

RAPPORT

Schulich School of Medicine & Dentistry
Western University / Alumni Magazine / 2015

MAKING CHANGE

With a life philosophy to focus on solutions, Dr. Abdel-Rahman Lawendy, MD '03, PhD '14, is altering the course of medical education and the lives of people around the world

COMMUNITY CONNECTION

A NEW BREED OF CLINICIAN- RESEARCHER

HOPE SPRINGS ETERNAL



Schulich
MEDICINE & DENTISTRY



Western



44 ARTISTIC EXPRESSION

From day one of their studies, Schulich Medicine & Dentistry students are encouraged to pursue extracurricular activities to reinvigorate their minds and spirits

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SCHULICH MEDICINE & DENTISTRY

The Schulich School of Medicine & Dentistry at Western University is one of Canada's preeminent medical and dental schools. Since 1881, the School has helped educate generations of physicians, dentists, scholars and scientists who continue to transform the practice of medicine and dentistry, and research in Canada and around the world.

Schulich Medicine & Dentistry's reputation has been built by dedicated teachers, breakthrough discoveries, a commitment to social responsibility, strong strategic partnerships and extraordinary leadership. The School continues to be a global leader in optimizing life-long health.

RAPPORT

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DEAN'S MESSAGE

There is a renewed energy building at the Schulich School of Medicine & Dentistry—it's one that you feel when you know all the players on a team are working together to achieve the goals before them. As I begin my second term as Dean of the School, it's this great sense of teamwork permeating at all levels of which I am most proud.

Each of the past five years has brought with it many achievements thanks to the contributions of all our faculty, staff and students. And to date, 2015 is no exception.



Dr. Michael J. Strong
Dean, Schulich School of
Medicine & Dentistry
Interim Director,
Robarts Research Institute

As you read this year's issue of *Rapport*, you will learn more about our recent successes, and gain insight into some of the unique aspects of our education programs. These include our case-based teaching method in the Master of Public Health program, our summer electives in undergraduate medical education, the award-winning Dental Outreach Community Service program, and the distinguished Angus D. McLachlin Professorship.

The past three years have seen a tremendous investment in our School's faculty complement, designed to fulfill the aspirations of our strategic plan. In this edition of *Rapport*, you will have an opportunity to meet some of these exceptional new faculty members.

Drs. Sam Asfaha and Christopher McIntyre, along with their peers Drs. Arlene MacDougall and Sandrine deRibapierre, are undertaking fascinating work across the spectrum of medicine and represent a new breed of clinician-researcher.

This year, we will welcome Marlys Koschinsky, PhD, as the new Scientific and Executive Director for the Robarts Research Institute. Marlys brings with her not only a reputation as one of North America's leading researchers in cardiovascular disease, but also a wealth of leadership experience.

We welcomed a number of new scientists to Robarts in the past 24 months, further solidifying its position as one of Canada's preeminent research centres. In this issue of the magazine, you will have an opportunity to meet Dr. Julio Martinez-Trujillo, a neurophysiologist and the Provincial Endowed Academic Chair in Autism, and Andrew Pruszyński, PhD, whose research as a CRC Tier II scientist is focused on neural mechanisms underlying sensory perception and motor control.

This past year has also seen the renewal of the Centre for Education Research & Innovation as a University centre which, under the leadership of Professor Lorelei Lingard and Dr. Mark Goldszmidt, has become internationally recognized as a centre of education scholarship.

The newest recruitment to the centre, Saad Chahine, PhD, brings expertise in the study of new assessment standards locally, and how to improve the science of workplace-based assessment globally. Saad's work is already finding tremendous applicability across a broad range of research programs at Schulich Medicine & Dentistry.

As we continue to focus on achieving our vision to become a global leader in optimizing life-long health, we are also taking time to celebrate

our extraordinary achievements, our rich history, and the people who continue to contribute to our mission.

As 2014 came to a close, we celebrated a \$26.3-million investment by the Government of Canada to host and establish the Canadian Arrhythmia Network as a Networks of Centres of Excellence. Dr. Anthony Tang will serve as the Network's Scientific Director and CEO.

We also publicly unveiled our plans for the Imaging Pathogens for Knowledge Translation (ImPaKT) Facility. Led by Eric Arts, PhD, it is unique in Canada, and will combine sophisticated imaging technology with a world-class bio-containment facility.

We welcomed 2015 with a kick off to the 50th anniversary of Dentistry. A year-long celebration has been underway, as we recognize the people who have contributed to Dentistry's success during the past five decades.

True to our nature, we are taking this opportunity to develop a 10-year strategic plan that will position Dentistry as one of the top 10 preeminent dental schools in North America. It's an ambitious goal, however, with full support from Western University's senior leadership and plans to update several operational processes, develop a new simulation lab, and focus on our strengths—it is achievable.

At Homecoming this year, we will celebrate our 2015 Alumni of Distinction Awards recipients. Joining the ranks of their esteemed colleagues and past recipients are: Bessie Borwein, PhD '73; Fred Possmayer, PhD '65; and Drs. Jill Bashutski, DDS '05; George Kim, MD '03; Len Chumak, DDS, MCID '85; and William Wall, MD '70.

No issue of *Rapport* would be complete without stories about our students and alumni—all who live the values of our School and strengthen our pride in its mission.

This year, our student feature explores the value of artistic expression and the important role it plays in the lives of our learners.

Dr. Abdel-Rahman Lawendy, MD '03, PhD '14, is our cover story; he serves as a tremendous example of the more than 14,000 alumni around the world who are taking clinical and research innovation to the next level, and who continue to contribute back to the global community.

I am looking forward to the next six years as Dean of Schulich Medicine & Dentistry, and the extraordinary achievements the team at the School will accomplish. I hope you will stay in touch with us through *Rapport* Magazine and our many online and print publications—there's no doubt you will feel proud of your alma mater.

CHECK-UP



Victor Garber headlined the 2014 Leaders in Innovation Dinner

CELEBRATING RESEARCH INNOVATIONS

■ With a focus on Alzheimer's and dementia research, the day-long Taylor Symposium, Public Forum, and Leaders in Innovation Dinner events presented by Robarts Research Institute drew in hundreds of community members for yet another successful celebration of research leadership. The events offered a full-day of intriguing presentations and inspiring stories.

Victor Garber, award-winning actor and native Londoner, toured the labs at Robarts and then took to the podium to share

the touching story of his family's struggle with Alzheimer's and the struggle of having both his parents succumb to the disease.

The evening portion of the event also featured the presentation of the 2014 J. Allyn Taylor International Prize in Medicine to Drs. Virginia M.Y. Lee and John Q. Trojanowski.

The 2015 event is expected to draw substantial attention with special guest and Canadian comedian Martin Short, and a focus on research innovations in the field of Cellular and Molecular Imaging in Cancer.

CELEBRATING 10 YEARS OF MEDLINGS

■ Medical Learning in Community Settings (MedLINCS) celebrated its 10th anniversary in July 2015. The six-week clinical teaching summer elective opportunity for first- and second-year medical students takes place in rural and remote communities across Southwestern Ontario, in regions such as Grey-Bruce, Chatham-Kent, Essex, Huron-Perth, Oxford-Elgin and Sarnia-Lambton.

The MedLINCS program provides medical students with the opportunity to experience hands-on health care in smaller communities where physicians work at the front-line in delivery rooms, emergency rooms and nursing homes. During the six-week program, students also have the opportunity to observe professionals in all aspects of health care—from anesthesiologists and pharmacists to radiologists—providing students with applied learning opportunities.

The program also highlights Schulich Medicine & Dentistry's commitment to excellence in education and social responsibility in Southwestern Ontario, as learners also work collaboratively with community partners. This includes organizing the popular week-long health career exploration camp delivered to local high school students.

During the week-long program, medical students provide leadership to high school students who have an interest in health care careers. The program provides them with practical experiences in health care, including reviewing x-rays, practising sutures and splinting and casting. Some communities end the week with a mock-disaster, which includes local emergency medical services personnel.

A HERO IN THE COMMUNITY



■ Schulich Dentistry's Dental Outreach Community Service program, which gives fourth-year dental students the opportunity to provide supervised dental care to clients from local social service agencies, received the 2014 Partnered Community Hero Award from the Glen Cairn Community Resource Centre.

The award recognizes the program's commitment to building a vibrant, healthy and happy community in London, Ontario.

CHECK-UP



MODELLING FAMILY MEDICINE

■ As part of a growing partnership between Schulich Medicine & Dentistry and Nanjing Medical University, the Department of Family Medicine hosted Drs. Yayun Wang and Lingxia Wu, delegates from Nanjing Medical University, with the aim of helping solve the challenging task of filling an immense gap of primary care physicians in China.

Using Schulich Medicine & Dentistry's renowned Family Medicine program as a model, Drs. Wang and Wu spent three months gaining first-hand knowledge on how to set up effective family medicine training programs at home by shadowing physicians, observing postgraduate family medicine teaching, and participating in departmental meetings.

HONOURS AND DISTINCTIONS

■ Faculty members from across the School were recipients of Western University, national and international awards throughout the past year. Their dedication and commitment continues to enrich the School's education and research environments and advances its mission.

Lina Dagnino, PhD, Physiology and Pharmacology, **David Edgell**, PhD, Biochemistry, and **David Heinrichs**, PhD, Microbiology and Immunology, were selected as Western University Faculty Scholars. They were recognized for their significant achievements in teaching and research, along with nine of their peers from across the University.

Dr. Jeff Dixon, DDS'77, was honoured as a Distinguished University Professor for Western University. An internationally recognized researcher, he has put Western on the map for bone and joint biology. He has excelled as a teacher and mentor and, perhaps most notably, can be credited for his enormous contributions to the development of bone and joint research across Canada. Throughout his career, Dr. Dixon has been heavily engaged in teaching and super-

vision. He has supervised 27 graduate students and 12 post-doctoral fellows, all of whom speak highly of his mentoring skills, his dedication to trainees and the quality of scientific training in his lab.

Ravi Menon, PhD, was selected as a senior fellow by the International Society for Magnetic Resonance in Medicine. A professor with the Department of Medical Biophysics and Canada Research Chair in Functional and Molecular Imaging, Menon was recognized for his lifetime achievements in brain imaging research. He joins only five other Canadians receiving this honour.

Lorelei Lingard, PhD, director of the Centre for Education Research & Innovation, **Ruth Martin**, PhD, who has a cross appointment with Physiology and Pharmacology, and **Dr. Bryan Richardson**, Obstetrics & Gynaecology, and Physiology and Pharmacology, became the newest fellows of the Canadian Academy of Health Sciences. The Academy recognizes those who have a history of outstanding performance in academic health sciences in Canada.



Lorelei Lingard, PhD

REMEMBERING TALENT, COMMITMENT AND COMPASSION

■ Two of Schulich Medicine & Dentistry's influential leaders left behind a legacy of greatness as they passed away respectively on September 30, 2014 and January 22, 2015.

Dr. Ralph Brooke served as Dean of the School of Dentistry at Western University for 15 years—from 1982 to 1997. During his leadership the dental school grew and thrived, helping make it one of the top dentistry programs in the country and a destination of choice for students looking for exceptional clinical experience. The Canadian Dental Association awarded him with an Honorary Membership in 1994, which is given to recognize those who have made outstanding contributions to dentistry or the dental profession over a sustained period of time.

Dr. Ramsay Gunton, distinguished medical scientist, former Professor of Medicine and academic administrator at Schulich Medicine & Dentistry, was one of the first Canadian cardiologists to develop cardiac catheterization technique in the country. He treated all his patients and their families with compassion and dignity and instilled this value to many future doctors he taught and mentored. Highlights of his career included his position as Chair of the Department of Medicine at Western, his role as president of the Royal College of Physicians and Surgeons and his time as board member and fellow of numerous Canadian and international medical associations.



A GOLDEN ANNIVERSARY

■ The renowned musician and much loved Western University stalwart Rick McGhie, as well as Dentistry faculty, staff, students and alumni gathered together in March 2015 to kick off the year-long celebration of Schulich Dentistry's 50th anniversary. The golden anniversary is being celebrated throughout the year, with events and activities commemorating 50 years of exceptional education, innovative research and the development of socially responsible leaders.

A special celebration weekend took place in early September with a barbecue, open house, tours of the School and a Gala Dinner.

In honour of the anniversary, Dr. Dave Kenney, DDS'70, a member of the first graduating class, is co-authoring a book about the history of dentistry at Western and completing a documentary. Individuals who wish to share artifacts, photographs or their personal Western experiences with Dr. Kenney can do so by sending them to westerndenthx@yahoo.com

NEW LEADERSHIP FOR ROBARTS RESEARCH INSTITUTE

■ Marlys L. Koschinsky, PhD, is the new Scientific and Executive Director for Robarts Research Institute. Koschinsky has had an extensive research career and is currently the Dean of the Faculty of Science at the University of Windsor.

Koschinsky received her PhD in Biochemistry from the University of British Columbia in 1988. Her thesis research was on the analysis of the molecular genetics of human ceruloplasmin. She then completed a Medical Research Council of Canada postdoctoral fellowship (1988-1991) at Genentech Inc., a biotechnology company in San Francisco.

She spent the next 17 years at Queen's University, where she quickly progressed through the ranks from Assistant to full Professor. She also served as the Director of the Cardiac, Circulatory & Respiratory Research Program and as Acting Head of the Department of Physiology. In 2008, she accepted the

position as Dean of the Faculty of Science at the University of Windsor.

Koschinsky's research is in the broad areas of atherosclerosis and thrombosis and focuses on the understanding of mechanisms of action of emerging risk factors for cardiovascular disease. She is an internationally recognized expert in the study of the cardiovascular risk factor lipoprotein(a), and is a well-respected opinion leader in the area of lipoproteins and cardiovascular disease.

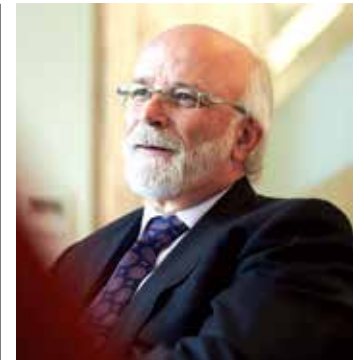
With a strong commitment to community engagement, Koschinsky is involved with a number of organizations in Windsor. She is the Vice-Chair of the Board of Directors for WETech Alliance; is a senior leadership volunteer with the Heart and Stroke Foundation, serving as Chair of the Windsor-Essex Mission Committee; and has served as a member of the Windsor-Essex Economic Development Corporation's Life

and Health Sciences Task Force. She is also a member of the steering committee for the Southwestern Ontario Academic Health Network.

In her role as Scientific and Executive Director of the Robarts Research Institute, Koschinsky will provide strategic leadership to a team of world-class scientists to enable them to continue to be recognized on the world stage.



Marlys L. Koschinsky, PhD



Dr. Michael J. Strong

UNANIMOUS SUPPORT FOR RE-APPOINTMENT OF DR. MICHAEL J. STRONG

■ Dr. Michael J. Strong has been re-appointed to a second term as Dean of the Schulich School of Medicine & Dentistry beginning July 1, 2015 through June 30, 2021.

The recommendation to re-appoint Dr. Strong enjoyed the unanimous support of the Schulich Decanal Selection Committee and reflects an endorsement of his leadership that emerged through an external review conducted in November 2014.



EDUCATION

COMMUNITY CONNECTION

The Dental Outreach Community Service program is bringing much-needed, free dental care to patients in London, Ontario

BY EMILY LEIGHTON, MA'13

Walking into a Dental Outreach Community Service (DOCS) clinic on a weekday evening in London, Ontario is to witness true community-building in action.

And amid the cheerfully decorated walls of the Boys & Girls Club of London, portable dental chairs and bright lamps, it's the people who stand out as the true pillars of this outreach effort.

"We focus on the human aspect of dentistry, the connection of the student to the patient," explained Dr. Les Kalman, DDS'99, chair of the DOCS program.

This scene takes place throughout the year, as the clinic rotates among community agencies and centres across the city to deliver free dental care to low-income families and individuals with no dental insurance.

DOCS has become a flagship of Schulich Dentistry's educational experience. Started by Dr. Ken Wright in 2008, the program has evolved from a coordinated volunteer effort to a mandatory curriculum component for fourth-year students.

Initial screenings take place at the community agencies, including examinations and treatment plans. Follow-up appointments and comprehensive treatments are completed at the School's main clinic on the Western University campus.

With this approach, the program is delivering high-quality oral health care where it's needed most desperately.

"Some patients haven't been to the dentist in years or even decades," explained Dr. Kalman. "The goal is to take away the barriers to care they may be facing and to provide this service in a setting where our patients will be comfortable."

One of the DOCS patients, who chose to remain anonymous, knows of this personalized care first-hand. "My teeth were in bad condition, but the students and professors were very attentive and informative," he said. "It has helped me and countless others in times of need. I'm very grateful for my cavity-free, healthy smile."

This appreciative patient is a great example of the shared benefits the program facilitates. While DOCS provides community

RIGHT: Dr. Pennie Thornton, DDS'81, consults with a fourth-year student during a DOCS clinic at the Boys & Girls Club of London



"We focus on the human aspect of dentistry, the connection of the student to the patient."

—Dr. Les Kalman

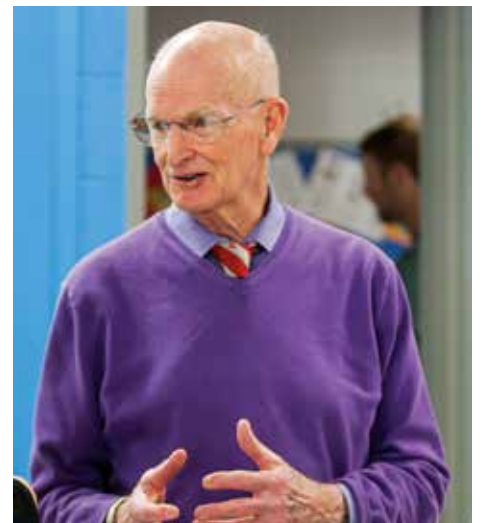
members with free dental care, it simultaneously offers unique learning opportunities for students, bringing a variety of new cases to the curriculum.

"The educational component is at the core of the program," explained Dr. Kalman. "It's about exposing students to a population that has challenges they may not be aware of otherwise."

Dr. Pennie Thornton, DDS'81, a London dentist and DOCS volunteer, also appreciates the significant advantage of this exposure. "The DOCS experience rounds our students as people and as practitioners," she said.

With the essential support of local dentists like Dr. Thornton, Schulich Medicine & Dentistry staff and faculty members, private donors and the community agencies, DOCS facilitates upward of 200 appointments and delivers more than \$40,000 in academic dental fees each year.

With this level of invested commitment



ABOVE: Dr. Ken Wright, founder of DOCS

in the city's oral health, the community-building has an impact beyond the walls of individual DOCS clinics. "We're showing that Schulich Medicine & Dentistry is part of the London community," said Dr. Kalman.

As the clinic at the Boys & Girls Club closes for the evening and the equipment is packed away, it is clear that for all involved, DOCS is about more than simply fixing teeth.

"We're giving people back their smiles, their confidence and their community," said Dr. Kalman. "And we're also teaching our students that there's a patient attached to every tooth." ■

A SURGICAL LEGACY

The Angus D. McLachlin Professorship is building on the surgical excellence established by the Chief, as it enriches the educational experience of the next generation of surgeons

BY JENNIFER PARRAGA, BA'93

The chair assumes a place of honour next to Dr. Vivian McAlister's desk in the Transplant Unit at University Hospital. Strong, sturdy, and well designed, its round shape offers a comfortable sitting—despite its firm construction.

A shiny, brass plaque at the centre of the chair pays homage to Dr. Angus D. McLachlin, MD'32. The Chief, as he is still referred, served as the Chair of the Department of Surgery from 1945 to 1974.

The chair serves as a symbol of the Angus D. McLachlin Professorship in Surgery. It will remain with Dr. McAlister throughout his term as the McLachlin Professor—just as it has with each of the holders of the Professorship since its inception.

The Angus D. McLachlin Professorship was established in 1991 through the generous support of former trainees and colleagues—in honour of Dr. McLachlin's dedication and contributions as an esteemed teacher and clinician.

The Professorship provides funding to a surgeon who has a strong focus on surgical education and teaching. And with that, the holder has an opportunity to spend time away from the clinic to advance surgical education and teaching. For example, Dr. Edward Meads, MD'63, directed the available funding to support medical students to pursue global health electives overseas. Meanwhile, Dr. Brian Taylor, MD'75, helped to revamp the surgical curriculum for undergraduate medical education.

"He was a very special man and perhaps the last of a breed—athlete, scholar, soldier, researcher, administrator, surgeon, but above all, teacher."

—Dr. Howard Cameron

Dr. Angus D. McLachlin

Born in St. Thomas, Dr. Angus D. McLachlin was the captain of the Mustang football team, who is said to have played every minute of every game; a Rhodes Scholar; and an officer commanding the Number 10 Canadian Field Surgical Unit in northwestern Europe during World War II.

Serving as the chair of the Department for nearly 30 years, he was known for being a craftsman of the technical aspects of surgery and a strong educator. He passed on his skill and dedication to three decades of surgeons, many of whom continue to practise across Southwestern Ontario. He also is credited for establishing the sub-surgical approach to residency at Western University.

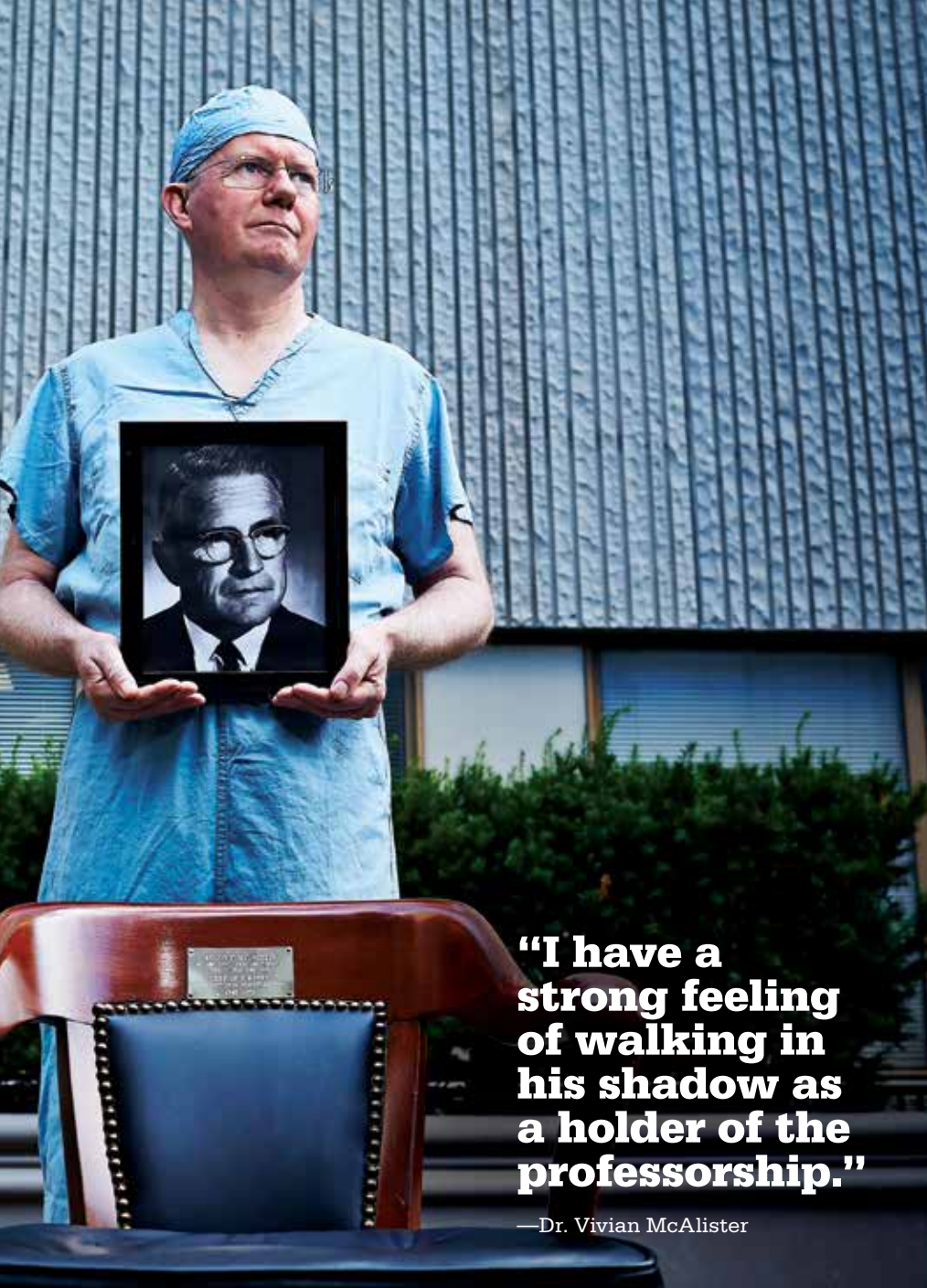
As a surgeon, he is remembered for his encompassing commitment to patient care and his insistence for excellence. "His belief was that patients deserved the best," recalled Dr. William Wall, MD'70, who was one of



Dr. McLachlin's residents. "He believed that only if you were giving 100 per cent all the time, could the patients' interests be best served."

Dr. Meads, who also trained with the Chief agreed. "He was a perfectionist who was honest, dedicated, diligent, and unwavering in his principles," said Dr. Meads. "He lived for the practice of surgery."

Dr. McLachlin expected good judgment and sound surgical techniques to be used by his trainees. His approach to training is legendary. Whether through his seminars for undergraduate students or his famed Sunday school sessions with residents, he was superb at simplifying the practice of surgery and passing on his knowledge.



“I have a strong feeling of walking in his shadow as a holder of the professorship.”

—Dr. Vivian McAlister

Building on a legacy

Dr. Vivian McAlister is the seventh holder of the Professorship. In the role, he joins an esteemed group of his colleagues including the late Dr. Bill Jamieson, and Drs. Edward Meads, Robert Bourne, Robert Litchfield, Douglas Ross and Brian Taylor.

Born and raised in Ireland, Dr. McAlister made the trek to Canada in 1981—looking for an adventure. He settled into northern Saskatchewan as a family doctor. When his practice began to require more surgical work than he had expected, he pursued additional training with the intention of becoming a community surgeon. However, when an opportunity

to do a fellowship with transplant surgeon Dr. Wall became available, he grabbed onto it. With that, his medical career changed forever.

In 2008, Dr. McAlister added a new element to his career and his life when he joined the Canadian Armed Forces. Since then, he has been to Afghanistan five times and participated in a few non-combat missions, including one in Haiti in 2010, following the earthquake.

It's through his military work that Dr. McAlister feels the closest connection to Dr. McLachlin. “I am the first in a long line, hopefully, of holders of the professorship, who did not personally know Dr. McLachlin,” said Dr. McAlister. “I recognize his contributions in the military during World War II, and I have an

understanding of some of the stresses he faced and how he took those experiences back to mould his professional career. I have a strong feeling of walking in his shadow as a holder of the professorship.”

Both physicians also share the honour of receiving the James IV Association of Surgeons Travelling Fellow Award. Dr. McLachlin was in fact the first recipient. The two also served as the Canadian secretary of the James IV Association of Surgeons. “It's a thrill to read the Chief's handwritten notes in the records,” said Dr. McAlister, of the historical documents now housed by Western Archives.

Dr. McAlister considers the long-term impact and effect of Dr. McLachlin's work to be remarkable. He believes the secret ingredient the Chief possessed was that ability to inspire and impress people so much that they, in turn, would share his surgical techniques, his advice and his principles.

Dr. Wall, who remembers Dr. McLachlin with great fondness, agrees. “We would find ourselves in the operating room with a difficult problem,” he said, “and we would always ask ourselves, what would Dr. McLachlin do? That's indicative of the impact he had.”

As the McLachlin Professor, Dr. McAlister hopes to continue to build on the legacy established by Dr. McLachlin. “The professorship,” he said, “is a stimulus to increase the efforts that I am currently making.” Dr. McAlister intends to spend time building new programs to help hospitals in the region deal with situations of mass casualties.

He also sees his role as editor of the Canadian Journal of Surgery as an opportunity to promote the status and achievements of Canadian surgery, and provide trainees and surgeons in Canada with a greater sense of pride in their work and that of a league of surgeons who came before them.

Dr. McAlister is honoured to be the current holder of the Professorship. “When I came to Western, I would hear about his extraordinary work and mentorship,” he said. “For that reason alone, it's a great thrill to be honoured as the McLachlin Professor of Surgery.”

Thanks to Dr. McAlister and his fellow professorship holders, the Chief's work, principles and ideals will continue to inspire generations of surgeons and enhance surgery in Southwestern Ontario and around the world. ■

EDUCATION



PICTURES ON LEFT:
Students of the Master of
Public Health Class of 2015
discuss real-world cases in
a small group environment



“This style of learning is for people who are willing to be innovative, people who want to be change-agents, and people who don’t necessarily think in a linear way. Potential students also must be able to work well independently and in a team.”

—Giovanna Longo

MAKING THE CASE FOR REAL-WORLD LEARNING

Interactive and experiential learning is at the heart of the Master of Public Health program

BY JESICA HURST, BA'14

Traces of arsenic are found in Bangladesh's drinking water. Wind turbines are being installed near a residential community. A salmonella outbreak is affecting numerous poultry consumers during the holiday season.

These situations may not sound like they have anything in common, but students from the Schulich Interfaculty Program in Public Health, within the Schulich School of Medicine & Dentistry, would likely disagree. Each situation is an example of a public health issue that could be dissected using the program's innovative case method of learning.

The learning method—which no other university public health program in Canada offers—takes education further than the traditional lecture-style classroom setting, by focusing on the students and their ideas as they become an active part of the experience.

"Case-based pedagogy is a very interactive and experiential approach to learning," explained Shannon Sibbald, PhD, one of four core faculty members with the MPH program. "The idea behind this learning style is that students are exposed to real-world challenges."

Sibbald, who teaches the program's Health Promotion and Health Communication courses, added that the situations presented

in the cases used are often complex and ambiguous, and have no one right answer.

Prior to attending a lecture, students are provided with one of these cases to read, along with a few accompanying discussion questions to help inspire thought. Following this independent work, students have the opportunity to meet with their learning groups to discuss their ideas.

These initial steps ensure the program's lectures are not only rich with well-informed conversation, but go deeper than only scratching the surface of the topic.

Giovanna Longo, MPH'14, was a student in the program's first graduating class. Longo explained the case method learning style taught her that there are a number of things you need to think about when examining public health cases—a skill that has helped her as the Chief Nursing Officer/Professional Practice Leader at Lambton Public Health.

"The program's case-based method promotes complex systems thinking, so when graduates are out there working in the field they can understand the language of different sectors," Longo said. "This style of learning makes you develop really strong critical thinking skills, and shows you that there isn't

always one simple answer to health issues."

While skills like these are ideal for every public health worker to develop, Longo explained the learning style isn't for every student.

"This style of learning is for people who are willing to be innovative, people who want to be change-agents, and people who don't necessarily think in a linear way," she said. "Potential students also must be able to work well independently and in a team."

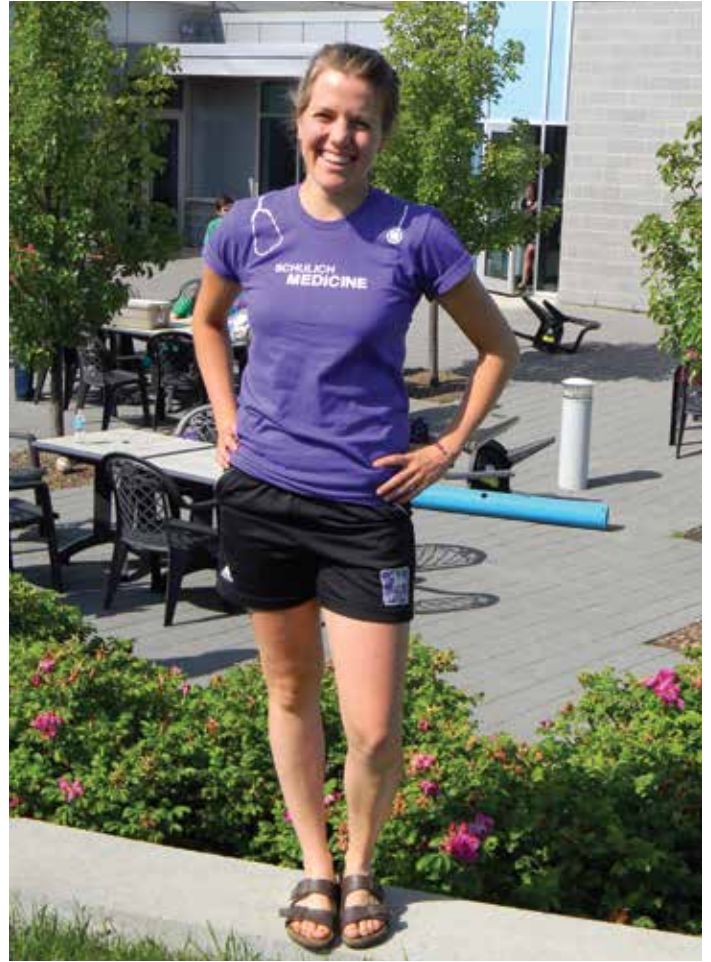
One aspect of the case-based method all potential students find attractive is that course material is constantly being updated to ensure it is relevant and timely.

Sibbald and other faculty members meet every two weeks to discuss and build the program's curriculum, looking for cases and topics that can be used in all courses, from Principles of Epidemiology to Developing Healthy Communities.

"I've been teaching for seven years, which is long enough to recognize that this program is unlike many others," Sibbald said. "I think we are at the cutting edge of public health education, and the direction it needs to be moving toward." ■

SUMMER LEARNING

Each summer, Schulich Medicine undergraduate students venture off open to the possibilities electives offer. They return in the fall with greater confidence, increased self-awareness, and a better understanding of their future role as a health care provider



BY JENNIFER PARRAGA, BA'93

The living may be easy for some during the summer, but for first-, second- and third-year undergraduate medical students, the dog days of the season have become the perfect time to pursue electives.

And with hundreds planned each year, the benefits of these electives are seemingly endless.

Students who choose clinical observerships are able to explore a variety of medical specialties, reinforce concepts learned in the curriculum, and improve their team and communication skills at sites in London, Windsor, across Southwestern Ontario, and around the world in places such as China and Africa.

"I wanted to put some of what I have learned in the classroom into action," said Jessica Bryce, Medicine Class of 2018, explaining her decision to complete an elective as part of the Medical Learning in Community Settings (MedLINCS) program. A six-week program combining clinical training and teaching, MedLINCS offered Bryce the

opportunity to experience health care in aboriginal and First Nations communities.

Working with community partners at Saugeen First Nation, Chippewas of Nawash and Urban Indigenous Youth, Bryce and 11 of her classmates shadowed physicians at the Grey-Bruce Health Services – Wiarton in emergency and family medicine. She also participated in community and youth engagement activities.

Struck by the broad and varied clinical experiences she observed, it was only a matter of days into the elective that Bryce was convinced that working in a rural, family medicine environment would be part of her future.

And during her newly-adopted routine of taking patient histories, practising physical exam skills and observing procedures, she discovered the art of medicine. "I learned that being flexible, open-minded and willing to ask for the perspective and opinions of others is important," she explained.

With this patient-centred approach,

Bryce also grew to appreciate the diversity among patients. "Each person has his or her own life story and circumstance," she said.

The entire experience has made her even more enthusiastic for the years ahead. "Completing this elective has definitely made me more excited, confident and prepared for clerkship."

Ahmad Al-Askar and Alex Xu, first-year medical students, travelled to China on an adventure to broaden their horizons, and experience the practice of medicine in a completely different culture.

Whirlwind days of medical rounds, observing surgeries and shadowing during patient visits provided countless learnings for Al-Askar and Xu. However, witnessing the relationship between physicians and patients provided some of the most meaningful lessons. They both came to really appreciate the importance of trust in the patient-doctor relationship and how their listening skills are paramount when providing care.

LEFT: Jessica Bryce took part in the MedLINCS program, a six-week elective combining clinical training and teaching

TOP RIGHT: Alex Xu travelled to China to expand his horizons and knowledge of the practice of medicine in a different culture

BOTTOM LEFT AND MIDDLE: Matt Douglas-Vail and seven of his classmates spent several weeks in Tanzania experiencing life on the ward, in the hospital and exploring the beauty of the country

BOTTOM RIGHT: Ahmad Al-Askar, third from the right, came to appreciate the importance of trust in the patient-doctor relationship during his elective in China



A similar international journey played out for Matt Douglas-Vail in Tanzania. Inspired by physician-humanitarians such as Drs. James Orbinski and Paul Farmer, it's not surprising the second-year medical student embarked on a four-week global medical elective at Muhimbili Hospital in Dar es Salaam, the country's largest city.

The language and cultural differences proved challenging, but he welcomed the chance to learn outside the classroom.

"This experience has given me a new appreciation for people who come to Canada for the first time, and are faced with a medical issue," said Douglas-Vail. "I can understand so much more, now, how a language barrier can complicate an already delicate and difficult situation."

Whether in the emergency unit or patient wards, Douglas-Vail and the seven other students who participated in the elective had the opportunity to interact with patients

who had travelled hours and miles for care and required lengthy courses of medications.

His greatest learning, however, came as a result of observing the similarities in the practice of medicine despite cultural differences. "The interaction and expectations of families in Tanzania and Canada may be very different, but Gitelman syndrome is the same regardless of location," he explained. "Medicine creates bonds between people and cultures."

These types of insights and skills gained as a result of summer electives are life-changing says Dr. Gary Tithecott, associate dean, Undergraduate Medical Education.

"Each summer our students access opportunities to broaden their skills in our curricular competencies through the research and clinical electives we offer," he said. "They return to us in the fall, with more confidence and a deeper understanding of diversity and the social determinants of health directing patient and family-centred care." ■

SUMMER ELECTIVES AT SCHULICH MEDICINE

Each medical student is permitted to take a maximum of three summer electives; each elective must be a minimum of 30 hours in duration

213

summer electives were planned by first-, second- and third-year medical students in 2015

12

students participated in MedLINCS

8

students travelled to Tanzania

7

students travelled to China

2

students travelled to Hungary

1

student travelled to Kenya

1

student travelled to Rwanda

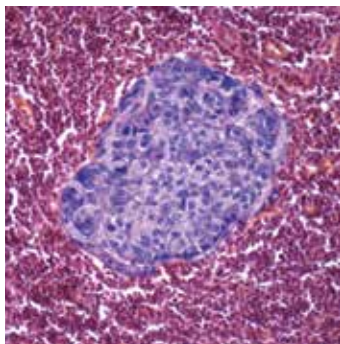
Understanding the spread of breast cancer

■ Mutations can reveal which breast cancer tumours are more likely to spread to other parts of the body, and which ones won't.

Peter Rogan, PhD, professor in Biochemistry, and Computer Science, is using unique analysis software that looks at a specific type of mutation—a splicing mutation. Previous studies of 445 tumours detected 429 splicing mutations, compared with the analysis software that found more than 5,000.

Combining the software with human tumour tissue sample genetic data, the research team discovered that mutations in the neural cell adhesion molecule and other related genes were present at a higher rate in tumours that had metastasized to the lymph nodes versus ones that did not.

“One of the big issues in breast oncology is that women are sometimes treated with chemotherapy even if their tumour isn't going to metastasize,” said Rogan. “The ideal situation would be to identify those patients where the side-effects and negative consequences of chemotherapy following surgery can be avoided, or at least minimized.”



Ravi Menon, PhD

Predicting treatment outcomes for children with cerebral palsy

■ Constraint therapy can be an effective way for some children with cerebral palsy to regain movement in a spastic limb. However, this therapy can be a difficult experience that does not provide a beneficial outcome for all children.

Ravi Menon, PhD, has discovered that functional magnetic resonance imaging (fMRI) can be an effective tool to predict which patients will likely benefit from the treatment. Menon is a professor with the Department of Medical Biophysics, director of the Centre for Functional and Metabolic Mapping at Robarts Research Institute and Canada Research Chair in Functional

and Molecular Imaging.

The study published in the *Journal of Child Neurology*, involved seven children with hemiplegic cerebral palsy and showed that children with more compromised networks and tracts in their brains displayed the most improvement following constraint therapy.

The researchers hope that this initial study will lead to a larger multi-centred trial that will prove their findings on a larger scale. “If it turns out to be a viable experiment on a larger scale, then this is something that could be done clinically to predict outcomes of constraint therapy relatively easily,” said Menon.

Home-grown hope for people with ulcerative colitis

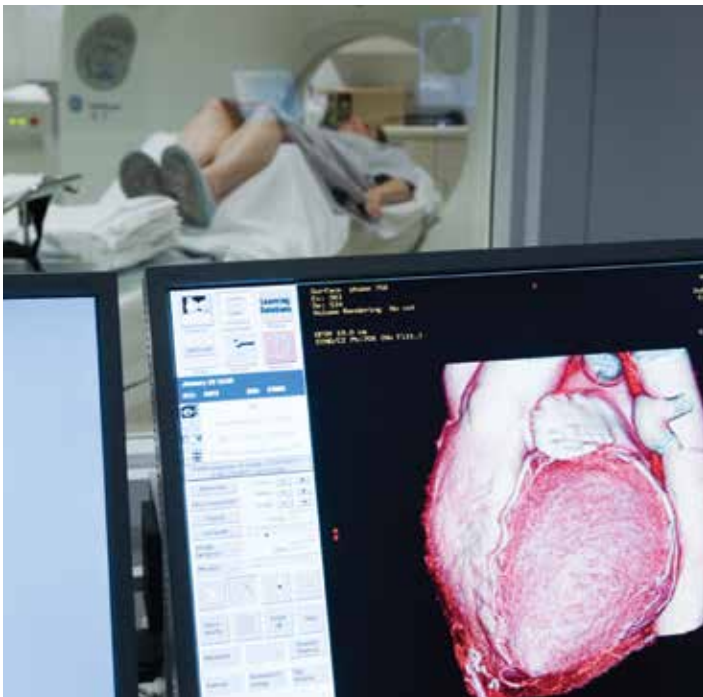
■ People living with ulcerative colitis now have hope for a treatment when others have failed, thanks to decades of research led by Dr. Brian Feagan, BSc'77, MD'83, and initiated by the late Dr. Andrew Lazarovits. Dr. Feagan serves as professor in the Departments of Medicine, and Epidemiology and Biostatistics, and the CEO of Robarts Clinical Trials at Robarts Research Institute.

Dr. Feagan led the international clinical trials and was lead author on the trial results published in *The New England Journal of Medicine* in 2013.

Ulcerative colitis, one of the two most common types of inflammatory bowel disease, is a potentially debilitating condition that affects more than 125,000 Canadians. Health Canada recently approved the use of Entyvio (vedolizumab), a medication that targets over-active immune cells in the gut without suppressing the entire immune system.



Multiple heart monitoring in stroke patients can prevent further strokes



Heart CAT scan

■ Dr. Luciano Sposato, recently recruited associate professor, Neurology, wants to raise awareness about the importance of more extensive testing for atrial fibrillation—heart rhythm disturbances—following a stroke or transient ischemic attack.

Dr. Sposato led the review of 50 studies from four continents that showed that almost 34 per cent of stroke patients with no history of atrial fibrillation can be newly diagnosed with the condition when using multiple cardiac monitoring methods sequentially—more than double

previous estimates based on only one or two methods of diagnosis.

Detection of atrial fibrillation after stroke is crucial for preventing further strokes in these patients.

“My hope is that physicians treating stroke patients will be more aware about the importance of pursuing more intensive cardiac monitoring for patients following stroke,” said Dr. Sposato. “This may have a direct impact on the number of patients diagnosed with atrial fibrillation and the number of stroke survivors receiving oral anticoagulants to prevent further strokes.”

Revealing the mystery behind childhood leukemia

■ Rodney DeKoter, BSc'90, PhD'96, associate professor, Microbiology and Immunology, has identified a gene that has the potential to wipe out cancer cells in a common form of childhood leukemia—acute lymphoblastic leukemia (ALL), the leading cause of cancer deaths in children.

The study, published in the *Journal of Immunology*, demonstrates that reduced expression of the Bruton tyrosine kinase

(BTK) gene plays a key role in ALL. DeKoter and Darah Christie, PhD, postdoctoral fellow and lead author, showed that a reduction in BTK is associated with the onset of ALL.

Conversely, when DeKoter and his team forced the expression of the gene in culture, it caused the leukemia cells to stop growing and die.

“Our studies showed that a gene-therapy type approach in the cultured cells killed the cancer cells, suggesting that this gene may be important for preventing this form of childhood leukemia,” said DeKoter.

Bringing attention to immigrant and refugee mental health

■ Kelly Anderson, PhD, is bringing attention to an overlooked problem—mental health in immigrant and refugee populations in Ontario.

Anderson looked at the data of 4.5 million first-generation immigrants and refugees, aged 14 to 40, who live in Ontario. The evidence suggests that the rates of schizophrenia and schizoaffective disorders in these populations are tied to country of origin, and whether the person entered as an immigrant or refugee.

Higher rates of psychotic disorders were found among first-generation immigrants from the Caribbean and Bermuda—60 per cent higher than the general population—with lower rates found in immigrants from northern Europe, southern Europe and East Asia. Refugee

status from all areas was a significant predictor of risk, with higher rates found in people from East Africa and South Asia—95 per cent and 51 per cent higher, respectively.

“Our findings have important implications for public health and policy,” said Anderson, assistant professor with the Departments of Epidemiology and Biostatistics, and Psychiatry. “If we can understand why some groups have a higher risk of psychotic disorder, whereas others are protected, we may be able to develop and target interventions and services to people who are at highest risk.”



RESEARCH

DOUBLE THE ROLES. DOUBLE THE RESPONSIBILITY. DOUBLE THE PASSION.

Clinician-researchers have been a part of Schulich Medicine & Dentistry's core for decades. With a recent push to focus on translational research, and to take part in more collaborative projects, a new breed has emerged—they are vibrant, open-minded, and full of exciting new ideas that will, undoubtedly, change the course of medicine.

Dr. Bill Clark, professor in the Department of Medicine, and clinician-scientist in the Program of Experimental Medicine, believes that by nature of having the dual roles, clinician-researchers are in the perfect position to develop and discover innovations that will improve the quality of life for patients.

He's also a strong supporter of the increased focus on research during undergraduate and postgraduate medical training. "I think by training clinician-researchers at Schulich Medicine & Dentistry, we're developing a vanguard of individuals who will not only be able to practise clinical medicine, but will also be able to develop discoveries and innovations that will improve the whole aspect of health care," he said.

BY JESICA HURST, BA'14

A NEW BREED OF CLINICIAN- RESEARCHER



Dr. Samuel Asfaha

“When you go from working on basic research to the clinic where a patient has run out of treatment options, it’s hard not to be inspired and go back to the lab with more motivation.”

Dr. Samuel Asfaha grew up wanting to do basic research, but he also always wanted to be a clinician. He didn’t know how to choose between his two passions.

During the first year of his undergraduate education, he found out he could make a career out of doing both. He has never looked back.

After spending the past few years working at Columbia University in New York, Dr. Asfaha and his family decided to move back to Canada in October 2014 so he could continue his research

at Schulich Medicine & Dentistry. He now serves as a gastroenterologist, clinician-scientist and assistant professor in the Department of Pathology and Laboratory Medicine. His main research focus is on inflammatory bowel diseases (IBD) and colon cancer.

“I am trying to identify stem cells in the colon with the goal of trying to find the cellular origin of cancer,” Dr. Asfaha said. “Once I can identify that cell, I can better appreciate what regulates it and understand how inflammation affects the cell to lead to cancer.”

IBD patients are predisposed to increased risks of cancer. However, researchers do not currently understand why some patients with IBD develop cancer while others do not. Because of this, all IBD patients are recommended to undergo colon cancer surveillance on an annual basis.

“If we can identify and differentiate patients based on this stem cell, this would be important clinically because we could have a more effective way of screening patients and predicting outcomes,” he said.

Dr. Asfaha explained it is easy to stay passionate and committed to his work when it has a translational application. While he does simply love trying to address challenging questions, his goal has always been to better understand problems that have a clinical impact.

“For someone who likes to address challenging questions and also provide good care to patients, it’s an unbelievably unique and rewarding job,” he said.



Dr. Arlene MacDougall

"We are using the interventions I'm developing and studying in the clinic with real patients—it doesn't get more translational than that."

Dr. Arlene MacDougall has the best of both worlds.

Working as a clinician-researcher with the Department of Psychiatry and as a psychiatrist with the Prevention and Early Intervention Program for Psychoses she has been able to follow her dream of helping people, promoting health, and looking into system-level questions about how to improve the field of medicine.

"What I see on a day-to-day basis clinically helps guide me in my research, as it's easier to identify how we could possibly improve treatment and develop new programs to better serve patients," she explained. "Likewise, I'm interested in translational research, so I can see the potential application in a clinical environment."

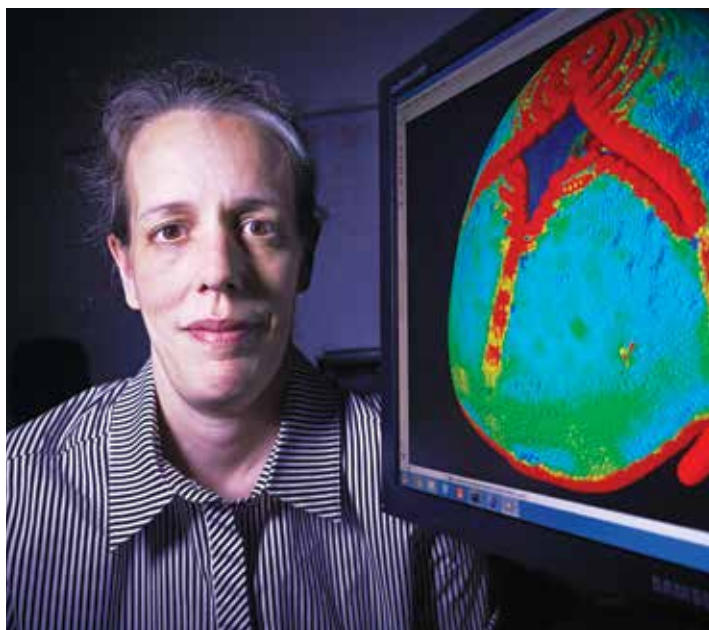
While she didn't necessarily set out to become a clinician-researcher, she has always had an inquisitive mind and wanted to involve herself in a multi-faceted career. It's the ability to have these different facets that keeps her passionate and stimulated in

her career.

Dr. MacDougall's main research focus is a project entitled Community REcovery Achieved Through Entrepreneurism (CREATE). Based in Kenya, CREATE will develop a business designed to employ people with mental illness and will provide an accompanying toolkit of psychological and social support that promotes recovery and successful reintegration into society.

She is also leading two other highly translational research projects. One is looking at youth-focused mindfulness group intervention for people with early psychosis, while the other is using participatory video as a way of engaging people with early psychosis to help them develop a narrative about their experience with illness.

"I feel like being a clinician-researcher is the way I can have the most impact in my career. That is what I'm focused on—making an impact and creating real-world change," she said.



Dr. Sandrine deRibaupierre

"If you're passionate about helping patients, and you're always questioning things and trying to find answers, becoming a clinician-researcher is a good path to follow."

"Being a clinician alone is pretty boring for me," Dr. Sandrine deRibaupierre said with a laugh. "When you're training, it's great because you're learning something new every day. But after that, most cases you see are similar and the growth you experience is restricted."

That's why the paediatric neurosurgeon loves research. She can return to the fundamental questions of "why does this happen" and "how can we do this better"—the creative, innovative part of her job.

Growing up and completing her training in several countries throughout Europe, Dr. deRibaupierre never expected to settle down in London, Ontario. It was the flexibility and collaborative environment at Schulich Medicine & Dentistry that brought her on board in 2008. In addition to her clinical practice, she is now an associate professor in the Division of Neurosurgery at Schulich Medicine & Dentistry.

"In general, people here want

to collaborate more than they want to compete, which is not the case in other places," she explained. "As a clinician, I don't have as much time to dedicate to my research so I rely on collaboration to make things more efficient."

When she's not on call, in the clinic or in the operating room, Dr. deRibaupierre focuses on two main areas of research.

The first involves designing new surgical simulators, as well as evaluating commercial simulators used to help train residents. If she can discover how to teach residents better using simulation, it would have a significant impact on resident competence and patient safety.

Her second research focus involves observing normal brain behaviour and the variability of different brains using functional magnetic resonance imaging.

"Working on research that is translational and related to the clinical work you're doing really feeds your questions," she said. "I think I'm a better clinician because of my research."



Dr. Christopher McIntyre

“Myself and other new clinician-researchers have deliberately avoided going in the direction of prestige and expertise. We’re going in a direction outside of our comfort zone—the collaborative area between specialties.”

When Dr. Christopher McIntyre took a position in Derby, England, he was given what can only be described as a dingy office. No windows, no lights, and only one door that opened up to a main waiting room for a dialysis unit, Dr. McIntyre naturally spent a fair bit of his time watching patients as they would come and go for their treatment.

“They arrived pink, talking and happy, and would leave pale, grey and silent,” Dr. McIntyre said. “It was that empirical observation that something was happening

to them during treatment, which has led me to my current research endeavours.”

Dr. McIntyre recently joined Schulich Medicine & Dentistry’s team as a clinician-scientist and professor in two departments: Medicine and Medical Biophysics. His work, simply put, is focused on two goals—helping dialysis patients have fewer symptoms, and die less. He hopes that his research can be a driving force in achieving these goals.

Dialysis patients have approximately the same risk of

dying as most cancer patients, and for those who live, there is a tremendous burden of symptoms on the quality of life. Most of these issues come from the dialysis treatment itself. Dr. McIntyre has found that by reducing the temperature of the dialyzate—the part of a mixture that passes through the membrane in dialysis—they can prevent drops in blood pressure, and protect the heart and brain.

Next year, he will launch the largest study ever completed with dialysis patients worldwide to test this discovery. It will involve

approximately 7,500 patients.

Even though his contract officially splits up the time he spends on research and the time he spends as a clinician, Dr. McIntyre explained projects like these prove his work is more blended than compartmentalized.

“If you do research like I do, it’s hard to see where one role ends and the other role begins,” he said. “In that way, the scheduling seems artificial because when I’m working on my research, I’m helping my patients, and vice versa.” ■

RESEARCH

STRENGTH IN NUMBERS

Musculoskeletal diseases are a massive economic and health burden to Canadians and people across the world. Researchers at Schulich Medicine & Dentistry are teaming up to solve the mysteries behind endemic diseases that are eroding the foundation of the human body

FROM LEFT TO RIGHT:
Dr. Jeff Dixon, DDS'77, PhD;
Cheryle Séguin, MSc'01, PhD;
Frank Beier, PhD

BY TRISTAN JOSEPH, BA'98

It's 2040. A 62-year-old man walks into his doctor's office with severe knee pain and stiffness. He remembers his own father being diagnosed with osteoarthritis. He was by his father's side through knee replacement surgery and months of rehabilitation followed by the constant presence and need for a walker. Medicine has changed, however, and his doctor tells him the good news. There's an effective treatment for his condition—one that will have him back to normal in a few weeks. The treatment was developed as a result of research conducted by the Western Cluster of Research Excellence in Musculoskeletal Health (MSK Cluster).

This is the dream that drives David Holdsworth, PhD, the director of the MSK Cluster.

Musculoskeletal diseases affect 11 million Canadians, 12 years of age and older

each year. It doesn't discriminate, from the 17-year-old soccer player who injures her anterior cruciate ligament to the 52-year-old construction worker who has a workplace accident—millions are affected.

By 2031, that number* will rise to 15 million. With \$22.3 billion of direct and indirect costs to the economy and an aging population, musculoskeletal diseases impact every single Canadian.

"The reality in Canada is that people are living longer with the expectation that they will be able to continue to travel, try new activities and live at home independently," said Holdsworth. "That life is only possible with continued mobility."

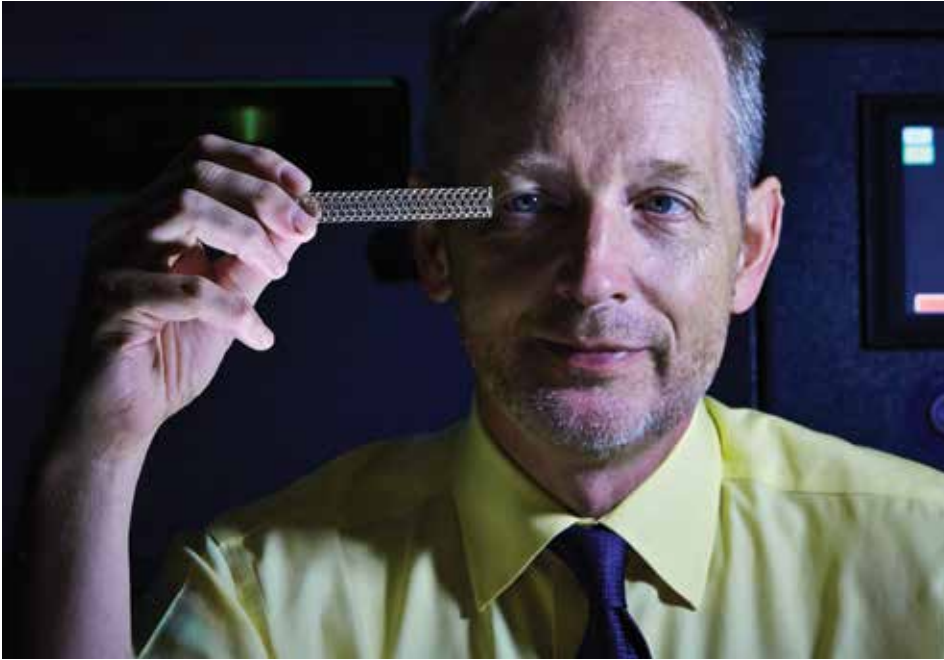
The goal of the MSK Cluster is to provide life-long mobility for people across the globe, reducing the burden to the economy and

health-care system.

The MSK Cluster is a transdisciplinary achievement, providing researchers with the ability to cross traditional boundaries. For Holdsworth, the strength of the grassroots initiative comes from crossing faculty and departmental lines in Health Science, Engineering, Social Science, Science and the Schulich School of Medicine & Dentistry.

Holdsworth works with a team of more than 70 researchers who form the MSK Cluster. It adds to his roles as Professor in Medical Biophysics, and Surgery, the Dr. Sandy Kirkley Chair in Musculoskeletal Research, and scientist at Robarts Research Institute.

The team at Schulich Medicine & Dentistry includes Dr. Jeff Dixon, DDS'77, PhD; Cheryle Séguin, MSc'01, PhD; and Frank Beier, PhD, in addition to 43 other researchers.



LEFT: David Holdsworth, PhD, examines a stainless steel mesh tube manufactured with the only 3-D metal printer in Canada

"The reality in Canada is that people are living longer with the expectation that they will be able to continue to travel, try new activities and live at home independently. That life is only possible with continued mobility."

—David Holdsworth

MAKING A GLOBAL IMPACT

In the 1980s, Dr. Dixon left his dental practice to study bone and cell biology. He found a home at Schulich Medicine & Dentistry as a professor in Physiology and Pharmacology, and Dentistry. Today, he also serves as the chair of the MSK Cluster Operating Committee and was honoured with a Distinguished University Professorship in 2015. His work focuses on the cellular and molecular mechanisms underlying the formation and destruction of bone and cartilage. Dr. Dixon describes his work as a detective mystery. Each day at the lab gets his team closer to the answers behind diseases like osteoporosis, periodontitis and osteoarthritis.

Working within the MSK Cluster has expanded his focus. His research encompasses working with Séguin on spine disease, with Holdsworth and Stephen Sims, BSc'75, PhD, on imaging bone cells and investigating therapies that could slow down bone loss or restore bone density.

"This is the way that I and the whole MSK Cluster can make a meaningful impact in Canada and the world in terms of improving musculoskeletal health," said Dr. Dixon.

TEACHING THE TEAM APPROACH

Working within the MSK Cluster has expanded the possibilities for Séguin's research. She is focused on understanding the factors behind the development of intervertebral discs—the soft, connective tissue joints of the spine that keep the back stable and enable movement.

"You can be stuck on a problem and immediately access experts who have the solution," said Séguin. "That team approach, that unique and open collaborative environment, exists because you're drawing on such diverse expertise."

Séguin is an associate professor in Physiology and Pharmacology and co-director of the Collaborative Training Program in Musculoskeletal Health Research, where she educates the next generation of researchers.

"Gone are the days of having your own lab and focusing on one thing," said Séguin. "Science is now focused on teams of scientists working together to tackle many different problems. The MSK Cluster better prepares our trainees to walk into that environment."

AGING WELL

Beier wears many hats across Schulich Medicine & Dentistry. He is a professor of Physiology and Pharmacology, mentor extraordinaire in the Collaborative Training Program, and holds a Canada Research Chair in Musculoskeletal Research. With the creation of the MSK Cluster, he has taken on a new role as a member of the MSK Operating Committee.

Beier studies the biology of cartilage during skeletal development and the progression of osteoarthritis. Utilizing genetic, molecular and cell biological approaches, the Beier Lab has demonstrated significant links between cartilage development and osteoarthritis.

He sees the importance of the MSK Cluster in its long-term impact. "Most musculoskeletal conditions, such as osteoarthritis, are not a normal fact of aging," said Beier. "People shouldn't be living the last 20 to 30 years of their lives unable to walk. Musculoskeletal diseases are something that we should be able to treat."

SOLVING THE MYSTERY BEHIND MUSCULOSKELETAL DISEASES

A tour of Robarts Research Institute with Holdsworth will inevitably take you to a room that houses the only 3-D printer in Canada capable of printing in metal, such as stainless steel and medical-grade alloys. The room also houses a variety of metal toy cats, cylinders and two joint-shaped parts—one solid and one made of a stainless steel mesh. The question behind the mesh is whether artificial joint implants with holes will integrate better inside the body and result in a better outcome for the patient. With the help of basic scientists, clinicians and imaging scientists, the MSK Cluster hopes to answer that question and hundreds more.

The strength of the MSK Cluster is its people—a community of researchers who are building a solid national and international foundation for research that will change the face of disability in the coming decades. ■

TEAMING UP TO SOLVE THE HIV PUZZLE

Eric Arts grew up near London and did his undergraduate degree at Schulich Medicine & Dentistry. Now he's a leading HIV researcher, and Chair of the Department of Microbiology and Immunology

BY PAT MORDEN, BA'77



Eric Arts, HBSoc'90, PhD, is a pretty big deal in the global HIV research community, with a raft of achievements behind him and a very bright future ahead.

In addition to being a world-class researcher, Arts is an enthusiastic cyclist. He rides to work, and routinely clocks 200 kilometres or more a week. When he travels internationally, he takes a folding bike with him in a suitcase. "It's the best way to see a country and its people," he said. "Between meetings I put my bike together and go for a 100-km ride to see what there is to see."

To see what there is to see—a good motto for a dedicated biomedical researcher. Arts grew up on a farm in Essex County, Ontario but always knew he would be a scientist. Within days of starting his undergraduate program at Western University, he had volunteered to work in Professor Anthony Ridgway's lab.

It was 1986 and the lab was involved in HIV research, only two years after the virus had been discovered. By the time Arts had completed a fourth-year project on HIV, he was committed to continuing the work. A quarter century later, the commitment burns as bright as ever, and Arts is back at Western leading a team of researchers on the brink of major advances.

After his undergraduate degree, Arts completed a PhD with Dr. Mark Wainberg, a leading HIV researcher and as he puts it, "the moral compass for HIV research in Canada." Arts moved to Case Western University for his postdoctoral research and then joined the faculty there.

His initial research was pure science, focused on the proteins and enzymes produced by the HIV virus, how new antiretroviral drugs blocked them, and how drug resistance developed. "Biochemistry set the foundation for me that allowed me to be successful in clinical research later," he said. In 1998, Arts established an advanced molecular clinical lab in Uganda, which has become a centre for testing for drug resistance in Africa.

After 20 productive years at Case Western, Arts was lured back to Western and Schulich Medicine & Dentistry in 2014 to become Chair of Microbiology and Immunology. He was attracted by the strong team already in place in the department and a commitment

"Science is changing, the silos don't work anymore. If we want to move forward, we have to work together to come up with new ideas."

—Eric Arts

on the part of the University to create a state-of-the-art research facility. Arts has recruited several more key team members since his arrival.

One of them is Dr. Jamie Mann. Educated in the U.K., Mann started his HIV research at St George's University of London and later Imperial College London. An expert in vaccine delivery methods, he moved to Cleveland to work with Arts and then followed him to Canada. "Eric's research is very compelling and he has the molecular knowledge and techniques required to be truly innovative," said Mann.

One of the challenges of HIV research is the sheer diversity of the virus, with hundreds of different strains. Arts' team has shown that this diversity has an impact on how the virus causes disease and how the disease progresses. The most dominant strains in North America and Europe, for example, are very aggressive, requiring immediate treatment and resulting in more treatment failures. The strains most common in Africa, by contrast, are slower moving and respond better to treatment. Arts' team is now exploring whether certain drugs in the arsenal of 29 approved antiretrovirals are better suited to fight each subtype.

The diversity of HIV is also a challenge when it comes to developing a preventive vaccine. "A successful vaccine has to be something that can neutralize or develop protection against a wide variety of HIV species," said Mann. "Conventional vaccine approaches have really struggled to come to terms with that." Arts' team developed a heterogeneous vaccine and are now working with a delivery method developed by Schulich

Medicine & Dentistry colleague Dr. Yong Kang. "We're combining our approach with his to get the best of both worlds," said Arts.

The Arts team is also hoping to develop a 'cure' for HIV.

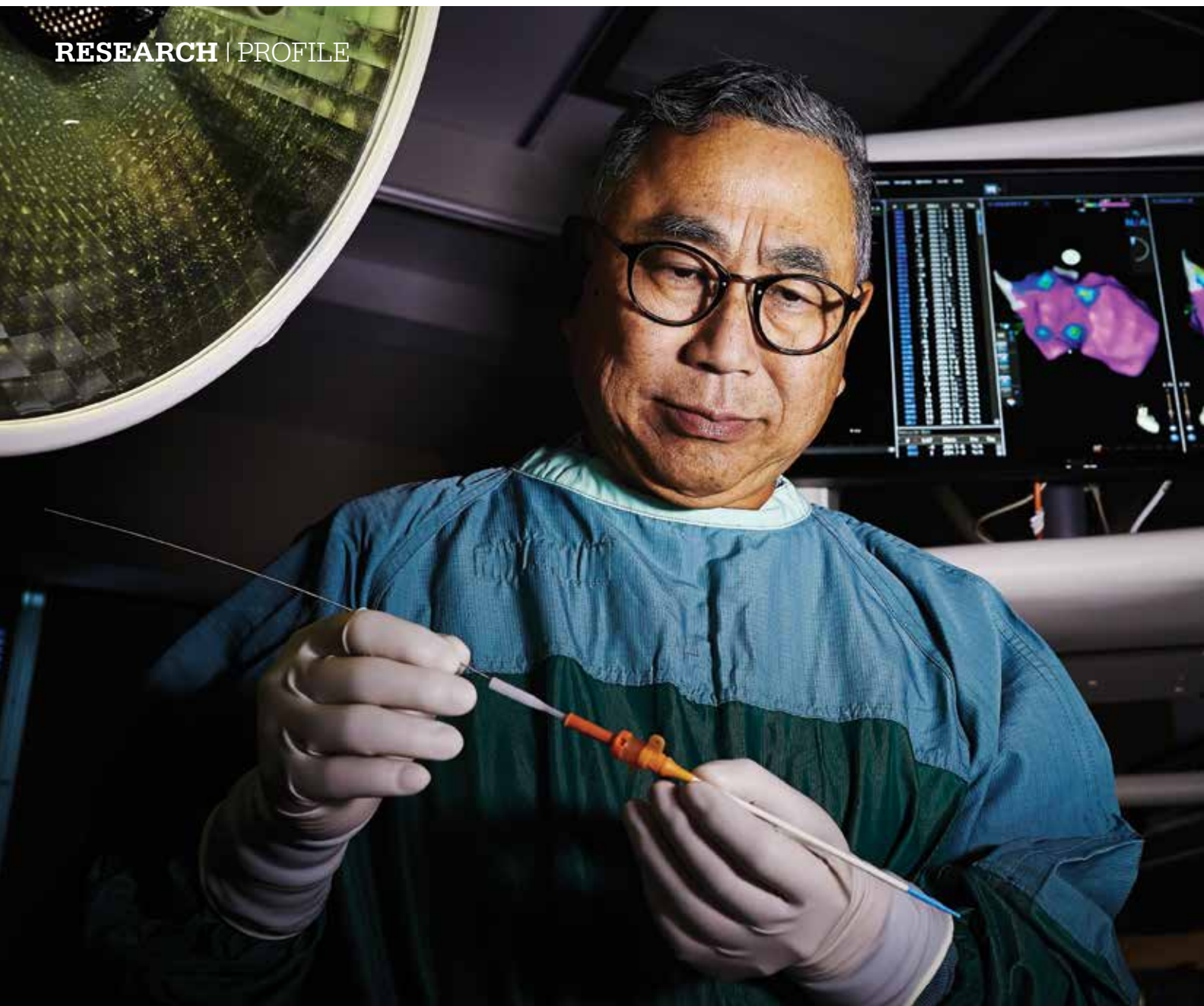
While antiretrovirals are generally effective in preventing full-blown AIDS, some HIV virus lurks in the body, ready to rebound whenever treatment stops. People taking antiretrovirals are at higher risk for cardiovascular and other complications.

The team has developed an approach that involves creating virus-like particles (VLPs) derived from the patient's own virus. The VLPs can no longer replicate but in other respects are identical to live virus. Their goal is to flush out the latent virus so that the patient's immune system, bolstered by the antiretrovirals he or she is taking, can destroy it. The approach currently requires the creation of individual VLPs for each patient, but Mann says the team has plans to create VLPs that could be administered to entire populations. The team is showing good results with primary human cell cultures, and is also evaluating this strategy in Macaques infected by SIV, the monkey version of HIV. They hope to start human trials shortly.

All this work and much more will be supported by a new \$15-million research facility, currently under construction. Known as the Imaging Pathogens for Knowledge Translation (ImPaKT) facility, it will combine state-of-the-art imaging equipment, including positron emission tomography, magnetic resonance imaging and in vivo imaging systems, in a Containment Level II and III facility.

It will enable researchers to study some of the nastiest viruses and bacteria safely and effectively. "It's an opportunity to look at infection and immunity in a whole new way. We have a great team in place, and I'm excited to bring in these tools and see what we can do with them," said Rick Gibson, who is overseeing its development. He also hopes the unique facility will attract top researchers from across Canada and around the world.

Arts already collaborates with scientists in several countries, and is a strong believer in the team approach. "Science is changing," he said. "The silos don't work anymore. If we want to move forward, we have to work together to come up with new ideas." ■



THE HEART OF THE MATTER

Dr. Anthony Tang leads CANet, a new \$26.3-million, Canada-wide network focused on improving arrhythmia care



“We need to have patients as part of planning the research to reflect what’s important to them.”

—Dr. Anthony Tang

BY PAT MORDEN, BA’77

When he was growing up in Hong Kong, Dr. Anthony Tang didn’t want to be a doctor. “I had the impression that doctors made a lot of money but didn’t necessarily have a lot of fun.”

Fortunately, Dr. Tang changed his mind. He is now a world-renowned cardiologist and researcher at Schulich Medicine & Dentistry, and Chief Executive Officer of the new Canadian Arrhythmia Network.

Dr. Tang moved to Canada after high

school. As a science student at the University of Toronto, he found many of his friends focused on winning a place in the medicine program. As he puts it, he “decided to give it a try and just happened to get in.”

When he graduated, he practised family medicine for two years, and then turned to cardiology. It appealed to him because he finds the specialty is intellectually challenging and requires a high level of technical skill.

During training at Duke University Dr. Tang’s interest in arrhythmia research began to crystallize. Intrigued by its scientific and mathematical underpinnings, he also saw it as a fit with his training in medicine. “I am a physician first,” he said. “I believe research has to be grounded in the care we provide to patients.” Even today, Dr. Tang continues to practise as a cardiologist. He enjoys the diversity of his work, encompassing research, teaching and care.

When his training was complete, Dr. Tang became Director of Electrophysiology and Director of Cardiology Research at the Ottawa Heart Institute, and then moved to Victoria to work with the Vancouver Island Health Authority.

His research career mirrored the remarkable achievements in cardiology during the past quarter century. He was involved in research to develop better ways to stop arrhythmias through the use of external defibrillation, and then helped develop the first implantable defibrillator devices. He also contributed to the development of cardiac resynchronization therapy, now a widely accepted treatment option for heart failure patients. His work, together with many others, advanced the practice of catheter ablation, and one of his projects at the moment is exploring ablation to treat atrial fibrillation in heart failure.

He moved to Schulich Medicine & Dentistry in 2013. He was drawn by the School’s strong program in arrhythmia research, led for many years by Dr. George Klein.

Dr. Tang was also attracted by the strong culture of teamwork and collaboration at the School. It’s the same spirit that makes the Canadian research community successful, he believes. “Canadians in my field work very

closely together,” he said. “We don’t have a lot of large centres like Mayo or Cleveland Clinic, but collectively we are stronger than any one of them.”

The spirit of collaboration was formalized in the Canadian Arrhythmia Network (CANet) as part of the federal government’s Networks of Centres of Excellence program. The \$26.3-million funding was announced in December 2014.

CANet’s goals during the next ten years are ambitious: to reduce sudden cardiac deaths by 10 per cent; to reduce the disease burden of atrial fibrillation by 20 per cent; to reduce health-care utilization as a result of syncope by 30 per cent; to commercialize five or more new technologies; and to train 30 to 40 skilled arrhythmia researchers. Dr. Tang was a natural choice for CEO as he has been providing leadership to the arrhythmia community for many years.

“The funding will enable researchers to build on their excellent work and go further,” said Dr. Tang. “We will have the capability to integrate our research beyond just clinical physicians.”

CANet will include engineers, social scientists, partners from industry, policy-makers and representatives from other sectors and disciplines. It’s important to Dr. Tang that it will also include patients. “We need to have patients as part of planning the research to reflect what’s important to them.”

Among the projects currently being considered is the development of cell phone-based technology to help diagnose and advise patients on a personalized basis. The goal is to ensure that those who need tertiary care get it quickly, while those who don’t need the high level of care aren’t stuck on long waiting lists. Other projects will develop better diagnosis and treatment approaches, with a view to both effectiveness and efficiency.

Dr. Tang says it’s time that researchers took a more pragmatic approach. “We need to develop new solutions that make sense for patients, make sense for the health provider, and make sense for health economics,” he said. “The only way we can achieve that is to all work together.” ■

BRINGING A NEW PERSPECTIVE INTO FOCUS

BY JENNIFER PARRAGA, BA'93

Saad Chahine, PhD, has always been fascinated by architecture.

As a high school student he drew sketches of buildings to understand complex mathematical concepts. During his graduate studies, he embraced photography as a hobby focusing on unique architectural patterns and structures.

With experience he began altering his positioning, perspective, and exposure and watched how the same building could come to life looking completely different. Frame by frame, what began as a way to pass time, began to influence his approach to his research and studies in developmental psychology and education. "When I was looking at my research, I started to look at concepts from different angles; this influenced my analysis and I began to see a more holistic view of people," he said, explaining the influence photography had on his work.

As the newest scientist at the Centre for Education Research & Innovation (CERI), Chahine has brought his passion for mathematics, education and photography, along with his well-honed analytical skills to his research studying the evaluation and assessment processes for learners. His work has become particularly important now with the Royal College of Physicians and Surgeons of Canada's new 2015 competency-based training framework.

Chahine's research is looking at how educators can make more accurate decisions about the performance of trainees, and their levels of competency. He believes that the rating scale, which is currently used, doesn't do justice to the complex skills that trainees are required to perform. "We are looking at ways to change our assessment practices to be authentic, capturing the complex skills that



"We are looking at ways to change our assessment practices to be authentic, capturing the complex skills that trainees are exhibiting and do it in a way that demonstrates a learning progression."

—Saad Chahine

trainees are exhibiting and do it in a way that demonstrates a learning progression," he said.

Lorelei Lingard, PhD, director of CERI, said that Chahine has the theoretical and methodological expertise to move the Centre forward in understanding how to achieve new assessment standards locally, and how to improve the science of workplace-based assessment globally.

It was Chahine's interests in mathematics and passion for education that led him to this relatively new area of research and eventually to CERI.

After completing his undergraduate degree in mathematics and physical education, Chahine began teaching math at the high school level in Toronto. He decided to pursue a master's degree with a focus in Theory and Policy Studies. His supervisor was Lorna Earle, PhD '86, and a world-renowned educator with a focus on policy and program evaluations. Earle introduced him to Ruth Childs, a quantitative psychologist, who supervised his PhD.

Chahine began working as a research scientist with CERI in September 2014. And he is well placed to be undertaking his research as an associate professor with the Department of Medicine, and Western's Faculty of Education.

Chahine's hope is that his research will help identify more realistic assessment

processes for students and trainees. Ultimately, he would like to see processes that provide more useful feedback, in a much shorter timeline. "We want to define and design a much more accurate picture of where people are in their learning," he said.

Straddling the theoretical and applied research streams, his work is expected to have immediate implications for how workplace assessment at Schulich Medicine is conducted. According to Lingard, it will also have longer-term implications to understand the benefits and limitations of new approaches to assessment.

Chahine is optimistic about the potential application of his research. He credits CERI's spirit of collaboration for helping him to advance his work. "The team is the most cohesive, collaborative group I have ever worked with," he said. Through this environment, and the continued and positive influence photography has on his work, success is a certainty.

"I anticipate that Saad's work will not only begin to reshape our own assessment practices in the next few years," said Lingard, "but it will also start to radically reframe how the assessment community is thinking about valid and reliable clinical assessment in the longer-term." ■

DISCOVERY



CATCHING CANCER IN ITS TRACKS

Paula Foster, PhD, and the team of imaging scientists
at Robarts are on a quest to conquer the deadly disease

A full-page photograph of an older man with a grey beard and glasses, wearing a blue button-down shirt. He is sitting in a laboratory or workshop, surrounded by various pieces of equipment, including a large blue machine on the left and a computer monitor on the right. He is holding a curved metal component with both hands. The background is filled with shelves containing boxes and other lab equipment.

ROBARTS DISCOVERY

UP CLOSE AND PERSONAL



Aaron Fenster, PhD

BY EMILY LEIGHTON, MA'13

The monster morphs into countless shapes and forms as it lurks within the human body—a mutant intruder that chaotically creeps and multiplies at an alarming rate. Its invasive tentacles forcefully seek new territory, wreaking havoc on the life it so cruelly disrupts.

The monster's name is cancer.

It is currently estimated that one in four Canadians will succumb to cancer. And the number of new cases is expected to rise by more than 70 per cent during the next 20 years, according to the World Health Organization.

To fight the monster effectively on all fronts, modern cancer research has evolved into a multidisciplinary effort. And innovative forms of imaging are an essential resource.

A team of imaging scientists at Robarts Research Institute is making considerable contributions to this particular quest through the Cancer Imaging Research Program. For them, getting eyes on the disease appears to be a winning battle strategy.

"If you can't see it, you can't strike it," said Aaron Fenster, PhD, director of the Imaging Group at Robarts. "And if you can't strike it, you can't cure it." Fenster is an inventor and scientific whiz. With more than 50 national and international patents to his name, he represents a strong arsenal of knowledge and experience in confronting the cancer monster.

Using 3-D ultrasound, Fenster and his team at Robarts are developing technologies that allow doctors to precisely guide tools for cancer diagnosis and treatment. His lab creates image-guided interventions for breast, cervical, liver and prostate cancers.

"We are looking at diagnosing cancer very precisely and guiding therapies more accurately," he explained. "The idea is to destroy the cancer through minimally-invasive procedures." →

ROBARTS DISCOVERY

Fenster's inventive mind is currently working on an imaging system that will complement cervical cancer treatment. Radioactive seeds are inserted into patients, destroying the cancer from inside. But precision is difficult and potentially inaccurate, as the procedure is currently performed without image guidance.

Using 3-D ultrasound in combination with each patient's diagnostic magnetic resonance imaging (MRI) scans, Fenster is devising a system that solves this missing visual element. "Physicians will be able to see the procedure as it takes place," he said.

A bench-to-bedside mentality exists across all of Fenster's research projects. From inventing solutions for clinical problems to building complete imaging systems, including hardware and software elements, his lab is on the cutting edge of medical imaging and applications.

This remarkable innovation is paralleled by renowned expertise in other imaging fields at Robarts, including research underway by Paula Foster, PhD.

Foster is a scientific detective extraordinaire. Using MRI, she tracks the movement of cancer cells and treatments in the body. The technique, called 'cell tracking', is one-of-a-kind in Canada.

Cells are labelled with magnetic nanoparticles, making them detectable with high-resolution MRI. This enables Foster to pinpoint small cellular events in the body that are pre-disease, catching a cancerous lesion or tumour in its earliest phase.

With many of her investigations, Foster tracks breast cancer metastases—secondary tumours that develop in the liver, bone, lung or brain. These particularly vicious manifestations of the disease are responsible for the most breast cancer-related deaths, as the metastatic tumour can be treated but not cured.

An exciting new discovery has also given Foster and her team the ability to detect and monitor dormant cancer cells. Dormancy is a stage in cancer progression where cells do not divide, but survive in an inactive state—the cancer monster quietly waiting to strike again.

"These cells can remain in this dormant state for years, even decades, before waking up, dividing and proliferating to become tumours," explained Foster. "They exist as ticking time bombs and are believed to be responsible for tumour recurrence."



Ting-Yim Lee, PhD

"Doctors need to know as early as possible whether cancer treatment is effective or not for their patients."

—Ting-Yim Lee



Foster's lab is working to identify these time bombs before they detonate. "This research has the potential to shed light on one of the least understood aspects of breast cancer recurrence," she said. "Our studies may lead to the investigation of treatments that target dormant cancer cells."

Using the same cell labelling technique, Foster is tracking immunotherapy treatment, an experimental therapy that harnesses a patient's own immune cells to attack cancer. These immune cells are monitored as they migrate throughout the body.

Timothy Scholl, PhD, is also paying close attention to the small details of the disease.

He is looking inside cancer tumours, developing molecular imaging probes to non-invasively assess changes in tumour biology.

These probes are created out of magnetized molecules and subsequently injected as contrast agents, making them visible with MRI as they embark on an explorative mission in the body.

Scholl specifically focuses on tumour metabolism. "If we can see how the metabolism is different in tumours that means we can identify them, determine how aggressive they are and also analyze treatment response," explained Scholl.

Another major benefit of tracking tumour metabolism is how frequently it changes.

"Treating a tumour, it might take weeks to notice any difference by conventional methods," said Scholl. "Working with metabolism allows us to detect change much earlier."

For Scholl, imaging is a vital tool in confronting the cancer monster. "Imaging allows for the identification of disease and validation of treatment, making cancer care more patient-specific and less costly," he said.

Visualizing cancer treatment is an important step in realizing this ideal of personalized medicine.

"Doctors need to know as early as possible whether cancer treatment is effective or not for their patients," said Ting-Yim Lee, PhD. He is using readily available computed tomography (CT) scanners to give physicians this precise ability.

Applying his renowned CT perfusion technology, Lee measures blood flow to and from cancer tumours. Because tumours need blood vessels to survive and grow, they often display an increased number or concentration, known as angiogenesis. CT perfusion indicates if treatment is starving the tumour of these new blood vessels effectively or not.

The goal is to identify which patients will benefit from certain types of cancer treatment, such as angiogenesis-inhibiting drugs, and which will not.

In recent multi-centre clinical trials on cases of liver and ovarian cancer, this technology has proven to be a strong predictor of therapy outcomes. "CT perfusion is a very powerful addition to the monitoring of cancer treatment," said Lee. "The technology is easily implemented and efficient, and can give physicians a fuller picture of how patients are responding to treatment."

As is evident by the work underway at Robarts, the power of many exceptional minds is pushing cancer imaging in promising new directions.

With the combined ability to detect the disease at its earliest stages and improved methods of delivering and tracking treatment, imaging research at Robarts is providing hope for the cancer patients of the future.

And with eyes on the disease, these researchers are determined to get up close and personal. Their relentless determination is a warning to the monster; you can run but you can't hide. ■



Timothy Scholl, PhD

"If we can see how the metabolism is different in tumours that means we can identify them."

—Timothy Scholl



MAPPING THE WIRED BRAIN

Researcher Dr. Julio Martinez-Trujillo, PhD, is studying the brain circuits affected by autism. His personal motivation to investigate the disorder is anything but ordinary

BY EMILY LEIGHTON, MA'13

Many of Dr. Julio Martinez-Trujillo's trips to the supermarket turn into interesting social experiments. Among the produce and packaged food aisles, he finds his most compelling research subjects: babies.

It's the eye contact that strikes him about these tiny humans—the hard-wired response to lock their gaze with another person, even a stranger in the check-out line.

"Gaze behaviour is very important in a child," he explained. "Humans learn by imitating behaviour and facial expressions. Our early life communication and learning starts with gaze contact."

These supermarket expeditions are fascinating for Dr. Martinez-Trujillo as a researcher at Robarts Research Institute, and also as a parent. He has a four-year-old daughter who has autism.

"As a child with autism, she can't stand to look someone in the eyes or she gets totally overwhelmed," he said. "She has beautiful greenish-grey eyes, but she has not looked at me for more than two seconds since she was born."

What's remarkable about this personal story is how Dr. Martinez-Trujillo, the newly appointed Provincial Endowed Academic Chair in Autism at the Schulich School of Medicine & Dentistry, is applying his own experience at home to his work in the lab. The birth of his daughter motivated him to employ his expertise in neurophysiology to the study of autism.

A clinical neurophysiologist by training with a doctoral degree in neurobiology, Dr. Martinez-Trujillo has spent much of his research career studying how the brain's electrical circuits implement attention and

"How different parts of the brain are connected determines how we perceive, think and act."

—Julio Martinez-Trujillo

control gaze. "We pay attention to and look at things that are important to us," he explained. "This importance is determined by patterns of brain connectivity formed during development and shaped by what brings us joy, satisfaction and reward."

In his role as a scientist at Robarts and Western University's Brain and Mind Institute, he is taking these research themes in a new direction. "I think I can contribute a lot because I have tools that can be quite unique and a strong motivation to do this type of work," he said.

Among these tools and techniques is the emerging area of optogenetics, a research method that uses light to control the activity of brain cells, circuit function and behaviour. Dr. Martinez-Trujillo also incorporates microchips in his research to measure the activity of the hundreds of brain cells within a single circuit.

"How different parts of the brain are connected determines how we perceive, think and act," he explained. "Mapping brain circuits is similar to the way an electrician would probe the circuit of a house. We send pulses from one region to another and then we can see how these two parts are connected."

A form of reverse engineering, Dr. Martinez-Trujillo's lab retraces the electrical activity from the muscles that produce behaviour to the brain circuits that are responsible for activating these muscles.

"What I'm trying to do is look at the specific brain circuits that are affected during autism and understand how the circuitry is wired," he said. "This approach narrows down the problem to a specific circuit and identifies if something is damaged, missing or misconnected."

Once these circuit issues are identified, the next step is to discover how to fix them. In the future, this research will guide targeted interventions to prevent circuit dysfunction, improving quality of life for patients and their families.

With such a personal stake in his work, Dr. Martinez-Trujillo is positive yet pragmatic. The word he uses to express his outlook is empathy, a capacity to know first-hand what it is like to care for a child with autism. It gives the researcher a sense of purpose and resolve.

"It's not that I want to cure my daughter, that is not the point," he explained. "But I want to improve her quality of life and the lives of other children with autism. I want to prevent this from happening to other families." ■



SMART SKIN

Andrew Pruszyński's research changes the way we see the role of peripheral nerves and could lead to significant improvements in treatment and rehabilitation

BY PAT MORDEN, BA'77

Imagine a sophisticated robot capable of providing rehabilitative care to stroke survivors.

Sounds like a brilliant idea and it is. But as Andrew Pruszyński, PhD discovered, such a robot can only be programmed based on a clear understanding of how human limbs move.

Pruszyński actually built the robot while an undergraduate student in electrical engineering at Simon Fraser University. "We had no real idea how to use the technology, because no one understood the underlying biology," Pruszyński said. "I could build it, but it wasn't useful."

Some people might have been discouraged and turned to other projects: Pruszyński decided to pursue a PhD in neuroscience. "It was a big

change," he admits. "I didn't even take biology in Grade 11."

He completed his doctorate, and his thesis won a Governor-General's gold medal. It focused on how sensory inputs from muscles in the arm are used to adjust to unexpected perturbations. For example, if you reach out for a cup of coffee and something bumps your arm, you automatically correct and continue reaching for the cup. Except that it's not automatic at all. "It turns out there are a lot of sophisticated computations that go into those corrections, and they use the same neural circuits that are used when you make a voluntary movement," Pruszyński said. "There's always been a division between voluntary movement and reflexes, but my work suggested that they are two parts of the same sensorimotor control process."

He went on to complete postdoctoral research in Sweden, which is considered the birthplace of microneurography, a method used to visualize and record nerve impulses in the peripheral nerves of waking human subjects.

Microneurography involves inserting a fine tungsten needle electrode into the nerve and connecting it to an amplifier. Pruszyński used the technique to study the role of neurons in the skin when we're manipulating an object. By moving the tip of the electrode, he was able to isolate the actions of specific neurons and then see where they were connected in the skin.

He discovered that neurons on the skin

were able to signal, for example, the orientation of an edge touching its patch of skin. Previously it had been assumed that receptors on the skin were simply wires used to send information to the brain, where the complex computations were made to figure out what was happening. "We were able to show that the neurons in the skin already do a lot of computations that are useful in object manipulation tasks," he said. "It turns out that they can produce information once thought to be a hallmark of cortical sophistication." Future work will explore how the central nervous system deals with information provided by these neurons.

The findings are more than interesting: they have important implications for clinical care.

When someone experiences a peripheral nerve injury—perhaps as the result of a car or industrial accident—a surgeon stitches the nerve together and the nerve regrows. Generally, however, the patient doesn't recover full function and can't return to the same skilled job. Pruszyński thinks his research may help to explain why. "Our results suggest that we have to worry about much more than just the nerves regrowing," he said. "If you want the person to recover fully, the nerves have to regrow in a very specific way that enables them to reproduce the computations they once did."

In the short-term, this knowledge may be useful in determining which patients will recover best and which will need more intensive rehabilitation. In the longer-term, it may inform the development of better surgical strategies.

Pruszyński recently joined Schulich Medicine & Dentistry and is an Assistant Professor with Physiology and Pharmacology and a scientist at Robarts Research Institute.

Currently busy setting up his lab, Pruszyński's next project will be to work with researchers at the Roth McFarlane Hand and Upper Limb Centre at St. Joseph's Health Care London to explore more fully the potential clinical applications of his research.

He remains engaged in his research because he has found a sweet spot that brings together his training and interests. "It's a good mix of the engineering and math side of my brain, and the neurophysiology side," he said. "I get to work with computer scientists at one end of the spectrum, and surgeons at the other. All the different approaches are driving in parallel toward better outcomes for patients." ■

ALUMNI | AWARDS



ALUMNI OF DISTINCTION

FROM LEFT TO RIGHT:
Dr. William Wall;
Fred Possmayer, PhD;
and Dr. George Kim

From the neonatal unit and operating room to the classroom, clinic and the community, the six recipients of the 2015 Alumni of Distinction Awards have all made a tremendous impact on the lives of people in Canada and around the world

BY JENNIFER PARRAGA, BA'93

Fred Possmayer, PhD'65

Excellence in Basic Science Research Award

Fred Possmayer's passion for research and discovery and his nearly half century of commitment to Western University demonstrates he is the epitome of an individual who has made outstanding contributions to the field of basic sciences research, setting a standard of excellence to which others can aspire.

Possmayer completed his PhD in Biochemistry in 1965. He then pursued advanced research training at University of Cologne, University of Utrecht and the University of California. He made his way back to Western in 1971 when he accepted an appointment with the Departments of Obstetrics and Gynaecology, and Biochemistry.

He is best known for his leadership contributions to the development of bovine lipid extract surfactant (BLES). This life-saving advance has dramatically enhanced the survival of countless premature babies that experience respiratory distress syndrome. His BLES was delivered to 99 per cent of neonatal units in Canada and to many other countries including New Zealand and India.

Throughout his career, he published more than 280 publications and presented more than 100 invited lectures. His publications have been cited more than 8,000 times, and he has an H index of nearly 50. To this day, his publications continue to be cited at a rate of nearly one per day.

Dr. George Kim, MD'03

Young Alumni Award

Dr. George Kim's youthful enthusiasm, informal teaching style, passionate energy and dedication are just some of the qualities that have enabled him to earn tremendous admiration and respect from his colleagues, peers and students. He is described as being 'always available,' a trusted colleague, who takes time to listen and care. His hallmark as an educator has always been his ability to model the School's values in all aspects of its four Pillars of Professionalism: Altruism, Integrity, Responsibility and Respect for students and faculty.

Dr. Kim completed his medical degree in 2003, and his residency in Family Medicine in 2005. In 2006, he became an adjunct faculty member with the Department of Family Medicine. In 2008, he became the coordinator for the undergraduate education program in Family Medicine. In 2012, he was appointed to a full-time position as Assistant Professor and in 2015, Dr. Kim was appointed Assistant Dean Rural Regional & Community Engagement. Through this role he leads the School's extensive Distributed Education Network.

Although early in his career, Dr. Kim has served as a mentor and role model for many and established a record of distinguished performance. In 2015, he received the Class of '62 Award and the Douglas Bocking Award.

Congratulations to Fred Possmayer, PhD'65 Dr. George Kim, MD'03 Dr. William Wall, MD'70

Dr. William Wall, MD'70

Professional Achievement Award

Dr. William Wall is known as 'Mr. Liver Transplantation' in Canada. An award-winning medical student, he pursued training in what was then the new area of surgical treatment of liver disease by transplantation. After completing his medical degree, he pursued his training at Cambridge, and when he returned to London he developed a referral practice in hepatobiliary surgery for Southwestern and Northern Ontario. He is credited with conducting the first liver transplant in Canada in the late 1970s.

In addition to his surgical innovations and achievements, Dr. Wall has taught and mentored many surgeons, who now occupy senior positions in every academic centre in Canada and many abroad.

His commitment to patient care is described as outstanding. Despite long days as a surgeon, he has never been 'too busy' to spend time with his patients, nor their families, during catastrophic illness and during recovery.

He has been a champion for encouraging public awareness about organ donation in Canada. In collaboration with the Trillium Gift of Life Network and The Kidney Foundation of Canada, he is recognized for leading the creation of the award-winning educational campaign *One Life... Many Gifts*, which is now part of the Ontario high school curriculum. It is for this work that he received the Order of Canada. In 2015, Dr. Wall received the James H. Graham Award of Merit from the Royal College of Physicians and Surgeons (RCPS). It recognizes outstanding achievements that reflect the aims and objectives of the RCPS.

Dr. Jill Bashutski



**Congratulations to
Dr. Jill Bashutski, DDS'05
Dr. Len Chumak,
DDS, MCID'85
Bessie Borwein, PhD'73**

Dr. Jill Bashutski, DDS'05

Young Alumni Award

Dr. Jill Bashutski graduated with a Doctor of Dentistry degree in 2005. A top-ranked, award-winning student throughout her undergraduate studies, she spent several summer terms as a research student working with Ed Lui, PhD, Dr. Jeff Dixon and Stephen Sims, PhD. Her former teachers and research advisors describe her as hardworking, collaborative and a person with great integrity and humility.

Following her studies at Western University, Dr. Bashutski completed her Certificate in Periodontics and her Master of Science in Periodontics from the University of Michigan School of Dentistry. Since graduation, she has established herself as a leading researcher and educator.

Today, Dr. Bashutski is a Clinical Assistant Professor and the Acting Director of Graduate Periodontics, and Director of Undergraduate Periodontics at the University of Michigan.

Dr. Bashutski serves as a senior editorial review board member for Implant Dentistry and the Journal of Oral and Maxillofacial Research. She has published extensively, including a first-authored paper in the prestigious *New England Journal of Medicine*. She has authored more than 25 articles and five book chapters on periodontics and implant dentistry. Dr. Bashutski also works in private practice in Regina, Saskatchewan and Ann Arbor, Michigan.

Dr. Len Chumak, DDS, MCID'85
Alumni of Distinction Award – Dentistry

Dr. Len Chumak completed his Master of Clinical Dentistry in Orthodontics at Western University in 1985. Immediately following graduation, he was appointed Assistant Professor, and has been a major contributor to the education mission at Schulich Dentistry since that time. For the past 15 years, he has offered lectures to current dentistry residents. His students attest to his insightful seminars, which help to prepare them for their board exams and future clinical practice.

Dr. Chumak is known for his genuine concern for the success of his students, and his kind nature and gentle sense of humour, which accompany his lectures.

Beloved by students and colleagues alike, more than 25 people supported Dr. Chumak's nomination for the award.



Dr. Len Chumak



Bessie Borwein, PhD

Bessie Borwein, PhD'73
Community Service Award

Bessie Borwein is described as a tireless champion for biomedical researchers, for the community and for health care issues. Her sensitivity to social injustices stimulated her to channel her energies into solutions to many challenges in the lab and the community.

Borwein completed her PhD in 1973, and following her postdoctoral training, became an instructor and lecturer at Western University. By 1984, she was an Associate Professor, and 1987 she became the Associate Dean of Research for the then Faculty of Medicine at Western University.

In this role, she initiated work to protect basic researchers from the attacks of animal welfare activists and spearheaded the formation of Partners in Research (PIR). It was the goal of PIR to provide ongoing information to the public on the importance of medical research and the essential role of well-

regulated and humane use of animals in many new discoveries. PIR is now a national organization continuing its outreach to secondary school students.

As the president of the London Branch of the National Council of Jewish Women, Borwein is credited for organizing the Block Parent Program, now in existence across Canada.

Borwein's commitment to the community enriched the lives of men, women and children through her work on the board of the Madame Vanier Children's Services, and with the Alzheimer's Society of London, the Ontario Breast Screening Program Research Advisory Committee, the Foundation for Gene and Cell Therapy, the Board of Trustees of the National Institute for Nutrition, and the Scientific Advisory Committee for the Youth Science Foundation.

Recognized nationally for her many contributions, Borwein is described as a spirited communicator with flair and eloquence.

MAKING CHANGE

With a philosophy of life to focus on solutions, Dr. Abdel-Rahman Lawendy is making change to better the lives of learners, his patients, and people around the world in crisis

BY JENNIFER PARRAGA, BA'93



Dr. Abdel-Rahman Lawendy, MD'03, PhD'14, gripped the edge of the unstable park bench in the back of a Volkswagen van, as it sped through the cover of darkness toward the Croatian border. The bombed out city of Sarajevo, under siege once again, grew smaller in the distance.

Waves of nausea hit him, as the van travelled more than nine hours through the unforgiving mountainous terrain. They stopped at checkpoints; just long enough for Dr. Lawendy to reach out his hand to cup some mountain water to replenish his system.

It was 1994 and the height of the Bosnian war. Dr. Lawendy was 18 years old at the time, working with Mercy International as part of a United Nations sponsored initiative. He had entered an essay contest and received the opportunity to travel to Sarajevo to assist with the relief efforts. Young, idealistic and feeling invincible, he didn't hesitate.

He never imagined, however, the reality of what was actually taking place. The devastating images of children, dirty and hungry, remain with him today. "You learn about war in history class when you are going to school," he said, "but it seems distant and obscure. This was an aggressive, violent destabilization of all infrastructure and civil society."

This was Dr. Lawendy's first humanitarian mission. The experience had such an impact on him that, two years later, he and a friend cycled across Canada to raise funds for Mercy International. "We travelled from Newfoundland to British Columbia and raised \$20,000, which at the time, seemed like a lot of money," he said with a thoughtful smile.

In 2005, during his residency, Dr. Lawendy and two of his fellow residents travelled to Balakot, Pakistan, situated in the Himalayan Mountains to provide front-line care following the devastating earthquake.

The missions have continued. In 2009, he travelled to Gaza as part of an international medical team and worked in a hospital during the 23-day Israeli attack.

Most recently, he spent a full month in Yemen with Médecins Sans Frontières (MSF)/Doctors Without Borders, working in a hospital dedicated to treating victims of violence.

Soft spoken, and almost serene, Dr. Lawendy is very pragmatic about the missions he undertakes.

"When you see people in severe calamity, most people want to help solve the problem. It's about applying a skill you have to help people—on an individual level it's a very basic but effective approach."

—Dr. Abdel-Rahman Lawendy

He believes that the media steadily advance a narrative focused on problems with no solutions, which in turn creates apathy. He would rather focus on solutions. "When you see people in severe calamity, most people want to help solve the problem. It's about applying a skill you have to help people—on an individual level it's a very basic but effective approach." It's a philosophy he has applied to his own career and the rest of his life.

As an orthopaedic surgeon with specialty training in trauma surgery, Dr. Lawendy definitely has a skill to share. It's one he developed through many years of training at Schulich Medicine & Dentistry.

Dr. Lawendy first encountered Schulich Medicine when he had the good fortune to work with Drs. Cec Rorabeck and Robert Bourne during a co-op placement. While studying medicine was not really part of his original plan, he was encouraged by the renowned surgeons to apply to medical school.

Medical school was a completely different world for the young student who describes his approach to his studies as less than disciplined. "The challenge of medical education is not in the understanding of concepts or principles but rather it's the volume of knowledge that you need to have mastery over."

Despite the workload, Dr. Lawendy has great memories of medical school. "It was a remarkable time," said Dr. Lawendy, who describes his class as tight and socially conscious. "As a class we felt strong and empowered; we knew we had a place in the School," he said recalling the issue of tuition increases which came about during his undergraduate years. His class challenged the plan

to increase tuition rates in the medical school, fearing that medical education could become exclusive and elitist.

The intense curriculum, specifically during his clerkship, inspired him to stay at Schulich Medicine for his residency.

It was during his residency that he began his PhD in medical biophysics. Dr. Lawendy successfully defended his thesis in November 2014, describing the whole experience as a difficult balancing game. "When I started at Western I underestimated the clinical and teaching demands of running a trauma practice, training residents and medical students, while competing for research grants and running a lab," he said. "At one point it seemed almost insurmountable to me. It took a discipline that I didn't have, and a whole restructuring of my approach to work."

It was through this challenge that Dr. Lawendy imagined a solution for those individuals who wanted to pursue a more intensive research path during their surgical residency: the Master of Science in Surgery Program. Today, he is the Chair of the program.

Dr. Lawendy's research focuses on the study of the pathophysiology of compartment syndrome. The syndrome usually results from bleeding or swelling after an injury. The dangerously high pressure in compartment syndrome impedes the flow of blood to and from the affected tissues.

He and his team are trying to better understand the mechanisms that lead to the syndrome and determine if there is a drug which can expand the surgical window and salvage the muscles. They have patented a drug through World Discoveries and continue to work toward a solution.

An award-winning professor, Dr. Lawendy values his relationship with his students, noting how he continues to learn from them. "While I'm teaching students about technical skills of surgery, I'm also learning from them, as they offer creative solutions that I have not considered, for difficult problems."

"During medical school you meet such different personalities," said Dr. Lawendy. "You find people who will be problematic and people who you just know will alter the course of the field." With a philosophy to focus on solutions instead of obstacles, Dr. Lawendy is altering medical education and care in Canada and around the world. ■

LIFE-LONG DEVOTION TO A SOCIAL DISEASE

Dr. Anne Fanning didn't plan to focus her career on tuberculosis. It was an opportunity that just fell into place, and an infectious disease that fascinated her throughout her career

BY JESICA HURST, BA'14

Dr. E. Anne Fanning, MD'63, FRCPC, closes her eyes and recalls a frail man sitting before her, telling his life's story.

The man was one of the last patients Dr. Fanning saw before she retired, and he had spent a significant portion of his life dealing with the effects of tuberculosis (TB), a serious infectious disease that primarily affects the lungs. He had acquired the infection as a young child in a residential school.

TB had affected the man's back bone and he needed to spend an entire decade in a body cast.

"Meeting that patient is one of the strongest memories I have," Dr. Fanning said. "It was a profound experience for me to realize how rich and wonderful my life had been, and how traumatized he had been, solely because of where he was born and where he grew up."

Dr. Fanning never planned to focus her career on TB. After graduating from medical school in 1963 and training in internal medicine, she and her husband decided to have a child.

When she was ready to return to work six months later, a colleague informed her of a part-time position at the University of Alberta's Division of Infectious Disease. The job would have her focus on TB.

"I must say, when I heard about the job, all I could think of was how boring it was going to be," she said with a laugh. "I only took it because of the hours and flexibility—I didn't know how fascinating it was going to be, or what an impact it would have on my life."

Dr. Fanning was immediately drawn to TB's myriad of presentations that are challenging to diagnose, and the strong statement it makes about socioeconomics not just in Canada, but globally as well.

The majority of people affected by TB have lower socioeconomic status, and usually live in small quarters with several people and little airflow. Because of this, they are more likely to be exposed to the one person in the room who has active infectious TB.

While TB is now mainly a disease of the third world, major populations are still affected by it in Canada, including the immigrant and First Nations populations.

"It has been said that Sir William Osler once described tuberculosis as 'a social disease with a medical aspect.' I think my passion is related to the fact that this is a disease of no concern to approximately 95 per cent of the population in Canada, and yet a huge burden globally," she said.

Dr. Fanning was able to make significant changes in the field of TB throughout her career, through her many roles including Director of TB Services for the Province of Alberta and Medical Officer for the World Health Organization's Global TB Program.

"I feel like I'm still the same person I was when I first entered medical school, I'm just in a new phase of my life."

—Dr. E. Anne Fanning



One of Dr. Fanning's former classmates, Dr. Eric Shepherd, MD'63, FRCPC, explained from the first time he met her in 1959, she has remained a continuous positive influence in many spheres. "My colleague and friend has devoted her energy and expertise unstintingly to confront the challenges of an ancient and resurgent disease that has major prevalence among the most underprivileged," he said.

Dr. Fanning has been recognized for her achievements and work through multiple prestigious awards, including: the Order of Canada in 2006; the Frederic Newton Gisborne Starr Award by the Canadian Medical Association in 2014; and a Lifetime Achievement Award from the North American Region of the International Union Against Tuberculosis and Lung Disease.

In addition to gardening, cooking and spending time with her three grandchildren, the 75-year-old continues to do infectious disease grand rounds, gives lectures about TB, and remains a part of several organizations including the Edmonton Lifelong Learners Association.

"I feel like I'm still the same person I was when I first entered medical school, I'm just in a new phase of my life—the phase where you want to stay connected and care passionately about what's going on, but don't have an official role," she said.

Continuing to lecture and give rounds has helped her with this transition, as she still has the opportunity to spend time with the brightest new minds in medicine.

"I know they will be able to make an even greater impact on global health," she said with a smile. ■

ALUMNI | PROFILE

RESHAPING LIVES

As an experienced plastic surgeon specializing in breast reconstruction surgery, Dr. Mitchell Brown, BSc'84, MD'88, recognized the need for education and awareness about the options available to breast cancer survivors. He turned this idea into action, founding an international movement that continues to grow



BY EMILY LEIGHTON, MA'13

The faded pale pink ribbon rests on Dr. Mitchell Brown's large office desk. It's not unlike the pink ribbons proudly worn by millions around the world each October in support of breast cancer awareness—except this one is special.

This one has an extra loop, creating an eternal infinity symbol. And its creator is Dr. Brown's sister, a two-time cancer survivor and gifted artist.

"For me, the eternal infinity symbol signifies longevity and life," said Dr. Brown, BSc'84, MD'88. "It represents closing the loop on breast cancer."

Closing the loop on breast cancer is the official motto for Breast Reconstruction Awareness (BRA) Day, founded by Dr. Brown in 2011. The unique pink ribbon is its logo.

An annual event, BRA Day promotes access, education and awareness for women who may wish to consider post-mastectomy breast reconstruction. It is celebrated on the third Wednesday in October through a series of workshops, panel discussions, support groups and online resources.

Among the events is the popular and often emotional "Show and Tell" Lounge. In safe and private spaces, breast cancer survivors share their experiences with those considering the procedure and bare the results of breast reconstruction following mastectomy.

"So much of what we do is visual," explained Dr. Brown. "It's one thing to talk about reconstruction, but women want to know what it looks and feels like."

An experienced plastic surgeon based in Toronto, Dr. Brown helped establish BRA Day to encourage this type of awareness and combat misinformation about breast reconstruction.

"Over and over again the story I was hearing was that patients didn't know reconstruction options existed or they believed there was a huge cost associated with the surgery that wasn't covered by provincial insurance," he said. "Women who want to consider breast reconstruction should be made aware of their options and they should be

provided access in a safe and timely manner."

It's a message that has resonated, as BRA Day continues to gain traction. Since its launch four years ago, the initiative has expanded to more than 30 countries worldwide. It has also grown past a single day and now operates 365 days a year.

This success and recognition is meaningful to Dr. Brown, but he is quick to distance himself from the campaign's impressive accomplishments. Instead, he prefers to credit the thousands of volunteers and local organizations that continue to spur awareness and change.

"My feeling from the beginning was if it had ownership there would always be a sense of personal gain," he said. "It wouldn't grow the way it needed, which was not through a surgeon or a surgeon's practice, but just by virtue of what it was."

This organic and grassroots approach strengthens BRA Day's main purpose in promoting life and well-being after cancer.

"A woman is diagnosed with breast cancer and the thought has always been about treating the cancer," explained Dr. Brown. "There is a lot of work to be done to help people understand that there's also great benefit in healing self and healing the whole body, not just the disease." ■

WATER PHILOSOPHER

Linda Gowman, MSc'89, PhD, is a practical engineer with a big-picture approach to clean water. As Chief Technology Officer at Trojan Technologies, she oversees the advancement of water purification for the benefit of people and industry around the world

BY EMILY LEIGHTON, MA'13

Relaxing in a cottage hammock one summer day, overlooking a calm and clear Eagle Lake in Northern Ontario, Linda Gowman, MSc'89, PhD, had a personal epiphany about water—not the usual kind of aha moment the practical engineer was accustomed to.

"I got to asking myself, why is it that some places have good water and water treatment and others don't," she explained. "The great realization for me was that providing the world's people with water is actually a social policy conversation."

If Gowman's career choice is any indication, this wasn't just a run-of-the-mill epiphany. Instead, it was a highly relevant observation about her industry, as she has been working for Trojan Technologies, the London, Ontario-based water purification company, for 16 years.

Trojan specializes in UV water treatment,



“Treating water is in the same place philosophically as medical engineering. Both have a public health focus.”

—Linda Gowman

providing clean water solutions for municipalities and industries around the globe.

But advancing technical solutions isn't the company's sole motivation. “Certainly technologies can be made better and more efficient, but moving forward the conversation is going to be about how we live together and share resources, and how we finance them,” said Gowman.

As Chief Technology Officer, she is part of this big-picture approach to water, interacting with governments and academic partners to better understand the role of new technologies, research and public policy in Trojan's product development.

“I spend a fair bit of time thinking about what it is we should be doing today that puts us in a good place for five or 10 years out,” she explained. “My job is looking at what we, as a

company, can provide to the world to make things better.”

Gowman reveals she came to the water industry quite by accident. A professional engineer by training, she graduated from Schulich Medicine & Dentistry with an MSc in medical biophysics.

“When I started in medical biophysics, it was just this wonderful, mind-opening experience to the mysteries and the power of nature,” she said about her time at the School. “That has stayed with me since and I have an enormous respect for what nature can do.”

After completing a PhD in mechanical engineering with a biomedical focus at the University of Toronto, Gowman returned to London to work as a Research Associate in medical imaging at London Health Sciences Centre and Robarts Research Institute.

A former colleague came forward with an opportunity to work at Trojan and Gowman took it. “Treating water is in the same place philosophically as medical engineering,” she said. “Both have a public health focus.”


The public's attitude toward water continues to interest Gowman. “We have a very complicated relationship with water,” she explained. “We're very good at making it dirty. A lot of the things we do in our homes have water being used as a garbage truck.”

This discarded wastewater is something Trojan is looking at as a source of clean water and energy, converting waste into raw material.

“It's a wonderful sense of accomplishment when you feel you can contribute, not just to improving the health of citizens, but also the health of the environment,” said Gowman. ■

ARTISTIC EXPRESSION

IN THE PHOTO: Camilla Stepniak, Medicine Class of 2016



From day one of their studies, Schulich Medicine & Dentistry students are encouraged to pursue extracurricular activities to reinvigorate their minds and spirits.

BY JENNIFER PARRAGA, BA'93

Known as the hardest working internal organ, the heart keeps the body functioning.

As it flushes blood through the aorta, by design, it nourishes its own muscle with oxygen-rich blood through the coronary arteries.

Only when it's nourished can the heart do its job and pump blood to the rest of the body.

This is a sentiment extracted from Dr. Irena Druce's artist statement for White Coat Warm Art, a national medical student/practitioner art exhibit. Alumna Carol Ann Courneya, MSc'82, PhD, is the founding director of the exhibit. She also serves as the Assistant Dean, Student Affairs, Faculty of Medicine at The University of British Columbia, a role focused on providing support to students.

A cardiac physiologist, she took her research in a different direction more than a decade ago, and has been investigating the impact and value of visual arts for medical students. →

STUDENT PROFILES

Her recent study published in *Arts and Health*, showed that through art-making students could process stress and facilitate their learning. It was also identified that art-making helped students to bear witness to the suffering of others. And in the end, students indicated that they believed the artistic process would help them to be better practitioners.

Dr. Terri Paul, MD'82, associate dean, Learner Equity & Wellness, Schulich Medicine & Dentistry, whole-heartedly agrees. She believes it's vitally important for students to have more in their lives outside of the classroom or lab. "Doing something intensive that is completely different from your studies, gives you that release and balance you need to strengthen your resolve and be successful," she said.

As a choral singer during medical school, Dr. Paul experienced many benefits of performance art during her undergraduate studies. It provided her with the opportunity to hone her communication and observational skills, which are critical for anyone working in a health care or lab setting. "When you are on stage performing, you feed off of those around you. You learn to see the unspoken, and understand what's best for the team," said Dr. Paul.

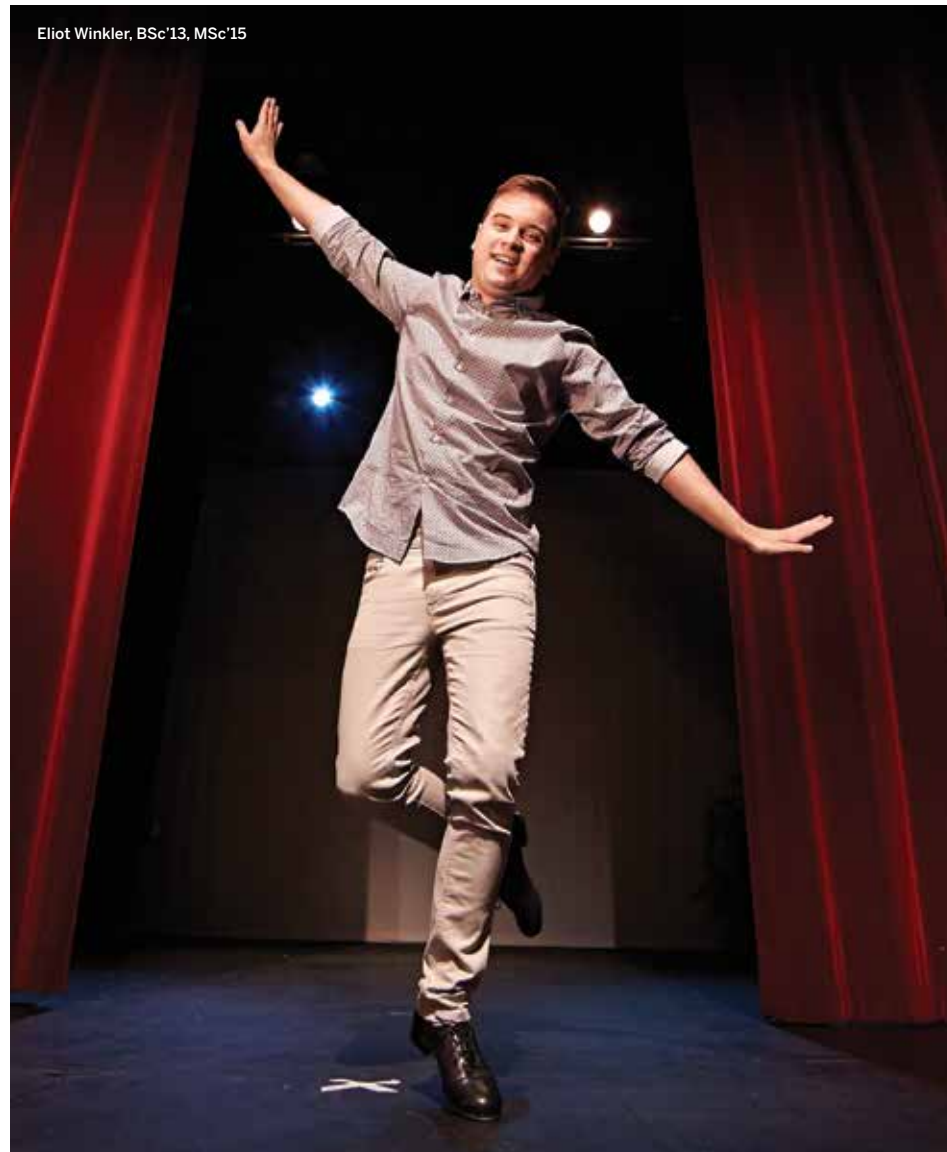
From day one of their studies, Schulich Medicine & Dentistry students are encouraged to pursue extracurricular activities to reinvigorate their minds and spirits.

Whether it's through dance, acting, music or the visual arts, when students create art, they are taking time for self-care and finding balance, enabling them to better care and support others, and become successful team players.

"I love being able to forget the other things going on in my life, when I am dancing," said Camilla Stepniak, Medicine Class of 2016. "It's my form of meditation and it helps to put things into perspective. It refuels me every time."

Stepniak began dancing at the age of three. Jumping and twirling around the house in Disney princess dresses soon gave way to formal classes and competitive dance. With each year, her love of dance grew. From tap and jazz to contemporary, hip-hop and ballet training; the more she gave to dance the more she received from it.

Amidst the whirlwind during the first weeks of medical school, Stepniak learned about the many performance and dance opportunities made available to students through activities



Eliot Winkler, BSc'13, MSc'15

such as Tachycardia, Med Games, and talent-shows. There were also student organized workshops introducing alternative styles of dance such as Bollywood and ballroom. And not only was she able to perform, she could share her love of dance by teaching others.

Apart from the sheer joy she receives from dance, Stepniak believes her training has helped her to develop a strong work ethic, to grow personally, to achieve her goals and create balance in her life. "I wouldn't be where I am today without that balance," she said.

"Today, our students are more aware of the need for balance during their studies. They are also more vocal and aware of their own wellness."

—Dr. Terri Paul

Of all his recent accomplishments, Eliot Winkler, BSc'13, MSc'15, is most proud of completing his master's in Clinical Anatomy. The two-year intensive program took Winkler from the classroom to the lab. Add to that his volunteer work as a clinical anatomy outreach instructor, as well as with Let's Talk Science—there were times when he felt overwhelmed.

The stage offered him a reprieve from his schoolwork. A musical theatre junkie, acting, singing and dancing gave him a way to de-stress. "Theatre was an extremely good outlet to get a break from science," he said. "It gave me an opportunity to step in someone else's shoes and see the world from a different perspective."

It all began for Winkler with the role of peasant number 32, in an elementary school production of *Les Misérables*. From then on Winkler had found the place that made him happiest—the stage.

During his undergraduate and graduate studies at Western, he explored his passion for music and acting through Theatre Western and King's University College Chamber Choir. Experience gained through ensemble parts in *Legally Blonde*, *Xanadu*, *Rent*, and *I Love You, You're Perfect, Now Change*, culminated in his favourite role to date: Florinda—Cinderella's evil step sister in the musical *Into the Woods*.

Winkler attributes part of his success during his graduate studies to the supportive environment offered through the Department of Anatomy and Cell Biology and the change of pace acting and singing offered him. "I love singing, and I love the people I meet when doing shows. It just makes me happy to perform," he said.

While Stepniak and Winkler found their bliss on stage, Dr. Grant Vezina, DDS'15, found his thanks to a century-old family heirloom.

It was the grand and resonant sounds of a pianola, also known as a player piano, that inspired him to play the piano.

From the moment his hands touched the keys he felt great contentment.

Playing from a young age, Dr. Vezina believes music has helped him academically. It created in him a motivation and discipline to practise, improved his study habits, and offered a break from intense and focused study periods. →

Dr. Grant Vezina, DDS'15



Kelly Bullock, MSc Candidate in Neurophysiology

STUDENT PROFILES

"I always admire the artistic person. They bring something different to the table; they think outside the box, and in doing so can change a whole practice, hospital or lab."

—Dr. Terri Paul

"There's no question the academic and clinical aspects of the dentistry program are all consuming," said Dr. Vezina. "But you need other pursuits to bring balance to your life. Whether it's music or something else, they are important to keep your mind ready to face the challenges you will undoubtedly encounter."

For Kelly Bullock, a master's student in neurophysiology, art is a form of meditation. "If I'm stressed it can be incredibly calming," she said. "It clears my mind. It puts me in a flow state where I'm not thinking; I'm not worried; I'm focused on the movement," she said.

Bullock experienced what she describes as a personal renaissance, when she was 14 years old. For her birthday that year, she received a special gift from her grandmother, the book, *The Brain that Changes Itself*, by Norman Doidge, MD. The stories were captivating and instilled in her a desire to pursue a career in neuroscience. Coincidentally, it was also the year when she started drawing portraits and sketching with graphite.

She realized early on how calming and relaxing drawing was. That, coupled with the positive feedback she received, was all she needed to continue with her art.

Inspired by the movie *Interstellar*, Bullock recently began using watercolour to capture nebulae. Her paintings of the interstellar gas and dust have a peaceful, almost dreamlike quality to them.



Emma Bluemke, BMSc student

In addition to the calming aspects of the pursuit of art, she finds it enormously satisfying. "It's incredibly rewarding and fulfilling, to dedicate 40 hours to produce something that no one else ever has," she said.

Emma Bluemke, a medical biophysics student, derives the same satisfaction from painting. "I find an existential pleasure in creating art," she said. "I've noticed that I can complete a full school year and only have grades and lab reports to show for my work. I begin to feel as though something is missing, and if I haven't produced something tangible in a while, I return to making art."

Bluemke grew up in a home surrounded by music and art. While she loves music—her true artistic passion is painting. Describing it

as her close-to-the-heart hobby, she produces striking images using oils on natural wood, using the grain of the wood to capture movement and dimension.

Although only entering her third year, Bluemke is making a name for herself on campus with her art. She was recently featured in the School's pictorial calendar, and had one of her paintings profiled in a publication for the Faculty of Arts & Humanities.

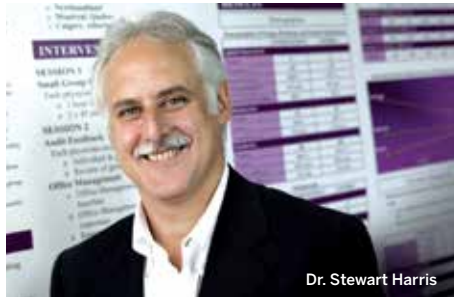
With plans to pursue a career in medical imaging, Bluemke believes her art will remain a hobby—one that gives her a true feeling of pleasure and brings balance to her life. "I picture myself as a scientist first," said Bluemke with a smile, "a scientist who also creates beautiful things." ■

FUNDRAISING

BREAKING WITH TRADITION

A \$500,000 gift from AstraZeneca Canada aims to help reverse a dangerous diabetes trend among Aboriginal Canadians

BY CHRISTINE WARD, BA'89



Dr. Stewart Harris

Twenty-five years ago, Dr. Stewart Harris was shocked to discover a high incidence of diabetes among First Nations communities in northern Ontario—along with a great deal of fear, misinformation and a lack of coordinated health care.

The situation isn't all that different today. According to the Canadian Diabetes Association, the incidence of diabetes among First Nations communities in Canada is three to five times greater than the general population, and it's growing exponentially. Which is why Dr. Harris, Schulich Medicine & Dentistry's Canadian Diabetes Association Chair in Diabetes Management, has launched a five-year diabetes research effort in collaboration with 12 First Nations communities in six provinces. Called FORGE AHEAD, the program will identify local health challenges, and facilitate better care and improved outcomes for diabetes patients living on remote fly-in reserves and in urban communities.

A \$500,000 gift from global biopharmaceutical company AstraZeneca Canada

Inc. is helping to make the work possible.

"This is exactly the kind of critical health challenge that, as a leader in health care, AstraZeneca has a broader responsibility to help address through supporting leading Canadian researchers and organizations," said Ed Dybka, AstraZeneca Canada president and CEO.

Among several outcomes, the company's gift and a \$2.5-million grant from the Canadian Institutes for Health Research will support Dr. Harris and his team in developing a unique toolkit for improved care coordination between community and clinical programs. Ultimately, they hope their research will halt and eventually reverse the upward trend of Type 2 diabetes and its complications.

"We don't need to learn anything more about diabetes," said Dr. Harris. "We don't need to discover new drugs. We know how to manage the disease and we have all the tools... now we need to apply them in these communities."

WHEN GREAT MINDS COME TOGETHER

Jim and Louise Temerty's \$5-million gift offers hope to millions affected by neurodegenerative disorders

BY CHRISTINE WARD, BA'89

Jim Temerty's passion for neurodegenerative disease research began two decades ago when his mother passed away from Amyotrophic Lateral Sclerosis (ALS). "Right from that time on," he said, "I started to look for opportunities to support research. That's where it started and it has continued to this day."

The founder and chairman of Northland Power Inc. and his wife, Louise Temerty, donated \$5 million to the Schulich School of

Medicine & Dentistry to advance discoveries in the prevention, early detection and treatment of neurodegenerative diseases like ALS, Parkinson's and Alzheimer's.

Their gift, which leverages Ontario Brain Institute matching funds, will support a five-year study led by Schulich Medicine & Dentistry's Dean, Dr. Michael J. Strong, principal investigator of the Ontario Neurodegenerative Disease Research Initiative and one of Canada's leading ALS researchers.

"Our ultimate goal is to determine if, by studying the disease as a component of a larger whole, we can develop early treatment strategies long before the disease fully takes hold," explained Dr. Strong.

One in three Canadians will be affected by a neurological or psychiatric disease, disorder or injury during their lifetime. Although extensive neurodegenerative disease research is underway around the world, Dr. Strong describes Western's study as unique. "Never before, either here or worldwide, have experts in seemingly diverse diseases come together into a single collaboration to understand

the basis, commonalities and distinguishing characteristics of these devastating disorders."

It's an approach that has Temerty brimming with passion about the potential multiplying effect. "We were quite taken by this idea. We felt we had to support it."



Jim and Louise Temerty

Dr. Supriya Singh assists with surgery in Tanzania



HOPE SPRINGS ETERNAL

BY CHRISTINE WARD, BA'89

Dr. Supriya Singh, MD'14, became a very different doctor during a split-second last year when a man crashed his motorcycle in front of her in Tanzania. Then a fourth-year medical student, Dr. Singh was in the East African country as part of a final year medical elective.

"He was a mangled mess," she remembers. "We brought him into the hospital and tried to start an IV, but he was so broken beyond repair, there was very little we could do."

With no blood products, one antibiotic and only Tylenol to manage pain, Dr. Singh and her colleagues had relatively nothing to work with. "I realized we can't help everyone, but I also knew if he had been at Victoria (Hospital



in London, Ontario), he would have gotten surgery immediately and been walking out in a few months," said Dr. Singh.

Heartbroken, exhausted and frustrated beyond her limits, Dr. Singh left the hospital, collapsed on a nearby rock and started to cry. Soon, a young boy sat down beside her. "He told me not to cry in Swahili. I was there to help people like him and he was the one comforting me. These people never lose hope," Dr. Singh said, amazed.

In that moment, Dr. Singh says her life changed. "It's such a different world in which we practise, here in Canada. But the compassion and empathy I got from seeing such hope

in the face of suffering inspired me. It fuelled a fire in me to never give up trying to help make a difference."

Dr. Singh chose to devote a portion of her career to international health care. Now a second-year orthopaedics resident at Schulich Medicine & Dentistry, she plans to practise in Canada, while continuing to work to improve the health care system in Tanzania.

Her efforts were recognized at graduation in 2014 when she was awarded the Dr. Rob Tingley Class of '95 Developing Countries Award. The award was established by the Medicine Class of '95 in memory of Schulich Medicine graduate Dr. Tingley, who spent time learning and practising in Kenya before his death in 2004. The fund recognizes the international efforts of two fourth-year medical students a year.

"Rob was the kind of guy who would give and give," remembers classmate and friend Jeff Blackmer, MD'95, vice-president of medical professionalism with the Canadian Medical Association. "When he died, we wanted a way to honour his legacy. An award linked to his international work was a no-brainer." Since establishing the award in 2004, the Class of '95 has continued to invest, growing the endowment to more than \$75,000. To support the increasing number of Schulich Medicine students who aim to travel abroad, they are planning another fundraising appeal this fall in honour of their 20th reunion.

Blackmer remembers Dr. Tingley as part of the pioneering wave of medical students who were interested in global health in the 1990s. "The landscape has changed," he acknowledged. "Today's medical students don't see their social accountability strictly in terms of Canadian patients; they look at global medicine as a vital part of being a practising physician in Canada."

Dr. Singh agrees. She's using her award to help launch a Canadian non-profit organization to improve the health and education needs of Tanzanian street youth, like the young boy she met last year.

"Winning this award inspired me. I'm so grateful that someone felt I was like Dr. Tingley, that I care about people and want to make a difference. It's encouraging me to keep going and to keep fighting for these people. It's how we pay it forward." ■

"The compassion and empathy I got from seeing such hope in the face of suffering inspired me. It fuelled a fire in me to never give up trying to help make a difference."

—Dr. Supriya Singh



For more information on the Class of '95 reunion and fundraising appeal in support of the Dr. Rob Tingley Class of '95 Developing Countries Award, email jeff.blackmer@cma.ca

A LEGACY OF TEACHING

For the past 36 years, Schulich Medicine & Dentistry has provided Saudi Arabia's brightest residents and fellows the opportunity to train as one of the School's own

BY JESICA HURST, BA'14

When Dr. Rasha Baaqeel completed medical school at the top of her class at King Abdulaziz University in Jeddah, Saudi Arabia, she was awarded a residency scholarship in Plastic and Reconstructive Surgery.

But this wasn't just any scholarship—it was an opportunity for her to expand her horizons and complete her training somewhere abroad.

Dr. Baaqeel, now a fifth-year resident in plastic and reconstructive surgery, decided on Schulich Medicine & Dentistry. "I had heard a lot of fantastic things about the School and the program, and I wanted to be exposed to the same experiences my mentors had," Dr. Baaqeel said.

For the past 36 years, Schulich Medicine & Dentistry has given residents and fellows like Dr. Baaqeel the opportunity to receive training at its state-of-the-art facilities through the Internationally Sponsored Residents and Fellows program. Since 1979, the School has trained a total of 464 residents and fellows with the program, and 76 per cent of them have come from Saudi Arabia.

These international trainees are funded by a sponsoring agency in their home country. The School currently has partnerships with: Aramco Services Company – Saudi Arabia; Saudi Arabian Cultural Bureau; Embassy of the State of Kuwait; Oman Medical Specialty Board; and Jaffna Health Foundation – Sri Lanka.

"This long-standing, successful program continues to extend our profile internationally and encourages us to look outward for inter-



Dr. Eyad Althenayan

"Training at Schulich Medicine & Dentistry did help me improve my knowledge, but more importantly, it helped me develop my leadership, communication and teaching skills."

—Dr. Eyad Althenayan

national opportunities," said Dr. John Denstedt, Special Advisor to the Dean, Health Globalization, Internationalization and Simulation at Schulich Medicine & Dentistry. "It fits with the goals of our strategic plan, adds diversity and gives us the opportunity to extend our influence on a global scale."

Dr. Eyad Althenayan completed his two fellowships as part of the Internationally Sponsored Residents and Fellows program from 2004-2007. While the quality of training was an obvious bonus for Dr. Althenayan, he explained the opportunity helped him most by improving his other skills.

"Training at Schulich Medicine & Dentistry did help me improve my knowledge, but more importantly, it helped me develop my leadership, communication and teaching skills," he said.

The experience also helped Dr. Althenayan obtain leadership roles in Saudi Arabia, and he was eventually recruited back to Schulich Medicine & Dentistry as an Assistant Professor in the Department of Medicine and a Consultant in Critical and Neurocritical Care at London Health Sciences Centre.

"It makes me feel proud to be part of a great opportunity like this, as I am not only happy to be part of this institution again, but being in Canada opens up doors for my children as well," he said.

According to Dr. Denstedt, Dr. Althenayan's situation is rare, as close to 100 per cent of all internationally sponsored trainees move back home to work once they complete their residency or fellowship. This is the plan for Dr. Baaqeel. She will complete a one-year fellowship in microsurgery following her residency, then will move back home where she has a position at the King Abdulaziz National Guard Hospital in Jeddah.

However, the Internationally Sponsored Residents and Fellows program has opened her mind to the idea of expanding her knowledge in other countries later in life.

"Who knows? Maybe I'll become interested in a certain field and go somewhere like Taiwan to see how they do things there," she said. "This experience has taught me it's crucial in medicine to be innovative and see as many different ways of doing the same thing as you can." ■



(Pictured left to right – Dr. Baraa Al-Khazraji, PhD; Christina Liao, BMSc/HBA; Dr. Kristin Chow, MD; Dr. Vikram Velker, MD'10, FRCPC; Mowffaq Kalantan, MPH; Dr. Kathleen Martin, DDS)

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