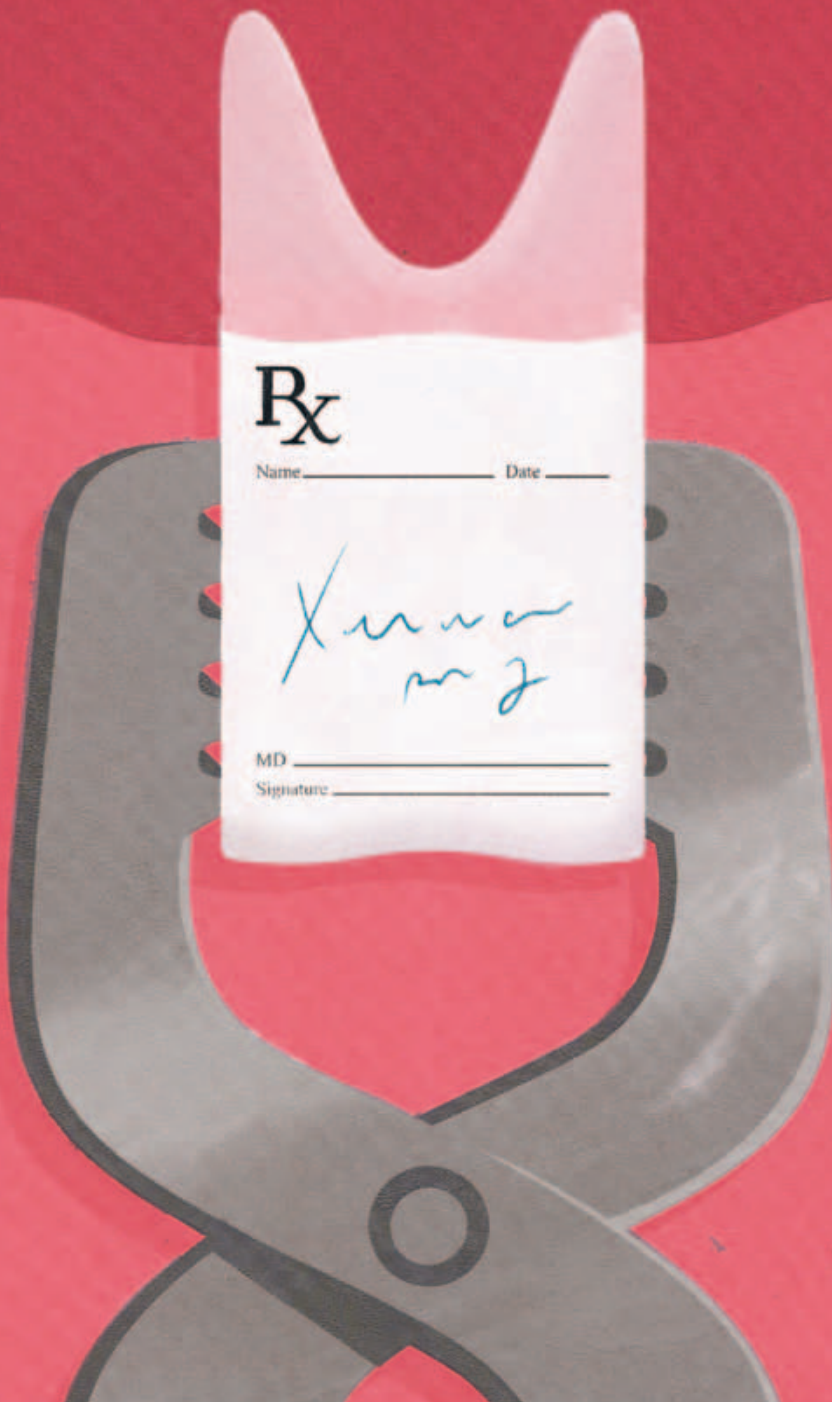


# U<sup>OF</sup>T DENTISTRY

## OPIOIDS, CANNABIS & DENTISTRY

How drug use impacts practice and patients



NEW GRAD  
ESCAPED TYRANNY

PROF WINS GG'S  
INNOVATION AWARD

DDS ROTATION  
AT CAMH

THE ERGONOMIC  
PIONEER

# U<sup>OF</sup>T DENTISTRY

8



COVER STORY

Illustration by Peter Ryan

20



Photo: courtesy of Andrew Coburn

## 3 MESSAGE FROM THE DEAN

## 4 UP FRONT

## 8 PAIN KILLERS

Dentistry's emerging role in curbing the complex opioid crisis

## 13 GOING TO POT

Your patients use cannabis; this is what you need to know

## 16 BREAKING DOWN BARRIERS

CAMH rotation teaches students about challenging but rewarding practice

## 18 MIGHTY MOLECULES

Paul Santerre earns a Governor General's Innovation Award

## 20 THE COMFORT DENTIST

Don Coburn invented ergonomic dental equipment

## 22 ESCAPE TO CANADA

A new grad's story of fleeing an oppressive regime

## 26 GALA 2017

## 27 REUNIONS

## 28 BOUNDLESS DONORS

## 31 WE REMEMBER

## 32 UPCOMING EVENTS

## EDITORIAL TEAM

Editor-in-Chief: ERIN VOLLICK  
 Managing Editor/Writer:  
 DIANE PETERS  
 Photography: JEFF COMBER  
 Art Direction & Production:  
 FRESH ART & DESIGN INC.  
 Cover Illustration:  
 PETER RYAN

## ADVANCEMENT OFFICE CONTACTS

SELINA ESTEVES  
 Director of Advancement  
 selina.esteves@  
 dentistry.utoronto.ca  
 (416) 864-8201  
 MIRIAM STEPHAN  
 Manager of Alumni Relations  
 miriam.stephan@  
 dentistry.utoronto.ca  
 (416) 864-8202

WARRENA WILKINSON  
 Advancement Coordinator  
 warrena.wilkinson@  
 dentistry.utoronto.ca  
 (416) 864-8203

SARAH MACFARLANE  
 Advancement Assistant  
 sarah.macfarlane@  
 dentistry.utoronto.ca  
 (416) 864-8200

## EDITORIAL ENQUIRIES AND SUBMISSIONS

Erin Vollick, Editor-in-Chief  
 University of Toronto  
 Faculty of Dentistry  
 124 Edward Street, Room 303  
 Toronto, ON M5G 1G6  
 (416) 864-8333  
 erin.vollick@  
 dentistry.utoronto.ca

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## MESSAGE FROM THE DEAN

# REFRAMING PAIN

**P**ain is the great leveller. It can afflict anyone. Pain causes anxiety, disability and reduces the quality of life for so many. As dentists, we are acutely aware of the role pain plays in the lives of our patients. Yet, some of our remedies for pain have become far more dangerous than the cause.

This issue of *UofT Dentistry* magazine takes a closer look at two drug types that provide analgesia and impact patients and our practice: opioids, which are both helping and yet killing thousands of Canadians, and cannabis, which is about to become fully legal in this country. These are not just topical issues — they are critical for society to resolve.

What is our role? Our mission as healthcare providers is not just to heal patients, but to unburden them of their pain. Yet, how do we undertake this task as professionals in the face of the opioid crisis? Will that tiny pill we are prescribing eventually lead to this person's longtime addiction or death? It's a heavy responsibility. The decision to administer any drug must take into account its risks and benefits; this balance becomes particularly important with analgesics. We must continually stay current in our knowledge of pharmacotherapeutics in order to meet this challenge.

How do we adopt or take a leading role in educating our

patients regarding the effects of legal or medical cannabis? And what can we do to further medical research into cannabis and its impact, both on oral health and as a tool for pain management?

These are big questions. But we can also reframe today's painkilling dilemma as a remarkable opportunity to lead a new and critical discourse about pain, and to use innovation to solve on-the-ground problems.

As you read these stories, notice the complex interplay between prescribers and patients, as well as the role that factors such as socioeconomic background play in determining outcomes.

As practitioners, we need to lean against preconceived notions and keep developing evidence-based treatments. As researchers, it's vital that we task ourselves to learn more about the

underlying mechanisms of, and discover new targets and tactics for, treating pain. Dentistry's long history of effectively managing and developing a better understanding of pain must continue.

For now, however, it's time for us start talking about how to truly deal with pain and the epidemic stemming from pain — not just as individual dentists but as a community of healthcare professionals. ■

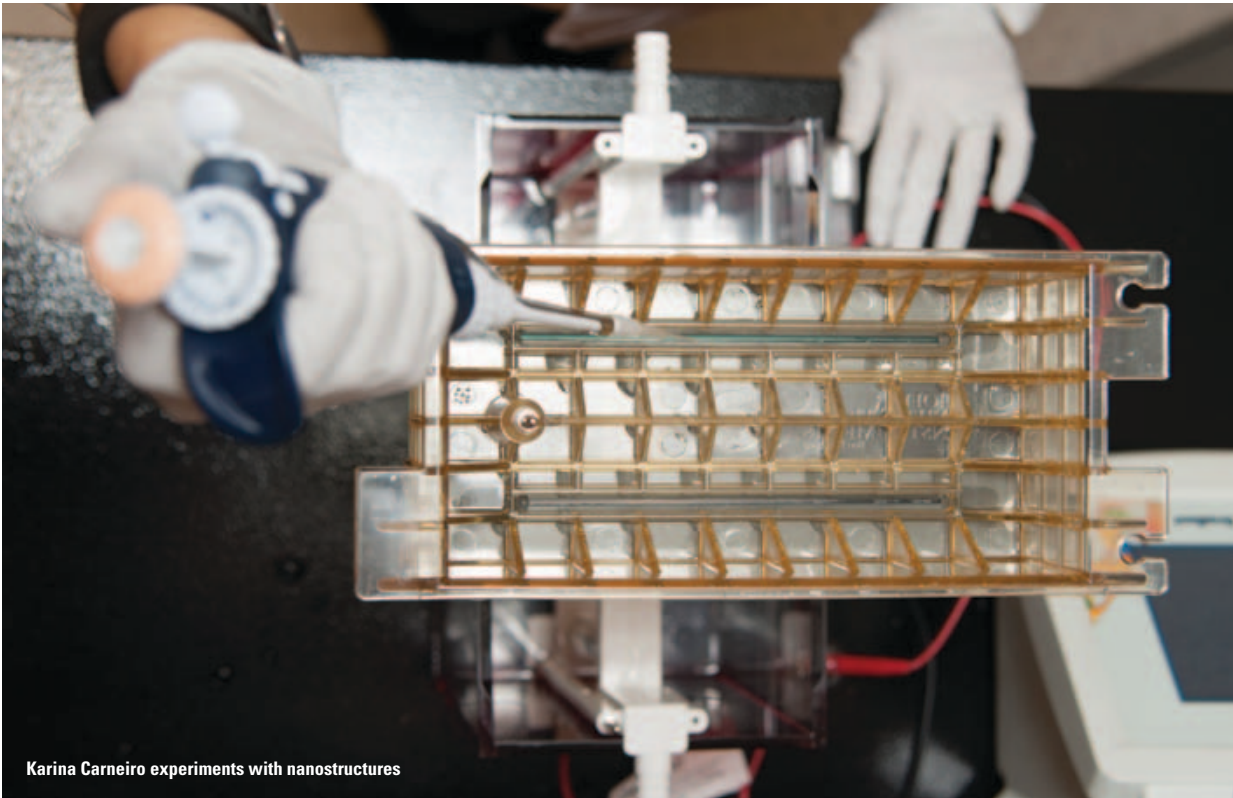
DEAN DANIEL HAAS 779, 878 PHD

Our mission as healthcare providers is not just to heal patients, but to unburden them of their pain

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# UP FRONT



Karina Carneiro experiments with nanostructures

Photo: Jeff Comber

## DENTISTRY RESEARCHERS LAND \$4.8 MILLION

In a whirlwind spring for UofT's Faculty of Dentistry, affiliated researchers brought in a stunning \$4.8 million of grant money. Eleven faculty members secured fifteen grants in early 2017.

"These outstanding results by our researchers are just more proof that our research program is unrivalled. To have this kind of success in today's funding climate is rare," said Vice-Dean, Research, Professor Bernhard Ganss.

For instance, of the four CIHR Catalyst Grants awarded nationally in oral health, three were received by UofT teams.

Notable funded projects include those of Boris Hinz, Distinguished Professor of Tissue Repair and Regeneration, who is cross appointed to the Institute of Biomaterials and Biomedical Engineering (IBBME) and the Faculty of Medicine. He's been awarded a five-year grant worth \$719,000 for his work on myofibroblasts.

Professor Paul Santerre, who is also cross appointed to IBBME, earned two grants: \$520,000 over three years to work on a ceramic-based "bone tape" to repair craniofacial fractures, and \$597,000 over three years to develop a cardiac tissue patch.

Associate Professor Herenia Lawrence secured \$664,800 from CIHR and a matching of \$225,000 from community health groups to develop dental interventions for indigenous communities in Ontario and Manitoba. Associate Professor Siew-Ging Gong received \$130,000 over five years to study the protein Flrt2 and its relationship to facial birth defects. She also secured a \$100,000 grant with Associate Professor Celine Levesque to look at probiotics and their ability to prevent caries.

Other recognized researchers include Professors Chris McCulloch 7T6, Karina Carneiro, Yoav Finer oT3 MSc Prosthodontics, Tara Moriarty and Michael Glogauer 9T3, 9T9 Dip Perio, 9T9 PhD.

# ENAMEL REGENERATION WINS GRANT



Karina Carneiro (right) works with undergraduate student

Photo: Jeff Comber

Colgate Palmolive has awarded UofT Dentistry Assistant Professor Karina Carneiro US\$30,000 for her work with DNA nanostructures and tooth enamel.

Acting as scaffolds, DNA nanostructures can be built to attract proteins and other building blocks essential for forming enamel. The nanostructures can also organize the materials they pull towards themselves in precise ways, helping the materials coalesce in a way that mimics the body's natural creation of enamel.

"The hypothesis is that because we can arrange these materials with nanometer precision, we can more exactly mirror what happens *in vivo*," says Carneiro.

**"This is a great example of how collaborations can create exciting opportunities to advance the field of dental research"**

labs will investigate whether combining DNA scaffolds with amelotin, a mineral-promoting enamel protein discovered by Ganss, could represent a novel strategy for regenerating mineralized tissues.

"This is a great example of how collaborations can create exciting opportunities to advance the field of dental research," says Ganss, who is also Vice-Dean, Research.

"I dream of the day we can put patches or networks on a decaying tooth that will help regenerate the enamel," she adds.

Carneiro will also collaborate with Professor Bernhard Ganss. The two

# CHANGES TO SEMESTER GOOD FOR STUDENTS, PATIENTS

Starting in September, DDS3 students will have their clinical session extend into July. DDS4 students the following year will end their program one month earlier.

With these changes, fourth year students who require extra time for patient care experiences will have it — under significantly less stressful conditions — while DDS3 students will more readily be able to carry out prosthodontic procedures.

The longer year also means the Faculty's patients will have more continuity of care over the summer months, and brings UofT Dentistry in line with peer institutions.

## STAY CONNECTED

Keep up with the latest alumni news and event invitations by ensuring we have your current mailing and email address on file. Update your address with sarah.macfarlane@dentistry.utoronto.ca.

## HARD-TO-TREAT WITHOUT SLEEP?

UofT Dentistry's Anaesthesia Clinic is welcoming new patients. Download a Referral Form from our new patient website: <https://patients.dentistry.utoronto.ca/referrals>

# DECIPHERING HEART FAILURE

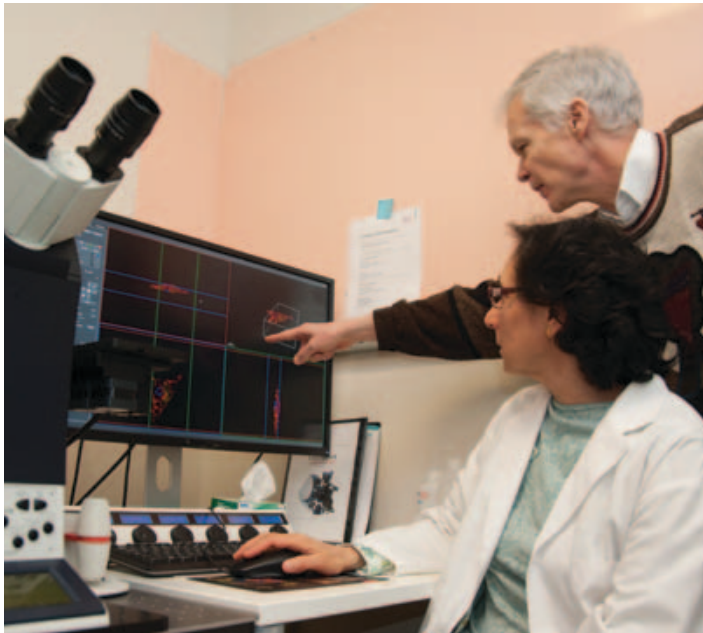


Photo: Jeff Comber

**Chris McCulloch with researcher**

In heart failure, alpha 11 integrin, a cell adhesion receptor, plays a key role. It impacts cardiac cell differentiation and cardiac dysfunction.

Dentistry professor Chris McCulloch and cardiologist Dr. Kim Connelly of St. Michael's Hospital have earned a \$271,500 grant from the Heart and Stroke Foundation for a three-year study on alpha 11 integrin.

They will be tracking just how the receptor impacts cardiac function and transforms cardiac fibroblasts into pro-fibrotic myofibroblasts, both in normal development and in heart disease models.

McCulloch and Connelly suggest this research could

**“We want to identify novel therapeutic targets and better outcomes for heart failure patients”**

lead to a much better understanding of what triggers stiffening and fibrosis in cardiac tissue, as well as discover new interventions to halt this deadly process.

“We want to identify novel therapeutic targets and better outcomes for heart failure patients,” says McCulloch, who holds a Tier 1 Canada Research Chair in Matrix Dynamics.

## STUDENT PARTNERSHIP PROGRAM

The Faculty of Dentistry gratefully acknowledges our partners who supported student experience in 2016-17:

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### Inquiries?

Contact Miriam Stephan,  
Manager of Alumni Relations, at  
miriam.stephan@dentistry.  
utoronto.ca

## LET'S CONNECT

UofT Dentistry upgraded its phone networks over the summer months to a new VOIP system, which involved the adoption of all new phone numbers. Find new staff and faculty contact numbers on the UofT Dentistry website:  
[www.dentistry.utoronto.ca/faculty-and-staff-directory](http://www.dentistry.utoronto.ca/faculty-and-staff-directory)

# DISASSOCIATING FROM PAIN



Massieh Moayed

Photo: courtesy of Massieh Moayed

People with the rare Complex Regional Pain Syndrome (CRPS) can develop body perception distortion and disassociation. After injury, parts of the body can no longer seem like a person's own, causing a loss of control over those areas.

UofT Dentistry Assistant Professor Massieh Moayed is part of an international research group that has been awarded a three-year,

£260,000 grant from Arthritis Research UK to study this phenomenon in CRPS. They also want to find out if it impacts those in chronic pain from osteoarthritis.

**“Chronic pain may be a lot more complex and more of a whole-system issue than we previously thought”**

The hallmark study will use brain imaging to identify the brain regions involved in body perception distortions.

“Chronic pain may be a lot more complex and more of a whole-system issue than we previously thought,” says Moayed. “If we can find the part of the brain that changes from normal to diseased, we can potentially target these with brain stimulation to treat chronic pain.”

A previous study by the same group found that disassociation and body distortion can be reduced through visual illusions, whereby the affected limb is seen as normal. With these changes in visual perception, there seemed to be modest reduction in pain.

## NATIONAL TEACHING AWARD GOES TO UOFT DENTISTRY PROF



Photo: Jeff Comber

Jim Yuan Lai

Last June, Vice-Dean, Education Dr. Jim Yuan Lai oTo Dip Perio was presented with the Association of Canadian Faculties of Dentistry National Dental Teaching Award.

Lai has been actively involved in efforts to reshape the undergraduate curriculum at the Faculty of Dentistry. Over the past year, he initiated a program to renew student grading processes as part of the Faculty's strategic planning implementation.

“National recognition from the ACFD demonstrates Jim's commitment to excellence in undergraduate and graduate teaching at the Faculty,” said Dean Daniel Haas.

Lai has one other national distinction under his belt: he is the longest serving director of a graduate periodontics program in Canada.



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# Opioids are meant to curb pain, but they're killing Canadians. Dentistry's emerging role in curbing the complex opioid crisis

BY DIANE PETERS ILLUSTRATION BY PETER RYAN

**LIKE MOST HEALTHCARE PRACTITIONERS**, dentists deal with patient pain daily. While we control pain with numerous effective medications, that's no longer a good thing. In 2016, Canadian pharmacies dispensed 19 million prescriptions for opioids as painkillers — we're number two in the world for prescription narcotic use. The same year, 2,458 people died of opioid-related overdoses. Opioids are the number one cause of death for young adults in Canada.

Those who die often took street-grade heroin, oxycodone or fentanyl. While some with an opioid addiction got their first taste recreationally, many got hooked after taking pills prescribed by a physician or dentist.

Most likely, a physician: according to Ontario data, 38 per cent of opioid scripts were written by general practitioners. But the second most common prescribers were dentists, who wrote 17 per cent of the total scripts. Meanwhile, U.S. statistics say dentists are the number one prescribers of opioids for youth ages 10 to 19. "We have become increasingly aware of the role dentistry plays in opioid prescriptions," says Jamie Moeller 1T7, who worked on an opioid research project in his final year at UofT Dentistry and is now doing a one-year residency at a hospital in Delaware.

**I**t's not just the death toll: opioid addiction impacts numerous points in the healthcare system, including pain doctors, ERs and addiction workers. Government and medical groups have begun to issue guidelines, change healthcare education messages and propose systematic solutions.

The dental community is looking for answers too. But the profession is discovering that just saying no at the prescription pad might not be enough. People get hooked and die for a range of complex reasons.

### THE DENTAL CONNECTION

Ontario dentists prescribed around 180,000 people codeine or codeine compounds and about 4,000 people oxycodone and related compounds over a 12-month period starting in 2014, according to a report from the Ministry of Health and Long-Term Care.

Survey data collected by the Royal College of Dental Surgeons of Ontario (RCDSO) in 2014 showed similar patterns. Dentists prescribed opioids — more than half of them did so over the last 12 months for mild and moderate acute pain — but tended to use the so-called low-end opioids, such as codeine. Yet, about a third of dentists used opioids as their first choice for mild, acute pain. “By and large dentists are pretty good. But there are exceptions,” says Dr. David Mock 6T8 7T7 Dip OP/OM, Dean Emeritus, Faculty of Dentistry, who’s also dentist-in-chief, staff pathologist and associate director of the Wasser Pain Management Centre at Mount Sinai Hospital. “Using a Tylenol 3 for mild pain is not necessary, that’s what we’re trying to reduce.”

While it seems safer to hand over a codeine product rather than one containing oxycodone, they both pose problems. “Giving a low-potency opioid like codeine isn’t as bad as Percocet,” says Mock. “But the risk is the patient will keep taking it.”

Indeed, the type of narcotic and length of treatment matters. A 2017 report from the Centers for Disease Control and Prevention found a person given a one-day course of an opioid had a six per cent probability of taking it at one year compared to a 45

per cent likelihood for those given a 40 day supply. People given long-acting opioids such as Oxycontin were the most likely — 27 per cent — to be still using at a year compared to five per cent for milder opioids. It’s more serious for younger patients: teens who take opioids before high school graduation have a 33 per cent increased chance of misusing them later.

People in chronic pain may find a narcotic helps them live more normally. Those with short-term pain might enjoy the buzz and want more. A postoperative dental patient might recover quickly and stash their remaining meds. “Kids can party, and they do,” says Mock. Or the patient might swallow one for an intense headache, or pass them to a friend with a bad back.

That can trigger regular use then a craving for the next fix. A person may seek new prescriptions for stronger formulations. When that source dries up — most provinces, including Ontario, track the prescribing of narcotics and can flag double doctoring and overprescribing — they may turn to street drugs. Now, the mildest drugs — marijuana included — can be laced with powerful opioids. For people with low resistance, even a trace of fentanyl or carfentanil can mean death.

### PAIN IN THE ER

The dental community has another connection to opioids: patients they never see, but should. Low income Canadians in severe pain due to an abscess, infection, severe caries or untreated gum disease often end up in emergency rooms. A 2009 study led by Faculty of Dentistry Associate Professor Carlos Quiñonez oT9 MSc DPH showed that ER visits for oral health symptoms were more common than those for hypertension and diabetes. Some hospitals have a dentist on site, or will call one in from the community, but most do not offer dental services. These people get low triage and



wait for hours to be seen by an ill-equipped ER physician.

“I look in the mouth and do an assessment. Maybe it’s an abscess, maybe it’s an infection, I don’t really know. You really have to see a dentist,” says Dr. Hasan Sheikh, a lecturer with the UofT Department of Family and Community Medicine and an emergency room physician at St. Michael’s Hospital.

He can offer no treatment, but often connects patients to places such as UofT’s clinic, or a dentist doing pro bono work. Often, there are few options. Then, the conversation turns to pain. “I really try to go with the lower risk analgesics and start with Tylenol and ibuprofen. Often they say that’s not enough,” says Sheikh. Such patients leave with a script for Tylenol 2 or 3, hydromorphone or morphine. He offers just a few days of pills, hoping they’ll get dental care soon.

ER physicians like Sheikh have no idea if these people get the root canal or extraction they need. Sheikh sees a patient in dental distress once every few shifts at the hospital. According to the Association of Ontario Health Centres, there were 61,000 visits to emergency rooms for dental health problems in 2014, at a cost to the health system of about \$31 million.

## SOLUTIONS

The RCDSO has taken an important lead in curbing this crisis by issuing the nation’s first guidelines on prescribing opioids for dentists in late 2015, two years ahead of updated medical guidelines published in the *Canadian Medical Association Journal*. Mock, who worked on the dental guidelines, says other jurisdictions are now developing their own guidelines and using the Ontario text as a model.

The document says opioids are not to be the first line of attack for mild to moderate pain and highlights the value of

nonsteroidal anti-inflammatory drugs (NSAIDs) for acute pain, such as postoperatively, and recommends collaborative care with other professionals for patients with chronic pain.

“We’re going to look at the data and see if it affected any change,” says Mock of the recommendations, which, at minimum, seem to be changing the conversation. And while UofT has long taught its students to understand the risks of opioids and look to alternatives before prescribing them — Dean Daniel Haas is one of the authors of Ontario’s guidelines — dental schools across the country have begun teaching this revised approach to pain management.

New recommendations are backed by other initiatives, including narcotic drug registries in most provinces, which track who is prescribing and how much. Programs for returning unused medications to pharmacies are also becoming popular; programs in four provinces destroyed 386 tonnes of expired or unused meds in 2016.

## FLAWS IN THE SYSTEM

Canadian doctors have had opioid guidelines since 2010, so merely having guidance — although the advice focused on how to prescribe opioids and not avoiding or delaying their use — does not prevent problems. These earlier documents may have helped dispel the myth peddled by drug reps that low-dose opioids were not addictive or dangerous.

Still, opioid use has soared in Canada and across North America. According to Andrea Furlan, senior scientist and staff physician at UHN’s Toronto Rehabilitation Institute and Associate Professor in UofT’s Department of Medicine, guidelines don’t offer support for dealing with patients standing in front of you, suffering.

Illustration by Peter Ryan



“Saying no is hard,” says Furlan. “People want their pain relieved in two seconds so they can go to work”

“Saying no is hard,” says Furlan. “We live in a society where we have everything, where we’re entitled to everything. We want quick fixes. People want their pain relieved in two seconds so they can go to work.”

The issue gets complex for those working with chronic pain due to temporomandibular disorders (TMD), trigeminal neuralgia or other oral or facial pain. While treatments such as cognitive behavioral therapy and physiotherapy can help patients reduce or even eliminate pain meds, they aren’t covered by government drug plans, and private plans quickly max out. “I want to send people for treatments, but they can’t afford it,” says Mock.

As well, tight budgets may also inspire more opioid use overall. Moeller’s research project at UofT with Quiñonez discovered that low income people were more likely to use prescription opioids instead of over-the-counter painkillers. Perhaps those people were in more pain. “It’s true the lower income bracket in Canada generally experiences far greater burden of dental disease,” says Moeller. Or, opioids, which are often covered under extended health plans, may be more attractive than paying out of pocket at the drugstore checkout. “If I’m living on \$12,000 to \$15,000, even if it’s a \$10 bottle of Tylenol, that can be a pretty big hit,” says Moeller.

Meanwhile, Furlan says many who treat chronic pain don’t fully understand a medical condition called central sensitization, which happens when someone is in chronic pain. The condition can cause widespread dysfunction in the pain system — dysfunction made worse by opioids. Even after the initial problem has been solved, a person can remain in terrible pain as the pain system goes into a hypervigilant state. “The person cannot sleep, they cannot work. It’s like they have dementia. They cry in front of you,” says Furlan, who says this condition may be silently feeding the opioid crisis.

#### BEYOND PAIN

Furlan thinks Canada needs a national pain strategy to offer information and support to make real change. Mock agrees that proper support for the dental community would nudge along prescribing habits. “Most dentists want to do the right thing. They just have to be taught how to do the right thing,” he says.

Such a pain strategy would likely include education materials for healthcare providers and patients. It could ensure that prescription return programs and our drug monitoring system run nationally and effectively. Currently, prescription monitoring systems don’t track opioids used in hospitals, only

“Most dentists want to do the right thing. They just have to be taught how to do the right thing”

pharmacists can easily access data and programs are inconsistent across the country. It may address what happens to people when the healthcare system turns them away and they buy — increasingly deadly — street drugs.

In Canada, no substantial changes are on the horizon. All we have now are better suggestions for how healthcare professionals should cope with their patients, and pain. Today’s dentists just have to try, as best they can, to follow those suggestions. And, behind the scenes, keep talking to the various stakeholders in the complex, expensive and highly dangerous opioid crisis to make some headway on the bigger issues. “The reality is, most opioid prescriptions are made by doctors,” says Moeller. “Dentists are not going to stop the crisis. We all have to work together to right the ship.” ■

# GOING *to* POT



Your patients use cannabis. With impending full legalization, here's what you need to know

BY DIANE PETERS

**W**endy Vale manages many different pains, with trigeminal neuralgia the toughest to bear and manage. For 15 years, the fiftysomething Torontonion has endured facial pain, migraines and musculoskeletal pain. A year and a half ago, Vale (not her real name) added medical marijuana to her already full medicine cabinet.

"It's just another tool in the toolbox. Chronic pain needs a lot of different tools, not just one pill that makes all your troubles go away," she says. She uses a vaporizer, taking in about 0.1 gram of cannabis at a time, to manage her neck and shoulder pain — it also gives her much-needed energy, as pain is so draining. It helps a little for the pain and nausea of migraines.

For facial pain, it's unreliable. "Sometimes the pain is relieved. Sometimes, it makes it worse. It's a gamble. But if I've tried everything else that day, I'll give it a go."

She now has fewer absentee days from her job as a software engineer. She finds only the strains with tetrahydrocannabinol (THC) work, and taking a high dose makes her feel stupid and sleepy and temporarily blurs her vision. Cannabis's side effects are milder than those of some of the other drugs she takes. "The pain impairs me more than the cannabis," she says.

Medical marijuana, such as Vale takes, is legal in Canada, and as early as next summer, recreational pot will be on the up-and-up as well. Now, the dental community is considering its stakes with regard to this drug, which has everyday and long-term implications. Legalization could facilitate more research on its painkilling and anti-inflammatory properties for facial and oral pain. But a wide-open legal landscape could

likewise add to a higher disease burden for new users. The profession and its patients may soon see legal marijuana lead to some big benefits — or a whole lot of smoke.

## POT FACTS

While Vale withheld her real name for fear of recrimination at work, medical and recreational pot use is increasingly becoming accepted. After all, cannabis is the most commonly used illegal drug in Canada; almost half of Canadians say they've used it at least once. Medical researchers have investigated the pharmacological effects of cannabinoids, the active compounds in pot, for decades. In 1999, the government allowed the first legal users of medical marijuana and expanded its uses to a shortlist of medical conditions in 2001. In 2014, the government allowed licensed producers to sell pot to people with a doctor's approval, opening up the market. By mid 2017, there were nearly 168,000 medical users in Canada purchasing edible oil, which they can ingest directly or put into food, or dried marijuana, which can be smoked or vaporized.

## ACCESS TO MEDS

For someone like Vale, trying medical marijuana starts with a referral from a physician to a cannabis clinic (some will let you self refer if you can document your condition) — her pain doctor wasn't keen at first, but is now pleased it's helping. A clinic doctor may offer a "medical document" (similar to a prescription), and counsellors determine which strain might work best. To get meds, a patient registers with a licensed producer and orders leaves, oil or pills online and has them mailed. "They often run out, or discontinue the type you want. It's a stupid system," says Vale. Patients must check often to see if their desired strain is available

Photo: istock.com

“We can say it’s effective for pain,” says Hendin of pot’s main medicinal selling point. It has anti-inflammatory, antibacterial and anti-anxiety properties, but there’s less evidence as to what degree

— but cannot reorder until their 30-day supply runs out. Maybe another producer has it? You can only be registered with one producer at a time, and changing requires paperwork.

The Apollo Cannabis Clinic in Toronto offers an in-person consultation to explain the system to new patients, then manages their meds for a \$60 fee. Many clients are enrolled in research studies and the service ensures they get their doses on time. “What we found was if we did not handle this, we could not do research,” says Bryan Hendin, president of Apollo.

With legalization, there’s a hope that this process will become more streamlined. Since cannabis is still omitted by many drug plans, many may start buying through the same outlets as recreational users. “It’ll give them a lot more flexibility,” says Hendin. “They’ll be able to choose what they like.”

### PAINKILLING POWER

“We can say it’s effective for pain,” says Hendin of pot’s main medicinal selling point. It has anti-inflammatory, antibacterial and anti-anxiety properties, but there’s less evidence as to what degree.

Hendin says anecdotal evidence suggests temporomandibular joint disorder (TMD) and trigeminal neuralgia and neuropathic pain may be relieved by medical cannabis. There’s little research on this, but strains that contain cannabidiol (CBD) might help the oral inflammation of periodontal disease. Tension headaches and migraines seem to be subdued by some strains and may benefit from its anti-anxiety effects.

In future, we may see cannabinoids in facial and oral medications. Axim Biotech, a pharmaceutical company that specializes in cannabinoids, is working on early stage medications for dry socket and oral pain. “We are not there yet,” says CEO Dr. George Anastassov.

The company has a line of oral care products, including mouthwash and toothpaste, called Oraximax, that are derived from industrial hemp and contain no THC. They contain cannabigerol (CBG) and CBD, and target inflammation and bacteria. “Cannabinoids are excellent oral care products,” says Anastassov, who’s also a trained dentist. “There are no other products on the market that target inflammation and contain a natural antiseptic,” he says.

Drug development and basic research take time, and they need acceptance. Hendin says as recently as 2013 he noticed “robust apprehension” among funders regarding cannabis research. Things have changed, but full legalization may help attitudes

further on the funding side, but also make growing research-grade pot a more attractive business — a reliable supply chain will aid research. Since cannabis research is highly restricted in the U.S., evolving attitudes and rules may help open up work there as well.

This emerging drug category comes with flaws: THC is a challenge as it oxidizes easily and, of course, has psychotropic effects. Growers struggle to cultivate plants with consistent levels of cannabinoids. Meanwhile, pot’s painkilling impact varies individually. “Not all people are receptive,” says Hendin. It remains to be seen if cannabinoid products will be better than what’s already on the market. “For TMD pain, we have other drugs that are not just analgesics but muscle relaxants,” says Jose Lança, Assistant Professor, Faculty of Dentistry. “And they have no psychotropic effects,” he adds.

### BAD FOR THE TEETH

While medical cannabis shows promise for many aspects of oral and maxillofacial health, existing cannabinoid-containing medications have adverse effects that impact dental health, including xerostomia and orthostatic hypotension. And while we have limited data on any dental implications of vapourizing — health wise, it has caused allergic reactions for some users — smoking pot via a joint negatively impacts the mouth and teeth.

The average joint contains the same amount of tar as 10 to 20 tobacco cigarettes, says Lança. While pot users smoke less frequently than regular smokers, it can be worse on balance. Regular pot smokers often develop xerostomia, which can precipitate caries, gingival hyperplasia and periodontal disease. Pot smoking increases the risk for erythematous edema of the uvula,



Photos: Jeff Comber, IITS

The dental profession needs more data to know how cannabis and cannabinoids in pharmacological drugs will impact practice. “Where the knowledge is at right now, we need to keep researching for years,” says Hendin

oral papilloma, leukoplakia and alveolar bone loss. A study published in 2008 in the *Journal of the American Medical Association* that followed over 1,000 young adults found that 26 per cent of those who smoked cannabis more than 41 times in the last year had attachment loss, compared to just 6.5 per cent among those who never smoke.

The impact extends beyond teeth and gums. “For lung cancer, pot smokers have the same risk as someone who smokes tobacco,” says Lança. Pot users hold the smoke in their lungs, making it a trigger for asthma and bronchitis too.

Legalization likely won’t increase the number of smokers that general dentists see. “I don’t think it’s going to lead to rampant use,” says Joel Rosenbloom, a lecturer at the Faculty and staff dentist at Toronto’s Centre for Addiction and Mental Health (CAMH). “We’re already there. Every single dentist is seeing people who are cannabis users.” But when it’s legal to smoke, dentists may hear more honest disclosures. “It might open up the conversation,” he says. An anonymous dentist reported a patient’s recent disclosure regarding his regular pot use, saying imminent legalization made him feel safe to talk. Since most of pot’s oral health issues can be mitigated by better oral care, this is a discussion dentists want to have.

## THE INFO GAP

Legalization could worsen another ongoing problem: hype. Already, the internet is scattered with weed-focused web sites that laud the benefits of pot and neglect its drawbacks. “This information is not supported by research,” says Lança. Increasingly, healthcare professionals will need to do their own research through the medical literature and transfer that information to patients.

A key myth to dispel is that marijuana is not addictive. About nine per cent of users become addicted — that stat surges to 17 per cent for people who started using in their teens. Since today’s marijuana contains more THC than in the past (and there are increasing worries that street pot is sometimes laced with opioids such as fentanyl), it’s more addictive now. It’s dangerous to use before driving and can trigger psychosis. Cannabis can interact with prescription drugs and increase side effects such as drowsiness and bleeding risk.

With a lag on the drug development side, marijuana lends itself to self-medication. And while experimentation may work for some, users risk only partially managing their symptoms while exposing themselves to side or adverse effects.

The dental profession needs more data to know how cannabis and cannabinoids in pharmacological drugs will impact practice. “Where the knowledge is at right now, we need to keep researching for years,” says Hendin. Tinkering with the dose-effect of THC, a current project at Apollo, is painstaking, and the medical literature offers little guidance.

In the meantime: “if it helps, that’s great,” Vale’s pain doctor told her. It’s an attitude dentists could take. They can prescribe cannabinoid-containing medications, or refer patients in pain to cannabis clinics, along with warnings about the system, lack of evidence and risks. They can support recreational users with their oral hygiene. Otherwise, dentists should read up on the evolving facts and wait for the smoke to clear on this ubiquitous, and surprisingly complex, everyday drug. ■



## POT AND ITS CANNABINOIDS

Cannabis contains dozens of different types of cannabinoids. Of the hundreds of strains, each has a different selection and concentration of these active ingredients.

- Tetrahydrocannabinol (THC), the psychoactive ingredient in pot, has analgesic, anti-inflammatory, antiemetic, anti-spastic and muscle relaxant properties.
- Cannabidiol (CBD) reduces pain and inflammation and is anti-spastic and anxiolytic.
- Cannabinol (CBN) has a mild psychoactive effect and is anxiolytic.
- Cannabigerol (CBG) has antibacterial, anti-inflammatory and immunomodulating properties.

# BREAKING DOWN BARRIERS

CAMH rotation teaches students about challenging but rewarding practice

BY ERINVOLLIICK

**I**t's 9:30 in the morning on a bright, sunny spring day. Kelsey O'Hagan-Wong and Kaitlyn Bento, two DDS3 students on rotation at the Centre for Addiction and Mental Health (CAMH), are in scrubs and ready to greet their patients. But their first two patients don't show. One is still on a hold in the secure unit at CAMH. The other has grown too anxious to come to the bright, friendly dental clinic nestled in the hub of the massive Queen Street complex.

The no-shows are part of the lesson here: the UofT Dentistry rotation at CAMH, which first opened as a psychiatric hospital in 1850, exposes students to a less predictable clinic environment. There are also a wide range of treatment

modalities that puts them face-to-face with how dramatically mental health, challenges with self care, medications and lifestyle factors impact oral health and treatment.

Operating on the philosophy that it provides "the best oral function, aesthetics and comfort that each patient can maintain," according to clinic director Paul Zung 8T5, the clinic has ten staff members, but will see 120 DDS4 and 44 DDS3 students rotate through the clinic each academic year.

The rotation has become one of the most popular among students. Here, says O'Hagan-Wong, students learn to "fly." From complex, on-the-spot decisions and creative solutions to oral health dilemmas to unique lessons in patient management, students on this rotation say the learning is incredibly valuable and prepares them for real-world practice and all its dynamic challenges. ■

Photos: Katiya Taylor





Hygienist Diana Paeglis (left), DDS3 student Kelsey O'Hagan-Wong and patient Chanthalansy Sayarath. "There's a lot of patient management at CAMH," says O'Hagan-Wong, who will see between two and four patients during the three-hour morning shift. "The patients are a lot more anxious here. Your job is to make them feel comfortable but also getting the work done in a timely manner, not spend your time arguing or negotiating."



O'Hagan-Wong (left) with a patient who's been with the clinic since the 1970s. The suites are designed specifically for people with high levels of anxiety, featuring glass doors that the patients can see out of, and sliding doors. "It was a lot different than I thought it would be," remarks O'Hagan-Wong. "I had never worked with patients with mental illness. But we had no troubles. Everyone is so nice."



Paeglis (right) goes over x-rays with DDS3 student Kaitlyn Bento and O'Hagan-Wong. The clinic prepares students for the unpredictability of practice. "At the school, because you follow the patients, you know what you're going to do in advance, so you can prepare for it," says O'Hagan-Wong. "But at CAMH there is the element of surprise. I think you'll learn the most on this rotation. There are cases in every domain, which makes you more confident."



Clinic director Dr. Paul Zung (left), Bento and O'Hagan-Wong. Briefings are a big part of the CAMH rotation. At the start of each day, the instructors go over some of the more difficult cases they have experienced. "A lot of the patients have really unique problems [which the doctors] have creative solutions to, such as post work and over dentures, and all the cases were very successful," says O'Hagan-Wong.



Bento (left), a client (centre) and Zung. "You become aware of drug interactions and effects on oral health," says O'Hagan-Wong, who quickly realized every patient is on medication. "With some you can really see the effects, like dry mouth. Decay progresses much faster."

## NOT ALL IN YOUR HEAD

Dentists need to examine their preconceptions about mental health — both that of their patients, and their own — says Dr. David Goldbloom, senior medical advisor at CAMH.

Mental illness affects approximately twenty per cent of the population. That's one in five cases of mild, moderate or severe mental illness newly diagnosed each year.

If a patient is unwell, a dentist's only clue may be a list of medications. But depression, anxiety, addiction or schizophrenia can impact a patient's ability to care for themselves, their finances and, as a result, their oral health.

And what happens when the dentist is unwell? While the myth that dentists have a higher-than-average rate of suicide has been debunked, Goldbloom says that mental health doesn't discriminate — even professionals who care for themselves, take breaks and nurture a positive work environment can fall unwell.

When a dentist does need to step away from work to deal with mental health problems, there can be a stigma attached that can be hard for oral health professionals. It's important to remember that mental health is an aspect of overall health, and should be looked at the same way. "If a dentist breaks her leg or has a heart attack he or she has to deal with fallout of that with the business end of their practice."

Most important, says Goldbloom, is that people seek the help and support they need — patients as well as dentists. "It's important to be able to confide in your colleagues and get support from professionals."

"We need to get over the 'we-they' dichotomy between us and our patients," says Goldbloom. Anyone can get sick, and to get well, everyone needs support and understanding.

# MIGHTY MOLECULES

## Faculty inventor and entrepreneur Paul Santerre earns a Governor General's Innovation Award

BY ERINVOLLICK

**T**he molecules that Dentistry Professor Paul Santerre works with are so small they can't be seen with the naked eye. But in the eyes of the world, these tiny polymers represent disruptive technologies with enormous potential to change healthcare as we know it — and Canada's place in the global health innovation economy.

With chameleon-like adaptability, Santerre's molecules can change the way the material surfaces of medical devices interact with the body. Within the body, some of these materials can be used to make tissue and bone scaffolds, and they can calm the body's immune response. And with such a wide array of properties — including biodegradability — they have nearly limitless applications across the healthcare sector. Those include: dentistry, surgical implants, surgery, tissue reconstruction, tissue patches, bone scaffolds, medical equipment and more.

It's the mighty molecules' endless potential that earned Santerre the Governor General's Innovation Award this past May. One of just six Canadians to receive the award, Santerre is being lauded for his scientific invention, representing an exceptional contribution to a culture of innovation and entrepreneurship in Canada.

### LIFESAVING MATERIALS

One of Santerre's most successful uses of these molecules is via Endexo, a surface-modifying, flexible material that can be applied to medical devices to solve several key medical challenges. For example, when manufactured into medical tubing, it can prevent blood from sticking and clotting to surfaces — one of the major reasons for catheter failure — and reduces the need for the patients to take blood-thinning drugs. Santerre commercialized Endexo and other surface-modifying molecules through UofT start-up Interface Biologics, Inc. (IBI). Now in its sixteenth year, IBI has three distinct molecule-based technology platforms that



Photo courtesy of: MCoP Vincent Carboneau, Rideau Hall, © OSGG, 2017



Photo courtesy of UofT

can be applied to hundreds of different products, with an estimated potential worth in the billions.

### BROKEN HEARTS AND BONE TAPE

Useful for far more than medical devices, Santerre's surface-modifying technologies are designed to work in harmony with the body's natural repair processes. With a collaborative team at the Ted Rogers Centre, Santerre was recently awarded a three-year, \$600,000 Collaborative Health Research Project grant from the Canadian Institutes of Health Research/Natural Sciences and Engineering Research Council of Canada to continue to develop a biodegradable cardiac patch. Adapted from the same basic concepts underlying his surface modifying molecules, the patch persuades damaged cardiac tissues to re-form while it slowly degrades into materials that the body can easily flush. Importantly, the materials in the patch will coach immune responses toward repair — preventing fibrotic scar tissue from forming on the heart — reducing the risk of heart failure.

Yet another application of Santerre's technology could revolutionize the repair of complicated craniofacial fractures. Rather than surgically inserting plates and metal screws into the head and face, a ceramic-polymer composite-based bone tape that promotes bone growth could be applied to fracture sites. As with the heart patch, the materials are designed to adhere to the bone, minimizing biocompatibility issues, and slowly biodegrade as new bone forms, ensuring better cosmetic outcomes as well as faster healing times.

"This is invention spinning off invention," Santerre says, crediting his success as a researcher in part to the collaborative and cross-disciplinary culture being fostered by the university and its partnerships, such as that formed between the Hospital for Sick Children, University Health Network and UofT to

create the Ted Rogers Centre, where Santerre's lab is located.

### A HUB OF INNOVATION

In addition to his own growing company, Santerre has been guiding his students and many others in the health sciences field in commercializing their discoveries through startup companies, such as the recently founded Polumiros Inc., which is developing its first product for market: a non-inflammatory, biodegradable tissue filler for replacing breast tissue after breast cancer surgeries. Santerre assists with mentoring more than 70 trainee-based startups across UofT in his role as co-director of the Faculty of Medicine's Health Innovation Hub (H2i).

For Santerre, the H2i Hub and the other eight accelerators on campus represent a shift in Canada's academic institutions, as the university aligns itself with entrepreneurship. It's a move he views as critical to Canada's economic development, research enterprise, and its ability to compete in the global healthcare and innovation industries.

Healthcare represents the world's largest and fastest growing market, contributing as much as \$1 out of every \$5 to the GDP in North America. But while

Canada — Toronto in particular — is poised to become a world leader, Santerre points out that this can't be accomplished without major investment in building the culture from Canadian universities.

"The argument that academia should steer away from contributing to applied knowledge with an entrepreneurial perspective is no longer as tenable as it once was," says Santerre, who was also awarded the NSERC Synergy Award for Innovation in 2012, the Ernest C. Manning Innovation Award's Principal Award in 2014, and U of T's prestigious Connaught Innovation Award earlier this year. ■

With chameleon-like adaptability, Santerre's molecules can change the way the material surfaces of medical devices interact with the body

# THE COMFORT DENTIST

Don Coburn invented dental equipment that transformed patient and dentist ergonomics

BY DIANE PETERS

**D**entists who put in long days without significant aches and pains, who efficiently flow from one task to the next and can offer their patients a comfy experience can thank one man — Dr. Don Coburn 5Tr.

Along with running a busy private practice in Ancaster and then Hamilton, he invented a wide range of equipment that prioritized comfort and efficiency. Coburn, who was an instructor in dentistry at the Faculty for many years and received the Award of Distinction in 2002, was basically the father of dental ergonomics in Canada.

It began with a friendship with patient Ronald Cox, a mechanical engineer, in the 1960s. The two began talking about workflow and dental equipment. They created the company Cox Systems together, and got to work transforming dentistry.

They began with developing systems to support the lounge chair, which Coburn's friends had invented in the 60s, replacing the standard Ritter J chair.

When the new chair came in, there had been no thought to how practice needed to shift to accommodate it. With the old chair, for instance, a cuspidor with running water allowed a patient to spit. But with lounge chairs, the patient would need to sit up to spit, halting treatment.

"Dentists were still standing," says Andrew Coburn 8To, Coburn's son and business partner. Chairs were at the height



Coburn's research project filmed dentists at work

of barber's chairs, meaning dentists were on their feet all day, developing varicose veins and back problems.

Coburn and Cox redesigned the dental suite, and were issued

Photos: courtesy of Andrew Coburn



the first patent for it in 1969. They also invented a high-speed suction device to replace the now-awkward cuspidor. The inventors soon attracted Wilson Southam, of Southam Newspapers, who joined as an investor.

For Coburn, the lounge chair was a starting point for reimagining the spaces that dentistry inhabits, as well as its workflow. As a working dentist, he was able to look past the tasks, patients and instruments in the dental office and see systems that he could improve upon. Through his work with Cox Systems, he altered the arrangement of storage, chair, instruments and instrument placement, and lights. His designs were modular, so some parts could be added or removed. Everything was designed to speed up practice and increase comfort for both the dentist and the patient.

CDA president and 2017 Award of Distinction winner Dr. Larry Levin GT9 recalls working on a government funded research project with Coburn between his third and fourth years at UofT. It entailed installing a time-lapse camera in ten different dental offices across North America. Levin recalls that Coburn specially designed a scaffolding system for the camera: two side supports rose on either side of the dental chair, joined across the top with a crosspiece, upon which the camera was mounted.

Each dentist was filmed doing the same dental procedure and Coburn, whose own office was one of the ten studied, revealed his work efficiency on camera. “Don had spent a lot of time thinking of where to put things,” says Levin. “Don was

“Dentists went from spending thirty per cent of their time working to eighty per cent of their time working”

doing each move smoothly, arms and back positioned comfortably. The others were zipping around, sometimes even leaving the room to get the amalgam. Assistants were reaching into the cupboards to grab things — it wasn’t organized.”

The research fed into a new line of dental office design products. Hallmarks of the design suite included the storage of most of the equipment behind the patient’s head. A tray could be moved conveniently between the dentist and his assistant. A drill could be clipped onto the tray for easy use. Cabinetry was shortened and Coburn included a sink in the suite for hand washing. “Today those features have been adopted by many manufacturers,” says Levin. “But at the time it was revolutionary.”

Andrew Coburn says, “Dentists went from spending thirty per cent of their time working to eighty per cent of their time working.” Father and son went on to invent a new suite that included a computer under the company Coburn Dental Systems. Again, their work was sold across North America and Europe.

Coburn, who died in 2013, left behind a legacy today’s dentists can see every day. If it feels good to do dental work — it’s because of him. ■

# ESCAPE TO CANADA

To become a grad of the class of 1T7, Paulos Seyoum fled an oppressive regime with the help of human smugglers

BY ERIN VOLLICK

**I**t had been a very hot day in the Eritrean lowlands — dry as ashes, as only the Sahara region can be — when Dr. Paulos Seyoum slipped out of the African nation with two human smugglers.

There was no guarantee the now-38 year old would survive the trek from his homeland across the border into nearby Sudan. But to have remained in the so-called North Korea of Africa, a nation that has not held an election since 1993, would have been worse.

There is no freedom of religion, speech or movement there. The borders are closed and closely guarded. Escapees who are captured alive are jailed and tortured. “Just talking about crossing the border will land you in prison,” explains the recent UofT grad. The risk was better than staying.

## FOOTHOLDS OF PROMISE

In 2000, Seyoum won a scholarship for dentistry at the University of Bologna, graduated *summa cum laude* in 2005, and returned to Eritrea to practice. He was one of the first — and last — Eritrean residents to be educated outside the country. Meanwhile, the government shut down the nation’s only university and sent students to government medical training centres, which would withhold graduates’ degrees.

Seyoum’s skills were desperately needed in the nation of 4.5 million. He was only the sixth licensed dentist in Eritrea, and the youngest. The government sent Seyoum to work in the Orotta National Surgical Referral Hospital in the capital city, Asmara.

Cases ranged from simple extractions and abscesses to cleft lip and palates and





“I feel lucky to be a part of the University of Toronto, to have received this level of education. There are places that don’t even get a fraction of what we get here”

deformities. There was no prosthesis — there was no equipment. But there was a fully functional maxillofacial surgery and there Seyoum worked alongside visiting oral surgeons to treat oral and maxillofacial cancers and faces disfigured during the conflict with Ethiopia, which began in 1998 and continues today. Seyoum earned the equivalent of \$3 per month. To survive, he worked weekends and nights in a private dental clinic.

A Christian, Seyoum had started attending Pentecostal services. One day, he discovered that most of the parishioners had vanished — likely rounded up and tortured to give up the names of other members. Seyoum risked a life in prison, torture, even death.

### FLIGHT OF TERROR

Two weeks shy of his thirtieth birthday, the network of smugglers he had been in contact with through a Sudanese friend finally arranged a meeting. He made the trek to a small border town, but no one came. To avoid arousing the suspicions of the armed patrols, he kept moving until he could find a phone and arrange another meeting. This time, they showed up.

“They stuck me in a bush and left me there for hours,” says Seyoum. Two of the smugglers returned at dusk with a camel. They walked through the trees of the lowlands for hours, bending low to avoid detection by patrols. Seyoum’s sandals and skin were ripped to shreds by the coarse brush.

In the early morning they crossed into Sudan, which was still dangerous, as it was crawling with Eritrean agents. The smugglers left him with a local family, but he had to stay inside their home. Another pair of smugglers took him by car to Khartoum, and then to a refugee camp, where he stayed for a month. It was infested with malaria. Smugglers often raided the camps, kidnapping people for ransom, or selling them into slavery.

Seyoum, luckily, was quickly moved to Khartoum, where

he spent a year and four months and worked as a dental assistant. He reconnected with Selamawit Yohannes, whom he’d known and dated in Eritrea years earlier, and the two got married. She had already emigrated to Canada, and was working as a trauma and settlement counsellor at the Canadian Centre for Victims of Torture when she sponsored him to join her in 2010.

In Canada, Seyoum worked as a security guard, at McDonald’s, and as a court interpreter while studying for the International Dentist qualifying exams. He was halfway through the exams when he received acceptance into the International Dentist Advanced Placement Program (IDAPP) at UofT. He graduated with the class of 1T7.

### FULL CIRCLE

Last May, Seyoum did a two-week peer-tutoring rotation at Addis Ababa University’s School of Dentistry. There, he met a young dentist he had helped train in Asmara.

Like Seyoum, he had escaped, but since his state-licensed dental degree had been withheld, he had to take his training all over again. While Seyoum had been taught to despise Ethiopia his whole life, the neighbouring nation had given this person a chance. “It gave me perspective into what I can give to Ethiopians, and hope for fellow Eritreans when the government opens the doors.”

It also gave him a way to measure his education at UofT. “I feel lucky to be a part of the University of Toronto, to have received this level of education. There are places that don’t even get a fraction of what we get here.”

Seyoum hopes to open his own practice in the future, and wants to give back, too. He has applied to the Canadian Armed Forces so he can treat Canada’s soldiers. “This is really an honourable call for me, for this country which has given me and every immigrant a lot.” ■

# CONGRATULATIONS CLASS OF 1T7!

## DDS

Archana Adavelli  
Yusuf Ahmed  
Salvador Alcaire  
Dana Aljawhary  
Ankita Arora  
Shayna Pnina  
Azoulay-Avinoam  
You Jin Bae  
James Bergen  
Virginia Julia Bertucci  
Sumati Bhalla  
Madhuchhanda  
Bhattacharya  
Adil Bhesania  
Aman Bhojani  
Ivan Boras  
Maher Bourbia  
Mohamed Nashat Cassim  
Wing Yan Chan  
Chi-Fan Chen  
Xi Chen  
Carolyn Ann Chuong  
Lexi Corrigan  
Geoffrey Cutler  
Avideh Daneshvar Mozafari  
Avneet Kaur Dhaliwal  
Rupreet Dhanju  
Hasnain Dharamshi  
Alexander Dimitry  
Lin Du  
Nicholas Dunn  
Anita E  
Seyed Sina Faghili  
Camille Celine Farrugia  
Jacob Fitzgerald  
Shoshana Gastfreund-Aziza  
Khashayar Gharavi

Daniel Goldberg  
Inje Ham  
Hany Naguib Ghaly Hanna  
Ayesha Haque  
Nafiz Imtiaz Hasan  
Steven Holterman Ten Hove  
Yundong Hu  
Xinyi Huang  
Jung Yoon Huh  
Sona Ipe  
Javad Jalayer  
Mona Jamshidi  
Mitesh Rohitkumar Jani  
Changwon Ryan Jung  
Amulya Kalidindi  
Gabriella Kaminer-Levin  
Nancy Kang  
Rashpal Kaur  
Ghaznia Khan  
Joo Wan Kim  
Nam Hee Kim  
Na Yae Kim  
Youngjae Kim  
Ervis Kola  
Anna Dorota Krendler  
Andriana Kurniawan  
Rosie Charlotte Leigh  
Wai Bun Liew  
Janice Elizabeth Lim  
Sukhyun Lim  
Elena Lissina  
Huixin Diana Liu  
Kimberley Heather  
MacIntosh  
Ahsan Mahmood  
Anh Quoc Peter Mai  
Linda Major

Michael Alexander Paiva  
Martins  
Anshul Mehra  
Han Min Miao  
Chetna Mistry  
Michael Moeller  
Pradeep Kumar Mohapatra  
Alexandra Montian  
Hamidreza Mousavi  
Kester Frederick Ng  
Phat Huu Nguyen  
William Nicola  
Elena Pilipenko  
Hanzel Pinto  
James Puthen Vettil Chacko  
Osama Qureshi  
Farzaneh Rahimi  
Mahdieh Rastkardar  
Mohamed Usama Hussein  
Abdelrah Roshdy  
Ayala Yocheved Rubin  
Jacob Rubner  
Reem Sabouba  
Bitia Sadeghlo  
Sean St Louis  
Paulos Misghun Seyoum  
Leila Shayanpour  
Emin Sheykhislyamov  
Wendy Huei-Ping Shyu  
Minja Simeunovic  
Peng Song  
Marina Sonkin  
Michael Vito Spatafora  
Danielle Alynn Swanson  
Veselin Hristov Trifonov  
Kinana Tujar  
Jennifer Wing Tung

Ilke van Hazel  
Smitha Viswanathan  
Ao Hong Wang  
Gang Wang  
Le Wang  
Yichen Wu  
Zhaomin Xu  
Wen Qin Yu  
Chung Hang Kevin Yuen  
Mahdi Zakeri  
Qiudi Zeng  
Michael Yiming Zhu  
Ilan Zimmer



Photo: Jeff Comber, IITS





## MSC

Craig Demetri Bellamy,  
Endodontics  
Jeffrey William Chadwick,  
Oral Radiology  
Leena Ameeta Chohan,  
Paediatric Dentistry  
Kerry Mark D'Costa,  
Periodontics  
Molly Ehrlich Friedman,  
Paediatric Dentistry  
Gabriella Amneris Garisto,  
Paediatric Dentistry  
Sarah Habib, Orthodontics

Lisa Elaine Johnson, Oral  
Pathology & Oral Medicine  
Wei-Chien Kao  
Brian Jin Chan Kim,  
Dental Anaesthesia  
Michelle Kornbluth,  
Orthodontics  
Flavia S. Lakschevitz,  
Periodontics  
Helena Sooyeon Lim,  
Endodontics  
Melissa Anne Milligan,  
Orthodontics

Brent Andrew Moore,  
Endodontics  
David Powell,  
Prosthodontics  
Alison Sigal,  
Paediatric Dentistry  
David J Simone,  
Orthodontics  
Tian Tian Tang  
Sean Steven Tjandra,  
Oral Surgery  
Gurkamaljit Garry Toor,  
Oral Surgery

## PHD

Gazelle Jean Crasto  
Lida Sadeghinejad  
Suja Shrestha  
Iwona Wenderska

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*Every effort was made to ensure  
the accuracy of this list as of  
press time.*

*MSc and PhD graduates range  
from fall 2016 to spring 2017.*

# THANK YOU

The Awards of Distinction Gala takes a bow

BY ERIN VOLLIICK



From its roots as an alumni dinner organized by volunteers in 1994, to its recent incarnation as a major gala, our community's support for the Awards of Distinction Gala has been nothing short of extraordinary. For over a decade, the Gala has strengthened a culture of excellence in our community, while having a profound positive impact on UofT Dentistry students and patients.

It's time for this event to evolve. As we say goodbye to this cornerstone event, we wish to send out our heartfelt thanks to the many steering and gala committees, our

countless volunteers, the Advancement Office, as well as our enthusiastic sponsors and partners. We also want to acknowledge you, our stalwart friends, colleagues and family, for your support over the years.

While the Gala may be retiring, our commitment to celebrating the achievements of our community and promoting health through dentistry remains unflinching. The Faculty of Dentistry's Awards of Distinction will continue: the next awards will be presented at a special dinner with the Dean in the spring and additional recognition will take place at our Graduation celebrations in June.

## NOMINATIONS WELCOME FOR THE 2018 AWARDS OF DISTINCTION

Recognize colleagues who are making a difference for the Faculty, research, the dental profession or society as a whole. Nominations are due November 10, 2017. For nomination details and forms, visit: <https://forms.dentistry.utoronto.ca/award-of-distinction-2018-nomination> or contact [miriam.stephan@dentistry.utoronto.ca](mailto:miriam.stephan@dentistry.utoronto.ca).

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# THE MORE WE GET TOGETHER



DDS 8T2 sit for a class portrait

Photo: courtesy Jack Beker



Dental Hygiene 6T2 celebrate their 55th at UofT's Spring Reunion

Photo: courtesy class of 6T2

## FIND OUT HOW HONOURED YEAR CLASSES CELEBRATED THEIR FRIENDSHIPS IN STYLE THIS YEAR.

Take a tour through our new Alumni photo galleries to see all the latest reunion photos at:

[www.dentistry.utoronto.ca/alumni/gallery](http://www.dentistry.utoronto.ca/alumni/gallery).

Looking for listings of current and upcoming reunions?

Visit our Reunions page at:

[www.dentistry.utoronto.ca/reunions](http://www.dentistry.utoronto.ca/reunions).

## NEW ALUMNI EVENT!

Friday, April 27, 2018 5 p.m. – 8:30 p.m.

Steam Whistle Brewery.

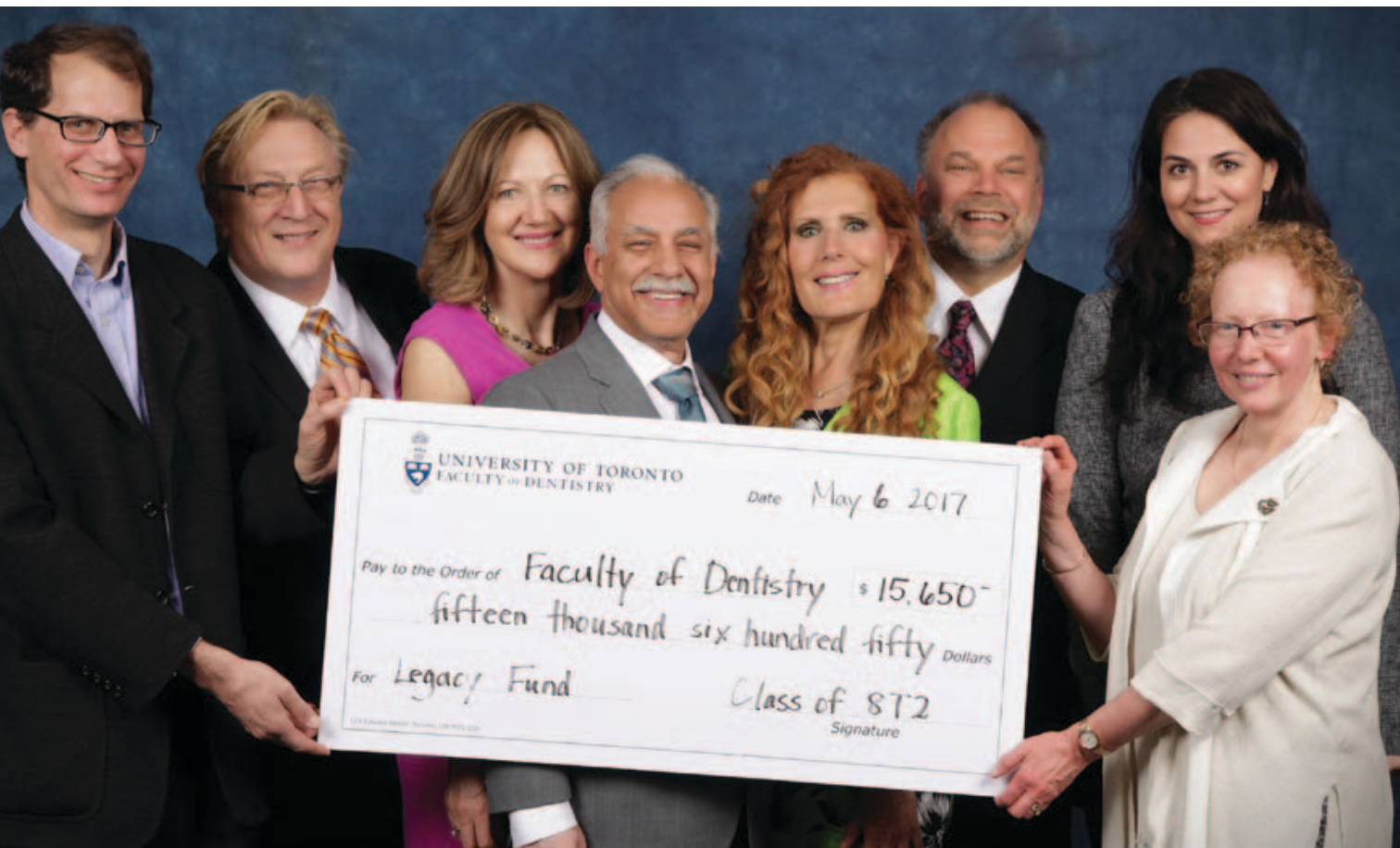
An all-alumni party not to be missed! More details to come.

## ORGANIZING YOUR CLASS REUNION?

Graduated in a year ending in 3 or 8? Don't miss your class reunion! For information, or if you are interested in organizing your reunion, please contact Warrena Wilkinson at [warrena.wilkinson@dentistry.utoronto.ca](mailto:warrena.wilkinson@dentistry.utoronto.ca).

# BOUNDLESSCLASS

Alum organize generous donations through reunions



They're not all selfies and photo bombs. For many, class reunions are an opportunity to come together to give back. This year, UofT Dentistry's honoured year reunions raised funds to help renew student workspaces and enrich the student experience.

## CLASS OF 7T7

Led by class fundraisers Linda Lee and Marvin Oban, this class raised more than \$31,000 to purchase and name an operatory in the UofT Dentistry Teaching Clinics.

## CLASS OF 8T2

This class has similarly purchased two operatories for the Faculty's teaching clinics, using funds from their previous reunions. This May, class organizer and lead fundraiser Jaideep Lal

— with the help of Sheryl Lipton, Janice Mummery, Robert Pasch and Mary Ann Seefus — pursued additional class fundraising, adding nearly \$16,000 to their class fund. They gave \$35,000 in support of the Student Service Learning Outreach Program to help students defray the cost of travel to remote service learning locations such as Uganda, Ethiopia and Honduras. UofT is honouring Lal's volunteerism and leadership this year with an Arbor Award.

## CLASS OF 9T2

Cheered on by lead class fundraiser Vito Gallucci, this class set themselves a challenge: to raise \$10,000 for UofT Dentistry's student experience. As of mid-July, the class had already surpassed their target, allowing for much-needed support for clinic renewal.

*UofT Dentistry wishes to recognize and thank the classes for their exceptional generosity and commitment to the Faculty.* ■

Photo: Jeff Comber

# WHAT MAKES US BOUNDLESS?

Remote student rotations in places like Uganda and Moose Factory influence the future of dentistry. Our research into new areas such as nanotechnology is helping us discover how to regrow lost enamel. Improving our clinical and research facilities means better outcomes for patients, and better learning opportunities for students.

With the transformative support of over 2,100 contributing alumni, friends and faculty, the Boundless Campaign at the University of Toronto's Faculty of Dentistry is enabling the Faculty to remain the leading dental education institution for the creation, translation and dissemination of knowledge and care. To date, the Faculty of Dentistry's campaign has raised more than \$17.7 million to improve support for students, to renew the teaching clinics, and to advance health research.

## BOUNDLESSLEGACY

We wish to express our gratitude to the benefactors who have made gifts of \$25,000 or more to the Boundless Campaign. Thank you to each of our donors for partnering with us in our mission to provide excellence in teaching, innovation in research, and compassionate care.

### \$1,000,000 OR MORE

SciCan Ltd. 1 Anonymous Donor\*\*

### \$500,000 TO \$999,999

Suzanne Brown\*\* 3 Anonymous Donors  
Ross McKean\*\*

### \$250,000 TO \$499,999

Dan Kmiecik and Lynn Tomkins 1 Anonymous Donor

### \$100,000 TO \$249,999

Susan Beal-Malloch Mark and Janine Nusbaum  
Douglas and Grace Bradley and Family  
Gerald P. Copeland Oral & Maxillofacial Surgery  
Keith W. Davey Foundation  
DENTSPLY Implants 3i Implant Innovations  
Douglas A. Eisner\*\* Canada  
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Ralph Grose\*\* Straumann Canada Ltd.  
Victor S. Kutcher\*\* Toronto Crown and Bridge  
Christopher McCulloch Study Club  
Mary Lou and Walter Walter Vogl\*\*  
Montanera Birty Williams\*\*  
Paul R. Morgan\*\* 6 Anonymous Donors  
Nobel Biocare Canada Inc.

### \$25,000 TO \$99,999

Altima Dental Canada Inc. Alan Joe  
Greg Anderson LHM Dental Studios  
Biomet Microfixation Nicholas Mancini  
BMO Financial Group John and Melinda Mayhall  
Aldo Domenic Boccia Lionel Metrick  
Frank Bojic Ontario Dental Association  
Donald Buschlen Ontario Society for  
Margaret Harriett Cameron Preventative Dentistry  
Canadian Dental Protective Association Ontario Study Club for  
Osseointegration  
CDSPI Oral Health Magazine  
Michael Cohen Patterson Dental  
DCY Professional James Posluns\*\*  
Corporation ROI Corporation  
Tony M. and Vanda Delitala Royal Bank Foundation  
DENTSPLY-Tulsa RBC Royal Bank  
Dental Specialties Barry J. Sessle  
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David Hunt TD Bank Group  
Ka-Biu Ip Vera and Lawrence Tomkins  
Ivoclar-Vivadent Canada Inc. George and Nancy Vasiga  
L. Jakubovic Katherine Zettle  
Frank Kalamut 6 Anonymous Donors

### LASTING LEGACIES

The Faculty of Dentistry recognizes those donors whose gifts of \$25,000 or more have been made through bequests, trusts or insurance through July 2017.

### \$1,000,000 OR MORE

Miet and Wanda Kamienski

### \$100,000 TO \$999,999

David Locker Robert Dunlop  
Guy and Eunice Poyton John and Doris J. Richmond

### \$25,000 TO \$99,999

1 Anonymous Donor

### KING'S COLLEGE CIRCLE HERITAGE SOCIETY\*\*

Since 1992, U of T has welcomed hundreds of individuals to the King's College Circle Heritage Society, which recognizes alumni and friends who have remembered the University through a provision in a will or other form of future gift commitment.

# BOUNDLESSLEGACY *(Continued)*

## LEADING GIFTS MAY 1, 2015 – APRIL 30, 2017

Our annual donor listing recognizes the generosity of donors who have made new gifts or pledges to UofT Dentistry of \$1,000 or more.

### \$25,000 OR MORE

Altima Dental Canada Inc.	Dan Kmiecik and
Douglas and Grace Bradley	Lynn Tomkins
Suzanne Brown**	Victor S. Kutcher**
Margaret Harriett Cameron	David Locker**
Canadian Dental Protective Association	Ross McKean**
Aaron Fenton	Paul R. Morgan**
	Barry J. Sessle
	3 Anonymous Donors

### \$5,000 TO \$24,999

A.T. Financial Group Inc.	Ontario Dental Association
BMO Financial Group	Oral Health Journal
Donald Buschlen	C. Grace Petrikowski
Margaret Harriett Cameron	PMH Dental Associates
Canadian Dental Protective Association	Protect Insurance
CDSPI	RBC Foundation
DCY Professional Corporation	RBC Royal Bank
Diab DeCosimo Barristers & Solicitors	ROI Corporation
Evolva SA	The Rossy Family Foundation
Ralph Grose	Royal College of Dental Surgeons of Ontario
HANSAmEd Ltd.	SciCan Ltd.
Henry Schein Canada Inc.	Scotiabank
HOSODA SHC co., Ltd.	Sinclair Dental
Brian Hurd	Valerie F. Stavro
Inter-Med, Inc./Vista Dental Products	Shin Sugino
Ivoclar-Vivadent Canada Inc.	Sunstar Americas, Inc.
Abe Leith	Straumann Canada Limited
LHM Dental Studios	Tax Matters For Dentists
M & Co. Chartered Accountants	TD Bank Group
Christopher McCulloch	Torch Financial
Nobel Biocare Canada Inc.	Toronto Crown and Bridge Study Club
Mark and Janine Nusbaum and Family	The Wyndham Group/ Raymond James Ltd.
	Katherine Zettle
	2 Anonymous Donors

### \$1,827\* TO \$4,999

Andrew P. Abela	Dentists
A-dec Inc.	Annex-Newcom
Alpha Omega Fraternity - Toronto Alumni Chapter	Izchak and Sheila Barzilay
American College of	Aldo Domenic Boccia
	Canadian Foundation for the

Advancement of Orthodontics	Linda Lee
Wing Chiu	Vincent Lo
David Chvartszaid	Tricia D. Lukat
Cirrus Consulting Group	Milan Madhavji
David Cowan	Wayne A. Maillet
Suzanne Cziraki	Lionel Metrick
DENTSPLY - Tulsa Dental	Modular and Custom Cabinets
Specialties	Babak Nurbakhsh
Natalie N. Dugas	Harry J. Patrick
Edward Bronfman Memorial	Patterson Dental Canada Inc.
Legacy Fund at the Jewish	Rob M. Pasch
Foundation of Greater	Pelton & Crane
Toronto	Philip W. Minnaar
Richard Ellen	Professional Corporation
E/T Endodontic	James Posluns
Technologies Inc.	Procter and Gamble
Federation of Chinese	Oral Health
Canadian Professionals	Professional Practice Sales
(Ontario) Education	Amit Puri
Foundation	Septodont
Jack Gerrow	Egils Tannis and Ingrid
Allan Hayes	Raminsh-Tannis
Ka-Biu Ip	3M ESPE Canada
ITEK Business Solutions Inc.	Tier Three Brokerage Ltd.
Frank Kalamut	West Toronto Dental Society
Wajahat Ali Khan	Richard Wang Lam-Yip
Jim Yuan Lai	2 Anonymous Donors
Ernest W. N. Lam	

### \$1,000 TO \$1,826

George and Christine	Kocho Cumandra
Alexopoulos	Dental Services Group of Toronto
Donald and Nancy Allen	Dino A. DiSanto
Ross Anderson	Randa Diwan
Arlene Dags Dentistry	Mark Donnelly
Professional Corporation	Dr. Gordon Bruce Wong
Peter Birek	Dentistry Professional Corporation
James Blackmore	Omar El-Mowafy
Steven Bongard	Mary I. Ferguson
Kevin J. Calzonetti	Louis Ferraro
Roberto Cardella	Stephen R. Flewelling
Cerum Ortho Organizers	Bernard Friedland
Stephen J. Cho	Emilio Frisoli
Classic Dental	George Hare Endodontic
Laboratories Ltd.	Study Club
Bruce Cole	Gary D. Glassman
Cormart Foundation	Helen Grad
G. Robert Corlett	William Edward Hall
Donna Crossan	

# WE REMEMBER...

Michael E. Hamilton  
International College of  
Dentists (Canadian Section)  
Tom Iwanowski  
Anca Jivan  
Tina Kell  
Adrienne E. Kertzer  
Bernard Y. Koong  
Manjinder S. Lalh  
Lionel Lenkinski  
Donald Wayne Lewis  
Caroline Maisonneuve  
Hackman  
Robert McFarlane  
Thomas R. McIntyre  
Shawn B. Monga  
Phrabhakaran Nambiar  
Peter J. Nkansah  
Garnet V. Packota  
Michael Pharoah  
Aly Phee

Calvin G. Pike  
Michael Rampado  
David Rich  
Kevin L. Roach and  
Anne Roach  
Paul Shutsa and  
Diane Smith  
Janet Tamo  
Howard C. Tenenbaum  
Jacques E. Thibault  
Peter T. Tonisson  
Claudia Vachon  
  
John Voudouris  
Malcolm Yasny  
Dr. Joseph S. K. Yu  
Janet Zarb and Children  
8 Anonymous Donors

## PRESIDENT'S CIRCLE\*

The President's Circle is the Leadership Annual Giving Society for the University of Toronto. Commemorating UofT's Royal Charter in 1827, individuals who make annual gifts of \$1,827 or more, and organizations that contribute \$10,000 or more, are automatically included as members of the President's Circle, and enjoy unique opportunities to attend lectures and events such as the President's Garden Party and the President's Holiday Party.

## GIFTS OF EXPERIENCE

UofT Dentistry students gain so much from the wisdom and experience of those who have come before them. We wish to gratefully acknowledge alumni gifts to the Dentistry Annual Fund, which supports initiatives such as peer mentorship nights and alumni lectures.

We also thank the many selfless volunteers and instructors of dentistry who have shared their time in service to our community of patients and students. Thank you!

*We strive to make our lists as accurate as possible. For more info, or if you have questions about the donor listing, contact Miriam Stephan at (416) 864-8202 or miriam.stephan@dentistry.utoronto.ca.*

### DR. ROY RASMUSSEN 5T0



Dr. Roy Rasmussen attended UofT Dentistry in 1945, after serving in the Royal Canadian Air Force. He then returned to his native Alberta and opened a practice in Calgary. During the 1950s and 60s, he served as a captain in the Canadian Dental Corps – Reserve Corps. He served on committees of the Canadian Dental Association and as president of the Calgary and District Dental Society and was on the board of the Canadian Dental Service Plans Inc. for 37 years, and served as chairman. He was a fellow of the International College of Dentists and the Academy of International Dentists and a member of the Pierre Fauchard Academy. He received the CDA's Certificate of Merit twice and was recognized by the Alberta Dental Association. Rasmussen passed away at the age of 92.

### DR. GORDON WRIGHT 5T0



Dr. Gordon Wright, a native of Bruce Mines, Ont., studied dentistry at UofT after serving in the Canadian Armed Forces during World War II. After graduation, Wright moved to Sault Ste. Marie and set up a practice there, working for 44 years until his retirement in 1995. In his work, he made a point of keeping up on the latest in oral surgery and orthodontia. Wright devoted a lot of his time to bettering the profession, serving as president of the Sault Ste. Marie Dental Society and the Northern Dental Society. He was on the Ontario Dental Association's board of governors and acted as chair of the RCDSO Complaints Committee and Discipline Committee. Outside of dentistry, he volunteered on his local Board of Education, serving as chairman. Wright died last March at the age of 91.

### WE MOURN THE LOSS

Allan Addems 5T1  
Henry Daignault 5T5  
Carl Dubin 5T1  
Lawrence Funt 5T2 MSc D  
Larry Greenland 7T5  
John Hunter 5T8  
Louis Lukenda 5T4

Ewart MacKay 5T9, 6T6 Dip Ortho  
Dudley McKenzie 5T0 Dip DN  
Dan Roszell 7T6  
Edward Sevic 6T2  
Jeanne Weeks 4T0 Dip DN  
Stanley Weiler 4T1

*Listings are as accurate as possible as of press time.*

# UPCOMING EVENTS

## SEPTEMBER NOMINATIONS WELCOME FOR THE 2018 AWARDS OF DISTINCTION

Recognize colleagues who are making a difference for the Faculty, research, the dental profession or society as a whole. Nominations are due November 10, 2017. The 2018 Faculty of Dentistry Awards of Distinction will be presented in the spring at a dinner with the Dean where tickets will be available. Additional recognition will take place in June during our 2018 Graduation Celebrations.

For nomination details and forms, visit <https://forms.dentistry.utoronto.ca/> award-of-distinction-2018-nomination or contact miriam.stephan@dentistry.utoronto.ca.

## FRIDAY, OCTOBER 6 DENTISTRY IN AFRICA GUEST LECTURE: DR. JAMES MASKALYK 12:30 p.m. – 1:30 p.m. 124 Edward St., Toronto

ER physician, St. Michael's Hospital and TAAAC lead for emergency medicine Dr. James Maskalyk will give a free lecture on building emergency response systems in Ethiopia.

## MONDAY, OCTOBER 16 FACULTY OF DENTISTRY ALUMNI ASSOCIATION — ANNUAL GENERAL MEETING WITH KEYNOTE: THE OPIOID CRISIS— IMPLICATIONS FOR DENTISTRY 6:30 p.m. – 8:30 p.m. Rm 170, 124 Edward St., Toronto

All Dentistry alumni are Dentistry Alumni Association members. You are invited to the Annual General Meeting with keynote speaker, former Dean Dr. David Mock. Come meet your Alumni Association Board, fellow classmates and colleagues to hear about all of the exciting changes the Board has planned and a talk on the opioid crisis, followed by a reception. RSVP by October 6 to [miriam.stephan@dentistry.utoronto.ca](mailto:miriam.stephan@dentistry.utoronto.ca).

## OCTOBER YOUNG ALUMNI MENTORSHIP LECTURE SERIES Location: TBA Toronto

Alumni who graduated between 2012 and 2017 and current students are invited to hear about the speakers' early career experiences helping to inform decisions regarding career path and community engagement.

## MONDAY, NOVEMBER 6 DR. GEORGE ZARB CLINICAL RESEARCH LECTURE 5 p.m. – 6 p.m. Rm 171, 124 Edward St., Toronto

Join us for a lecture by Dr. Eli Eliav, vice-dean, oral health, at the School of Medicine and Dentistry at the University of Rochester Medical Center and director of the Eastman Institute for Oral Health.

## FRIDAY, NOVEMBER 24 DSS MENTAL HEALTH TALKS: PAT CAPPONI 12:30 p.m. – 1:30 p.m. 124 Edward St., Toronto

Mental health advocate and writer Pat Capponi

will talk about her experiences as a user of mental health support systems.

## TUESDAY, FEBRUARY 13, 2018 RESEARCH DAY 124 Edward St., Toronto

Join us for this annual symposium highlighting the Faculty's innovative research. Connect with fellow students, faculty, staff and alumni as we feature student posters, lectures and a keynote address followed by a reception. All are welcome. More details to follow.

## MARCH 8 PACIFIC DENTAL CONFERENCE VANCOUVER ALUMNI RECEPTION 5 p.m. – 7 p.m. Pan Pacific Hotel Vancouver

Dean Daniel Haas will be hosting an event for UofT Alumni. Whether you live on the West Coast or you're in town for the Pacific Dental Conference, we hope to see you.

## MARCH 2018 DENTANTICS Enjoy the 97th annual



Photo: Jeff Comber

Dentantics with classmates or your entire practice.

## MARCH 2018 WORD OF MOUTH NETWORKING EVENT 6 p.m. – 8 p.m. Student Commons 124 Edward St., Toronto

Connecting our graduating DDS students with UofT alumni, clinical instructors and experts from the UofT Career Centre to help prepare them to launch their careers as healthcare professionals in a rapidly changing landscape.

## APRIL 26 – 28 ODA ANNUAL SPRING MEETING Metro Toronto Convention Centre South Building Toronto Come see us and the Dean in our booth on the convention floor.

## FRIDAY APRIL 27 GREAT ALUMNI EVENT 5 p.m. – 8:30 pm Steam Whistle Brewery Toronto Get your classmates together and celebrate your friendships with the Faculty. Open to all UofT Dentistry alumni. More details to follow.

## QUESTIONS OR SPONSORSHIP INQUIRES?

Contact Miriam Stephan, Manager of Alumni Relations, at [miriam.stephan@dentistry.utoronto.ca](mailto:miriam.stephan@dentistry.utoronto.ca) or (416) 824-8202.