WHY RESEARCH MATTERS

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Erratum From the 2023 Winter/Spring issue.
Page 13: The RCDSO does not track complaints by age or financial circumstances of dentists.
Page 20: Pat Beattie was from the class of 2T3.
MESSAGE FROM THE INTERIM DEAN

BEYOND THE LAB

This issue of U of T Dentistry magazine honours the impressive work, past and present, of our researchers. The Faculty of Dentistry’s research efforts have garnered worldwide recognition and made far-reaching impacts on the profession, oral health care and overall health.

For nearly 150 years, oral health academics with the Faculty of Dentistry have been asking probing questions in the lab, classroom and clinic, and their endeavours have transformed oral health care and beyond.

Our feature about the history of dental research begins with Harold Box’s provocative declarations about periodontology in the 1920s and spans the discoveries of some of our most distinguished professor emeriti.

Through the 20th century, these academics helped build and enrich the fields of prosthodontics, public health, biomaterials, orthodontics and more. They expanded our knowledge of the intricacies of dental and oral health and also fought for the recognition that dentistry is an integral part of medicine.

We also profile some of the Faculty’s latest cutting-edge research across multiple research themes, reflecting the breadth and depth of the Faculty’s research enterprise. Many of these projects include collaborations between researchers and clinicians, which help ensure discoveries in the lab have greater relevance in practice and create a necessary feedback loop that challenges the status quo.

From three of our faculty members receiving prestigious Canada Research Chair appointments to others garnering important awards, we are continuing to push the envelope of inquiry and discovery to create a lasting impact on human health.

These are exciting times for the Faculty of Dentistry; our commitment to research will only deepen our understanding and bolster positive outcomes for future generations.

Indeed, this is a thrilling era across the wider University: U of T was just ranked second in the world among universities for health science research in a new index published by the journal Nature.

I am grateful to be part of this community of discovery. I hope you too feel a deep sense of pride for our collective contributions to nurturing the oral healthcare professionals and researchers of the future who will transform human health.

INTERIM DEAN LAURA TAM 8T5, 9T3 MSC D
The Faculty of Dentistry already works closely with the public, providing nearly 70,000 patient visits in 2022–23 through its clinics. Now, the wider research community is getting its turn. Since 2019, the Collaborative Advanced Microscopy Laboratories of Dentistry (CAMiLoD) has supported more than 150 public users, and it continues to grow. Located on the fourth and fifth floors of 124 Edward St., CAMiLoD offers unique services via access to expertise and state-of-the-art equipment.

“We have been collaborating with academic and commercial clients in the Greater Toronto Area and beyond, including biopharmaceutical companies and industry startups,” says
professor Morris Manolson, vice-dean of research. The lab is emerging as a hub for research thanks to its advanced microscopy, histology and mechanical testing suites.

The facility offers an array of services, including atomic force microscopy, light microscopy, histology, mechanical testing, scanning electron microscopy, and slide scanning and image analysis.

CAMiLoD, uniquely, offers a multidisciplinary approach. While the facility is based in the Faculty of Dentistry, it caters to a wide range of fields, including biomechanical, biomedical and biomaterial sciences.

The team at CAMiLoD offers expert guidance to support clients in selecting the most suitable methods and equipment. “Choosing the optimum service or instrument depends on the research question. The first step of working with us is booking a complimentary consultation that will help us guide you on the best approach,” says Dhaarmi Rajshankar, manager of CAMiLoD.

The Faculty has a focus on collaboration, and that value has been embraced at CAMiLoD as well. Clients are able to work through the lab to establish connections with like-minded partners focused on doing cutting-edge research with the best equipment and expertise around. 

**ACCESSING ORAL PATHOLOGY**

Early detection of oral cancer matters to patients and dentists. The Faculty’s Toronto Oral Pathology Service (TOPS) is one of the largest oral pathology diagnostic laboratories in Canada, processing 7,892 samples in 2022 alone.

TOPS provides diagnostic services to dental and medical professionals in Canada and internationally with a quick turnaround. It offers standard tissue processing, staining and immunohistochemistry. The Service doubles as a data collection point for oral cancer research, providing vital information to Faculty researchers working to understand this debilitating and often fatal cancer.

**FURTHER YOUR RESEARCH**

To find out more about CAMiLoD, visit camilod.ca

To learn more about TOPS, visit dentistry.utoronto.ca/tops
While hundreds of thousands of Canadians may be missing out on the Interim Canada Dental Benefit (CDB), this program that offers families some money back for kids’ dental care is starting to have some impact.

“My patients are definitely using it, and we continue to give them information. They are pleased that they’re the ones getting the payments,” says Paul Andrews ST6, ST9 Dip Paedo, 9To MSc, pediatric specialist and assistant professor, teaching stream.

Uptake data have been mixed: an April 2023 report by the Canadian Centre for Policy Alternatives found that hundreds of thousands of Canadians missed out on the benefit, with just over half of eligible children actually receiving it.

In July, the Government of Canada reported that close to 340,000 children had made use of the benefit.

Sonica Singhal, graduate program director of Dental Public Health at the Faculty of Dentistry, says the benefit’s eligibility criteria and application process can be difficult to understand, plus many families simply don’t know about the CDB.

“A lot of dental care providers were not aware of how this benefit worked, because the benefit is between the government and patients,” says Singhal. She stresses the importance of dentists staying informed to better assist their patients.

Andrews says the benefit is not always sufficient. “A lot of children need to be put to sleep to have their advanced needs dealt with. With anaesthesia, fees can amount to upwards of $3,000. A $650 benefit does not go far,” he says.

However, he thinks direct reimbursement to families is cost-effective, as it avoids adding administrative burden to dentists. “It’s kind of the ideal situation. If they were to make it a higher dollar value, it would be an ideal system.”

The second benefit period of the interim CBD runs until June 30, 2024. Meanwhile, the federal government is planning to roll out a permanent program to cover more Canadians.

Singhal is optimistic about the potential of the Canadian Dental Care Plan. “Although details of the permanent plan are still unknown, having dental care in the federal budget solidifies the government’s promise and the important recognition that oral health is a key factor in overall health.”
PROF EARNS AWARD

Professor Anil Kishen has been chosen as the recipient of the Canadian Association for Dental Research-Association of Canadian Faculties of Dentistry (CADR-ACFD) National Dental Research Award for 2023.

This award is a tribute to Kishen’s outstanding research, mentorship and leadership. It recognizes his commitment to dental academia and reflects the esteem and admiration in which he is held by peers. Kishen is the first endodontist to receive this national award in Canada.

THREE NEW RESEARCH CHAIRS

In spring 2023, three faculty members from U of T Dentistry received Canada Research Chair appointments.

Professor Anil Kishen has Canada Research Chair Tier 1 funding for his work in oral health nanomedicine. Massieh Moayedi, associate professor, has secured Canada Research Chair Tier 2 funding for his research into pain neuroimaging. Karina Carneiro, assistant professor, now holds Canada Research Chair Tier 2 funding for her investigations into DNA-based biomaterials.

STAY IN TOUCH

Stay connected with what’s happening at the Faculty and what your fellow alumni and friends are doing in the community. Update your contact info at dentistry.utoronto.ca/alumni/my-services.
“It is another triumph,” the Ontario minister of health declared in 1924 of the breakthrough by Harold Box, professor at the Royal College of Dental Surgeons (the previous name of the Faculty of Dentistry at the University of Toronto), that described the root cause of periodontitis. By “another,” he was referring to the discovery of insulin.

The finding was such big news that it made Time magazine. Box had declared that gum disease, previously thought to be caused by loose teeth, was triggered by microbes multiplying in the opening between the teeth and gums. A dentist from Texas called the work “epoch making” in a journal article, while the head of periodontology at the Royal College challenged the findings.
Thanks to the research foundation set up by Box and others, Roy Ellis 2T9, 4T2 MSc D was able to further develop a legacy of dentistry research. He became dean of the Faculty in 1947, and established the University of Toronto Dentistry Division of Dental Research in 1952. This, along with funding initiatives, attracted and supported renowned dental scientists and helped build U of T Dentistry’s international research reputation. From his humble beginnings on an Australian farm, Ellis became a leading light in Canadian dentistry, using his persuasive and organizational powers to build and expand the 124 Edward St. Faculty building, triple student enrolment and facilitate further research.

A BROAD APPROACH

In those early years, the Faculty became a leader in the emerging field of orthodontics with the creation of the Burlington Growth Centre in 1952. Hosting thousands of pediatric research subjects, the Centre led to nearly 400 studies, and became known as one of the most important craniofacial growth databases in the world.

The Centre benefitted from the work of Robert Grainger 4T3, 5To Dip DPH, 5T1 MSc D, a noted epidemiologist and statistician who, in 1959, authored Canada’s first oral-health evaluation manual, making Canada one of the first countries to set national standards for epidemiological surveys. He also helped establish the World Health Organization’s Dental Survey Criteria. Senior research fellow Margaret Hatton 5T2 PhD bolstered the Centre with pioneering work on genetics, craniofacial structure and malocclusions, plus gave popular lectures to students — remarkable contributions given the barriers she experienced as a mixed-race female researcher.

Also doing important Faculty research on orthodontics was professor Donald Woodside 5T2, 5T6 MSc D. He developed the mandibular growth charts still used today and also propelled the understanding of muscle movements’ influence on bone growth forward.

Materials science became an important focus at U of T in the 1960s, with Dennis Smith — nicknamed the father of biomaterials in Canada — leading the way.

“Dennis Smith made a very impressive contribution to materials science,” says Zarb. At the University of
Manchester, Smith used his chemistry expertise to create dental cements, as well as an acrylic cement still used in hip replacement surgeries today. In Toronto, as a professor in Dentistry, the affable researcher helped create the Canadian Biomaterials Society in 1971, inviting engineers, chemists, dentists and medical researchers to collaborate in this first-of-its-kind organization.

He established the Department of Biomaterials in Dentistry and was involved in the university-wide Centre for Biomaterials founded in the ‘80s — the precursor of the Institute of Biomedical Engineering. All this lay the foundations for future innovators, including Dorothy McComb 7T4. Her research in composite resin technology, materials and adhesive systems helped transform dental treatment, says assistant professor, teaching stream, Greg Anderson 8T6. McComb was active in the faculty from 1975 to 2015, and she’s still talked about today for her research and advocacy around favouring less risky and invasive treatments. “She always promoted that, before you jump into a root canal treatment, try to restore that tooth,” says Anderson.

LATE-CENTURY IDEAS
By 1969, the Faculty of Dentistry had gained enough international traction to recruit star South African researcher Anthony Melcher, who looked at periodontal tissues and wound healing and transformed our understanding of connective tissue. “Melcher was a major force in terms of how we think about the structure, causation and treatment of gum disease,” explains professor Chris McCulloch 7T6, 8T2 PhD. As a periodontics professor, Melcher also helped develop the Innova Endopore implant system.

The Faculty also became central in understanding dental public health’s value, largely thanks to James Leake 6T6, 6T9 Dip DPH, 7T8 MSc. Equally passionate and humble, professor Leake authored or co-authored more than 70 journal articles on such topics as Indigenous peoples, access to care and fluoride. Leake contributed to the Royal Commission on the Future of Health Care in Canada in 2001, and his research on dental care for low-income children led to the 2010 formation of Healthy Smiles Ontario.

While professor David Locker’s name is often paired with Leake’s — they co-authored numerous papers — Locker was a long-time professor and research powerhouse in his own right who influenced dental public health in Canada and abroad, says Helen He, head of the Dentistry Library. Locker led Ontario’s Community Dental Health Services Research Unit, for instance, which firmly established the connections between overall health, oral health and access to dental care.

RISING RESEARCH LEADERSHIP
Over the last few decades, oral health research has deepened and broadened at the Faculty. Helping to build an understanding of the complexity of pain has been former dean and 2020 recipient of the prestigious IADR Gold Medal, professor Barry Sessle. “He made really important contributions to understanding the brain connections associated with tooth pain,” says McCulloch. Sessle himself is pleased at the research-friendly changes he has seen over his five decades at U of T Dentistry. “The Faculty has placed an emphasis on recruitment of staff contributing to the multidisciplinary research activities, and this has been a major factor in its research enterprise going from strength to strength,” he says.

During this era, as well, the Faculty became world-renowned for its contributions to prosthetics research, thanks to George Zarb. His studies on dental implants helped revolutionize tooth replacement and earned him global notoriety, as well as the Order of Canada. “Zarb’s work has made one of the biggest differences in patient treatment and quality of life,” explains Anderson. “Back in the 1980s, implant dentistry wasn’t really a part of everyday practice, but now it’s discussed with almost every patient we come across.”

Haas adds: “When you travel worldwide, the two names that consistently come up from U of T Dentistry are Zarb and Sessle.”

MORE FRONTIERS
As oral health research continues to evolve, expect more evidence-based improvements to practice, driven by experience and new questions.

As they continue to innovate — now leveraging new tools such as digital dentistry and artificial intelligence — today’s academics owe a great debt to the work of the dental scientists of the past. Thanks to their findings, organizational efforts, fundraising, teaching and mentorship, the future is brighter than ever for dental research.

That’s especially true at the Faculty of Dentistry, which is routinely ranked as the top most published and cited of the dental schools in the country. As Haas says, “We are always trying to improve, always trying to move forward.”

There’s been some amazing dental research work from a basic science standpoint that has led to huge clinical improvements for overall health.
Researchers at the Faculty of Dentistry investigate many aspects of human health, making sure that even basic research will change the lives of patients. Here are the latest innovations falling under the Faculty’s seven priority research themes.
When professor Paul Santerre joined the Faculty of Dentistry in 1993, he began solving one of the most fundamental materials problems in dentistry: the failure of composite resin dental work.

Polymeric-based fillings often fail after about seven years, costing patients and insurers millions a year, and leaving those unable to afford replacements vulnerable. “If we can fix this, we can improve quality of life and decrease the burden of disease. We also free up the dentist’s time to fix more challenging problems and help more people,” says Santerre.

He and professor Yoav Finer — PhD, MSc Prosthodontics — propelled the issue forward in 2004 when they showed that it is the enzymes in human saliva that attack the esters in composites. Researchers at the Faculty and elsewhere have tried to follow this up with solutions, including masking the esters, but no one has been successful so far.

In 2020, Santerre tasked PhD student Zach Gouveia with finding a new material that would resist saliva enzymes, and also be useful to dentists, with the right viscosity and a quick cure time. As well, he wanted a resin that could be made into both composite and adhesive.

With both Santerre and Finer as his co-supervisors — Finer offers valuable clinical insights as a working prosthodontist — Gouveia leveraged his training in chemical and biomaterial engineering and followed a precise design criteria and workflow to test 40 different compounds. “The problem has been poorly defined in the past. If you don’t define the problem early on, you’ll design something that eventually fails,” he says.

This meticulous approach worked: He has come up with a subset of monomers that seem, so far, to tick all the boxes. As Gouveia enters the fourth year of his degree — he’d like to stay in academia after that — Santerre is speaking to potential industry partners. “Right away, when we are doing science, we are thinking of doing products.” Throughout his career, Santerre has developed biomaterials for cardiology, renal medicine and surgery, and has secured more than 70 patents, started companies and inked industry partnerships.

Santerre expects this discovery, decades in the making, will lead to new products in just a few years. Access to dental fillings and other oral biomaterials that truly last, plus are safe and easy to use, will be transformative for patient health. “This is paradigm shifting,” he says.
“I love looking at damaged collagen,” says professor Laurent Bozec, a whiz at using atomic force microscopy to look at tissues at what he calls the nanometrology level. His lab analyzes samples at 1,000 to 10,000 times higher resolution than normal histology, and always with an eye to clinical implications. “I work at the interface between traditional physics and dentistry clinical applications.”

Since 2013, he’s been interested in Ehlers-Danlos Syndrome — it affects 1.5 million people worldwide, while another 225 million have symptoms but no formal diagnosis — in which collagen dysfunction can cause stretchy and fragile skin, joint hypermobility and a range of oral, facial and dental problems.

This biophysicist hopes to impact patients with this rare disease thanks to a partnership with the GoodHope Ehlers Danlos Syndrome Clinic at University Health Network. Working with physician and clinical researcher Nimish Mittal, Bozec has been looking at skin samples of patients to find a biomarker for the disease.

Most people take an average of 15 years to get a diagnosis (a small subgroup can be identified with a genetic test). “So, that’s 15 years where your health insurance is not going to pick up the tab. Nobody believes that they are having these issues; people get told to stop complaining,” says Bozec.

After Bozec finds a diagnostic biomarker, he plans to influence collagen using peptides, and find personalized, local treatments to help with, say, a wound or a loose tooth. Currently, there are no pharmacological treatments for Ehlers-Danlos — patients rely on things like physiotherapy to stay as well as possible.

Bozec also does oral cancer research, predicting which lesions will lead to cancer based on collagen matrix changes, plus his lab is trying to prevent the degradation of the collagen around teeth during routine treatments such as root canals. His approach to scaffolding collagen during these dental processes will inform plans for treating Ehlers-Danlos. In turn, Bozec expects findings related to diagnosing and treating this rare disease to feed back into other research.

Bozec had to wait a long time before getting this work underway: it took seven years to get ethical approval, because it takes people with the condition a long time to heal after giving a sample. “I hope we can find some solutions for these patients,” he says. “Even if we can’t, we will still have done good research that has the potential to help others.”
The GreenShield Clinic is a special place. This two-chair clinic at 124 Edward St. offers patients no-cost dental care. Critically, it’s also a living lab that generates data for the researchers with the One Smile Research Program. Patients can access a broad range of treatments cost-free and are monitored via surveys and physiological tests.

“Having barriers to accessing oral health care is one of the biggest determinants of poor oral health,” says Sonica Singhal, graduate program director of Dental Public Health at the Faculty. “Access to consistent oral health care, without any barriers, can lead to improvement and maintenance of good oral health. Although this seems obvious, it has not been proven enough through compelling evidence.”

The Clinic, which was launched in 2021 thanks to a landmark, $6.15-million donation from GreenShield, offers a powerful way to build a data-driven understanding of the impact of dental public health.

To tease out the financial value of dentistry, Singhal and fourth year Dental Public Health PhD candidate Abdulrahman Ghoneim are tallying up the costs of providing care to patients who’ve experienced barriers to accessing dentistry over the previous two years, and the far-reaching repercussions of that investment.

“I’m trying to capture the costs of dental care, but also the indirect costs. The things that aren’t necessarily captured within typical economic evaluations,” says Ghoneim. He’s adding up the direct costs on the clinic’s side, but also the hidden ones borne by patients related to taking time off work or travelling to get care. (Patients need, on average, about $2,000 worth of dental care to start.) “We’re hypothesizing that over the years, the costs will drop significantly,” he says.

Ghoneim and others on the research team are also calculating the impact of dentistry on oral and overall health, plus such things as job seeking, food insecurity and relationships. “We will come up with a ratio to show if you put this much money in a program, this is what you get back,” he says. Governments look to this kind of data when developing programs.

When Ghoneim graduates, he says he’ll miss the clinic and the vital information it’s yielding. “There’s a huge opportunity here to follow people for years and see the real impact. I believe the longer you keep this kind of program going, the more benefits you’re going to get.”
Her classes allow students to practise speaking to patients, often using experiential learning with standardized patients — a.k.a. an actor playing someone disputing their bill or finding out there was a problem with their root canal. Afterwards, everyone dissects those interactions.

At the same time, she gathers metrics on the process for her research, leveraging her classroom as a lab, too. Dempster increasingly works using a mixed methods approach, employing both surveys and interviews.

Lately, Dempster has turned her attention to patients, and how they perceive conversations with healthcare professionals. “I think it’s really important for any clinician to have a sense of what patients feel,” she says. “I’m trying to give patients a voice and appreciate their contribution to the education of a dentist.”

She’s been assessing standardized patients’ perceptions of interactions in her classroom and at the GreenShield Clinic, the Faculty’s no-fee clinic that also serves as a research resource. Here, she’s trying to understand how past experiences — including negative ones — influence trust, interactions and anxiety.

While Dempster may have few peers in her corner of dental education research, she’s found engaged collaborators who have questions about communication in medicine, pharmacy and physiotherapy. She’s helping to build a rigorous, evidence-based understanding of the non-clinical side of healthcare education and practice.

As Dempster shares her findings — plus earns awards from the likes of the American Dental Education Association — she’s noticed that colleagues and students are becoming increasingly comfortable with her objective measures of interpersonal skills and want more.

“Students are coming back to do specialties, and I get a number of them who want to get involved in the kind of research I’m doing. I think because they see how closely it aligns with professional practice.”
Professor Céline Lévesque has always been inspired by her office and lab mates, and loves to chat with them when they meet on the bench or in the hall. Now, her longtime friendship with a work neighbour, professor Siew-Ging Gong, has led to a potentially industry-changing caries prevention product.

It took a while for the two to start a collaboration. Lévesque is a microbiologist focused on streptococcus — so much so that she has a “Streptococcus Rd.” street sign on her office wall (she bought it at a Hong Kong street market) — and its genetics. “Streptococci are so fascinating. They’re involved in many infectious diseases that can be life threatening. They can also cause things like dental caries,” says Lévesque.

Meanwhile, Gong does basic research in developmental molecular biology, but also clinical research as a trained orthodontist. To work together, the duo recruited some students to look at the bacteria in the plaque of orthodontic patients.

Lévesque was mapping out strains of caries-causing streptococcus mutans from patients for the project when one sample caught her eye. “When I saw the plate, I thought it looked interesting.”

Later, Lévesque confirmed that the plaque sample from a caries-free control contained beneficial streptococcus salivarius — this kind of strep is normally found on the tongue, not in plaque, making it special. “This particular colony was able to kill the streptococcus mutans. And that’s how we started our probiotic research.”

Lévesque has now isolated a powerful strain. In mice fed a sugary diet, it killed off the bad, caries-causing strep, and as a bonus, aided teeth in remineralization.

“I’m looking at the possible applications and who we should target with a product,” says Gong of her role on the clinical side. Possibilities include formulations for professional use in dental offices, or for consumers. The pair have worked with a biomaterials postdoctoral fellow and a chemist, plus are speaking to possible industry partners.

“When you collaborate with someone, you see your work differently,” says Lévesque, who’s thrilled to be working on potentially industry-changing products, and doing so with a trusted friend.

Gong agrees collaboration makes for stronger research, but it has to feel right, as this project does. “It only works if we connect individually. You cannot force it on people. This is about mutual interest and also respect for each other.”

CARRIES NO MORE
Oral cancer: it’s awful. Six to 36 per cent of premalignant oral lesions progress to cancer, but we have limited strategies for predicting which ones will remain harmless, and which could kill the patient. That risk of death is real, with oral cancer killing more people in Canada than melanoma or cervical cancer — about 1,500 people a year.

“No matter what, even if you survive it, it’s bad,” says associate professor Marco Magalhaes PhD, MSc OP/OM. Advanced oral cancers have a 50 per cent survival rate, and those who get cured can have significant disability after radiation and surgery. “If we are able to identify oral cancers early and find ways to treat them early, that will be ideal.”

Magalhaes runs one of the few labs in Canada devoted to understanding oral cancer. With funding from the likes of the Canadian Cancer Society, he and his team are analyzing which lesions risk turning malignant to identify cancer early and find new treatment options.

In a novel approach to studying oral cancer, he is combining clinical research with advanced molecular and genetic analysis. Magalhaes and Oral Pathology and Oral Medicine MSc student Vincent Lavoie are putting samples from the Faculty’s Toronto Oral Pathology Service through something called spatial transcriptomics.

This process looks at protein coding RNA expression within different cell types. “Before, we used to take a piece of tissue and we got all these transcripts, all jumbled up. Now, we’re able to separate them into compartments and see how they’re behaving differently,” says Lavoie. “We’re trying to predict if tissue has a higher risk of progression. From our preliminary results, it seems like we can.”

Oral cancers are complex, but this approach is confirming that inflammation and immune response play an important role in cancer progression. Jump-off projects in Magalhaes’ lab include the development of a genetic test for some of these expressions and the creation of an animal model that knocks out these genes, to find a pathway for potential treatments.

Outside of the lab, Magalhaes has become something of an advocate for awareness and research funding for deadly and debilitating oral cancers, sharing his insights at scientific meetings and charity events. “There’s not much going on in the way of oral cancer campaigns, but that’s what I’m trying to do, to get the awareness out there.”
A patient that associate professor Iacopo Cioffi spoke with recently about his study on temporomandibular disorder (TMD), told him they were just offered an assessment and treatment plan from a private healthcare provider. The price tag: $5,000.

“When there is confusion and patients are desperate, you have people that will come up with fancy theories that are not supported by scientific evidence. They charge these patients a lot,” says Cioffi.

TMD is a surprisingly complex condition of which we have a limited understanding. Cioffi hopes to change that by, for starters, developing a better diagnostic tool. “Right now, we have diagnostic criteria, but they just tell you that TMD is present. What we lack right now is correlates of disease severity.”

With nearly $1 million in funding from the Canadian Institutes of Health Research, Cioffi is leading a study to assess TMD via a range of tests — ultrasound, electromyography and magnetic resonance imaging — plus pain self-reports and psychosocial factors to categorize a person’s disease. The study includes nearly 400 patients in Canada and Australia, comparing those with TMD to controls, plus patients with masticatory myofascial pain syndrome and trigeminal neuropathy.

In future, Cioffi and his team will look at which treatments affect which biomarkers. Currently, doctors start with night guards and physiotherapy and then ramp up to more invasive treatments. The goal is to be more targeted and faster; over time, uncontrolled TMD can become a chronic pain that’s deregulated at the nervous system level, making it difficult to get under control.

“Consider it a Waze for TMD, or Google Maps,” says Bruce Freeman 9To, 9T3 Dip Ortho, 9T7 MSc, co-director of the Facial Pain Unit at Mount Sinai Hospital, facial pain consultant at Toronto Western Hospital, and assistant professor, status only, at the Faculty, who’s a clinical partner on the study. He has a clinical focus in TMD and facial pain, and hopes his work with Cioffi will support dentists and others to better understand the condition. “It doesn’t make sense. It doesn’t fit into the framework that dentists are used to,” he says.

Cioffi says TMD is decades behind other diseases because we previously didn’t have the technology to map it, but also, it was thought to be a purely occlusal condition, while we now understand it’s multifactorial. “What we know now is it’s not just about the teeth. It’s about the muscles, it’s about the brain, it’s about psychosocial variables.”
Taking up RESIDENCE

Many of the class of 2023 are pursuing GPRs

CONGRATULATIONS TO THE CLASS OF 2023

Mohammed Abdul-Khaliq
David Meyer Abraham
Mona Adib-Moradi Langrudi
Maaz Muhammad Ali
Syed Babur Mansoor Ali
Ussama Ali
Rebecca Nicole Allen
Choukat Alsakati
Yasha Amani Andabili
Sanaa Muhammad Arifuddin
Rebecca Lauren Bahar
Clara Rebecca Ban Kim
Christina Basily
Kissa Batul
Haytham Elsayed Behery
Perre Allyson Blais
Brianna Teresa
Boissonneault
Sepehr Bozorgzadeh
Marc Otello Candeliere

Photo: Jeff Comber
Aynaz Khodayari was the first person of the graduating class of 2023 to sign out of clinic and officially be done with her degree. “Everyone was saying, ‘You’re the first, congrats!’” Not that she was in a rush to finish her education. “I really liked the program. It was definitely tough, and it was different with COVID hitting. But I loved the professors and found good mentors.”

In fact, Khodayari is not done learning. She’s now doing a one-year general practice residency (GPR) at the Montreal Children’s Hospital, a program run by McGill University. GPRs have always been an excellent option for new DDS grads, offering them additional clinic time in a supported environment, experience with a wide range of patients and, sometimes, more exposure to teaching and other academic work.

“I love teaching. I love mentorship. I see myself continuing to teach, maybe as a clinical instructor in future. This will help give me so much more experience,” says Khodayari.

She and others from the Faculty of Dentistry have been looking to GPRs more in the last few years. Competitive specialization programs increasingly expect GPRs on resumés, which is a motivator for Khodayari, who’s interested in pursuing orthodontics. The GPR she chose focuses on children and offers rotations through numerous specialties, plus she gets to practise her French. “It’s the best thing for me as a person.”

Adam Tepperman also plans to apply for a specialty after he completes a GPR at the Columbia Irving Medical Center in New York City. He wants to study endodontics — for which many programs recommend residency experience — so he put his name into the U.S. match system. During his residency, he’s treating medically complex patients and working alongside oral surgery residents. The expectations are high, but Tepperman is up for it: he likes a full schedule, as he took on student leadership during his time at U of T Dentistry, serving as class vice president up until DDS4, when he took over as president. “I can find much less productive ways to fill my time if I wasn’t getting involved,” wisecracks Tepperman, who felt like student leadership was an important way to contribute to the profession early on.

New grad Alexandra Khozin, unlike many of her peers, always expected to do a GPR after her DDS. In her initial research for dental school, many of the older dentists she spoke to had done them. “I had it in the back of my mind over the entire four years,” she says. “In fourth year, when I applied, I felt like I could use another year. I just applied right away; I didn’t hesitate.”

She chose Sunnybrook Health Sciences Centre, which is affiliated with U of T, which allows her to keep living in the same place, stay close to her family in Toronto and enjoy a well-rounded program. “I wanted another year of general dentistry with some mentorship and supervision,” says Khozin. “I’ll be dealing with more medically complex patients, and it’s a good way to make sure I’m comfortable in private practice.”

General dentistry is all about relationships, and that’s what Khozin liked about dental school, too. “The highlight was the people. It was so fun to go to school every day with my classmates and friends.”

“...and friends...”

Kristina Maria Carnogursky
Gloria Yanqing Chang
Ritika Chhalani
Wilie Chad Cygelfarb
Mirian Man Hin Dang

David Joshua De Lazzari
Gillian Taylor Denomme
Matthew Wilson Deratnay
Suraya Dhallal
Charanbir Singh Dhillon

Avery Caroline Vera
Donkin-Verschuren
David Alexander Goziotis
Dunbar
Angela Nicole Dykes

Nayha Eijaz
Alicia Evelyn Fisch
Bahareh Fouladi
Victoria Fugariu
Ehsan Ghassem Khani

2023 SUMMER/FALL • 21
CLASS OF 2023 CONT’D

David Jordan Goldenberg
Lisa Yue Guan
Mina Emad Saad Hanna
Jitesh Kumar Haryani
Muhammad Suhaib Hasan
Vincent Hua
Jae Sung Huh
Liana Catherine Iannucci
Imtisal Janjua
Anuj Shailesh Jhaveri
Stefan Mikhail Juckes
Manvir Singh Kahlon
Tegveer Singh Kamra
Nidhi Katoch
Mankirat Kaur
Kashmala Aziz Khan
Falguni Sanjaykumar Khaneriya
Aynaz Khodayari
Alexandra Gabrielle Khozin
Junsoo Kim
Rashmi Kiri

Dominika Kovaleva
Chun Heng Royce Lai
So Hyun Lee
Andrew Benson Ho Juen Leung
Jeffrey Liang
Silk Tine Lim
Darrien Bryce Lui
Zujajah Malik
Sara Joanne Marcine
Noha Miah
Kayla Atara Shoshana
Mincer
Zainab Mohammad
Sakhithya Mohanathaa
Douaa Mostafa
Thevah Nagaarudkumaran
Sandhya Nagarajan
Michael Nakhla
Emily Minh Thuy Nguyen
Afisu Adewale Oladega
Khushkaran Singh Panu
Parisa Parhami
Jeong Won Park
Rachel Jaebin Park
So Won Park
Raj Patel
Sudip Patel
Maryiam Rahat
Rani Ranabhatt
Aleksandra Redzic
Colin Ray Robertson
Frédéric Léo Edgar Rochon
Jeanne Denise Roque
Ivan Ruvinov
Sneha Sachin
Aya Saeed
Persoon Saini
Anika Leena Shah
Shruti Atul Shah
Kaylee Ashlynn Mei Tzai Shen
Vinita Sanjay Sheth
Eric Shieh
Ruby Singh
Rithima Kaur Sokhi
Aniket Dhirenbhai Somani
Amber Runzhe Sun
Osama Syed Mohammad
Javaria Taufiq
Adam Lyle Tepperman
Rakhi Tilak
Eileen Tran
Matthieu Charles Trottier
Aaswin Kaur Tuli
Rickson Daniel Valtellini
Xing Mei Wang
Sonya Noel Waseelenko
Kun Yuan Yang
Caroline Xiu-Xin Ye
Kelly Yeung
Matthew Yoon
Christina Zografos

Specialty grads
Ahmed Mohamed Ben Suleiman, MSc
Sally El-shennawy, MSc
Ebtelah Abdulraouf Ghazal, MSc

Listings are as accurate as possible as of press time.

NOMINATE ALUMNI OF INFLUENCE 2024

Nominations are now open for the Faculty of Dentistry’s Alumni of Influence Award.
To nominate an influencer, view past recipients, and for more information, please visit: https://uoft.me/acii

Pictured above: Alumni of Influence Award Recipients 2023 (Daniel Haas 7T9, 8T8 PhD, Lynn Tomkins 8T1, and Vikram Malhotra 0T9)
### 2023 – 2024 Course Offerings

<table>
<thead>
<tr>
<th>COURSE TITLE</th>
<th>SPEAKER(S)</th>
<th>DATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dental Practice Management (virtual)</td>
<td>Linda Anderson</td>
<td>Sept 16, 2023 – May 2024</td>
</tr>
<tr>
<td>Digital Pre-Treatment Planning for Atrophic Ridges Restorations</td>
<td>Dr. Mario Beretta</td>
<td>Sept 22, 2023</td>
</tr>
<tr>
<td>Small Field-of-View Cone Beam CT: A 2.5 Day Didactic &amp; Hands-on Course</td>
<td>Dr. Dale Miles</td>
<td>Sept 29 – Oct 1, 2023</td>
</tr>
<tr>
<td>Doc, I’ve Broken My Teeth. What Do We Do Now? CORE (1/2 day AM)</td>
<td>Dr. Jordan Gerster</td>
<td>Oct 27, 2023</td>
</tr>
<tr>
<td>Orthodontic Procedures for Dental Hygienists and Level II Dental Assistants</td>
<td>Dr. Natoosha Nargaski</td>
<td>Oct 27 – 29, 2023 (fall) Feb 23 – 25, 2024 (winter)</td>
</tr>
<tr>
<td>Medical Emergencies in the Dental Office CORE</td>
<td>Dr. Daniel Haas</td>
<td>Nov 10, 2023 (fall) Apr 5, 2024 (spring)</td>
</tr>
<tr>
<td>Nitrous Oxide &amp; Oral Sedation</td>
<td>Dr. Daniel Haas et al.</td>
<td>Nov 11 – 12, 2023 (fall) Apr 6 – 7, 2024 (spring)</td>
</tr>
<tr>
<td>Management and Prevention of Gingival Recession (1/2 day AM)</td>
<td>Dr. George Merijohn</td>
<td>Nov 17, 2023</td>
</tr>
<tr>
<td>Thrive! Produce Less Aerosol, Deliver Safer Therapy (1/2 day PM)</td>
<td>Dr. George Merijohn</td>
<td>Nov 17, 2023</td>
</tr>
<tr>
<td>Unique Solutions to Challenges in Implant Dentistry</td>
<td>Dr. Mark Lin</td>
<td>Nov 24, 2023</td>
</tr>
<tr>
<td>The Art and Science of Multiple Veneer Solutions to Common Cosmetic Challenges (2 days)</td>
<td>Dr. Tony Mancuso, Dr. Domenic Belcastro</td>
<td>Nov 24 – 25, 2023</td>
</tr>
<tr>
<td>Cracked Tooth: Keep it or Remove it? CORE (1/2 day AM)</td>
<td>Dr. Amir Azarpazhooh</td>
<td>Dec 1, 2023</td>
</tr>
<tr>
<td>The Endodontic-Restorative Continuum Recommendations and Considerations Based on the Best Available Evidence CORE (1/2 day PM)</td>
<td>Dr. Amir Azarpazhooh</td>
<td>Dec 1, 2023</td>
</tr>
<tr>
<td>Travel and Learn Cruise 2023: Periodontics and Implant Update: What You Need to Know for Your Practice</td>
<td>Dr. Jim Yuan Lai</td>
<td>Dec 27, 2023 – Jan 5, 2024</td>
</tr>
<tr>
<td>Small Field-of-View Cone Beam CT: Principles &amp; Applications (2.5 days in person &amp; virtual)</td>
<td>Dr. Trevor Thang, Dr. Gaurav Krishnamoorthy</td>
<td>Jan 19 – 21, 2024</td>
</tr>
<tr>
<td>Diagnosis and Management of Temporomandibular Disorders CORE</td>
<td>Dr. Iacopo Cioffi, Dr. Bruce Freeman, Dr. Sid Lisser</td>
<td>Jan 26 – 27, 2024</td>
</tr>
<tr>
<td>Tips and Tricks on Restoring Crowns: From Single Units to Multiple Units</td>
<td>Dr. Beatrice Leung</td>
<td>Feb 23, 2024</td>
</tr>
<tr>
<td>CPR Recertification for Health Care Professionals</td>
<td>Rescue 7</td>
<td>Feb 28, 2024</td>
</tr>
<tr>
<td>Nitrous Oxide and Oral Sedation Refresher Course</td>
<td>Dr. Peter Nkansah</td>
<td>Mar 1, 2024</td>
</tr>
<tr>
<td>Travel &amp; Learn: March Break in Curacao</td>
<td>Dr. Michelle Wong</td>
<td>Mar 8 – 15, 2024 or Mar 9 – 16, 2024</td>
</tr>
<tr>
<td>Applied Occlusion for the General Dentist</td>
<td>Dr. Domenic Belcastro</td>
<td>Mar 22, 2024</td>
</tr>
<tr>
<td>Treatment Planning for the General Dentist</td>
<td>Dr. Domenic Belcastro</td>
<td>Mar 24, 2024</td>
</tr>
</tbody>
</table>

### Other 2023–2024 Courses

- **Aesthetic Dentistry for the GP Office from A - Z (1 day)**
  - Fall 2023
- **Basic & Advanced Skills in Oral Surgery**
  - Winter 2024
- **2024 Implant Residency Program**
  - Winter 2024
- **Dental Caries**
  - Winter 2024
- **Periodontal Surgery for the General Dentist (1.5 day lecture & hands-on)**
  - Spring 2024
- **Advanced Aesthetic Dentistry**
  - Spring 2024
- **The Fundamentals of Dental Office Reprocessing**
  - TBD
The unparalleled power of Dentistry’s alumni community remains unchanged, even as the decades pass. Alumni from the graduating classes of 1954 all the way to 2023 attended the Great Alumni Event last May. An annual tradition for alumni and friends across the #UofTDentistry community, the evening was busy with people coming together to reminisce and reconnect. We look forward to welcoming alumni back next year to celebrate Dentistry alumni once again.

The University of Toronto Faculty of Dentistry’s

Great Alumni Event

SAVE THE DATE

April 19, 2024
Steam Whistle Brewing
uoft.me/greatalumni

Above: Photos from Great Alumni 2023
U OF T DENTISTRY GREATLY APPRECIATES THE SUPPORT OF OUR GENEROUS SPONSORS FOR GREAT ALUMNI 2023

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BLAST FROM THE PAST

Class photos from the Great Alumni Event 2023. To see more visit: uoft.me/ga2023
We need your help to realize the immense potential of our students and researchers, and to remain the number one dental school in Canada. Join the Defy Gravity Campaign supporting the University of Toronto Faculty of Dentistry. Together, we can build the future of good oral health.

JOIN US
https://uoft.me/dentistrygiving
Over the last three decades, Michael Glogauer 9T3, 9T9 Dip Perio, 9T9 PhD has spent most of his professional life in and around U of T’s Faculty of Dentistry. “When you fall in love with a place, there’s never any reason to leave,” says Glogauer, who completed his DDS, periodontics training and PhD at the Faculty and has been a professor since 2002. He now also serves as head of dentistry for University Health Network and Princess Margaret Hospital.

He did leave, for two years, to do a postdoctoral fellowship at Harvard University. His training there in immunology led him to become an expert in neutrophils, which are now the cornerstone of his research.

While many are enticed by the prestige and paycheques of the Ivy League, for Glogauer it instead firmed up his commitment to his alma mater. “U of T has an outstanding reputation and I was able to build a niche in oral immunology that requires the ability and need to collaborate with other like-minded people,” he says.

He returned to Toronto to find colleagues who were warm and eager to share ideas and push science forward together. Giving back to this supportive community has been a priority for Glogauer for many years now. He started about seven years ago, donating $100,000 a year. Now, he’s committed to reaching $1 million in lifetime giving to the
Faculty of Dentistry by pledging $300,000 this year. Achieving this milestone will earn Glogauer a place on the donor wall that’s currently being developed at 124 Edward St. His gift is earmarked for research; he often supports students in his own lab.

“In the dental field, getting research funding is a real challenge. When we go to the funding agencies, we’re competing against cancer, heart disease, diabetes,” he says. The decision-makers have limited funds to disperse, so sometimes more high-profile diseases land the money.

It’s even more challenging to do translational research for which you have no preliminary data. That’s why Glogauer has been directing this money toward an oral cancer project of late. Students have been collecting samples from 300 patients, a labour-intensive endeavour for which formal funding has not been available.

When he directs money in this way, it supports his passion, but also innovation and, importantly, students who are building their careers.

Glogauer says giving as he’s done has been possible because of what he’s learned at U of T Dentistry, and the opportunities his degrees have afforded him. The Faculty always needs support for such things as research and building upgrades. This kind of giving helps push research forward, deepening U of T Dentistry’s impact.

“I’d like to encourage my colleagues who graduated from this illustrious institution that has given them the professional lives they have, to be as generous as possible,” he says. “That includes supporting the next generation. Dental education is an expensive proposition and we need to support it. We all have a chance to make a difference. You won’t regret giving.”
Some find dental school too stressful to enjoy. Not Bruno Vendittelli 9T4, 9T9 Dip Ortho.

“I had great mentors and had a very good experience as a dental student,” recalls the 1994 DDS grad. He aced his studies and earned the Dean’s Gold Medal and the Alpha Omega Fraternity Prize, plus other undergrad kudos, and then came back to complete orthodontics training.

“Now, I have returned to teach in ortho and am happy to be part of the Faculty’s Defy Gravity Campaign Committee,” he says, noting he also made lifelong friends at U of T. “I’ve always been connected to the Faculty of Dentistry.”

His passion for teaching and learning inspired him to give $50,000 to name an operatory in the future Clinic 2.

“In my mind, there’s no better project than the clinic and supporting the purchase of a dental chair, where the students can actually learn. Getting to name the operatory is a bonus,” he says.

Vendittelli calls working with students a “win win win.” “I get a lot out of it, too. I’m connected to the Faculty and the great young minds who are constantly learning and challenging,” he says.

“Dental school afforded me the opportunity to be what I am today,” adds Vendittelli, who owns Forest Hill Orthodontics and is staff orthodontist at SickKids.

His DDS impacted his life on a number of levels. He and his classmates would often go out for a beer to the Madison Avenue Pub. One night, he met Jane Halverson there, and they married not long after. “Those four years were just good for me personally.”

He was inspired to make this infrastructure donation after organizing a 9T4 class gift to honour classmates who had passed away — that donation has almost reached its goal.

Vendittelli decided to support facilities for undergraduates because they impact the most students.

The operatory will be in the name of his immediate family. He, his wife and their two sons support numerous organizations related to the arts, libraries and children. “Adding the Faculty of Dentistry to the list was a natural priority for me.”
WE REMEMBER...

ROGER ELLIS 5T6, 6T8 DIP DPH

Former professor Roger Ellis died last April. Ellis did his DDS and his diploma in public health at U of T.

He spent a decade in private practice and taught at the Faculty. He also served at the University of Alberta and was deputy registrar and then registrar for the Royal College of Dental Surgeons of Ontario.

He was awarded many fellowships, including at the Royal College of Dentists of Canada and the International College of Dentists. The Faculty gave him an Award of Distinction in 1997.

SIDNEY GOLDEN 5T6

Periodontist Sid Golden died last spring. He was accepted to the pre-dentistry program at age 17 and graduated with the class of 1956. After working as a general dentist, he pursued training in periodontics.

Starting in 1964, Golden served as an associate at the Faculty and became assistant professor in 1990. He earned the Bruce Hord Master Teacher Award in 1989 and the Award of Distinction in 1995.

Golden served as president of the Canadian Academy of Periodontology. He was president of Alpha Omega Fraternity Toronto Alumni Chapter in 1972 — and was awarded its Achievement Award in 1998.

MARTA VOGL

Longtime Faculty staff member Marta Vogl died earlier this year. She began working as a dental assistant in the clinic dispensary in 1959 and went on to run Lab 1. She worked for the Faculty for 35 years and was affectionately known as Mrs. V.

Upon her retirement in 1996 she was awarded the Faculty’s Award of Distinction.

WE MOURN THE LOSS
Frederick Froud 4T8
Lloyd Koutsaris 7T1
Andres Laansoo 6T9, 7T1 BSc D
John McKenna 6T7
David Richardson 7T2
Cheryl Rintoul 6T8
Shirley Walker 6T3 Dip DH
Grant Woodall 6T7

WE NEED YOUR HELP

The future of U of T Dentistry relies greatly on modernizing our physical spaces – for student learning and patient care.

As part of the Defy Gravity Campaign donors will be represented on the operatory and on a NEW DONOR WALL under development at 124 Edward St.

JOIN US

Name an operatory at the new 777 Bay St. clinic (shown on the left) $25,000 (may be pledged over 5 years)

CONTACT

Selina Esteves,
Director of Advancement
selina.esteves@dentistry.utoronto.ca
416-580-2802
UPCOMING EVENTS

Our website hosts the most up-to-date information for upcoming alumni events and programming. We invite you to visit us at dentistry.utoronto.ca/alumni/events

The class of 2023

FOLLOW US AND SHARE YOUR STORY

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