SPECIAL REPORT: UMSOD Responds to COVID-19

Advancing Oral Health. Improving Lives.™

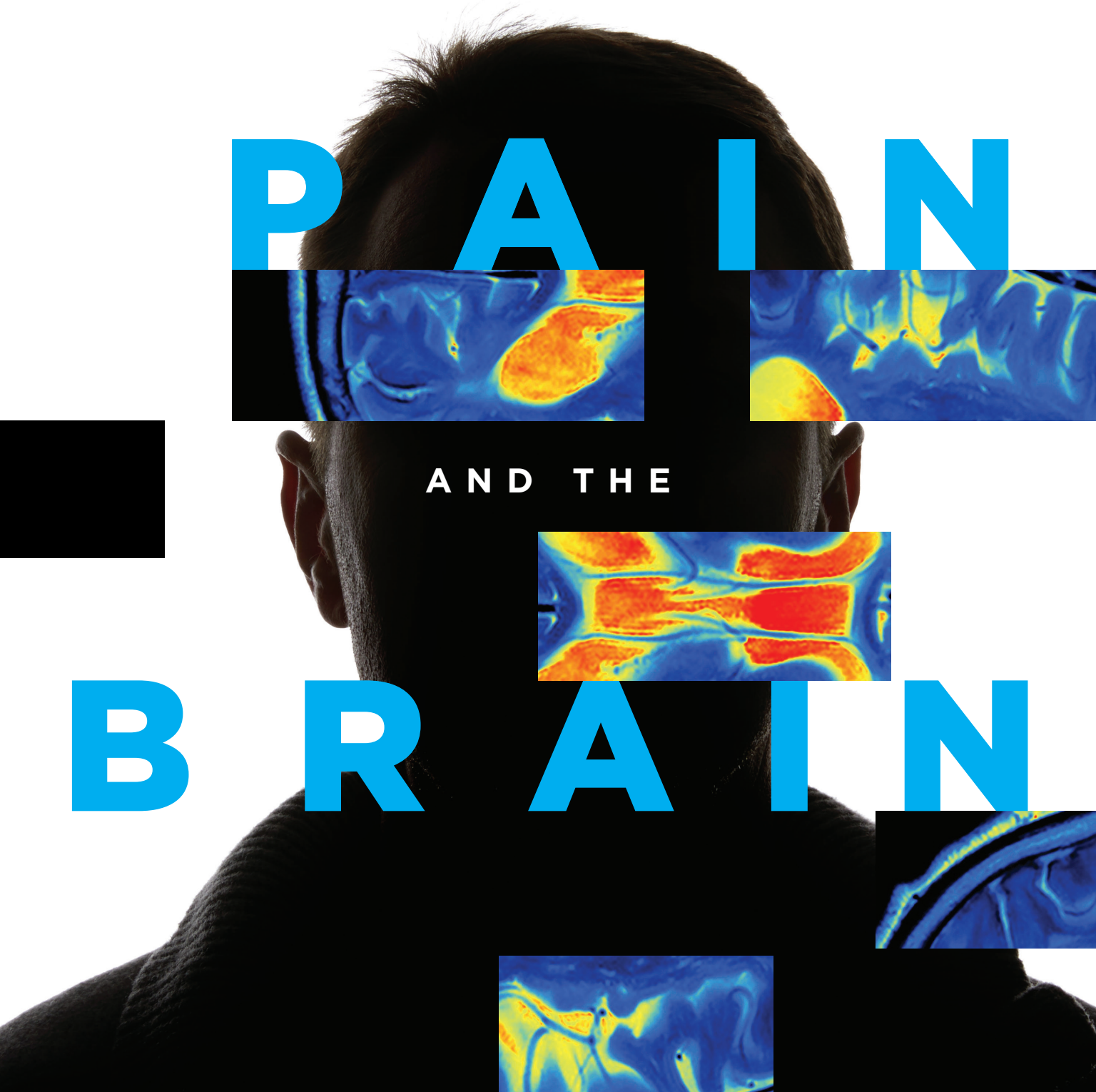
TESTING LIMITS
UMSOD researcher investigates reuse of N95 respirators.

BRUSHING UP
UMSOD students offer housebound youths oral health lessons.

OUR DOORS ARE OPEN
New clinics offer emergency-only care during pandemic.

Mdental

THE MAGAZINE OF THE UNIVERSITY OF MARYLAND SCHOOL OF DENTISTRY | SUMMER 2020



PAIN AND THE BRAIN

OfNote

Anmar Janabi, DDS, MSD, a third-year endodontics resident at the University of Maryland School of Dentistry, has created a novel device aimed at helping dentists with water suction during procedures that require rubber dam isolation.

His invention, which has a patent pending, can be produced in two formats: the Smart Evacuator, made of metal, and the Smart Hook, made of plastic. Both devices allow the suctioning of water, saliva, or caustic irrigants from a patient's mouth during treatments that require rubber dam isolation such as restorations and root canals — while the dentist's other hand remains free.

At the 2019 American Association of Endodontists (AAE) annual meeting, Janabi received the AAE/Dentsply Resident Award and placed fourth in the endodontics postgraduate division contest. He also recently received an AAE Foundation Competitive Research Grant for his work. In the future, Janabi hopes to produce and market his devices. "I have other ideas, too," he says. **Md**

PHOTO BY MATTHEW D'AGOSTINO / UMB

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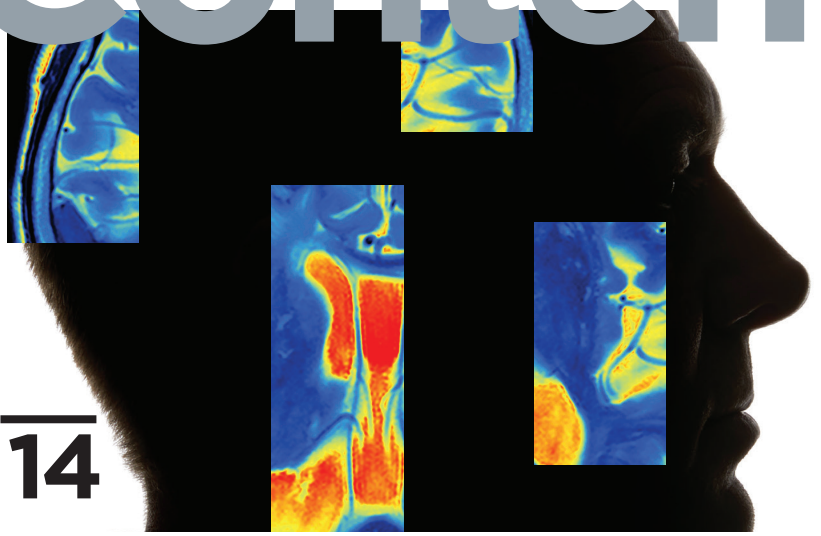

Features

Much has changed in the few months since COVID-19 upended how we teach, study, work, and offer patient care.

What began as a typical spring semester at the University of Maryland School of Dentistry (UMSOD) filled with study and promise suddenly became focused on social distancing, remote learning, and rescheduling or designing meaningful ways to celebrate important school events virtually.

Despite the challenges, I have been impressed every day with the dedication and nimbleness shown by our faculty, staff, and students as they seek innovative methods for teaching classes online, excelling in coursework from home, furthering research without entering the lab, mentoring students from a distance, and celebrating our Class of 2020 members online (Page 10).

That nimbleness was apparent when our new integrated oral health care clinics were transformed, within weeks of opening earlier this year, into emergency-only clinics that with our Urgent Care Clinic continue to treat patients during the pandemic (Page 5).

Our faculty and students transformed how they teach and learn as well, shifting to didactic, case-based, and simulated lessons via the web (Page 18). When several planned community service events were canceled, UMSOD students, in turn, developed online oral health lessons for a variety of local youths (Page 4).

As you know, our school has been long renowned for the state-of-the-art research conducted by its faculty — and that continues. This *Mdental* issue also includes a description of the innovative explorations into the relationship between pain and the brain being conducted by David A. Seminowicz, PhD, associate professor in the Department of Neural and Pain Sciences. One of his projects is examining whether mindfulness can play a positive role in mitigating chronic pain, while another is part of a national effort by the National Institutes of Health to combat the opioid crisis (Page 14).

This issue also includes profiles of four UMSOD students who, despite the rigors of dental education, proved that they have what it takes to succeed academically — and on the baseball field, ice hockey rink, and soccer pitch (Page 22).

Lastly, this issue includes the names of our 2019-20 Dean's Faculty, as a way of thanking them for their generosity toward the school and our students (Page 28). These oral health professionals volunteer to share their knowledge and clinical expertise with our students. Their collective experience, wisdom, and skill is invaluable to the school and immeasurably enriches our students' education.

My heartfelt thanks to them — and to the UMSOD faculty, staff, and students — for their continued hard work and collaboration during these difficult times.

Warm regards,

Mark Reynolds

Mark A. Reynolds, DDS '86, PhD
Dean and Professor

Mdental

ON THE COVER
UMSOD researcher investigates novel ways of alleviating pain, p. 14.

Photo illustration by B. Creative Group

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UNIVERSITY of MARYLAND
SCHOOL OF DENTISTRY

Special Report

UMSOD Responds to COVID-19

Testing the Limits

UMSOD Researcher Shows N95 Masks Safe for Reuse After Irradiation

BY JOEL KABOT

Ru-ching Hsia, PhD, associate professor in the University of Maryland School of Dentistry's Department of Neural and Pain Sciences and director of the Electron Microscopy Core Imaging Facility, showed in two separate investigations that sterilized N95 masks can be safely reused after being disinfected.

In the multi-institutional studies conducted in March and April, Hsia examined masks after irradiation, checking to see if damage occurred.

"It's a learning process for all of us," Hsia said, "since we never had to reuse them before."

In one study, researchers at the University of Maryland, College Park used gamma irradiation to sterilize the masks, after which colleagues at the University of Maryland School of Pharmacy applied air pressure. Hsia then examined the mask fibers to see if any particulates had been released or were susceptible to inhalation by those wearing it.

The results were positive: The irradiated masks compared favorably to new, non-irradiated masks.

In another study, in collaboration with the University of Maryland St. Joseph Medical Center, Hsia examined the N95 masks after irradiation with UV rays. Like before, the masks held up well even after five cycles of irradiation.

This is good news for health care workers given the shortage of personal protective equipment nationwide because of the COVID-19 pandemic, Hsia said.

"We're just happy to contribute and glad that so many institutions came together to get the projects done." Md

Brushing Up ... Virtually

UMSOD students offer online classes to kids at home

BY GWEN FARISS NEWMAN

Jennie Hager with her husband, Patrick Hager, and daughters Delaney and Aubrey.

What's a University of Maryland School of Dentistry (UMSOD) student to do during a pandemic lockdown?

If you're Jennie Hager, a member of the dental hygiene Class of 2020, you produce an interactive, online class about oral health aimed at engaging cooped-up children.

Hager initially developed the presentation for her daughters, Delaney, 9, and Aubrey, 7, who were remotely learning due to the public health crisis. But as word got out, the Kent Island, Md., resident received requests for the virtual class from friends and neighbors eager to amuse and educate their children, as well. Within weeks, Hager had shared her presentation with 48 children and 26 parents.

In addition to spreading the word about oral health, Hager received community service credits required for graduation. (Her initial plans to travel to Rwanda for 10 days this spring to fulfill those requirements were upended by COVID-19.)

The 10-minute video, which is delivered via Zoom and includes an interactive question-and-answer segment, elicits guesses and giggles as it teaches the basics of brushing, flossing, and rinsing, and how different foods feed bacteria.

"The interaction with the kids was great," Hager says. "They all enjoyed responding to my questions and provided great feedback. It was also an opportunity to share how the health of your mouth affects the health of your body."

Positive feedback about Hager's project spurred other UMSOD students to develop online programming for youths, as well. Dental hygiene Class of 2020 members Carly LeCompte, Anna Fleming, and Caitlin Heidler initially were scheduled to present three in-person, oral health lessons to pre-K and kindergarten public school students in April. Instead they designed and recorded a presentation for children that debuted in April and can be viewed repeatedly.

Still another UMSOD group gave an online class in real time to University of Maryland, Baltimore CURE Scholars who are in the sixth through eighth grades. The CURE program introduces middle and high school students to science, technology, engineering, and math (STEM) education and is designed to encourage youths to pursue STEM professions including oral health. The interactive class, taught by dental hygiene Class of 2020 members Hager, Katherine Perez Sandoval, and Ann Bassett, as well as rising fourth-year dental student Imani Fuller, was offered in late April.

"It's exciting to be able to capitalize on virtual learning to promote oral health among local youths — especially since schools have shifted to online learning," says Lisa Bress, MS, RDH, UMSOD clinical assistant professor and director of recruitment and advising in the Dental Hygiene Division. Md

1. Treatment rooms are thoroughly disinfected and allowed to sit for 30 minutes between patient appointments.
2. Cynthia Idzik-Starr, DDS, clinical assistant professor and director of Urgent Care, wearing personal protective equipment.

Open for Business

UMSOD's New Integrated Oral Health Care Clinics Adjust to Address Pandemic

BY HOLLY SELBY

Inside the University of Maryland School of Dentistry's (UMSOD) new integrated oral health care clinics, scenes of the Eastern Shore adorn the walls, comforting sofas dot the reception area, and a flickering electric fireplace hints of warmth. But the new clinics, which opened earlier this year, offer much more than meets the eye.

Envisioned as home to a multi-disciplinary team of faculty experts who would offer primary and specialty care for patients with complex oral health needs, the clinics also are designed to operate as a portal through which dental health can be integrated with overall health care delivery.

But in March, when Maryland Gov. Larry Hogan ordered all non-essential businesses and institutions closed to combat the spread of COVID-19, the clinics, located on the school's first floor, were transformed within days into an epicenter of emergency treatment for UMSOD's patients of record. Additionally, the adjacent Urgent Care Clinic continued to offer emergency care to patients who walk in or are referred by area hospitals.

"Our faculty very rapidly transformed our clinics into an emergency oral health center that was fully prepared to implement precautions necessary to safely deliver much-needed care to patients," said Mark A. Reynolds, DDS '86, PhD, UMSOD dean and professor.

"Whether during a public health crisis or more routine times, the distinctiveness of our clinics rests in our expert faculty."

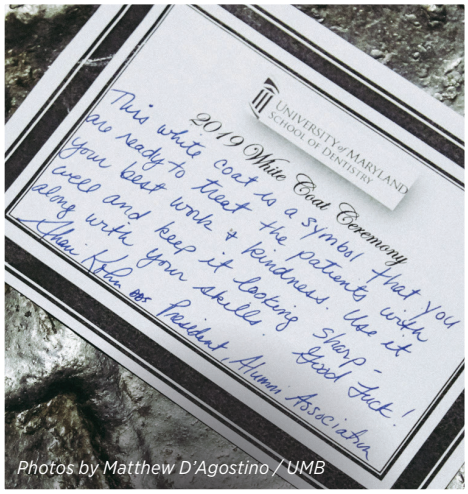
Patients are greeted at the school's entrance by oral health professionals wearing personal protective equipment who take temperatures, provide masks, and direct them to the new clinics or Urgent Care. Clinicians also have been fitted with N95 respirators and wear gloves, eye shields, and head covers when treating patients.

"We're able to manage the emergencies of our patients of record who typically would see students [who are not allowed to treat patients during the public health crisis]," said Louis G. DePaola, DDS, MS, associate dean of Clinical Affairs and professor, Department of Oncology and Diagnostic Sciences. "In Urgent Care, we treat patients who walk in with emergencies or who are referred from hospitals throughout the region. In that way, we are helping to relieve already stressed emergency rooms."

Headed by Douglas Barnes, DDS, MS, chief dental officer, and David George, DDS, MBA, MS, FAGD, chief of operations, the new clinics encompass 16 private and two open orthodontic operatories; and a learning/conference room (for use in non-pandemic times). Operatories are equipped with state-of-the-art technology including microscopes, digital screens, and radiology equipment.

"When the clinics do return to operating in their full capacity, we will be able to provide specialized care using a collaborative, multidisciplinary approach, as well as offer patients access to a wide network of health care services including clinical studies related to potential new diagnostics and treatments," Reynolds said. Md

OnTheCusp



Photos by Matthew D'Agostino / UMB

White Coats, Warm Welcomes

Ceremony Marks Transition from Student to Clinician

BY HOLLY SELBY

Saying that white coats traditionally have been associated with the health care professions — symbolizing altruism, honor, respect, accountability, and excellence — Mark A. Reynolds, DDS '86, PhD, dean and professor of the University of Maryland School of Dentistry (UMSOD), welcomed the members of the dental hygiene Class of 2020 and the dental surgery Class of 2021 to the oral health profession.

He spoke last fall at the 2019 White Coat Ceremony, during which students are presented with white coats to mark their transition from dental or dental hygiene student to oral health care provider.

"These students represent the next generation of professionals who will dedicate their careers to providing oral health care to the residents of our state, nation, and beyond," Reynolds said to an audience filled with family members, friends, and alumni. Keynote speaker Nina-Cecilia Santos, DDS '15, MS, also offered remarks, reminding the students of the importance of their patients. "You don't know how your patients will change your lives or how you will change your patients' lives," she said.

Afterward, the students stood on stage and, aided by faculty members and mentors, ceremoniously put on their white coats. All students were presented with a handwritten note from a member of the UMSOD Alumni Association Board of Directors wishing them well — and welcoming them to the profession and the UMSOD alumni family.

For more information, visit *www.dental.umaryland.edu/whitecoat*. Md

Accolades

▲ **Amanda Amaro**, a member of the Class of 2020, received the 2019 Maryland State Dental Association Foundation-R.K. Tongue, Inc.-Professional Protector Plan for Dentists Scholarship, which recognizes dental students who have a heart for service and a history of excellence in both academics and service activities in their communities. The scholarship awards $10,000 to the recipient in recognition of such community-minded service.

▲ **Jamila Asgar**, a PhD candidate in neuroscience, Graduate Program in Life Sciences, received a two-year National Institutes of Health National Research Service Award F31 grant in August for "Gut Mechanisms of Stress-induced Comorbid Visceral Pain."

▲ **Eugene Bestman**, a rising fourth-year dental student, was one of three recipients of a new scholarship created by the International College of Dentists (ICD) and the Washington University Dental Alumni Association (WUDAA). The ICD-WUDAA scholarship awards $2,500 to each recipient in honor of the ICD's centennial in 2020.

▲ Rising fourth-year dental students **Shayla Butler** and **Meriam Macauley** participated in July 2019 in the University of Maryland School of Dentistry's interprofessional program with University of Maryland, College Park School of Public Health students in Compone, Peru. They were scheduled to present a poster based upon that experience at the spring 2020 Consortium of Universities Global Health (CUGH) Conference in Washington, D.C., which was canceled due to the pandemic. Instead, their presentation and others from the conference are scheduled to be included in an e-book to be published by CUGH.

▲ **William F. Hoffman Jr., MAS,** department administrator, Advanced Oral Sciences and Therapeutics, was designated as an SRA International Distinguished Faculty by the Society of Research Administrators (SRA) International.

▲ **Arielle Statham**, a member of the Class of 2020, received a National Dental Association Foundation Colgate-Palmolive Scholarship. The $1,000 award recognizes outstanding under-represented minority dental students.

Shining Example

Elizabeth Alston Ottey, DDS, MHS, a third-year resident in the Division of Orthodontics at the University of Maryland School of Dentistry (UMSOD), is a recipient of a University of Maryland, Baltimore (UMB) 2020 Presidential Core Values Award for diversity. She also was named the 2019-20 Shining North Star Baltimore Volunteer by Unified Efforts, Inc., a nonprofit dedicated to minimizing the loss of academic prowess among youths during summer break.

Ottey organized a July 2019 visit to UMSOD for students from Unified Efforts, Inc. The youths spent a day touring the school and learning about dentistry.

"[Ottey] has gone above and beyond to bring high school students to the School of Dentistry," says Jose Bosio, BDS, MS, clinical associate professor, division chief, and program director in the Department of Orthodontics and Pediatric Dentistry. "The impact of her efforts can last for a lifetime, because the visit might very well be a life-changer."

The Presidential Core Values Awards recognize students, faculty, and staff who embody the values at the heart of UMB's mission: accountability, civility, collaboration, diversity, excellence, knowledge, and leadership. Saying she is honored to receive the award, Ottey adds, "This is amazing! This will forever be a monumental moment in my life."

To learn more, visit *www.umaryland.edu/president/core-values/2020-winners*. Md

— HOLLY SELBY

Building Up

UMSOD Launches New Academic Programs at Shady Grove

BY PATRICIA FANNING


1


2

Gov. Larry Hogan, higher education leaders, students, and local elected officials were among those who gathered last November to introduce expanded opportunities for Marylanders as the University of Maryland, Baltimore (UMB), the University of Maryland School of Dentistry (UMSOD), and other institutions unveiled new programs and services at the Universities at Shady Grove (USG) in Rockville, Md.

Those in attendance enjoyed a ribbon-cutting ceremony held to celebrate USG's new Biomedical Sciences and Engineering (BSE) Education Facility. The $175 million, state-of-the-art building is a six-level, 220,000-square-foot facility that will double the footprint of the USG campus. Programs of nine institutions in the University System of Maryland, including UMSOD and the University of Maryland schools of nursing, pharmacy, and social work, are housed at USG.

The new facility includes innovative spaces, classrooms, and remote learning centers that will house UMSOD's two new academic programs — as well as state-of-the-art dental services, which began accepting patients in early March. (Please check the website at *www.shadygrove.umd.edu/campus-resources/Patient-Care* for updated information about oral health services during the pandemic.)

"The School of Dentistry's new educational programs and services at USG will expand our ability to educate highly skilled clinical practitioners and leaders in oral health care as well as improve access to dental services for underserved residents of Montgomery County in the future," said Mark A. Reynolds, DDS '86, PhD, dean and professor of UMSOD, who attended the festivities.

UMSOD is introducing two innovative programs designed to educate and train future leaders who will work interprofessionally to address oral and systemic health connections and improve patient outcomes.

The Clinical Dental Hygiene Leader Program, in which coursework began in June, will be the only Master of Science (MS) degree in dental hygiene in the state. Through this two-year, dual-degree program, qualified college graduates can obtain both a second Bachelor of Science degree and an MS, producing dental hygienists who are well prepared to assume key leadership roles in a variety of clinical, educational, public health, and health care settings.

The Postbaccalaureate Certificate in Oral Health Science Program, scheduled to be offered in fall 2020, is for non-dental health care professionals who want to build core oral health competencies to better respond to patients' needs and more holistically manage patient care. Reynolds noted, "This training will help bridge the gap in management of oral diseases and general medical health care, which is critical to advancing overall health and well-being."

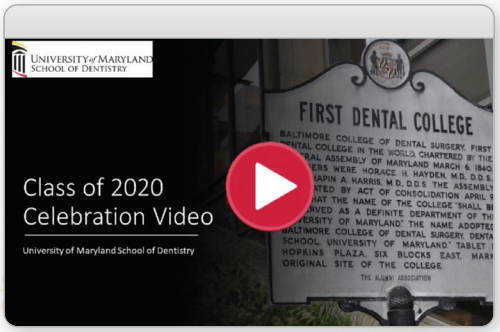
When UMSOD's dental services reopen, patients who are currently underserved and eligible for services on a reduced-fee basis will be able to receive care. The suite of 24 dental chairs and adjoining operatory facilities will enable UMSOD to provide comprehensive dentistry for adults and children, with treatment by postdoctoral residents and dental and dental hygiene students under faculty supervision.

"Our new academic programs will offer expanded educational opportunities for Marylanders who are interested in enhancing their careers in the health professions," Reynolds said. "Additionally, our new services will provide a resource to community practitioners and greater access to oral health care to the underserved while offering increased visibility for the School of Dentistry."

For more information about the new academic programs, visit: *www.dental.umaryland.edu/dentalhygiene* or *www.dental.umaryland.edu/admissions/oralhealthscience.* Md

1. Meskerem Melorea, dental hygiene Class of 2020, was one of several UMSOD students who introduced attendees to the new, state-of-the-art oral health simulation lab. **2.** Gov. Larry Hogan and other dignitaries attended a ribbon-cutting ceremony at the USG campus that celebrated expanded opportunity including a new building and new UMSOD academic programs and services. **3.** UMSOD Dean and Professor Mark A. Reynolds speaks with Wallace D. Loh, PhD, JD, then-president of the University of Maryland, College Park, during the ribbon-cutting ceremony. **4.** Sahar Nesvaderani and Ben Horn, members of the Doctor of Dental Surgery Class of 2021, used dental manikins to demonstrate techniques in the new simulation laboratory at USG. **5.** With its airy, state-of-the-art spaces, USG's new $175 million building will enable the campus to increase its enrollment capacity from 3,000-plus students to more than 7,500 over the next several years, according to USG.

A Celebration to Remember



UMSOD Hosts Virtual Year-End Ceremony for Class of 2020

BY HOLLY SELBY

Noting how "exceedingly proud" he was of the Class of 2020, Mark A. Reynolds, DDS '86, PhD, dean and professor of the University of Maryland School of Dentistry (UMSOD), said in a virtual ceremony that although the COVID-19 pandemic had profoundly altered the final months of study and year-end festivities for this year's dental and dental hygiene graduates, their achievements were no less impressive.

"Instead of gathering in person to celebrate and applaud your accomplishments, we are saluting you through our smartphones, tablets, and laptops," Reynolds said as part of the Class of 2020 celebration video, which attracted more than 1,000 viewers on May 15 when it went live.

Nonetheless, "our pride in you as the oral health leaders of tomorrow is no less profound and our congratulations to you upon your graduation are no less heartfelt," he added.

Due to the COVID-19 pandemic, both the University of Maryland, Baltimore's (UMB) commencement and UMSOD's honors convocation, typically held each May, were canceled. Instead, UMSOD feted the Class of 2020 with a celebration video that included congratulatory remarks made by UMB Interim President Bruce E. Jarrell, MD, FACS, as well as video messages from UMSOD Board of Visitors Chair Melvin F. Kushner, DDS '66. Other well-wishers included UMSOD Alumni Association President Shari C. Kohn, DDS '90, and many other faculty and staff members and alumni.

Good wishes for the graduates, delivered via video and email, contained both serious advice and humorous salutations. A few were delivered against fake beach backgrounds, one included the speaker's poodles, and others were recorded from home offices or in front yards. All included best wishes for the graduates' success.

"This is a remarkable year," Reynolds said. "And although we are not able to gather in person to mark your graduation, we proudly recognize your remarkable accomplishments."

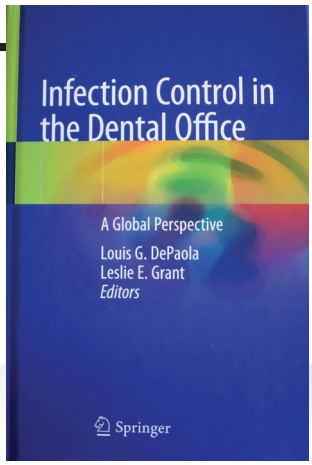
To view the Class of 2020 celebration video, please visit *www.dental.umaryland.edu/celebration2020.* Md

Group Effort

Louis G. DePaola, DDS '75, MS, associate dean of clinical affairs and professor in the Department of Oncology and Diagnostic Sciences at the University of Maryland School of Dentistry (UMSOD), and Leslie Grant, DDS '86, MPSA, a member of the UMSOD Board of Visitors, co-edited a new textbook this year.

Titled *Infection Control in the Dental Office: A Global Perspective*, the textbook, published by Springer Nature Switzerland, features chapters on infection control by 18 members of the School of Dentistry's faculty and staff — making it truly a UMSOD scholarly work. Md

— HOLLY SELBY



ByTheNumbers

At UMSOD, Research is a Priority

A robust graduate education program helps broaden and enrich faculty research, and at the University of Maryland School of Dentistry (UMSOD), expanding the Doctoral Program in Dental Biomedical Sciences (DBMS-PhD) is a priority.

The DBMS-PhD program — led by Pei Feng, MD, PhD, professor and director of the Office of Research — has grown from one student in 2012 to 19 students in 2019. Areas under investigation by the doctoral candidates include oral head/neck cancer and clinical research, bone studies, materials, neuroscience-pain, and microbiology.

Without the strong commitment of research faculty mentors, this level of graduate education would not be possible. Here is a snapshot of the DBMS-PhD program:

10

UMSOD faculty/ mentors

1 vs. 19

1 student in 2012
19 students in 2019

24

Articles published in peer-reviewed journals

Graduates

7 DBMS-PhD Graduates, including
2 DBMS-PhD Members, Class of 2020

Alumni in Academia

1 Vice Dean for Postgraduate Studies
2 Assistant Professors

Photos by Holly Selby

UMSOD Offers Baltimore Youths Oral Health Tips, Sealants, and Fun

"Look at what I carved!" exclaimed Savannah Glanville, holding up a smooth, white tooth carved of soap. "It really looks like a tooth."

The sixth-grader from Green Street Academy was one of 14 middle and high school students who spent Saturday, Feb. 15, at the University of Maryland School of Dentistry (UMSOD) learning about tooth anatomy, creating rap songs about oral health, and exploring the range of careers available within the dental profession.

The lessons and fun were part of the University of Maryland, Baltimore's (UMB) CURE Scholars Program, which aims to introduce middle and high school students to science, technology, engineering, and math education and careers, and Planet Smilez, a hands-on oral health education program founded by Kathryn Pawlak, DDS '19.

The day's programming included a welcome ceremony featuring, among others, Mark A. Reynolds, DDS '86, PhD, UMSOD dean and professor; Bruce E. Jarrell, MD, FACS, UMB interim president; Kathleen Kohr, president of the dental hygiene Class of 2020; and Pawlak, who returned to UMSOD for the day.

Twenty-six dental hygiene students volunteered their time to provide sealants and chairside oral hygiene instruction to scholars who opted for the services.

Additional activities, including a rap contest, hot dog suturing, and soap carving, were led by 27 dental students who also volunteered their time. Faculty and staff members who provided oversight and counsel included Barry L. Cohan, DDS '74, clinical assistant professor, Dean's Faculty; and Mark L. Wagner, DMD, professor emeritus, and Norman Tinanoff, DDS, MS, professor, both in the Division of Pediatric Dentistry. Md

— HOLLY SELBY

Dog Days at the School of Dentistry

Lexi, the University of Maryland, Baltimore's (UMB) first resident comfort K-9 dog, dropped by the University of Maryland School of Dentistry last fall as part of an initiative called "Pizza with the Chief."

Accompanied by UMB Police Chief Alice Cary, MS, and other officers, the now 2-year-old female Australian shepherd mix seemed pleased to meet students, faculty, and staff.

The visit was one of a series of getting-to-know-you lunchtime visits being made at schools throughout campus by Cary and her UMB Police Department colleagues. For her part, Lexi joined the department in June 2019 — making UMB one of only three university police departments in the nation with a comfort K-9 program — and has been familiarizing herself with the campus and community.

Comfort dogs are trained to provide stress relief and affection to people dealing with anxiety, depression, trauma, or mental illness. Canine comfort programs are used in schools, hospitals, nursing homes, rehabilitation centers, and disaster areas to help those dealing with trauma, post-traumatic stress disorder, or mental or physical illnesses.

"I'm very excited about this program," says Cary, who welcomed a second comfort K-9, a mixed-breed male named Archie, to the department in December 2019. "I believe a comfort dog is a valuable tool in fostering dialogue between the police department and the community we serve." Md

— HOLLY SELBY

Innovation +Discovery

UMSOD Professor Named UMB Entrepreneur of the Year

BY LOU CORTINA

Photo by Matthew D'Agostino / UMB

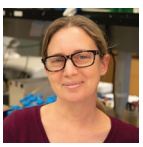
Robert K. Ernst, PhD, says his laboratory at the University of Maryland School of Dentistry (UMSOD) follows the National Institutes of Health's "bench to bedside" mantra, a phrase used to describe the mission to take the findings of research and develop them into new ways to treat patients.

Ernst, professor and vice chair in UMSOD's Department of Microbial Pathogenesis, uses this approach to understand the interplay between a bacterial pathogen and the host defense mechanisms. He is clearly getting results in this area and others, earning major research contracts and grants, developing a diagnostic test to more rapidly identify bacteria- and fungi-caused infections, and co-founding a company, Pataigin, aimed at developing a method to quickly and accurately identify disease-producing agents, or pathogens.

He's also getting rewards. In 2017, Ernst was honored for his "bench" work by winning the University of Maryland, Baltimore's (UMB) Researcher of the Year Award. Last fall, his "bedside" efforts were recognized with his selection as UMB Entrepreneur of the Year. Ernst calls the 2019 honor "pretty amazing" for himself and the graduate students, postdoctoral fellows, and faculty who have worked in his lab since he arrived at UMSOD in 2008, when he moved from the University of Washington.

"Over the past five years, we've tried to take our initial observations in the areas of pathogen identification, vaccine adjuvant development, and sepsis therapeutics and move them toward the 'bedside' as much as we can in an academic setting," Ernst says. "The recognition from UMB for these efforts suggests that we might be moving in the right direction." Md

UMSOD Researcher Takes Aim at Deadly Bacterium



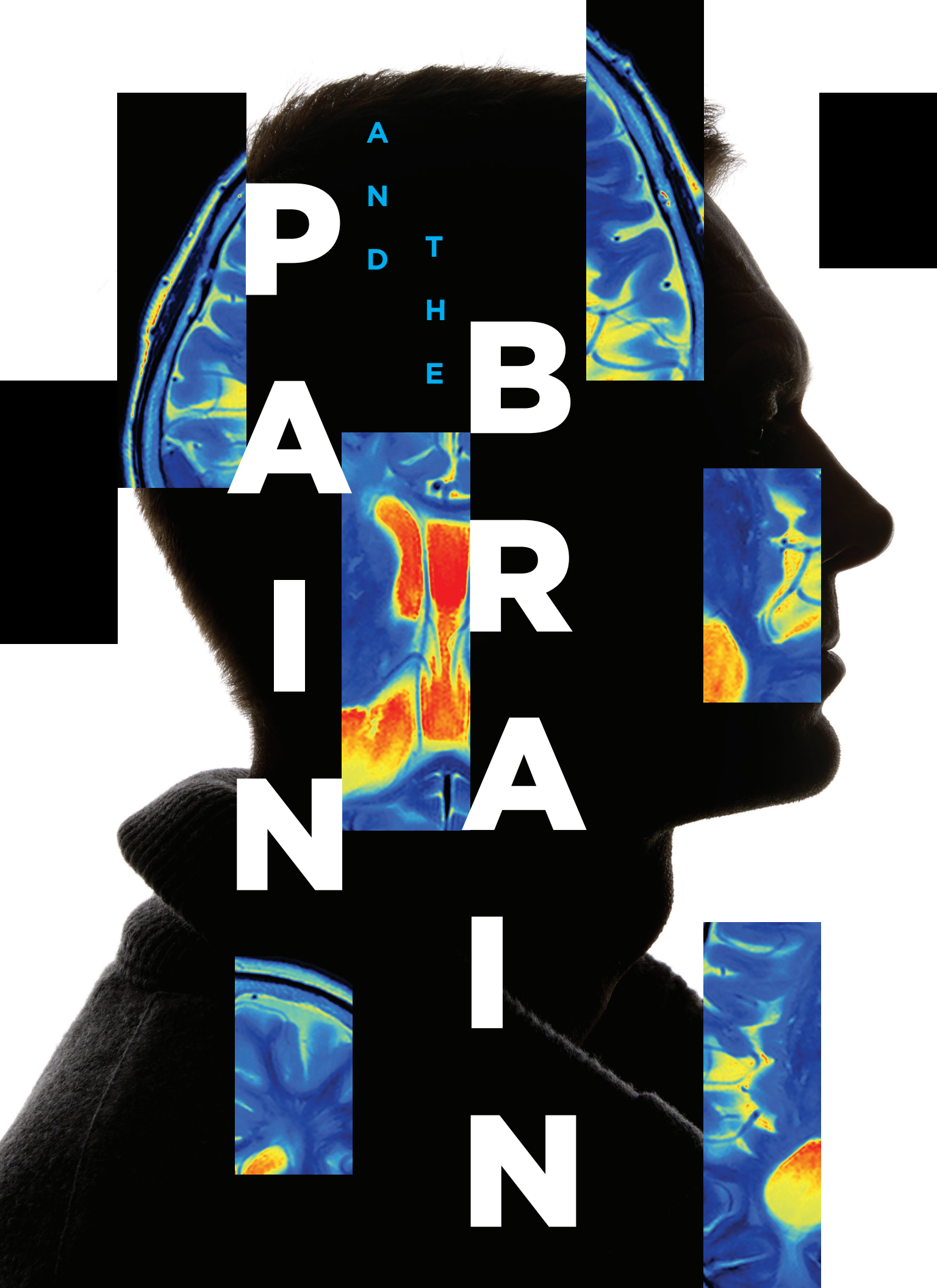
A University of Maryland School of Dentistry (UMSOD) researcher has developed an experimental vaccine that protects up to 80 percent of mice against *Staphylococcus aureus* (*S. aureus*), the bacterium that accounts for one-third of deadly health care-acquired infections — often after people undergo surgical procedures.

Janette Harro, PhD, a research assistant professor with UMSOD's Department of Microbial Pathogenesis, and colleagues published their findings in a recent issue of *Infection and Immunity*, a journal of the American Society for Microbiology.

Harro notes that the vaccine has proved effective not only in mice but also in 66 percent of rabbits infected with *S. aureus* — the most deadly Staph bacterium. And, though tested so far only in animals, the vaccine has demonstrated the potential to drastically reduce the number of patients who succumb to *S. aureus* infections post-surgery when their immune systems already are compromised.

"This vaccine could prove hugely beneficial especially for orthopedic and cardiovascular patients, for example, where medical structures or devices are implanted," says Harro, a scientist who specializes in the study of biofilms. She and her laboratory colleagues and collaborators elsewhere are carrying out the work on biofilms started by Mark E. Shirtliff, PhD, a professor in the department who published extensively in the field prior to his death in July 2018. He is among the co-authors of the published study. Md

— GWEN FARISS NEWMAN


PAIN
AND THE
BRAIN

Through several studies and collaborations on two continents, UMSOD researcher David A. Seminowicz seeks keys to how chronic pain alters the brain

BY JOEL KABOT

Mindfulness, a concept derived from a 2,000-year-old Eastern practice, is seemingly everywhere these days. It's discussed on TV shows and detailed in books, its meditative practices enabled by myriad apps.

Scientists, too, are paying mindfulness close attention, including the University of Maryland School of Dentistry's (UMSOD) David A. Seminowicz, PhD, associate professor in the Department of Neural and Pain Sciences.

"Mindfulness fits my research very well," Seminowicz says, "since I'm interested in cognitive aspects of pain, and mindfulness is about paying attention to the current moment."

In two different studies, Seminowicz and his team are working with researchers at Johns Hopkins University to understand how mindfulness can help those affected by chronic pain. These are the latest steps in answering the question Seminowicz has been asking for much of the past two decades: How does the brain change as pain develops? Put another way, if we treat pain, can we reverse changes in the brain?

That question has led him to other projects that go beyond mindfulness, too. He has multiple ongoing grants, including one under the National Institutes of Health's Helping to End Addiction Long-term Initiative, or NIH HEAL Initiative, which the NIH created in April 2018 as part of a national effort to stem the opioid crisis by identifying non-opioid alternatives for pain management.

Seminowicz typically divides his time between Baltimore and Neuroscience Research Australia, University of New South Wales, in Sydney, Australia — where he's at work on the HEAL Initiative project — but it was in his native Canada where he "fell in love with research," he says. Growing up in rural Ontario, he always thought he'd be a clinician, whether as a physician or a dentist. It was while studying for a master's degree that he realized research was the right path for him.

As a doctoral student at the University of Toronto, he first focused on depression and affective disorders but transitioned to pain research when his mentor left for another institution. It wasn't hard to make the switch.

"Pain is the ultimate disease for brain imagers to study," he says.

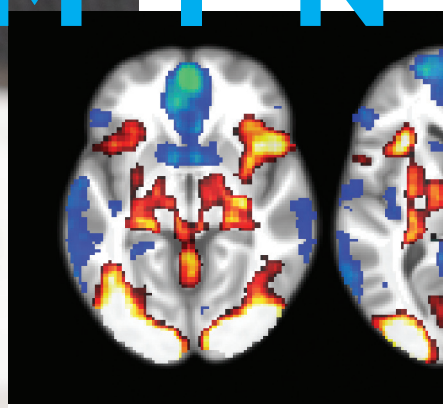
After postdoc work at McGill University in Montreal, Seminowicz was ready for the move to UMSOD when the opportunity arose.

"Everyone knows about the pain group here at UMSOD," he says, noting the influence of Ronald Dubner, DDS, PhD, professor emeritus in the Department of Neural and Pain Sciences.

Fast-forward 10 years, and the first of the mindfulness studies has been completed and its findings are getting much-deserved attention. Focused on patients with migraines, and funded thanks to a $3.6 million National Center for Complementary and Integrative Health (NCCIH) grant, it was conducted in collaboration with Jennifer A. Haythornthwaite, PhD, professor in the John Hopkins School of Medicine's Department of Psychiatry and Behavioral Sciences. Subjects received weeks of training at Johns Hopkins in either enhanced mindfulness-based stress reduction or a tailored course on stress management for headaches. Patients recorded their headaches in a diary and received MRI testing at UMSOD at baseline and at 10 and 20 weeks.

"MINDFULNESS FITS MY RESEARCH VERY WELL SINCE I'M INTERESTED IN COGNITIVE ASPECTS OF PAIN, AND MINDFULNESS IS ABOUT PAYING ATTENTION TO THE CURRENT MOMENT."

— David A. Seminowicz, PhD



The results were positive: Mindfulness appears to be an effective treatment for those suffering from migraines. The researchers found that, compared to those who received training in stress management, those who practiced enhanced mindfulness had fewer headache days and reduced headache-related disability.

An article co-authored by Seminowicz and Haythornthwaite and published last February in *Pain* detailed the study, noting that the results were "comparable to commonly used first-line treatments" such as valproic acid.

"This is really good news for patients," Seminowicz says, "especially because mindfulness is a non-pharmaceutical option that has no side effects."

However, he adds, while this study and others suggest that mindfulness is effective in reducing pain, scientists do not yet understand what specific aspects of mindfulness are most effective.

Seminowicz now is working with Patrick Finan, PhD, associate professor in the John Hopkins School of Medicine's Department of Psychiatry and Behavioral Sciences, on another study, funded by a new, $2.1 million grant from NCCIH.

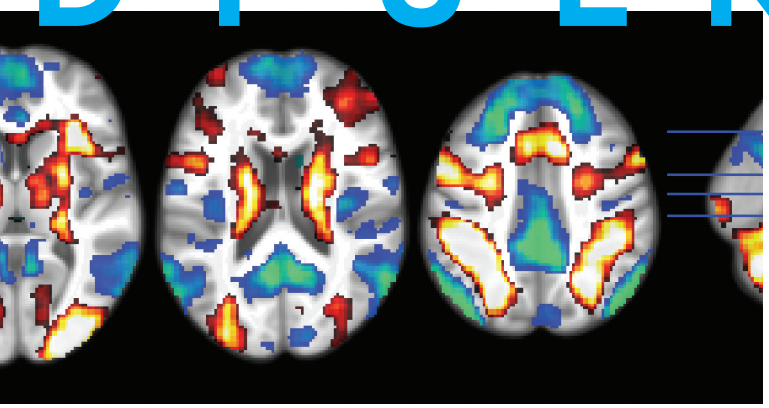
They are examining how mindful breathing and a practice called "savoring" affect patients with rheumatoid arthritis. ("Savoring," while technically not a mindfulness technique, directs people to think positive thoughts, thus inducing positive emotions.) Their first aim is to determine whether mindful breathing and savoring, separately, can help alleviate pain.

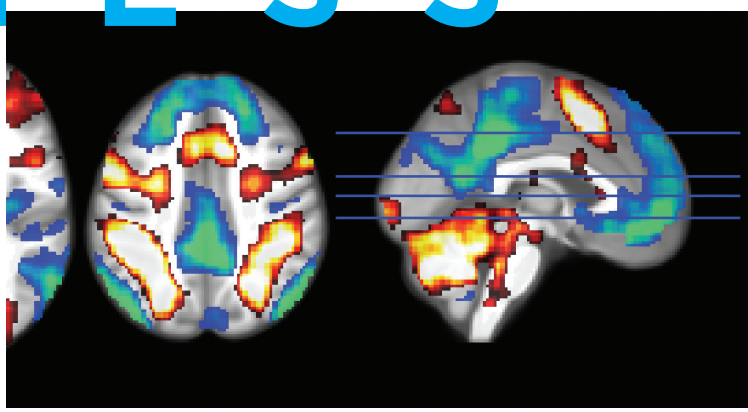
"The goal of the study is to understand the parts of the brain used when people meditate in the context of evoked pain," says Finan. "We expect that there will be different brain regions activated by these practices," which will become apparent after testing them against one another.

In the initial phase, subjects are brought in for threshold pretesting at UMSOD. In pretesting, a thermode, a small probe capable of emitting high levels of heat, is strapped to the calf or forearm while heat is applied at increasingly higher levels until the subject can no longer withstand it. The goal is to find a temperature the subject can tolerate, generally a 6 to 7 on a 10-point scale. Because tolerance of heat might differ from person to person, the temperature levels will vary, but not the rating.

Subjects then are trained in four, 20-minute sessions at Johns Hopkins in mindful breathing, savoring, or a deep breathing condition. After completion, they are brought to UMSOD's MRI facility and asked to perform mindful breathing, savoring, or the deep breathing condition while subjected to pain levels from the thermode. Ultimately, by scanning the patients in an MRI machine, the researchers will be able to observe how the subjects modulate pain.

D F U L N E S S





FAR LEFT: During the EEG-FMRI study, as the participant experiences pain, an MRI-compatible EEG apparatus records millisecond-scale electrical brain signals simultaneously with functional MRI measurements of brain activity in precise brain regions. **LEFT:** Darrah Speis, research assistant; Michael L. Keaser, analyst and lab technician; and Joyce Teixeira Da Silva, PhD, discuss an activation map that shows activity evoked by the experience of pain during a functional MRI scan. **ABOVE:** A composite activation map of patients' brains as they perform a cognitive task at baseline as part of the initial mindfulness study. Red shows activation, while blue shows deactivation.

"If we're successful in engaging the different brain regions," Finan adds, "we will then test if the magnitude of activation is greater when mindful breathing and savoring are combined."

Since this work builds on previous studies in healthy controls that yielded positive outcomes, Seminowicz and Finan are hoping for similar results in rheumatoid arthritis patients.

In the HEAL Initiative project, a $1.4 million grant from the National Institute of Neurological Disorders and Stroke (NINDS), Seminowicz intends to find out whether a particular biomarker can be an accurate predictor of pain severity. Previously, using non-invasive methods including brain recordings (with electroencephalography, or EEG) and brain stimulation (transcranial magnetic stimulation, or TMS), Seminowicz's lab identified a brain map-based biomarker. The biomarker clearly distinguished subjects who were highly pain-sensitive from those who had low pain sensitivity to future induced muscle pain.

Essentially, Seminowicz and his team are trying to identify people at higher risk of chronic pain. An example of where this technology could be helpful is with post-surgical pain patients: According to Seminowicz, depending on the type of surgery, up to 40 percent of these patients will develop chronic pain.

"We don't yet have confirmation of what the best predictors of post-surgical pain sensitivity are," Seminowicz says. "We hope this study validates our earlier findings.

"The research is possibly relevant to other disorders, as well," he continues.

In collaboration with Siobhan Schabrun, PhD, associate professor at Neuroscience Research Australia and the University of New South Wales, Seminowicz is looking at subjects experiencing a model of temporomandibular disorders (TMD) and will study patients with early onset TMD in the second phase of the study. The lab members will attempt to predict which patients will develop TMD versus those who will recover.

"IF WE'RE SUCCESSFUL IN ENGAGING THE DIFFERENT BRAIN REGIONS, WE WILL THEN TEST IF THE MAGNITUDE OF ACTIVATION IS GREATER WHEN MINDFUL BREATHING AND SAVORING ARE COMBINED."

— PATRICK FINAN, PHD

In another project, a $2.4 million grant from NINDS, Seminowicz is using simultaneously recorded EEG and functional magnetic resonance imaging (FMRI) to determine where the aforementioned biomarker is located in the brain. According to Seminowicz, EEG allows one to see millisecond events, but localization is poor. FMRI, on the other hand, provides high-quality spatial resolution.

"By combining them, we can determine both when it's happening — using EEG — and, using FMRI, determine where it's happening," Seminowicz says.

With such projects underway, Seminowicz and his collaborators in the United States and abroad are at the forefront of current thinking about chronic pain — whether it's using ancient spiritual practices as a non-invasive, non-pharmaceutical intervention, or trying to determine susceptibility to chronic pain before it starts.

Mindfulness in particular "has a lot of promise," Seminowicz says.

"It can be learned by anyone," he says, which makes it accessible and useful when pharmaceuticals are not.

Mindfulness, thanks to scientists like Seminowicz, is having its moment. **Md**

REMOTE POSSIBILI

BY HOLLY SELBY

Adapting Teaching and Learning in a Time of Pandemic

OPPOSITE PAGE: Jazmin Jones, president of the Class of 2022, at far right, with her classmate, Alauna Martinez, during pre-pandemic days

TIES

"WE PROVIDED TRAINING CLASSES HOURLY EVERY DAY FOR TWO WEEKS TO FAMILIARIZE FACULTY MEMBERS WITH THE PLATFORM AND SOFTWARE AND DISTRIBUTED OVER 100 LAPTOPS TO MAKE SURE THAT EVERYONE HAD WHAT THEY NEEDED."

— **KENT BUCKINGHAM,** executive director of Information and Technology and Facilities Management

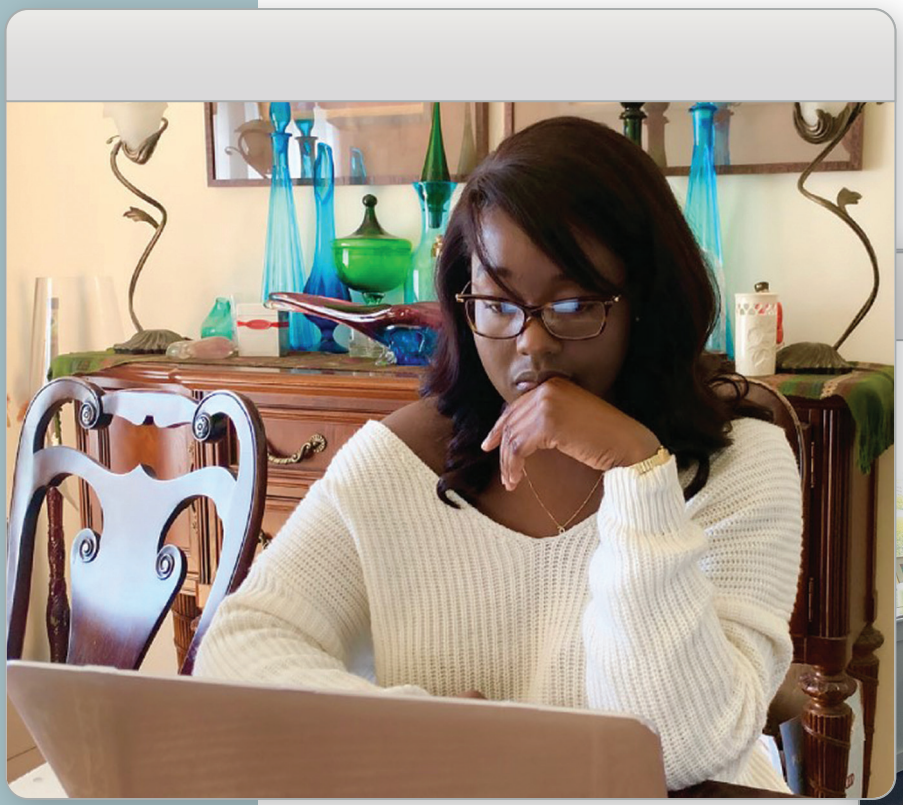
This was not how Jazmin Jones envisioned spending the spring semester of her second year at the University of Maryland School of Dentistry (UMSOD): Listening to online lectures and preparing for exams via study groups held on Webex in the basement of her best friend's childhood home.

If not for the pandemic, Jones would have been honing her hand skills in the Simulation Lab and finishing up projects for her fixed prosthodontics class.

The Fresno, Calif., native considers herself lucky, though. She finished the semester living in Baltimore with the family of classmate Alauna Martinez, and the two women were able to support and motivate each other as they attended lectures and completed assignments online.

When learning remotely, "it is a little more difficult to communicate and a little more stressful. It definitely will be nice when we won't have to email all our questions or worry about the internet connection," said Jones, who is president of the Class of 2022.

"But the professors have been pretty innovative with online lectures, videos, recordings, and making time to answer questions. So at least the education is continuing, and we are thankful for that."



ABOVE: Meriam Macauley, Class of 2021, found sticking to a schedule and staying in touch with friends helped her focus.

BELOW: For Kevin Son, Class of 2020, a remote learning schedule offered him the flexibility to work out as well as study.

On March 19, when Gov. Larry Hogan asked the University System of Maryland Board of Regents to move classes online for the duration of the semester, UMSOD was on spring break. That meant the school had about a week to help its faculty move nearly 90 spring semester courses online for the remainder of the semester. Instead of returning to classrooms and clinics after a week off, more than 600 dental and dental hygiene students and residents had to adapt quickly to off-site learning.

UMSOD was relatively well-positioned to transition to remote learning: Lectures already were being recorded on Mediasite, a lecture capture platform, and course materials are routinely posted on Blackboard, a learning management platform, said Kent Buckingham, executive director of UMSOD Information Technology and Facilities Management.

Nonetheless, in a matter of days, the school needed to ensure that faculty members had the equipment and training to give lectures and efficiently interact with students from home. "We provided training classes hourly every day for two weeks to familiarize faculty members with the platform and software and distributed over 100 laptops to make sure that everyone had what they needed," Buckingham said.

A second challenge was ensuring the integrity of assessments administered virtually. In the end, the school administered exams through Proctorio, an online proctoring software platform. "We're now positioned to provide didactic course education in a way that is sustainable for the future," Buckingham said.

Gearing online learning to the needs of students at different stages in their dental educations was a priority for Nisha Ganesh, DDS, MAEd, assistant clinical professor and director of predoctoral education in UMSOD's Department of General Dentistry.

For fourth-year dental students, who already had hours of clinical experience under their belts, she and other faculty members designed case-based learning modules that included a presentation of a clinical case, complete with photos, radiographs, and patient details. Drawing upon what they knew and could learn by researching existing literature, the seniors developed diagnoses and treatment plans.

The fourth-year students also could ask questions and answer queries about the case via online forums before posting summaries of their plans. This case-based model of learning is asynchronous, said Ganesh, and allows more experienced students to manage their own time.

"As fourth-year students, they have seen a lot of patients. And as I am painting this picture through slides on Blackboard, they should be able to envision themselves actually encountering the patient in real life," Ganesh said.

Radi Masri, DDS, MS, PhD, professor and director of graduate prosthodontics in the Department of Advanced Oral Sciences and

"FOR ME, WAKING UP AT THE SAME TIME THAT I DO AT SCHOOL HELPS, SO I KEEP THE SAME SCHEDULE THAT I HAD BEFORE."

— MERIAM MACAULEY, Class of 2021

ABOVE: Christian Mullin, Class of 2020, completed the semester remotely and also carved out time for professional development.

Therapeutics, who previously has taught using the case-based educational model, also has found it effective during the pandemic.

He typically "creates" a virtual patient and invites teams of four or five residents to attend online chat groups through which they can discuss symptoms, ask questions, and "order" diagnostic tests such as CT scans. Once they've formulated a diagnosis and treatment plan, the residents meet in a larger group to review the results.

"Treatment planning seminars are a staple of clinical education in the postgraduate prosthodontics program and are designed to enhance our residents' abilities to solve clinical problems with confidence," Masri said. "We used to meet in actual classrooms, face to face, to discuss these virtual patients. Now, we use Webex and online teleconferencing, and this format has exceeded my expectations about how well it's working."

Despite missing working directly with patients, Kevin Son, a member of the dental Class of 2020, appreciated the flexibility offered by his online-only schedule. "I've begun every day with a run, which I never got to do when school was open. Doing these assessments on my own time gives me a flexible schedule and makes me more productive," said Son, who will spend the next year as a resident at Kings County Hospital in Brooklyn, N.Y.

Classmate Christian Mullin also used the greater flexibility to his advantage — carving out time for exercise and professional development. "A lot of places are offering free CE [continuing education] classes to dental students, so it is a very good time to be learning," he says. He and his wife and classmate, Tanya Guinto, are headed for residencies at Eastern Carolina University and with the U.S. Navy in Norfolk, Va., respectively.

In contrast, for the second-year students, Ganesh and colleagues Cecilia Velez, DDS, clinical assistant professor, and Eve Desai, DDS, clinical instructor, both in the Department of General Dentistry, designed a class that students take synchronously — while their professors are present online and able to answer questions. "Based on their experience level, we felt it was important to be available in the moment," Ganesh said.

As a third-year student last semester, Meriam Macauley found that making the unexpected switch from the fast pace of spending hours in the clinic every day to studying online from her parents' home in New Jersey was "definitely an adjustment."

Continuing to follow essentially the same schedule that she would have had at school helped her stay focused. "For me, waking up at the same time that I do at school helps, so I keep the same schedule that I had before," Macauley said.

Relying on friends helps, too. Macauley and her classmates frequently schedule Webex meetings during which they discuss assignments and "make sure we are up to date. We hold each other accountable," she said. "And we lean on each other. Even though we're not at school, we're all in this together." Md

GOOD SPORTS

IN THE ATHLETIC ARENA, FOUR UMSOD STUDENTS GOT GAME

BY JOEL KABOT

We all know that the University of Maryland School of Dentistry's (UMSOD) student body boasts talented clinicians. These days, it also has a number of notable athletes in its ranks. Below, we highlight some of those students — one from each class — who are stars not only chairside, but also on the ice, diamond, and pitch.

JUSTIN MILO

It's hard enough to go professional in one sport, let alone two. But Justin Milo, a member of the Class of 2020, has done just that. Before enrolling at UMSOD, he played both minor league hockey and baseball, although there are no divided loyalties: He says the former was always his first love.

Growing up in Minnesota, Milo would play endless games of "shinny" — pickup hockey — on backyard ice rinks. His high school team, Shattuck-St. Mary's in Faribault, Minn., was a hockey powerhouse and competed in Canada and Sweden during his time there. But also having excelled in American Legion baseball, where his team won the state tournament four years in a row, Milo wanted to play both sports in college.

He did so at Cornell University, where he was named a freshman All-American in baseball. He later transferred to the University of Vermont, which made the Frozen Four — college hockey's championship semifinals. Ironically, it was at the Frozen Four where he was noticed by professional baseball executive and scout Damon Oppenheimer of the New York Yankees, who also was a college hockey fan. The Yankees drafted Milo and assigned him to their Single-A Staten Island team.

Milo remembers one particularly notable Staten Island game, which happened to fall on the first day of classes at Vermont. Coincidentally, the minor league Yankees were in town to play the Vermont Lake Monsters.

"I picked up my books that day and played professional baseball that night," he says.

After two years with the Yankees organization, Milo left to play professional hockey with the Gwinnett (Ga.) Gladiators in suburban Atlanta. It wasn't until he went to work for his uncle, who owns a dental lab, that he began to consider dentistry as a profession. It's changed him a bit, he admits.

As a young hockey player, he thought seeing older hockey players take out and insert their "flippers" — temporary dentures — "was the coolest thing ever," he says.

Now, when playing in a weekend league, Milo has a different perspective.

"My No. 1 concern is protecting my teeth," he says.

JUSTIN MAXWELL

Many young children have dreamed of playing professional baseball. Justin Maxwell was no different, although he also dreamed of adding "Dr." to his name — as a veterinarian, physician, or dentist. After playing in the major leagues and accomplishing dream No. 1, Maxwell is now a rising fourth-year dental student and well on his way to achieving dream No. 2.

The child of dentist parents who both played on a competitive traveling softball team, Maxwell saw from an early age that one could combine the dental profession and athletics.

"I was always in the stands cheering my parents on," Maxwell says.

After playing baseball at Sherwood High School in Sandy Spring, Md. — and bypassing a chance to join the Baltimore Orioles, who drafted him in the 43rd round right out of school in 2001 — he went to the University of Maryland, College Park (UMCP). His time at Maryland kept him on the radar of professional teams: The Texas Rangers drafted him in the 10th round in 2004, but he declined to sign with them. The Washington Nationals took him in the fourth round in 2005, and he made his major league debut for the team in 2007. During a seven-year career in Major League Baseball in which he also made appearances for the Houston Astros, Kansas City Royals, and San Francisco Giants, Maxwell batted .220, homered 41 times — which included a grand slam for the Royals in 2013 — and drove in 133 runs.

As a dental student, Maxwell has focused his attention on his next career. He hasn't fully left baseball in the rearview mirror, however. Last year, during Labor Day weekend, he appeared as an analyst on the Nationals' pre- and postgame shows on the Mid-Atlantic Sports Network. During the World Series, he stepped into the broadcast booth again, providing commentary and analysis for Washington's WTTG Fox 5 during the Nationals' march to victory.

"Watching TV professionals work behind the scenes makes me admire all the hard work it takes to bring games from the ballpark to the living room," Maxwell says. "Broadcasting has not only allowed me to stay connected to the game, but it has also made me a bigger fan of the game."

"I PICKED UP MY BOOKS THAT DAY AND PLAYED PROFESSIONAL BASEBALL THAT NIGHT."

— JUSTIN MILO, Class of 2020

ALEX AND JUSTIN LEE

ABOVE: UMSOD dental students and brothers Justin Lee (left) and Alex Lee juggle academics and professional soccer.

It can be difficult for a dental student to find the right work-life balance. But just try scheduling a quick away game in the Maldives between classes. That's real life for twin brothers Alex and Justin Lee, current members of the Guam national soccer team.

Alex, a rising third-year dental student, and Justin, a rising second-year student, played soccer at Magruder High School in Derwood, Md., where they won a state championship. They went their separate ways after graduation: Alex to UMCP and Justin to Penn State. Alex later was drafted by a Major League Soccer team, FC Dallas, before playing several seasons for the Richmond Kickers in the United Soccer League. After several trials, Justin traded soccer for the insurance business.

In early 2015, both Lees thought their soccer careers were over, but they noticed on social media that one of Alex's former Maryland teammates was suiting up for Guam. Since the Lees' grandmother had been born in the territory, they were both eligible to play for the national team. By March, they were out on the pitch representing Guam on the international stage. Along with younger brother Nathan, the three athletes started their first eligible match, a friendly against Hong Kong.

Although Guam lost that game 1-0, the brothers didn't have to wait long to taste victory. In Guam's first World Cup qualifying match in 15 years, the Matao — as the team is known — beat Turkmenistan 1-0. It was the island nation's first-ever World Cup qualifying win.

"It was a dream come true," Alex says, "not just to play in World Cup qualifiers, but to win for the first time ever."

"It was amazing to look up into the stands and see how happy and proud the Guamanian fans were," Justin says.

Now the focus is on current World Cup qualifying, which has included matches against China, the Maldives, the Philippines, and Syria. Given the demands of dental school, playing such matches — whether in Guam or elsewhere — can be especially tricky. But the Lee brothers credit their course directors with understanding their unique situation and allowing them to work around games.

"We really appreciate the course directors working with us," Alex says.

Their father is a dentist, but the Lee brothers admit they weren't interested in the profession at first. It wasn't until Alex spent the Kickers' offseason in his father's practice that he started to consider pursuing dentistry. Justin soon caught the dental bug, as well.

Now they are students trying to juggle course demands with the hopes and dreams of an entire nation. **Md**

Lasting Impressions

FocalPoint

Dental Treatment for the Graying Population is Not Black and White

BY SYDNEE CHAVIS, DMD

"The graying of America" — the aging of the population of the United States — brings dental treatment needs that are not black and white. As individuals age, the risk of increased medical and health complexity increases, along with the potential for increased oral health and dental needs.

Advanced age brings higher prevalence of chronic medical conditions such as diabetes, heart disease, stroke, and cancer, affecting about 80 percent of older adults. More than three-quarters of that population suffers from at least two of those conditions, according to the National Council on Aging and the National Center on Aging. The prevalence of dementia also increases as life expectancy increases.

Oral health problems, especially periodontal issues, are strongly associated with these conditions, with significant linkages between poor periodontal health and poorly managed chronic conditions. Chronic conditions also impact oral health with manifestations such as tooth and gum infections, dry mouth, delayed healing, and oral and facial pain.

These oral health concerns are often exacerbated by pharmaceutical treatment of chronic conditions. Polypharmacy, the simultaneous use of multiple drugs for one or more conditions, contributes to the feeling of dry mouth (xerostomia) and decreased saliva production (hyposalivation). These conditions can lead to problems with oral function like chewing and swallowing, as well as an increased risk for cavities.

While the dental treatment procedures themselves do not differ for older adults, treatment planning and management may. The potential for more medical complexity among older adults can contribute to increased dental complexity from a standpoint of treatment planning, provision of care, and health maintenance. In older adults, medical and dental disease may progress more quickly than that of the general population. Dental treatment may be more difficult to obtain due to access or financial constraints, and oral health maintenance may be more difficult for older adults to manage. Health status can be more dynamic among older adults, and providers may notice rapid changes in health from visit to visit.

The spectrum of dental treatments as viable options and indications is not age-dependent. What does come more significantly into play is what older patients can tolerate procedurally, what they can manage in terms of oral health and treatment maintenance, and what their oral and systemic health functional capacity and goals are.

Oral health plays an important role in systemic health — and quality of life. The mouth and its components are integral to interpersonal relationships and communication, nutrition and sustenance, and self-esteem and confidence. It is of the utmost importance that older adults maintain sustained oral health as a part of systemic health. Treating older patients is no different from treating other patients: With an understanding of the patient's medical history, concerns, and goals, appropriate treatment plans can be devised and executed to keep the graying population healthy. Md

Chavis is a clinical assistant professor in the Division of Special Care and Geriatrics in the Department of Oral and Maxillofacial Surgery.

Laurels

Mary Beth Aichelmann-Reidy, DDS, division chief of periodontics and clinical associate professor, Department of Advanced Oral Sciences and Therapeutics, received the 2019 Lucy Hobbs Taylor Award, the American Association of Women Dentists' (AAWD) highest honor. AAWD presents this award to a member who exemplifies a true professional with accomplishment in one or more areas of dentistry, organized dentistry, academia, government, anthropology, archeology, philanthropy, and consulting. It was presented at AAWD's 98th Annual Conference, held Sept. 26-29 in Phoenix.

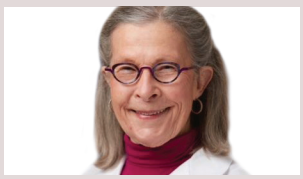
Patrik Bavoil, PhD, professor and chair, Department of Microbial Pathogenesis, co-authored three articles: "Non-Optimal Vaginal Microbiota after Azithromycin Treatment for Chlamydia Trachomatis Infection," published in *The Journal of Infectious Diseases*; "Chlamydia in Adolescent/Adult Reproductive Management Trial Study (CHARM): Clinical Core Protocol," published in *Contemporary Clinical Trials*; and "Insertional Mutagenesis in the Zoonotic Pathogen *Chlamydia Caviae*," published in *PLOS One*.

▲ **Glenn Canares, DDS, MSD**, clinical assistant professor and clinical director, Division of Pediatric Dentistry, Department of Orthodontics and Pediatric Dentistry, is the first author of "Pediatric Dental Residency Program Directors' Perspectives on and Use of Social Media for Resident Selection and Education," published in the September 2019 issue of the *Journal of Dental Education*. Vineet Dhar, BDS, MDS, PhD, clinical professor and chair, Department of Orthodontics and Pediatric Dentistry, is the second author.

Joel D. Greenspan, PhD, professor and chair, Department of Neural and Pain Sciences, co-authored "A Functional Substitution in the L-aromatic Amino Acid Decarboxylase Enzyme Worsens Somatic Symptoms via a Serotonergic Pathway," published in *Annals of Neurology*, and "Premorbid and Concurrent Predictors of TMD Onset and Persistence," published in the *European Journal of Pain*. Both were published in August 2019.

Gary Hack, DDS, clinical associate professor, Department of Advanced Oral Sciences and Therapeutics; Cynthia Idzik-Starr, DDS, clinical assistant professor, Department of Oral and Maxillofacial Surgery; and Se-Lim Oh, DMD, MS, clinical assistant professor, Department of Advanced Oral Sciences and Therapeutics, were among the co-authors of "Provisional Removable Prostheses," published in the January 2020 issue of *Decisions in Dentistry*. That issue also highlighted recent research co-led by Hack on oral palate width in patients with deficit schizophrenia. This interprofessional, international research was published in the journal *Schizophrenia Bulletin*.

▲ **Mary Anne Melo, DDS, MSc, PhD**, associate professor and director, Division of Operative Dentistry, wrote "A Novel Dental Sealant Containing Dimethylaminohexadecyl Methacrylate Suppresses the Cariogenic Pathogenicity of *Streptococcus Mutans* Biofilms," published in the *International Journal of Molecular Sciences*. University of Maryland School of Dentistry (UMSOD) co-authors included Maria Ibrahim, BDS, CAGS, MDS, MPH, and Abdul Balhaddad, BDS, MSD, both PhD candidates in the Dental Biomedical Science Program; Michael D. Weir, PhD, research assistant professor, and Huakun Xu, PhD, MS, professor and chair, both in the Division of Biomaterials and Tissue Engineering; and Thomas W. Oates, DMD, PhD, professor and chair, Department of Advanced Oral Sciences and Therapeutics.



▲ **Elaine Miginsky, DDS,** clinical instructor, Division of Operative Dentistry, Department of General Dentistry, was inducted as a fellow in the International College of Dentists on Sept. 5, 2019.

Silvia Montaner, PhD, MPH, professor, Department of Oncology and Diagnostic Sciences at UMSOD and the University of Maryland Marlene and Stewart Greenebaum Comprehensive Cancer Center, is the senior author of "Angiopoietin-like 4 Binds Neuropilins and Cooperates with VEGF to Induce Diabetic Macular Edema," published in the Sept. 23, 2019, issue of the *Journal of Clinical Investigation*.

Norbert Myslinski, PhD, associate professor, Department of Neural and Pain Sciences, was honored in China and South Korea in September 2019 for his worldwide work in neuroscience for young students. He gave invited oral presentations in seven cities and oversaw the International Brain Bee Competition, which he founded.

Richard Traub, PhD, professor and vice chair, Department of Neural and Pain Sciences, co-authored two articles: "Valproate Reverses Stress-induced Somatic Hyperalgesia and Visceral Hypersensitivity by Up-regulating Spinal 5-HT2C Receptor Expression in Female Rats," published in *Neuropharmacology*, and "The Role of Descending Pain Modulation in Chronic Primary Pain: Potential Application of Drugs Targeting Serotonergic System," published in *Neural Plasticity*.

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Congratulates Valli Meeks, DDS, MS, RDH

Clinical Professor in the Department of Oncology and Diagnostic Sciences
Director of the PLUS Clinic, which has served the Ryan White Eligible Metropolitan Area for three decades

RECIPIENT OF THE 2020 WILLIAM J. GIES AWARD
FOR ACHIEVEMENT — DENTAL EDUCATOR

Visit www.dental.umaryland.edu/ValliMeeks

In Appreciation

of the 2019-20 Dean's Faculty

THE UNIVERSITY OF MARYLAND SCHOOL OF DENTISTRY WOULD LIKE TO THANK THE PROFESSIONALS WHO GENEROUSLY VOLUNTEER AS MEMBERS OF THE DEAN'S FACULTY, OFFERING THEIR TIME, ENERGY, AND EXPERTISE TO THE NEXT GENERATION OF ORAL HEALTH LEADERS.

Jeremy Abbott, DDS
Ronald I. Ackerman, DDS
Oluwayemisi Titilayo Akinrefon, DDS
Guy Alexander, DDS
Andrew Allen, DDS
Lori Andochick, RDH, DDS
Dawn Anthony, RDH
Roghieh Atapour, DDS
Behnaz Bagheri, DDS
Christopher Bailey, DDS
William Barrett, DDS
Thomas Barron, DDS
Jeffrey Behar, DDS, PA
Ali Behnia, DMD
Louis Berman, DDS
Alan Berne, DDS
Leonard Bers, DDS
Shameem Bham, DDS
Ignacio Blasi, DDS
Gonzalo Blasi-Beriain, DDS
Keith Boenning, DDS
Warren Brill, DMD
Sol Brotman, DDS
Edna Buckle, DDS
Paul Bylis, DDS
Jerome Casper, DMD
Natalia Chalmers, DDS
Jay Chason, DDS
Dina Chehab, DDS
Charles Chen, DDS
Richard Cheskis, DDS
Lawrence Coffin Jr., DDS
Barry Cohan, DDS
Harvey Cohen, DDS
Howard Cohen, DDS
Stanley Cohen, DDS
Ana Cotrim, DDS, PhD
Wendy Daulat, DDS
Henry David, DDS
Ronald Davis, DDS
John Davliakos, DMD
Nidya de la Torre, DDS
Richard Diaz, DDS
Vincent DiFabio, DDS
Charles Doring, DDS
Douglas Drewyer, DDS
Allan M. Dworkin, DDS
Bruce Dye, DDS
Michael Eckhart, DDS
Barry S. Edland, DDS
Samuel Elhadad, DDS
Karim Elrafei, DDS
John Emmett, DDS
Adam Eskow, DDS
Roy Eskow, DDS
Henry Fasteau, DDS
Sylvan Feldman, DDS
Fred Fink, DDS
Francis Formica, DDS
Ivan S. Fried, DDS
Jacquelyn Fried, RDH, MS
Colin Galbraith, DMD
Stephen Gandel, DDS
Allan Garfinkel, DDS
Judith Gaston, RN
Marc Geballa, DDS
Philip Gentry, DDS
Edward Gillis, DDS
Andrew Goldberg, MD
A. Gary Goodman, DDS
David Gordon, DDS
Louis Gorman, DDS
Gordon Groisser, DDS, MSD
Frank Grosso, DDS
David Harmon, DDS
Joseph Heher, DDS
M. Lamar Hicks, DDS, MS
Edna Hirsch, DDS
Lubor Hlousek, DMD, MD
Daniel Hoch, DDS
Andrew Horng, DDS
Peterson Huang, DMD
Julius Hyatt, DDS
Courtney Jackson, DDS
Jeffrey Jarvis, DDS
Chao Ji, BDS
Eunjung Ji, DMD
Beverly Jimenez, DDS
Christopher Jin, DMD
Hiba Kamel-Kassab, DMD
Daniel Karlin, DDS
Mark Keiser, DDS
Margaret Kern, RDH
Wahn Khang, DMD
Jason Kim, DDS
Dushanka Kleinman, DDS
Morgan Kneib-Baker, DMD, RDH
Shari Kohn, DDS
Catherine Kolasny, DDS
Charles Kovalchick, DDS
Hakan Koymen, DDS
William Kreul, DDS
Richard Kuntz, DDS
Melvin Kushner, DDS
Gerard Lamkin, DDS
Alan Wonhee Lee, DDS, MS
Albert Lee, DDS

Henry Lee, DDS
Christine Leo, RDH
Martin Levin, DMD
Stephen Levin, DDS
Eric Levine, DDS
Joseph Levy, DDS
Christopher Liang, DDS
Mao Lin, DDS
Mitchell Lomke, DDS
Morris Lustman, DDS
William Maas, DDS
Bobby Mann, DDS
Marion Manski, RDH, MS
Philip Markin, DDS
Christiana Markova, DMD
Miluska Masaschi-Sanchez, DDS
David Mazza, DDS
Patricia McGuire, RDH
John Meredith, DDS
Anastasia Mischenko, DDS
Julian Moiseiwitsch, BDS, PhD
Edwin Morris, DDS
Ronald Moser, DDS
Niki Moutsopoulos, DDS, PhD
Kevin Murphy, DDS
Sathiyanathan Nadarajah, DMD
Mimi Nguyen, DDS
Robert Noppinger, DDS
Ali Nosrat, DDS
Lawrence Nurin, DDS
Youssef Obeid, DDS
Thomas O'Shea, DDS
Sandra Pacios-Pujado, DDS, PhD

Augustine Paik, DDS
Gilbert Palmieri, DDS
Zachary Papadakis, DDS
Mary Passaniti, DDS
Roshani M. Patel, DMD
Bradley Phillips, DMD
Mervyn Pinerman, DDS
Jeffrey Posnick, DMD, MD
Sumesh Potluri, DMD
John Powers, DMD
Frederick Preis, DDS
Eugenia Prokopets, DDS
Steven Pruce, DDS
Michael Raderman, DDS
Steven Rattner, DDS
Robert Redman, DDS, PhD
Michael Rethman, DDS
Adel Rizkalla, DDS
Paulina Rodrigues, DDS
Sarah Rollor, DDS
Michael Rosen, DDS
Paul Rosen, DDS
Barry Rosenthal, DDS
Tarun Saini, DDS
Viney Saini, DDS

Aala Salimian, DDS
Peter Samuels, DDS
Richard Schlossberg, DDS
Craig Schneider, DDS
Arul Selvaraj, DMD
Bethany Serafin Awalt, DMD
Suzanne Setayesh, DDS
Juheon Seung, DDS
Mohammad Shahegh, DDS
Nahid Shahry, DDS
Stuart Sheer, DDS
Paul Shires, DDS
Deven Shroff, DMD
Robert Shub, DDS
Geoffery Shultz, DDS
Victor Siegel, DDS
Michael Singer, DDS
T.P. Sivakumar, BDS
Terry Slevin, DDS
David Somerville, DDS
Andrew Sorkin, DMD
David Steiner, DDS
Dennis Stiles, DDS
Marie Stiles, DDS

Jon Suzuki, DDS
Gary Swiec, DDS
Sheldon Sydney, DDS
Garima Talwar, DDS
Renju Thackenkary, DDS
Paul Thomopulos, DDS
Robert Tigani, DDS
James Tong, DDS
Patricia Tordik, DMD
Keyla Torres, DMD
Bradley Trattner, DDS
Margaret Valega, DDS
Kim-Thi Van-Dinh, DDS
Robert Vandre, DDS
Devender Verma, DDS
Prashant Verma, DDS
Jordan Virden, DDS
Mark Wagner, DDS
William Wahle, DDS
Elaine Wong, DMD
Anna Wu, DDS
Jenin Yahya, DDS
H. Richard Yoo, DDS
Lobna Zada, DDS
Mehdi Zamani, DDS
Karl Zeren, DDS

Alumni

From the Alumni Association

Just months ago, few of us would have dreamed that we in the dental community would be sitting home because of an international pandemic. This public health crisis has altered and undoubtedly will continue to affect the way we practice dentistry. Already, it has changed how we alumni connect with one another.

Although we have had to cancel our All-Alumni Reunion Weekend and other events, staying in touch seems to be more important than ever.

Last year, the board focused on finding new ways to help our dental and dental hygiene students get acquainted with you, our fellow alumni, and we continue to meet — albeit remotely — to discuss innovative ways to serve you all. I urge you to follow us on Facebook and check our webpage (*www.dental.umaryland.edu/alumni*) to learn about what we are planning.

In the months preceding the novel coronavirus pandemic, we had been hearing stories from recent (and not-so-recent) graduates who had been helped immeasurably by alumni offering mentorship or assistance in finding a first job.

When I was a dental student, I worked for several dental offices on Saturdays and one evening a week. Besides earning money, I learned firsthand what aspect of dentistry I found most interesting while developing relationships with other dentists.

Later, I mentored high school and college students and graduates by hiring them to work in my office. Three are now dentists, three are hygienists, and all six are proud alumni of our prestigious institution!

Inspired by experiences like mine and by our conversations, the board last year worked to create new avenues for connection.

Last fall, for example, board members played a meaningful role in the White Coat Ceremony. At this event, members of the dental hygiene Class of 2020 and the Doctor of Dental Surgery Class of 2021 were welcomed to the oral health profession. As the white coats were issued to the students, handwritten notes from alumni filled with good wishes and advice also were passed along. (Please check our webpage for updates about plans for this fall.)

In another initiative, board members served as mentors to first-year dental students through a class that explored issues of leadership, ethics, and patient concerns.

Now board members are teaming up with students to create an alumni LinkedIn page where recent graduates and students can connect and share information about potential residencies and jobs.

If you would like to join us in getting to know our current students and forming lasting connections through mentorship and knowledge sharing, please let us know. After all, what better time to support one another than now?

Best regards,
Shari C. Kohn, DDS '90
President | Alumni Association Board of Directors

For more information

about alumni news or upcoming events, please contact Nicole Nash, assistant director of alumni relations, at 410-706-3663 or *nnash1@umaryland.edu.*

2020 Distinguished Alumni Award Winners

Distinguished Public Service Award
Edwin L. Morris, DDS '74, ORTHO '76
In recognition of a graduate for meritorious professional leadership and service to the School of Dentistry and the community

Distinguished Achievement Award
Paul S. Rosen, DMD, PERIO '88, MS '90
In recognition of a graduate for significant professional accomplishments in science, dentistry, or education

Linda DeVore Dental Hygiene Award
Jane L. Phillips, RDH, BS '83, MS '12
In recognition of a dental hygiene graduate who represents the integrity, intellectual curiosity, community-mindedness, and leadership epitomized by DeVore

Rising Dental Health Leader Award
Andrew C. Swiatowicz, DDS '10
In recognition of a graduate from the past 10 years whose accomplishments enhance the perception of the dental profession and who has demonstrated remarkable service to the community

For biographies of the award winners, please visit *www.dental.umaryland.edu/distinguished-alumni/.*

ClassNotes

Michele Griguts, DDS ’97

Michele Griguts, dental director for the Bureau of Medical, Dental, and Pharmacy Policy at the New York State Department of Health, was among a group of health department officials invited by the New York State Board of Dentistry to attend its January board meeting, held at the New York University College of Dentistry. The topic of discussion was barriers to care for people with disabilities.

Wayne Kye, DDS, PERIO ’04

Wayne Kye is serving his second term as chairman of the New York State Board of Dentistry. He is a full-time clinical associate professor at the New York University College of Dentistry, where he previously served as the predoctoral director of periodontics.

Arthur Nimmo, DDS ’79, FACP

Arthur Nimmo received a 2019 Sustained Exemplary Teaching Award from the University of Florida College of Dentistry. The award honors up to three senior faculty members for outstanding teaching performance over the preceding three academic years. Nimmo also serves as the director of the predoctoral implant dentistry program and is a diplomate and past president of the American Board of Prosthodontics, past president of the American College of Prosthodontists, and recipient of the American College of Prosthodontists’ Distinguished Service Award in 2005.

Rebeca Zechmann, DDS ’11 and Ellen Paulisick, DDS ’11

Rebeca Zechmann and Ellen Paulisick have joined forces to practice together in Daniel Island, S.C., at River Landing Dentistry. They both completed their general practice residencies at Baltimore Veterans Affairs Medical Center and are ecstatic to work together again. They also are excited to expand the services they provide to include sleep appliances, Invisalign, CT-guided surgical implant placements, platelet-rich plasma therapy with extraction and grafting, and Botox cosmetic.

In Memoriam

We are saddened by the loss of the following alumni, friends, and faculty:

Bruce G. Belvin, DDS ’67
Frank L. Bragg, DDS ’60
Thomas K. Brigada, DDS ’82
James C. Campbell, DDS ’69
Jeffery M. Carolla, DDS ’83
Milton C. Clegg, DDS ’60
Elmer E. Cook III, DDS ’76
Roger L. Eldridge, DDS ’78, JD
Francis X. Falivene, DDS ’56
Thomas H. Gaffney, DDS ’66
Herald D. Green Jr., DDS ’56
Louis P. Greenberg, DDS ’52
Kenny Arnell Hooper Sr., DDS ’78
Fred H. Koeniger, DDS ’57
Stanley M. Kotula, DDS ’47
Andrew L. Lavoie Jr., DDS ’71
Stephen R. Morrison, DDS ’78
Alex M. Rudewicz, DDS ’65
John A. Wood Jr., DDS ’69
Lawrence F. Yampolsky, DDS ’65
Albert W. Zanner Jr., DDS ’55

*The school learned of the passing of these alumni between June 30, 2019, and Jan. 15, 2020.

Left to right: Wayne Kye and Michele Griguts, Arthur Nimmo, Ellen Paulisick and Rebecca Zechman

If you have news to share, please send it to *hselby@umaryland.edu.*

Agents OfChange

Courtesy of Corey Smith

UMSOD Alumnus Happy to Serve His Hometown of Berlin, Md., and Beyond

BY HOLLY SELBY

When people think about a resort area, they usually envision frothy waves, sun-kissed sand, and a boardwalk. On most days, Corey Smith, DDS '10, has a different vantage point.

As the owner of a dental practice in Berlin, Md., he sees opportunities to save smiles — sometimes literally. Whether providing general dental care to local residents or offering emergency services to locals and tourists, Smith finds his job highly rewarding.

"I seem to have found a niche, almost my calling, using the tools the University of Maryland School of Dentistry [UMSOD] gave me to provide general dentistry to this growing resort area," Smith says. "I am glad that I was able to keep my practice open during the pandemic to patients who needed emergency dental treatments, but I'm looking forward to offering the full range of care to patients."

Born and raised in Berlin, Smith always hoped to remain in the area as a professional. A biology major at Washington College, he initially considered a medical career. After taking into account the training necessary for both professions and his desire to work with his hands, however, he chose to attend UMSOD.

Having family members in the profession also played a significant role in his career choice. "My parents are my role models," he says. "My mother, who recently retired after 45 years of serving this area as a dental hygienist, was the first to introduce me to the profession's ability to improve the lives of so many."

Smith also has a cousin who is a hygienist and a second cousin who aspires to be one. Additionally, his brother, Christopher Smith, DDS '11, is a major serving as an oral surgeon in the U.S. Air Force.

Before buying his practice two years ago, Smith worked as an associate dentist for several private offices and public clinics, offering services from high-end cosmetic dentistry to basic care for underserved populations. He also taught a Dental Assistant Radiology Course at a local community college and participates annually in Maryland's Mission of Mercy program.

"Each experience provided me a different outlook on how the community receives dental care in different settings. I could see over time what worked and what didn't," he says. "Most importantly, I learned what made a dental office team not only successful, but happy."

As a dental practice owner, his goal is to offer superlative care at an "all-around, one-stop shop for family dentistry to anyone and everyone in need," he says. He credits UMSOD's faculty with teaching him how to provide high-quality dental treatment as well as how to be a caring professional.

Last year, Smith made a pledge to his alma mater in support of the Dean's Scholarship for Leadership & Excellence. His gift jump-started Socks for Scholarships, an initiative aimed at encouraging others to make a gift to the school. (Those who make a gift of more than $100 are rewarded with a pair of dental-themed socks in UMSOD colors.)

"Sometimes people ask why I am so positive and willing to give back all the time," he says. "Dentistry allows me to make a difference in the community that I grew up in, and UMSOD gave me the opportunity to do what I love to do." Md

GameChanger

UMSOD Professor Takes Helm of National Association

BY GWEN FARISS NEWMAN

Photo by Holly Selby

Growing up in Delhi, India, Priya Chand, BDS, MSD, wanted to be an interior designer. She cherished the notion of creating environments that soothed and comforted. But at age 14, Chand unexpectedly became familiar with endodontics — and her aspirations changed.

"A cousin was in pain and needed immediate care," says Chand, graduate program director and clinical associate professor in the Division of Endodontics, Department of Advanced Oral Sciences and Therapeutics at the University of Maryland School of Dentistry (UMSOD). She accompanied her cousin to the dentist's office, where the cousin was diagnosed as needing a root canal.

As Chand observed the oral health professional, she realized that, like designers, dentists deliver comfort — albeit in a vastly different way.

The experience was life-changing. "That encounter really was the catalyst that triggered me to delve into dentistry and endodontics," she says.

In the past year, in addition to serving as graduate program director and associate professor, Chand took on the interim roles of director of UMSOD's predoctoral program and interim division director, strengthening faculty support for residents and developing Advanced Science and Endodontics Collaborations, which offer students additional clinical experiences.

She also hosted the 10th annual College of Diplomates Board Review Course and Scientific Update in February, which drew more than 200 endodontists from across the nation to participate in educational opportunities and study for board certification.

In April, Chand became the youngest woman to serve as president of the College of Diplomates of the American Board of Endodontics, a professional organization dedicated to encouraging endodontists to pursue diplomate status. "Taking on these leadership roles has been a humbling journey," she says. "I hope to fulfill them with compassion, commitment, dedication, and hard work."

As president, she aims to strengthen the collaborations among the three major endodotic organizations — the American Association of Endodontists, American Board of Endodontics, and College of Diplomates — and enhance the latter's international mentoring platform.

"She strongly emphasizes acquiring new cognitive and clinical skills through innovative organizational and educational programs, promoting development of a specialty practice attuned to changing dental health needs, and fostering continuing self-analysis of practice characteristics and outcomes for the benefit of patients," says M. Lamar Hicks, DDS, MS, FACD, FICD, FIADT, clinical professor, UMSOD Dean's Faculty, and College of Diplomates founder and past president.

In India, Chand studied dentistry at Rajiv Gandhi University, one of the nation's top private schools, where one in four applicants is accepted and only two-thirds graduate. Of 140 students in her class, only 25 were women. Chand then earned her Master of Science degree in dentistry from Case Western Reserve University in Cleveland.

As a student and particularly as an intern working in impoverished communities, Chand saw the suffering caused by lack of access to oral health care and became determined to turn the tide.

"So many people, even today, don't know that procedures like root canals can actually save teeth, so they suffer needless pain and embarrassment from a less-than-perfect smile," she says.

For a young girl who dreamed of crafting beautiful interiors, Chand has found a way to do that in the realm of dentistry, too. Md

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