"I've been trying to tackle this for a long time," she says. "I introduced more clinical examples, and my fellow teachers complimented me on how I presented it. But when a former student recounted how she would leave each week's lab in tears, I realized it wasn't enough. I had to come up with some way they could manage it better, so I could lead them through it step-by-step, but at their own pace."

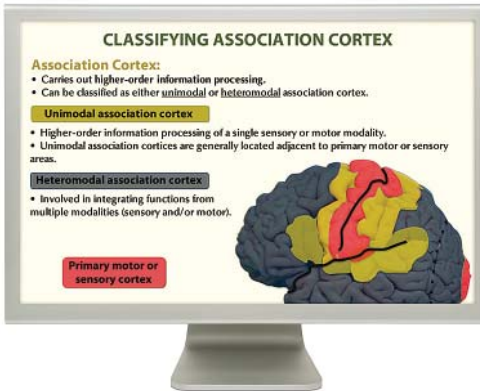
Supported by a \$60,000 grant from the Flexible Learning Initiative, Dr. Krebs sought to abandon the structure of the weekly lab: a 20- to 30-minute lecture and anatomical dissection led by her, followed by students using specimens

at their tables to go over what she had just covered – identifying different parts, remembering their respective functions, seeing how they related to other parts.

She also wanted to slim down the thick, didactic lab manual, which was essentially a softcover textbook, and make it into more of a workbook. And the information the manual once imparted would become more interactive, animated, even more stylized.

Taking advantage of the dynamism and eye-candy appeal of digital graphics, she and her team – including people from the Department of Cellular and Physiological Sciences, MedIT, and UBC's Centre for Teaching, Learning and Technology – created a set of online slides for each lab.

With each click, a picture appears with an explanatory block of text, followed by pop-ups pointing to various parts of the brain and spinal cord. Many of the slides incorporate anatomical watercolours from the 1950s by Nan Cheney, a painter, confidante of Emily Carr, and the Faculty of Medicine's first medical illustrator. Practice slides ask students to drag and drop labels to various parts or to answer multiple choice questions.



Clockwise from top left: Claudia Krebs (wearing her great-aunt's pearls) in one of the instructional videos; Dr. Krebs explaining one of the finer points about the spinal cord; pop-ups in one of the online modules delineate parts of the brain.

Photo by Martin Dee

Still other information is conveyed through lecture and dissection videos. But no stiff instructors droning on at a podium here – the videos exploit various camera angles, close-ups, soft lighting, and science-y mood music.

Riffing on the Cheney illustrations, the videos have a deliberate retro style. Professor **Wayne Vogl** draws on a chalkboard (or points to parts of a live human model) while he talks, and Dr. Krebs wears her great-aunt's pearl necklace while dissecting a spinal cord.

"THE TALKING HEAD IS NOW ON THE WEB, SO REAL INTERACTION CAN HAPPEN IN CLASS... AND THAT, FOR ME, IS WHAT UNIVERSITIES ARE ALL ABOUT."

—CLAUDIA KREBS

Students are expected to go through the modules and videos before each lab, taking as much time as they need and going back over something that isn't quite catching, so they avoid what Dr. Krebs calls the "cognitive overload" of her lectures. (All of this material is available on neuroanatomy.ca)

When students arrive for that week's lab, they complete the short "readiness assessment test" (or RAT), then break into small groups to answer questions from the lab manual as Dr. Krebs and other instructors roam the room. So the initial, nuts-and-bolts learning is done at home, while the reinforcing "homework" done in class.

"The talking head is now on the web, so real interaction can happen in class," Dr. Krebs says. "They are prepared, so we can go in-depth and explore their questions. And every student will have different questions. That, for me, is what universities are all about – it's about the exchange, not me reading to them."

Although the students experiencing these revamped neuroanatomy lessons have little basis for comparison, they know it's a new approach, and most of those interviewed say it's working for them. **Martha Balicki's** comments were typical:

"I'm more engaged. I'm learning it, as opposed to letting it wash over me and then panicking when I realize I don't understand it. By asking me questions and forcing me to think through the answers, they're making me apply the learning. It's a lot more

work on the front-end, but I think it will be a lot less work on the back-end when it comes to exams."

A more quantifiable measure of the new paradigm will come from student surveys, and exam results. One particularly telling indicator for Dr. Krebs will be how students fare on the questions about bladder function.

"In past labs, we didn't even get to bladder function, or it would be tagged on at the end, when everyone was exhausted, so it came down to, 'OK, the bladder doesn't work when you have a spinal cord injury,'" Dr. Krebs says. "Every year we include questions about it, and no one gets it right, even though we tell them they need to know it. They weren't learning it. This year, from my interactions with students in the lab, I'm almost certain they will perform well on those questions, because they have an understanding of it."

But Dr. Krebs already has one positive, and surprising, result: For the first time, she has won the Year 2 Teaching Excellence Award.

"I was expecting my ratings to drop! That's usually what happens when you implement curricular change," she says. "I guess this was one change that was long overdue." ■

OSCAR CASIRO'S VICTORIA LAP

The Faculty's first Regional Associate Dean, Vancouver Island, steps down after 10 years of nurturing medical education and training from Victoria to Port McNeill.

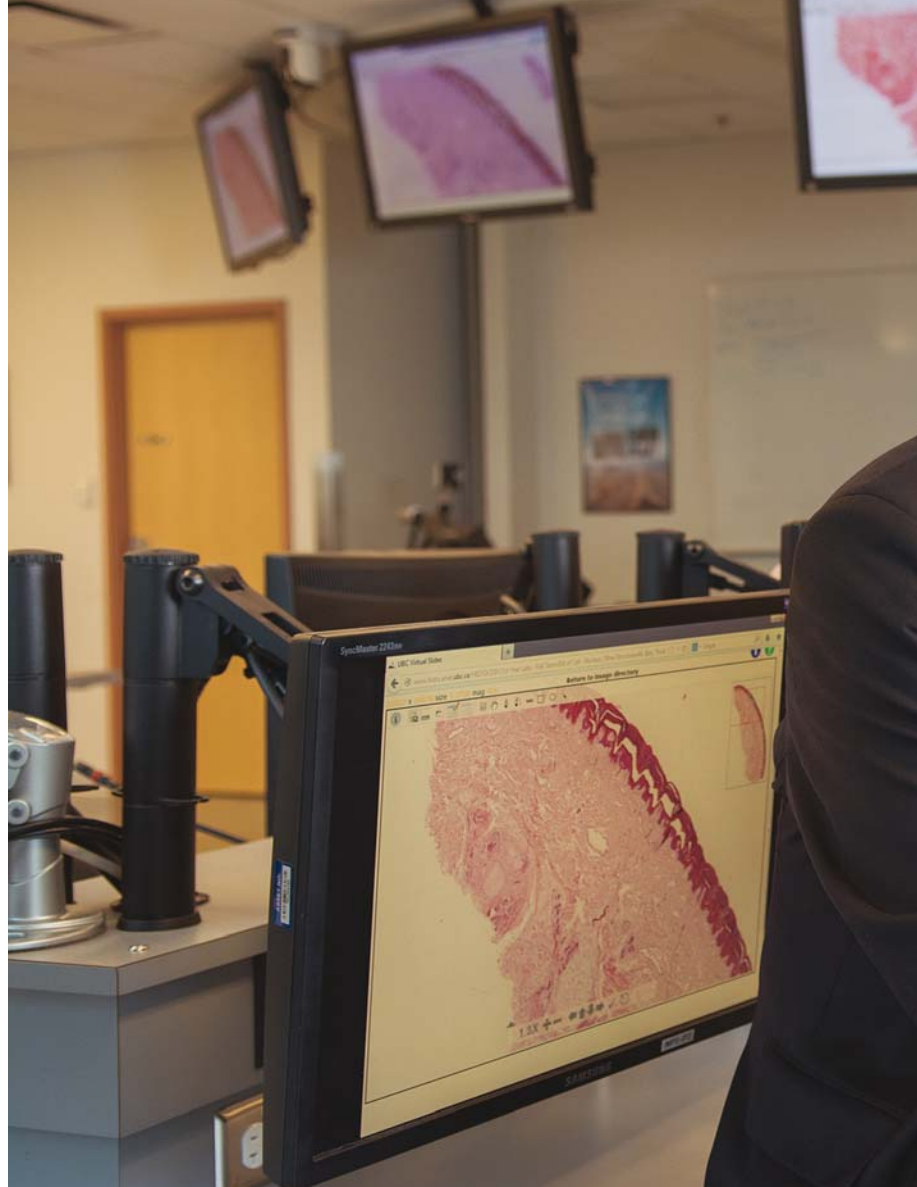
Like many a job candidate, Oscar Casiro had to meet – and try to impress – a whole array of people when interviewing to be the first head of the nascent Island Medical Program. But one of those encounters is as vivid for him today as it was 11 years ago.

“They put me in a room with 50 physicians in Victoria and left me there, while one person from the search committee sat in a corner taking notes,” he recalls. “We sat there for two hours. The doctors didn’t try to persuade me that this was a good place to come. In fact, they were giving me all the reasons why this wouldn’t work and why I shouldn’t come.”

The head of the search committee, **Joanna Bates**, then the Senior Associate Dean, Education, met him at the Vancouver seaplane terminal upon his return from the Island. She had heard about the exchange. “Have we lost you?” she asked.

“This is like mission impossible!” he told her. “But that actually makes it more interesting!”

That reaction, as much as anything, reveals why Dr. Casiro was selected to lead UBC’s expansion of undergraduate medical education and residency



training to Vancouver Island – and why he was so good at it.

“He had vision,” said **Kathy Gaul**, the Foundations of Medicine Course Director and a University of Victoria Associate Professor who helped plan the Island Medical Program. “He wasn’t afraid of stepping into the unknown.”

At the time, Victoria was a magnet for physicians seeking to practice tertiary care medicine without having to be part of a teaching enterprise. So a large portion of the medical community was openly skeptical, and even hostile, to bringing medical education program to the Island.

“We were quite negative about all this,” acknowledges **Ian Courtice**, an anesthesiologist who was President of

the Medical Staff Association for South Island at the time. He and other doctors feared that teaching would be an untenable burden on an already overloaded health care system. They dreaded the politics and the hierarchy. And they resented that clinical faculty traditionally didn’t receive much recognition or compensation for their efforts.

But Dr. Casiro, in addition to his willingness to take on a “mission impossible,” had other attributes going for him, starting with the fact that he was not from here. A native of Argentina, he did a pediatrics residency in Israel before moving to Manitoba, where he became an associate dean.

Dr. Casiro made the most of that opportunity. Having lived in three countries, with three languages and

Oscar Casiro.
Photo by University of
Victoria Photo Services



month. “Oscar is better at creating win-win situations than a lot of people in medical politics or administration. Most people say they aren’t entirely sure how he does it, but he seems to get what is needed for the medical students and residents.”

Today, the fruits of all of those attributes and hard work are obvious. The Island Medical Program is now firmly ensconced in the academic and medical community. Its graduates perform as well – and sometimes better – than their peers at the Faculty’s other sites. The Island is now home to about 100 Island-based medical residents, with another 100 rotating through each year. Departments that once refused to teach students are now clamoring for them. The head of undergraduate education for UBC’s Department of Psychiatry is based in Victoria, a testament to the decentralization of authority. And UVic’s Graduate Program in Neuroscience, which Dr. Casiro nurtured as Head of the university’s Division of Medical Sciences, has grown to 30 students.

During a sabbatical starting in July, Dr. Casiro, 64, plans to document the lessons UBC learned from its experience in distributing medical education, through a visiting position at the Faculty’s Centre for Health Education Scholarship. Beyond that, he is unsure – he will continue to live in Victoria with his wife, Malca, though he might spend more time in Vancouver, not only to help with educational issues, but to enable his successor, **Bruce Wright**, to make his own mark.

At the welcome event for the newest group of Island Medical Program students in January, Dr. Casiro quoted the words of Ralph Waldo Emerson: “Do not go where the path may lead, go instead where there is no path and leave a trail.” The words were meant for the students, but he might as well have been talking about his past decade’s work. ■

three cultures, he knew how to navigate unfamiliar terrain.

“You have at least three cultures here – the UBC Vancouver culture, the UVic culture and the Island medical community culture,” he says in the office, in UVic’s Medical Sciences Building, that he will vacate this summer. “And they all speak different languages. I was confident I could bridge those differences, because I had done it before and wasn’t fazed by it.”

Dr. Casiro also brought an instinctual knack for negotiating and finding common ground among various parties. He invested a lot of his time employing his gentle demeanor in one-on-one meetings, lunches and dinners, many of them obvious efforts at making peace, allaying fears and rallying support.

“Oscar works tirelessly at making relationships,” says **Jatinder Baidwan**, the Executive Vice President and Chief Medical Officer of Island Health, and a Clinical Assistant Professor in the Department of Family Practice. “He gets out there and gets to know people. When he asks you to do something, a lot of people feel really uncomfortable saying ‘no’ to him. They find the time to do it. They know he’s doing the right thing, so they want to help him. And that’s incredibly powerful – far more powerful than a stick or a carrot.”

“You know what he wants, but he doesn’t put his immediate needs ahead of yours,” says Dr. Courtice, who became a Clinical Assistant Professor, and whose daughter is graduating from the program this

WHERE

DROWNING

IS AN EPIDEMIC, UBC ATTEMPTS “IMMUNIZATION”



Drowning is not the same the world over.

In Canada, a typical drowning victim is an adolescent or young adult male who suffers a mishap while swimming or boating. Often, the victim had been drinking.

In Bangladesh, the average age of a drowning victim is 3 years old. In most cases, the young victims were not playing, but simply fell into one of the many bodies of water – some stagnant, others flowing – that cover much of the rural landscape. Often, the only way to navigate around these ponds and streams is on narrow paths that fall off sharply to either side. Other

times, the most convenient thing to do is to walk across slippery, narrow poles that serve as footbridges.

The incidence of drowning, not surprisingly, is as starkly different in the two countries as the circumstances under which it happens. Two Canadian children per 100,000 die every year from drowning. In Bangladesh, it's 55 per 100,000.

“The drowning fields” – that's how **Steve Beerman**, a Clinical Associate Professor in the Department of Family Practice, describes it.

To Dr. Beerman, a family physician in Nanaimo, childhood drowning in Bangladesh and other low-income countries is more than a tragedy – it's a public health problem. And he has a plan for cutting the death toll by half.

With a \$100,000 grant from the federal government's Grand Challenges Canada program, he and his Bangladeshi collaborators will seek to reduce the rate of drowning in one village. If successful, they will seek to scale it up to encompass a large portion of the country.

The project was among 83 chosen to receive Phase I, \$100,000 grants from Grand Challenges Canada's “Stars in Global Health” program. After a year, they will be eligible to apply for Phase II grants, which can be up to \$1 million. The projects, submitted by university researchers, social entrepreneurs, private companies and non-governmental organizations, were selected through independent peer review.

NINING

FROM LIFEGUARD TO WATER SAFETY LEADER

Left: Two Bangladeshi children practice a drowning rescue technique. Photo courtesy of Centre for Injury Prevention and Research, Bangladesh

Dr. Beerman, the only family physician who applied in this year's round, has spent four decades preventing deaths in the water.

He was a lifeguard and swimming instructor in the Sunshine Coast town of Powell River, where he saved half a dozen people from drowning.

He went on to save more people from drowning as an emergency room physician in Nanaimo. Those experiences led him to question some of the standard protocols of medical care for near-drowning victims, both at the scene and in hospitals. He began researching the subject, writing articles for medical journals and giving presentations at conferences.

Eventually, he ascended to leadership positions in the field of drowning rescue and prevention – President of the Lifesaving Society of Canada, the scientific chair of the World Water Safety Conference and president of the International Life Saving Federation.

Below top: A swimming lesson in one of the bamboo enclosures. **Below bottom:** Children in a makeshift day care centre, being kept safe from everyday hazards. Photos courtesy of Centre for Injury Prevention and Research, Bangladesh

In the process, he came to appreciate the disparities in drowning. In Canada, it's a rarity. But in countries like China, Vietnam, Thailand, the Philippines, and Bangladesh, it's a fact of daily existence and the leading cause of child mortality. Drowning is the main reason that some countries – including Bangladesh – will not meet the United Nations' target of cutting childhood mortality by half by 2015.

"The public health movement has had enormous success in reducing infectious diseases and diarrheal illness in the developing world," says Dr. Beerman, the Site Director for UBC's Family Practice training program at Nanaimo Regional General Hospital. "But as deaths from those ailments declined, it exposed the tremendous toll that drowning continues to take in those countries."

TAILORING A SOLUTION TO THE CULTURE

As risk-laden as Bangladesh's landscape is, Dr. Beerman and his Bangladeshi collaborators will also be contending with a set of cultural and social challenges, including a deep aversion to going in the water, and a lack of adult supervision of young children during the day.

Scaffold-like bamboo structures will be mounted along the edges of ponds so that children will learn to swim not in a pool, which is regarded as a Western luxury, but in the water they skirt every day.

They will be taught basic survival skills – how to keep their heads above water for 30 seconds, how to propel themselves 10 metres, how to upright

themselves – in three half-hour classes, eight kids at a time.

Dr. Beerman hopes these lessons will reach 1,000 children between ages 6 and 14, and that the survival skills might spread to their peers – what public health experts call "herd immunity."

"We believe this is an immunization against drowning for life,"

Dr. Beerman says.

For children too young for those lessons, the project has another major component: creating a system of backyard day



Steve Beerman.

care centres, enrolling 1,000 1- to 5-year-olds six mornings a week.

Being kept under the watchful eye of an adult, in a secure area for a large part of the day, would be a dramatic change for most Bangladeshi children – and, Dr. Beerman believes, would dramatically reduce their contact with the bodies of water surrounding them, as well as other potential hazards, such as poisons or downed electrical wires. The grandmothers enlisted as day care centre operators would be taught about safety and child protection.

"The thing that binds both of these arms together is enhanced safety awareness," Dr. Beerman says.

The team also will raise awareness about safety by convening village meetings after each drowning, facilitated by a doctor, to discuss why it happened and how it could have been prevented. The meetings will be held in the evenings, Dr. Beerman says, because in Bangladesh's patriarchal culture, men have disproportionate influence to make changes.

"This is the way Bangladeshis share knowledge," Dr. Beerman says. "But delving into this issue, in this forum, will be an interesting cultural shift for them. Drowning deaths are rarely reported to civic authorities due to a number of local cultural issues and a lack of a death registry. So discussing child drowning deaths will be an exercise in community trust." ■



LOST AND FOUND IN MEDICAL SERVICE

By Mercedes Chan

I am my father's daughter. From the age of three, I accompanied him to BC Children's Hospital, where he worked as a pediatric oncologist. The hospital's emergency room, call rooms and doctors were regular fixtures in my childhood.

To those who knew me, it was not surprising that I would follow in my father's footsteps. I was inspired by his love of medicine, but perhaps even more by his and my mother's dedication to community service and social responsibility. My parents would make regular trips to China to provide medical care and education in developing cities and rural villages. Be it battling altitude sickness on our way to see patients near Tibet, or hiking hours to a clinic site only to be greeted by hundreds of villagers who had traveled even longer distances to see us, I loved meeting these challenges in attempts to reach the unreachable.

In my third year of my pediatrics residency, though, something changed. The growing identity of "Dr." grew heavy on my shoulders. Whether it was coping with the increasing demands of training, or adjusting to

the reality that I would soon be an attending physician, I felt my roles and responsibilities as a burden, and attempted to escape. In an act of rebellion, I went on a non-medical service trip to Rwanda to do everything but see patients. I cleaned washrooms, visited street kids, even worked in a village to make mud bricks for a cowshed.

But one day, while visiting the Genocide Memorial Center in Kigali, I realized I had other lessons to learn. The stories of genocide victims told of dreams and lives cut short, including that of a 12-year-old girl whose life ambition was to be a doctor. This was a reality she would never see, and one I was callously rejecting. Later, as I visited tuberculosis clinics, entire villages affected by HIV, and orphanages filled with children of the genocide, I quickly realized that I was being equipped with knowledge and skills that were not to be wasted.



I completed my residency, then a fellowship in pediatric rheumatology at UBC, when my parents invited me to join them for a trip to Thailand and Myanmar. And it was in Myanmar that another 12-year-old girl reinforced my commitment.

Mae Ai had travelled from the Laotian border, 11 kilometres away on rural backroads, to seek help for ankle pain and swelling she had suffered for two years. Our interpreters found her complaints laughable because she looked so well, but I quickly

I HAD LOST SIGHT OF MY PURPOSE WHEN I BECAME TOO FOCUSED ON MYSELF.

recognized she had juvenile idiopathic arthritis, and needed treatment. At that moment, I was grateful for the training that allowed this girl to have a diagnosis as well as a chance at a better life.

I had lost sight of my purpose when I became too focused on myself – a common pitfall amongst the busyness of medical school, training and establishing a practice. I now seek to embrace, rather than dread, the responsibility that comes with a medical education. My experiences in global health have strengthened my sense of purpose. For this, I see no better way of showing my gratitude than by giving back to the communities I serve – here in B.C., and overseas.

Should I ever lose my way again, I know I have to do only this: Follow in my father's footsteps.

Mercedes Chan is a Clinical Fellow in the Department of Pediatrics and a pediatric rheumatologist at BC Children's Hospital. Through the Faculty of Medicine's Centre for Health Education Scholarship, she is earning a Master of Health Professions Education from Maastricht University. ■



Far left: Mercedes Chan with one of her young patients in Myanmar. **Centre:** Dr. Chan at BC Children's Hospital, where she works. **Right:** Dr. Chan examines a child in a Myanmar village clinic.



SOLVING THE RIDDLE OF PARKINSON'S DISEASE, ONE BOWL AT A TIME



Marg Meikle liked getting answers.

As CBC Radio's "Answer Lady," she researched random questions from listeners – How much does your head weigh? What is ear wax? Why are bald men more attractive? – and relayed fact-filled responses from the country's top experts on the nationally broadcast Gabereau Show.

Then she encountered a question that proved daunting, in more than one sense: What is the cause and cure of Parkinson's disease?

The question was personal – in 1998, she was diagnosed with the neurodegenerative disorder.

Upon learning that there was no known cause nor a cure, Meikle grew determined to help scientists find the answers. Thus was born Porridge for Parkinson's, a string of oatmeal-laden fundraising events across North America.

When she passed away in December 2013, she left behind a ritual that became the most reliable source of funding for the Pacific Parkinson's Research Institute, the foundation that supports UBC's Parkinson's research.

"Her contribution was so much more than money – she built a real grassroots community around Parkinson's," says **Jon Stoessl**, Director of the Pacific Parkinson's Research Centre at UBC, who also was Meikle's neurologist, fan and friend. "Her house was packed with people who really cared about her. With enormous grace and vigour, she chose to better the lives of others. She captured the imagination of people in Canada and in other countries."

Meikle and husband **Noel MacDonald** didn't know their porridge fundraisers would prove so popular when they started them at their Kitsilano home in 2001, borrowing the idea from United Church fundraisers. But their homespun events spawned several others across Canada and two in the United States, becoming what Meikle jokingly described as a "bowl movement."

Every dollar Meikle raised became three dollars through matching funds from the foundations she wooed, generating \$1.6 million for UBC research.

"She could turn a bag of oats into \$200,000," says **Dale Parker**, Chair

of the Pacific Parkinson's Research Institute. "It's quite an achievement."

Their November 2013 event drew 270 loyal friends, acquaintances and newcomers attracted by Meikle's very public battle – she talked about it with any media outlet that would listen. She also fought for improved advance care planning.

"You'll never find another Marg," Parker says.

Meikle energetically researched porridge, of course, and their home boasts a collection of Scottish wooden spurtles, long wooden rods used to stir delicate oats without breaking them up.

"We saw donations go up significantly when we added single malt Scotch as a topping for the porridge," MacDonald says.

MacDonald and the couple's 16-year-old son Mac will continue hosting the breakfast, which now includes Mac's add-on, "Pennies for Parkinson's," in which participants deposit coins in a large pail. He gets 300 to 400 pounds of coins – about \$1,500 – per event.

With the donations Meikle and her family raised, UBC created the Marg Meikle Professorship in Parkinson's Research, also known as the "Porridge Professorship," now held by **Silke Cresswell**, an Assistant Professor of Neurology.

"Marg loved the search for knowledge," MacDonald says. "That's what her whole career was about – talking to people smarter than her and searching for answers. Working with the researchers at UBC was really special to her. Putting together that professorship and showing what a small community can do – that's the legacy Marg wanted to leave behind." ■



Left: Noel MacDonald and Marg Meikle at one of their Porridge for Parkinson's events. Photo by Dina Goldstein, courtesy of Canadian Living. **Above:** Meikle in 2011.

A SELF-FUNDED EFFORT AT ACADEMIC ENRICHMENT

For more than two decades, a contingent of radiology residents and newly-appointed radiology specialists have been coming from across Canada – and beyond – to spend a year or two at Vancouver General and UBC Hospitals.

They are drawn here to learn even more, through one of seven subspecialty fellowship programs – all of them made possible by the generosity of UBC radiologists.

Vancouver Imaging, the group that provides radiology services to these hospitals, has been quietly funding the fellowships since the 1990s. Their contributions total at least \$16 million, making the group among the Faculty of Medicine's top contributors.

Their tradition began with a handful of fellows, in a bid to position the Department of Radiology as a leading academic hub for teaching, research and innovation. This year alone, they

committed \$2.2 million to fund 27 fellows in nearly every subspecialty.

"They place us at the tip of the spur in terms of new thinking," says **Hugue Ouellette**, CEO of Vancouver Imaging and a Clinical Assistant Professor. "We teach the fellows, but there is a lot of reciprocal learning. Fellows ask questions and challenge your understanding."

Vancouver Imaging – comprised of 24 radiologists and even more fellows – puts an emphasis on technological advances and publishing papers. Because of their diverse backgrounds, the fellows help cross-fertilize that academic environment, bringing in new knowledge and ideas. For example, **Patrick Mc Laughlin**, from Ireland, helped demonstrate the viability of a new technology that dramatically lowers the radiation dose of CT scans.

"There is a longstanding tradition of clinical excellence and academic achievement in Vancouver," says Dr. Mc Laughlin, one of the Emergency and Trauma fellows, lured by word-of-mouth and interviews with faculty. "I had no doubt that the Emergency and Trauma Fellowship I

Radiology Fellow Patrick Mc Laughlin and Hugue Ouellette, Clinical Assistant Professor and CEO of Vancouver Imaging, in the Trauma Radiology Reading Room at Vancouver General Hospital.
Photo by Rob Shaer



am completing was the best program of its kind in North America."

"Thanks to these varied fellowships, UBC has become a training ground for radiologists from all over the world," says **Bruce Forster**, Professor and Head of the Department of Radiology. "The fellowships help us develop international relationships. It has led to all sorts of collaborations and educational endeavours, and has enhanced UBC's influence worldwide." ■

A MIDWIFE FOR CANADIAN MIDWIFERY HELPS HER "BABY" GROW UP

As a midwife, **Elaine Carty** has assisted many births, but none as historic as the birth of regulated midwifery in Canada.

For four decades, she helped cultivate midwifery's inception in most provinces, an effort that culminated with her becoming the founding Director of UBC's Midwifery Program in 2002. After retiring in



Elaine Carty.
Photo by Rob Shaer

2007 (followed by an 18-month stint as Interim Director in 2012-13), she has found a way to nurture midwifery beyond Canada.

Professor Carty has generously donated \$50,000 for visiting scholars – one scholar a year for five years – to spend a week at UBC, teaching Midwifery students, meeting with faculty members and giving public lectures on emerging issues in the childbirth field. Her goal is to supplement the core educational program by deepening public understanding of midwifery and enable knowledge exchange

with experts from other countries, especially those where midwifery is more established.

"I want exciting, innovative thinkers, and not necessarily all of them midwives, – lots of specialties contribute to this field," Professor Carty explains. "Ultimately, I want our program recognized internationally as being on the vanguard of academic midwifery."

To support Midwifery education, please contact Leanne Denis at 604-822-2207. ■



TRAVERSING TWO CONTINENTS IN A 1939 CADILLAC, IN THE NAME OF BRAIN RESEARCH

For 16 years, **Marcia Duthie** has tackled her battle with Parkinson's disease head-on, fearless of the road ahead.

Inspired by her resolve, her husband, **Glen Duthie**, decided to embark on a tough, winding journey of his own: a vintage and classic car rally called "Peking to Paris."

He and his buddy **Allan Cullen** collected \$115,000 in donations to complete the 2013 re-enactment of the 12,247-kilometre race, originally dreamed up by a Paris newspaper in 1907. Both UBC alumni, they donated all of the proceeds to the Brain Research Centre, a joint research unit of UBC and Vancouver Coastal Health.

Above, left to right: Allan Cullen and Glen Duthie at home in B.C., and behind the wheel as they cross eight countries. Race photos by Gerard Brown

With Duthie and Cullen taking turns at the wheel of their 1939 Cadillac La Salle, they traversed eight countries in 33 days, enduring various mechanical breakdowns and mostly maintaining their civility.

"It was gruelling," says Duthie, an Enderby resident. "The Gobi Desert was brutal, but it got worse. By the time we hit Austria and Switzerland, the route took us across seven major mountain passes. The transmission was going, we had difficulty keeping it in second, and it was overheating – we were on 16 per cent grades in the rain and fog. Finally, the head gasket blew and it was like a steam engine.

We changed it in three and a half hours, but we lost our gold medal."

"Their physically exhausting struggle is not unlike the struggle many people deal with every day who suffer Parkinson's or other brain related diseases," said Marcia Duthie, who witnessed her husband's 18th place finish at Paris' Place Vendome. "I am proud of their achievement, not only for braving the trek but for their fundraising efforts, which reached totals beyond my expectations."

To support brain research, please contact Fatima Hassam at 604-822-8079. ■

HEALTH PRODUCTS COMPANY SUPPORTS PROSTATE CANCER SURVIVORSHIP PROGRAM

A gift from Viva Pharmaceutical to the Department of Urologic Sciences is helping to ensure that men with prostate cancer don't just survive – they thrive.

The Richmond company pledged \$1.5 million to support Prostate Cancer Supportive Care – an evidence-based program to improve the quality of life for those coping with prostate cancer.

"Because of tremendous advances in diagnosing and treating prostate cancer, patients survive about three times longer than they did just 20 years ago," says **Larry Goldenberg**, who created the program in 2013 as Professor and Head of the Department

of Urologic Sciences. "This success has created a new challenge – helping men and their partners live with the physical and psychological side effects of treatment, including altered sexual and urinary function."

The program will focus on supportive care strategies – educational group sessions, workbooks and web-based resources – to help patients and their caregivers cope with the effects of treatment.

"The care we provide for men living with prostate cancer will be smarter and more complete thanks to Viva's gift," Dr. Goldenberg says. "Moreover, our researchers can use this seed

money to leverage additional research grants and pursue other needed investigations."

A significant supporter of the Faculty of Medicine, Viva owner **Jason Ko** says this gift was inspired by the entrepreneurial spirit at the Vancouver Prostate Centre.

"Medical research needs that innovative mindset shared by Dr. Goldenberg and his team, and I can't wait to see what they accomplish next," he says.

To support prostate cancer research, please contact Sarah Roth at 604-827-0569. ■