

THE PERFECT FIT

Students Take the
Next Step in Their
Professional Journey

**FORMER CLASSMATES TURN
COMPASSION INTO ACTION**

How a Lifelong Friendship
Began at HSDM

**RETURNING
TO RWANDA**

New Program Focuses on
Training Future Physicians

Harvard School of Dental Medicine

Spring 2024 / Volume 84, Number 1

Harvard Dental

AI and
Dentistry

Student Snapshot

Students represented Harvard School of Dental Medicine during the American Student Dental Association (ASDA) National Leadership Conference in Denver, CO. In addition to attending educational sessions, they spent time with students and leaders from other dental schools and joined discussions to further their professional goals in dentistry.

HSDM ASDA was honored with the ASDA Gold Crown Award for Community Service. Every year, the organization hosts Give Kids a Smile and Give Veterans a Smile at the School. Jake Cantrell, DMD25, was also elected ASDA District 1 Trustee.

"Jake and I served as the voting delegates representing Harvard," said Asli Pisano, DMD26. "We had a very successful weekend at the annual session!"



Dear Alumni and Friends,

OVER THE PAST FEW MONTHS, I've had the chance to travel to different parts of the country and the world and meet with alumni and colleagues in our community. It's been a pleasure to reconnect with so many friends and supporters. Everyone is interested to hear what is new at HSDM, and how we are preparing the next generation of dental leaders to contribute to oral health education and research.

One of the topics on their minds is artificial intelligence (AI) and how it will impact dentistry. There is a buzz around AI in dental practices, at conferences, in research, and in dental education. Recognizing the importance of the topic, and the expertise available within our Harvard community, we convened a symposium in the fall that brought together experts from academia and industry to discuss how to best harness AI's potential, explore its research applications, and examine the ethical and regulatory landscape for AI. In this issue, you can read about some of the outcomes and the exciting work happening in this area.

As dental educators, we need to prepare our students for an evolving practice landscape. At HSDM, our students have the benefit of early exposure to research and to community health centers, giving them well-rounded experience. A recently awarded \$4.4 million NIDCR grant will augment research training at HSDM and at collaborating institutions and community health centers. This innovative collaboration, featured in this issue, will train future clinician-scientists, and also give clinicians the chance for greater exposure to practice-based research.

Another enriching experience for our students is having exposure to real-world health issues. Our students and faculty are actively engaged in pursuing solutions to critical challenges. Here in Boston, a faculty member and student have teamed up to remove hurdles for migrants to access oral health. This is just one example of the many ways our faculty, students, and alumni are taking the lead in tackling global health challenges. You can also learn about



efforts underway in Rwanda to incorporate oral health into medical training. Additionally, you can read about how a friendship between HSDM classmates has grown into a collaboration aimed at alleviating suffering by treating facial deformities in Bangladesh.

As our Class of 2024 students graduate this year, they will go on to make their own unique impact as alumni in their chosen specialty, clinical practice, or in the fields of research, public health, and others. We're proud to instill a strong foundation, skillset, and values that they will take with them. Please join me in wishing them all the best, and warmly welcoming them into the profession and into our outstanding community of alumni.

WILLIAM V. GIANNOBILE, DDS, DMSC96, PD96
 Dean and A. Lee Loomis, Jr. Professor of Oral Medicine,
 Infection & Immunity
 Harvard School of Dental Medicine

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Harvard Dental
Harvard School of
Dental Medicine
188 Longwood Avenue
Boston, MA 02115

Email: bulletin@hsdm.harvard.edu
Phone: 617-432-2072

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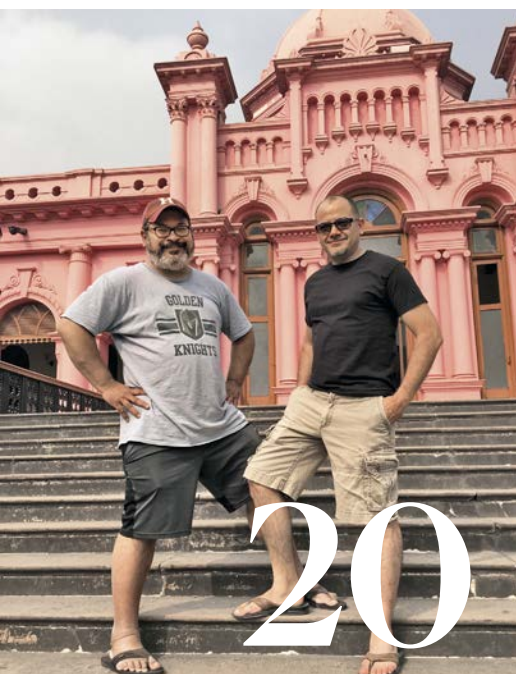
Design: Stoltze Design Group

Writing: Heather M. Denny,
Kathleen Refior, Kat J. McAlpine,
Cami Tussie

Editing: Jakob Fjeldsted, Jody Johnson,
Amy Kotsopoulos

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On Longwood Ave.



CLINICAL CARE

Superhero Smiles

More than 70 pediatric patients ages one to 17 received free dental care during HSDM’s annual Give Kids a Smile event held on Saturday, February 3. This year’s event featured a superhero theme—making dental care accessible, fun, and fearless for the young patients. The event was organized by predoctoral students who also provided care alongside orthodontic and pediatric residents, and faculty members. The volunteers provided dental prophylaxes, oral exams, dental x-rays, referrals, and specialty consults. Patients and their families also enjoyed face painting and learned about beneficial oral health practices.

Aryeh Iosif, DMD26, interacts with a young patient at Give Kids a Smile.

STAFF HIGHLIGHT

Creativity on Display

The 2024 Harvard Staff Art Show celebrates the creative work of the Harvard University staff through an online exhibition, local shows, and artist events across the University. The show is organized by a team of University-wide staff volunteers in partnership with Harvard Human Resources.

This year, two members of the HSDM community had their artwork featured in the show. Jill Adams, senior grants and contracts manager, had her watercolor paintings displayed and Sudipta Baroi, a research fellow in Oral Medicine, Infection and Immunity, had his macro-photography and pencil sketches featured.

For Adams, a beginner watercolor artist, it was the first time she has submitted her work for a show. “It was inspiring to see so many Harvard staff who devote their free time to the arts. I’m totally doing it again next year,” she said.

The artists’ work can be viewed online and in upcoming shows on campus through June 10. For more information, visit staffartshow.harvard.edu.



Macro-photography by Sudipta Baroi

COMMUNITY EVENT

Celebrating Diversity

Monday, March 11 kicked off a week of engaging events during HSDM's annual Diversity Week. The opening night reception featured musical and spoken word performances, as well as a keynote by Dr. Nicole Cheek, president of the National Dental Association.

The week brought speakers from across the country to HSDM for daily lunchtime learning sessions that highlighted diverse perspectives in dentistry and how they influence oral health, medicine, and academia. Topics included: Race, Ethics, and Humanity in Forward Progress; LGBTQIA+ People and the Medical System; Accessible Oral Health for Neurodivergent Patients; Men of Color in Health Care and Research; and Trauma-Informed Care in Oral Health.

Diversity Week was organized by the Office of Diversity, Equity, Inclusion and Belonging (ODEIB) led by assistant dean Dr. Fadie Coleman, and supported by coordinator Ariel Heim, as well as ODEIB student ambassadors. The week's events were made possible by the generosity of Dr. Anne Koch.



First-year DMD students Brendon Anderson and Sabrina Del Valle won the American Student Dental Association District 1 Debate.

STUDENT SUCCESS

Taking Home the Trophy

At the Yankee Dental Congress, a team of HSDM dental students won the 15th Annual American Student Dental Association District 1 Debate, bringing the trophy home to HSDM. Competing against four other New England dental schools, as well as a pre-dental team, Sabrina Del Valle, DMD27, and Brendon Anderson, DMD27, faced off across multiple rounds, arguing on policy and ethical issues confronting students and practitioners alike.

“Seeing so many of our classmates come and support us meant a lot; it truly made the win so much more meaningful. We're incredibly lucky to have a supportive and tight-knit group here,” said Anderson. “That level of comradery and support amongst the class was one of the reasons why I was so excited to attend HSDM.”



HSDM alumni Drs. Dolores Mercedes Franklin, George Taylor, and Everod Coleman attended the opening night. They are pictured with keynote speaker Dr. Nicole Cheek (second from right).



Analog by Choice performing at the opening night reception



Innovation Focus

AI AND DENTISTRY

Artificial intelligence (AI) has made its arrival in dental care around the world, largely thanks to a swell of early adopters who have embraced the newest assistive technologies that could lead to earlier diagnosis of oral diseases and put more informative tools in the hands of patients. Now, the majority of dental practices, dental schools, oral health researchers, and policymakers are rapidly positioning themselves to evolve in step with the dawning AI movement in oral healthcare.

Innovation Focus

From Climate Change to Caries, AI Is Changing Oral Health

In Dental Research and Practice, All Eyes Are on AI's Promise for Patients Near and Far

By Kat J. McAlpine, HSDM Correspondent

"AI HOLDS THE PROMISE of transforming the way we practice oral healthcare, pinpoint and treat diseases and conditions, and increase equitable access to care and treatment," said William Giannobile, dean of Harvard School of Dental Medicine (HSDM), during his opening remarks at HSDM's inaugural Global Symposium on AI in Dentistry, held November 3–4, 2023, in Boston.

The tangible energy around AI's growing influence on dentistry is what prompted HSDM to gather more than 400 leading dental practitioners, researchers, students, AI scientists, ethicists, and policymakers from 30 countries around the globe. Three hundred attendees

joined the symposium in person and another 120 tuned in virtually to the event's workshops, keynotes, and thematic panel discussions.

More than 65 research projects were presented during the symposium's poster session, featuring a range of device prototypes, patient-facing smartphone apps, and other technologies under development at the intersection of AI and dentistry. A panel of judges honored several poster presenters, including second-place prize winner Dahee Chung, an HSDM student who described her research to develop an AI-based module for tooth prognosis, clinical decisions, and treatment plans based on patient medical and social history, x-ray findings, and other parameters.

Harnessing AI to address barriers in oral healthcare

For more than 40 years, researchers have been experimenting with ways to apply AI to dentistry, said Florian Hillen, founder and CEO of VideaHealth, a dental imaging startup launched from AI research conducted at Harvard and Massachusetts Institute of Technology (MIT). Within the last decade, AI capabilities have finally reached critical mass. "AI-powered tools are now helping dentists identify dental decay in patients up to five years earlier.... the tech revolution is happening," he said.

Beyond opportunities to improve outcomes for individual patients, researchers are quickly seizing AI to help solve population-level health challenges. But for AI to effectively tackle large-scale problems, academia and industry will have to dissolve the boundaries between different scientific disciplines, said MIT's Dimitris Bertsimas, one of the symposium's keynote speakers.

"Real-world problems do not have [clear-cut] labels—global warming is not just physics, or engineering, or mathematics. Medicine is not just biology, chemistry, or

Dean William Giannobile welcomed symposium participants to Harvard.





Keynote speaker Dimitris Bertsimas of MIT spoke of AI's ability to tackle large-scale problems.

computer science,” said Bertsimas, the Boeing Professor of Operations Research and associate dean of Business Analytics at MIT. “Multi-modal data will increasingly be used across science, engineering, and medicine, and [AI] will become the predominant methodology for predictions and decision making across all fields.”

At Harvard, cross-disciplinary teams are leveraging machine learning to identify patients whose social determinants of health put them more directly in the path of climate-change-related impacts and a bevy of other risks to oral health.

“Are exposures to wildfires impacting oral health? If they become more frequent, who’s most vulnerable and how do we act on this information?” asked Francesca Dominici, director of the Harvard Data Science Initiative at the T.H. Chan School of Public Health.

She and a team of researchers are using AI to analyze satellite data, atmospheric chemistry models, and other factors, revealing which communities are most affected by increasingly frequent wildfires, extreme heat waves, and destructive storms. Reduced air quality from fires and higher temperatures from a warming climate can cause mouths to be drier, making people more prone to oral disease and tooth decay. Increased psychological stress from extreme weather events can heighten the risk for teeth grinding and temporomandibular joint (TMJ) disorders.

What’s more, “natural disasters can disrupt access to dental facilities and care,” Dominici added.

“

Multi-modal data will increasingly be used across science, engineering, and medicine, and [AI] will become the predominant methodology for predictions and decision making across all fields.”

DIMITRIS BERTSIMAS

Augmenting—not replacing—human knowledge

Biomedical researchers are also deploying AI to speed up and optimize experiments, therapeutic discovery, and pre-clinical validation. “[AI is] generating, acquiring, harmonizing, and refining data, and it can generate hypotheses, as well as simulate experiments and downstream outcomes,” said Marinka Zitnik, an assistant professor of Biomedical Informatics at Harvard Medical School.

It will revolutionize the way therapies are matched individually to patients, she said, and help design entirely new drugs and therapeutics. A survey of 1,600 biomedical researchers revealed that 25 percent of them feel AI will be essential to their studies within the decade, Zitnik added.



Keynote speaker Fernanda Viégas, Gordon McKay Professor of Computer Science, Harvard John A. Paulson School of Engineering and Applied Sciences, spoke about bias in AI systems.

engagement, scheduling, and other time-consuming “back office” tasks for dental practices.

“AI [products] on the market today are not decision-makers, they are helpers,” said Philippe Salah, co-founder and CEO of DentalMonitoring.

Dental AI tools include products that allow dentists to remotely analyze patient-submitted oral photos submitted via smartphone. Imaging tools use AI to guide patients as they capture images of their teeth, and then can detect signs of declining oral health to flag for the dental care team. AI-guided 3D simulations of patients’ mouths help orthodontists accelerate the fittings and transition between braces, aligners, and retainers.

Some tools even enable patients to

Zitnik specializes in building knowledge graph AI models, which help contextualize and capture relationships within diverse sets of biomedical data. Her team has developed a knowledge graph AI model called TxGNN that describes 17,000 diseases using all available clinical and biomedical data. Once trained, it will be able to predict how well any given therapeutic might effectively treat a patient’s unique disease and even be able to recommend new uses for FDA-approved medications.

On the industry side of dental care, two primary types of AI-assistive technologies are already making waves in dentists’ offices: platforms for patients, providers, and payers that focus on using AI to interpret and analyze imaging, and AI software that automates patient

see AI-powered, lifelike simulations of how their teeth, mouth, and face will look after dental work or braces.

“One of the biggest frustrations in my practice was knowing what my patients needed, but not having the tools or ability to communicate that in a way [that inspired my patients] to prioritize their dental care,” said Edward Zuckerberg who owns a private practice and is the chief dental officer at both Keystone Bio and Viome.

Several FDA-cleared AI products on the market today use visual dashboards to show patients and their dental care teams precisely where areas of decay are detected in the mouth and to what degree—motivating patients to pursue care sooner.

When AI and high stakes collide

Although the upsides of AI are undoubtedly exciting, experts at the intersection of AI and dentistry agree that with progress must also come prudence.

“I’m excited about the abundance of AI solutions [we’re talking about] here,” said Mariya Filipova, former chief technology officer at CareQuest Innovation Partners. But, she cautioned, AI is not good at empathy, creativity, or imagination—all uniquely human factors that are critical to solving problems ethically.

And, she continued, new technologies are often put into play before guidelines and policy have caught up.

While more and more AI dental platforms are being cleared by the FDA for commercial access, that process “doesn’t regulate fairness and bias,” said Hawazin Elani, MMSc15, assistant professor of Oral Health Policy and Epidemiology at HSDM. “We have to own where our data [that’s training AI systems] is coming from.”

“

It touches upon the need for trust, confidence, transparency... and these are all really hard things to accomplish [in an AI system]. As we start to deploy new [technologies], we will find these gaps [in user experience] that we need to design for.”

FERNANDA VIÉGAS



Fernanda Viégas of Harvard and Google, a keynote speaker at the symposium, warned that healthcare providers should not have to put blind faith in AI decision making.

Viégas, a principal scientist at Google and the Gordon McKay Professor of Computer Science at Harvard's John A. Paulson School of Engineering and Applied Sciences, and her collaborators at Google have found that clinicians are more likely to adopt AI tools that don't spit out automated results without sharing details about its analytic framework or the baseline data the system was trained on.

"In high-stakes situations" like making the correct diagnosis for a patient, Viégas said, "[we found] being able to engage with [AI] systems at meaningful levels mattered a lot" to healthcare providers. "It touches upon the need for trust, confidence, transparency... and these are all really hard things to accomplish [in an AI system]. As we

start to deploy new [technologies], we will find these gaps [in user experience] that we need to design for."

Giannobile, the dean of HSDM, couldn't agree more with the need for continued alliance among researchers, practitioners, and industry as AI further transforms the field of dental medicine in coming years.

"This was our inaugural symposium on AI and dentistry, but we know things will change rapidly in this space—perhaps even within the next couple of weeks. So, stay tuned, because we'll be inviting you back to meet again," he said. ♥

ABOVE: A student presents her AI research poster to Dr. Edward Zuckerberg, chief dental officer with Keystone Bio and Viome. Student scholarships to attend the symposium were made possible by support from sponsors CareCapital, CareQuest Innovation Partners, Univar Solutions, VELMENI, Align Technology, ASUA Inc., Envista, Henry Schein One, Overjet, Proteocyte, and Santa Fe Group.

Innovation Focus

AI, Dentistry, and Ethics: Prioritizing Transparency and Equitable Access

By Kat J. McAlpine, HSDM Correspondent

ARTIFICIAL INTELLIGENCE (AI) and machine learning tools have begun changing the course of dental medicine, helping providers identify patients at heightened risk of oral disease, diagnose and treat oral health problems sooner, and virtually expand their reach to patients living in dental deserts or facing other dental access challenges. Many researchers, developers, and oral health care providers are optimistic that AI-backed tools will ultimately make dental medicine more equitable and accessible for patients.

Yet they also acknowledge issues of fairness and bias—which have broadly plagued AI and machine learning models developed for a variety of applications—need to be addressed before AI can truly benefit dentistry. (ChatGPT, for example, often gives different answers to similar queries based on the assumed or learned gender, race, and socioeconomic profile of its users.)

“The first rule is to do no harm,” said Hawazin Elani, MMSc15, assistant professor of Oral Health Policy and Epidemiology at Harvard School of Dental Medicine (HSDM), speaking to attendees at HSDM’s Global Symposium on AI in Dentistry. “If we as a profession don’t consider algorithmic bias and fairness, we will cause unintentional harm.”

The problem of algorithmic fairness in AI systems

At Harvard, Elani and collaborators are studying methods to improve algorithmic fairness and transparency of machine learning and AI for oral health applications. By reviewing existing literature, Elani has discovered hundreds of studies on the intersection of AI and dentistry, but the majority of peer-reviewed papers focus on predictive algorithms related to periodontal disease, treatment, and prevention. Only

two papers have looked at issues of fairness and disparities in oral healthcare. And she’s found evidence that some AI tools provide more accurate diagnoses for white patients than non-white.

“The logical progression of our field is that most of these prediction algorithms will be deployed and implemented [into practice],” Elani said. Her fear is that algorithms will be put into practice before enough work has been done to combat algorithmic bias.

“AI systems can have a biased medical point of view,” said Fernanda Viégas of Harvard and Google, a keynote speaker at the symposium. “And that may be okay, because doctors know other doctors can have biases, too.... Everything doesn’t have to be perfect, but it does have to be transparent.”

Viégas said many AI systems today don’t specifically disclose their origins in terms of what data they’ve been fed and which people helped label the contents of those datasets to establish algorithmic “ground truths.”

AI-assisted diagnostic systems, however, do have a potential advantage as a second or third opinion when compared to human healthcare providers. “Deep learning systems [don’t have to be] black boxes—unlike [human] brains, we can open them up. I can peek inside, do interventions, and understand what’s happening inside,” Viégas said.

The U.S. Food and Drug Administration (FDA) is still catching up with the pace of technology, and currently lacks strict guidelines for how closely AI predictions should match real-world data. “There’s not much consistency in how the ‘ground truth’ [of dental AI] is being done,” said Adam Foresman, MSc, MBA, director of quality and regulatory affairs at VideahHealth, a dental imaging startup launched from AI research conducted at Harvard and MIT.

Foresman urged dental care providers to get “under the hood” and look at what drives decision making in AI tools before implementing them into clinical practice, imploring that they seek out tools trained on methodically collected—rather than “cherry-picked”—data.

Extending oral healthcare’s reach through AI, VR, and more

The symposium also explored how AI and other new technologies can make dentistry more accessible to patients near and far, and even mobilize dental expertise to reach remote geographic areas.

Kim Harding, founder and president of Monarch Innovation Partners, said an open data and open science approach is critical to ensure transparency and fairness, but so is empowering patients to have direct access and equitable control over their own oral health data. She and her team, motivated to address racial health disparities facing Black women and other minority groups in the U.S., are developing a smartphone app to put AI-driven healthcare into patients’ hands.

“Our goal is to create a conceptual platform [to integrate] medical and dental information, empowering the patient with unbiased, actionable AI insights,” Harding said at HSDM’s symposium. She is especially interested in how AI tools could start to bridge the gap between dental and medical data, educating patients on how their oral health impacts their cardiovascular system, risk for depression, and more.

Experts at the symposium said that other populations of underserved patients, including those that live in areas without nearby dental clinics or in areas impacted by

“

Our goal is to create a conceptual platform [to integrate] medical and dental information, empowering the patient with unbiased, actionable AI insights.” KIM HARDING

natural disasters, could also benefit from new AI-backed tools, especially in combination with virtual reality (VR) or other remote-access technologies.

Within so-called dental deserts, where dental access is scarce, “how can AI serve as an oasis?” asked Cindy Roark, SM15, a dentist and chief clinical officer at Sage Dental. During a symposium workshop dedicated to the intersection of AI and VR, she described how many rural communities in Florida—where Roark practices—have struggled to recruit dental specialists like endodontists, who treat the nerves and blood vessels within teeth.

With the assistance of VR and AI imaging screening, however, Roark is hopeful that specialists based in major hubs will soon be available to consult with and diagnose patients in remote areas. “I can bring on a VR consultant to solve an amazing problem,” she said. ♥

BELOW: A panel on Bioethics and the Regulatory Landscape of AI was moderated by Marko Vujicic and featured panelists Kimberly Harding, Adam Foresman, and Adam Heroux.





Innovation Focus

Student Perspective: How the Next Generation of Dentists Will Use AI

By Cami Tussie, DMD25

I HAVE ALWAYS LOVED TO BUILD. What began as obsessively stacking building blocks as a little girl evolved into a love for physics, creation, and design. I was fascinated by the ways innovative devices could transform the fields in which they were introduced, how past data could influence future methodologies, and how our own designs could be used to improve the health of so many. As I began college, there was no doubt in my mind: I would be studying mechanical engineering. That was until my own dental work began...

I was born congenitally missing 13 permanent teeth, a non-syndromic oligodontia that meant my early 20s were

spent in the dental chair undergoing implant placement and heavy amounts of dental work. Dentistry, a field that I had only slightly considered pursuing as a career, became interwoven into my daily life—my self-esteem, ability to eat, and basic functioning now more than ever tied to my oral health. After spending so much time in the dental office and witnessing how much of a change my dentist was able to impart on my emotional and physical well-being, I began to appreciate the beauty in dental technologies: the way dental implants were transforming oral prosthetics, the 3D scanner that so effectively captured minuscule aesthetics, and the

innovative techniques that were intricately interwoven into the dental field. It didn't take long for me to realize that dentistry was my future. A field that so beautifully combined the engineering I loved with the medicine that had a direct effect on the patients I could treat.

Today, my focus is on the forefront of dental technologies—integrating artificial intelligence (AI) into dentistry. AI technology enables machines to mimic human-like thinking and decision making, training machines to recognize patterns from previous data to perform tasks and solve problems. In clinical dentistry, AI's potential includes more accurate and efficient diagnostics, creating personalized treatment plans catered to each patient's history and needs, and improved educational tools for providers in the form of summarizing academic publications or simulating clinical scenarios. Administratively, AI can be used to improve patient communication, education, and management to allow the clinician to devote more time to providing direct patient care.

Studying at Harvard allows me to be at the forefront of this integration. My research focuses on utilizing machine learning to enhance dental practice. Coming from an undergraduate background in bioengineering, I have been creating models that can be applied to the dental field. Utilizing cephalometric measurements, for example, I have worked on a project that can accurately classify a patient into vertical and horizontal maxillofacial morphology. With data of the oral microbiome and salivary biomarkers, I used AI to test the success of using salivary information for COVID-19 prediction. And for the general education of dental providers, I have published works that demystify the technology behind AI and describe how we can best harness the technology while still being cognizant of the very significant associated risks.

I was honored to present my work and learn from pioneers at HSDM's first Global Symposium on AI in



Artificial intelligence has the potential to revolutionize the way we perform dental care, improving diagnostic precision, tailoring care to each patient and their specific needs, and giving us generative capabilities to educate patients and improve their dental experience.”

CAMI TUSSIE, DMD25

Dentistry. I was given the opportunity to be in a room with the CEOs and leading researchers who are creating cutting-edge technologies focused on improving medical care for our future patients. From the speakers, I learned a tremendous amount about the new technologies being created and the areas of most need in dentistry. At the poster presentation, I understood the direction of where AI innovation was heading and saw the huge potential for increased prediction, diagnostics, and personalized care for our patients. But most importantly, in my interactions with clinicians and researchers from all over the world, I understood different perspectives, concerns, and aspirations of where increased AI integration can lead us.

Artificial intelligence has the potential to revolutionize the way we perform dental care, improving diagnostic precision, tailoring care to each patient and their specific needs, and giving us generative capabilities to educate patients and improve their dental experience. Given such substantial benefits and the rapid pace of development, its integration into dentistry is not just beneficial, but inevitable. Just as the study of material sciences, pharmaceuticals, and new mechanical devices are integral to the study of dentistry, so too should be the incorporation of AI into our dental curriculum. We must equip dental students with the necessary knowledge to understand its associated technology, risks, and benefits. HSDM's AI Symposium paved the way for such educational initiatives, setting a precedent for future conferences and platforms to convene leading minds in the field. These gatherings and the education behind them are crucial to establish best practices and ensure the safe and effective integration of AI into dentistry.

Now, more than ever, I realize that my love for building and creating has found its purpose in dentistry. The dental landscape is brimming with opportunities for innovation and technological advancement, and AI holds the key to unlocking many of these new frontiers. I envision a future where AI empowers dentists to provide improved care, facilitates educational growth, and streamlines administrative tasks so that the clinician can focus on what matters most: the patient. I envision integration of AI into the predoctoral curriculum, where future dentists can understand the associated risks and necessary foundational knowledge to best utilize the technology. I am beyond excited to be studying at Harvard as we cross this frontier, where I hope to play a role in integrating AI in ways that benefit the future of our field. ♥

Innovation Focus

Exploring How AI Can Enhance Dental Education



ARTIFICIAL INTELLIGENCE APPLICATIONS AND TOOLS

for dentistry emerging in the marketplace today have, for the most part, been designed for use in dental practices and by dentists in the field. However, AI tools designed for *learning dentistry* is an area less explored.

“Dental education uses simulation-based learning for the development of student’s psychomotor skills, yet simulative approaches are not as widespread in other areas of dental education, such as diagnostics, clinical decision making, treatment planning, and prognostication,” said Magda Feres, DMSc99, chair of Oral Medicine, Infection, and Immunity (OMII). “We see great potential for generative modeling to increase both the capabilities and the scalability of virtual patient systems used in dental education.”

Feres and a team of researchers at HSDM recently received a Harvard Medical School (HMS) Dean’s Innovation Award to explore simulation-based learning in dental education through generative AI. The \$100,000

award for the Use of Artificial Intelligence in Education, Research, and Administration aims to kickstart work that supports pioneering applications of AI that can enhance learning, improve health outcomes, increase productivity, and accelerate biomedical discoveries. The initial award will fund a year of research with the opportunity for renewal.

The research team Feres leads includes collaborators Balazs Feher, a research fellow in OMII; Chia-Yu (Jennifer) Chen, DMSc19, director of Predoctoral Periodontology; and Sang Lee, MMSc10, PD12, assistant dean for Clinical Affairs. They will work with Andreas A. Werdich, a data scientist at the HMS Center for Computational Biomedicine (CCB) with expertise in computer vision and natural language processing, and Nathan Palmer, director of Data and Analytics Platforms at CCB and a senior research scientist in Biomedical Informatics at HMS. Important groundwork for the collaboration between CCB and HSDM was established by Jane Barrow, SM87, executive director of HSDM’s Initiative to Integrate Oral Health and Medicine.

The team will use deidentified patient data from the Harvard Dental Center’s (HDC) electronic dental records to engineer and fine tune a large language model (LLM) to create synthetic patient cases with dental records, clinical parameters, and imaging data that can be used for teaching.

“Using the virtual patient framework, dental students would be able to interact with an unlimited supply of simulated patient cases—complete with rich patient histories, symptoms, and imaging—to improve their diagnostic, treatment planning, and clinical decision-making skills in an immersive learning environment,” Feher said. “They would receive immediate, tailored feedback from their interactions with the virtual patient framework. This aligns with contemporary trends in medical education, emphasizing experiential learning, the integration of novel technologies, and approaches that prioritize student engagement.”

The project was launched on March 1, and the team hopes to begin testing the preliminary framework with an initial group of students by the end of the year.

“We are very fortunate to have received this funding to explore the innovative use of AI in dental education,” said Feres. “It’s stimulating to work with and for the students, as they will be the next generation of dentists who will be working with AI in the field. We are also very excited about this fruitful collaboration with our colleagues from HMS-CCB. This is the second project we are conducting together, and we are already planning next steps potentially applying AI to enhance personalized treatment in dentistry.” ♥

ABOVE: A team of HSDM researchers and HMS data scientists will explore simulation-based learning using AI.

Education Focus

\$4.4 Million Grant Elevates Training for Future Clinician-Scientists

A COLLABORATIVE INITIATIVE, led by Harvard School of Dental Medicine (HSDM), recently received \$4.4 million in funding from the National Institute of Dental and Craniofacial Research (NIDCR) to establish a novel clinical practice-based research network to train future clinician-scientists over the next five years.

Known as the Harvard School of Dental Medicine Collaborative Clinical Practice-based REsearch Program for DENTal Schools (H-CREDDENT), the initiative will bring together a consortium of community health centers and academic partners, including the Cambridge Health Alliance, Charles River Community Health, Harvard Catalyst, Massachusetts College of Pharmacy and Health Sciences, Meharry Medical College, and the University of New England.

“H-CREDDENT is an exciting partnership that will leverage our collective expertise and commitment to fostering a culture of scientific inquiry, encouraging scientific partnerships between students and research faculty, and stimulating clinical research pursuits across HSDM and collaborating sites,” said HSDM Dean William Giannobile, who will serve as principal investigator.

Students and faculty who participate in the H-CREDDENT program will have the chance to engage in training opportunities throughout the consortium. They will participate in clinical research, take courses developed for H-CREDDENT which supplement courses in their respective programs, and be part of diverse “learning pods” where they will engage with other students, faculty mentors, and subject matter experts.

“This will have a significant and tangible impact on various aspects of dental education that can lead to the development of innovative teaching approaches,

curriculum enhancements, and the integration of new technologies into dentistry,” said Sang Park, MSc01, HSDM’s associate dean for Dental Education.

“It can support the creation of educational materials and resources for dental students that enhance the learning experience, as well as the training and professional development of dental educators, ultimately leading to the improvement of dental education programs and the quality of instruction provided to students.”

H-CREDDENT will bridge teaching, learning, and clinical research. Learning pods will allow for mentoring on multiple levels, with the hope that the pods will evolve into long-term research partnerships. H-CREDDENT will give predoctoral students and residents the opportunity to delve into research earlier in their dental training, faculty new to clinical research will engage with methodological experts, and senior researchers will receive instruction on mentoring and leadership.

“This funding will provide more opportunities for students to become

engaged in research during their clinical training program, which is so exciting and synergistic with the mission of HSDM,” said Jennifer Gibbs, associate professor and director of the Division of Endodontics in Restorative Dentistry and Biomaterials Sciences.

Participants will get hands-on experience with clinical research in a multi-site study developed by Gibbs. The study will evaluate factors that might influence post-operative pain resolution after certain dental procedures including root canals, tooth extractions, periodontal surgeries, dental implants, and other procedures.

“Ultimately, we could create an algorithm that can predict which patients will have severe pain or slowly resolving pain after dental procedures. This large multi-centered study will help to give dentists the knowledge in the future to identify those rare patients who experience disproportionate amounts of pain after dental procedures,” said Gibbs.

H-CREDDENT will train students, as well as faculty, who are highly proficient in conducting clinical studies in varied communities and across patient demographics. Additionally, the program aims to amplify training aptitudes, thereby augmenting the future clinician-scientist workforce. Initially, 40 students a year will be enrolled in the program from HSDM and collaborating institutions. Prospective students for the first H-CREDDENT cohort will be recruited through outreach efforts to dental schools nationwide. ♥



Student Focus

The Perfect Fit

Students Take the Next Step in Their Professional Journey

HARVARD SCHOOL OF DENTAL MEDICINE (HSDM) CLASS OF 2024 STUDENTS took the next step in their careers this January after learning of matches to residency programs around the country. Surrounded by their peers and mentors, the DMD students who will graduate in May celebrated their future plans.

Out of the 33 graduating students, 26 have chosen to pursue post-doctoral residency programs. Seven will go into Oral and Maxillofacial Surgery, four into General Practice Residencies, four into Orthodontics, three each into Pediatrics, Periodontology, and Endodontics, one into an Advanced Education in General Dentistry program, and one into Prosthodontics. Other students will go on to private practice and into military service.

“No matter the path they have chosen, we are immensely proud of them,” said Dean William Giannobile to those gathered in the crowded lobby of the Research Engineering Building.

Dahee Chung, DMD24, originally from South Korea, will head to New York after graduation to pursue periodontics at Columbia University College of Dental Medicine.

“My interest in periodontics stems from its holistic approach to patient care, its intrinsic connection to systemic health, and the long-term patient relationships it fosters,” said Chung. “Also, I believe that periodontics is at the forefront of incorporating new technologies and techniques.”

Chung hopes to pave the way for a new era of periodontology, using advanced technology to enhance the care of patients. She’s no stranger to new advances in artificial intelligence applications for dentistry,

Class of 2024 students celebrate their post-graduation plans during Match Day.



Thirty-three graduating students make up the Class of 2024.

having immersed herself in innovative research and earning a Scientific Poster Award during HSDM’s inaugural Global Symposium on Artificial Intelligence in Dentistry.

“My goal is to leverage these tools to provide a comprehensive approach to patient care that includes prevention strategies, early detection, precision in interventions, and personalized aftercare plans,” she said.

Sapna Nath, Class of 2024 president, will take the skills she’s learned to the University of Pennsylvania School of Dental Medicine, where she will pursue a residency in orthodontics. While at HSDM, Nath served as president and co-founder of the Harvard Dental Innovation Society, president of the Harvard Dental Chapter of the American Association of Women Dentists, and vice president of the Harvard Dental Business and Practice Management Club.

“I hope to leverage my orthodontic training with my background in business and policy to drive innovation and become a leader in improving patient care through innovations in care delivery systems,” she said.

For Joe Montesano, DMD24, Boston will continue to be home for now, as he pursues the periodontology residency program at HSDM. Already establishing his roots in the community by helping pre-dental students as senior advisor of the HSDM ASDA Pre-Dental Committee and participating in research at Boston Children’s Hospital, he looks forward to using what he learns next to become a researcher and mentor for others.

“My goal, much like many of my mentors, is to become a clinician-educator-scientist, engaging in clinical practice, treating patients, teaching dental



My goal, much like many of my mentors, is to become a clinician-educator-scientist, engaging in clinical practice, treating patients, teaching dental students or others whenever I can.”

JOE MONTESANO, DMD24

students or others whenever I can, and performing research that aims to help improve treatment outcomes or the understanding of disease progression for my patients—all of which I believe HSDM periodontology is incredibly well-poised to help me achieve,” said Montesano.

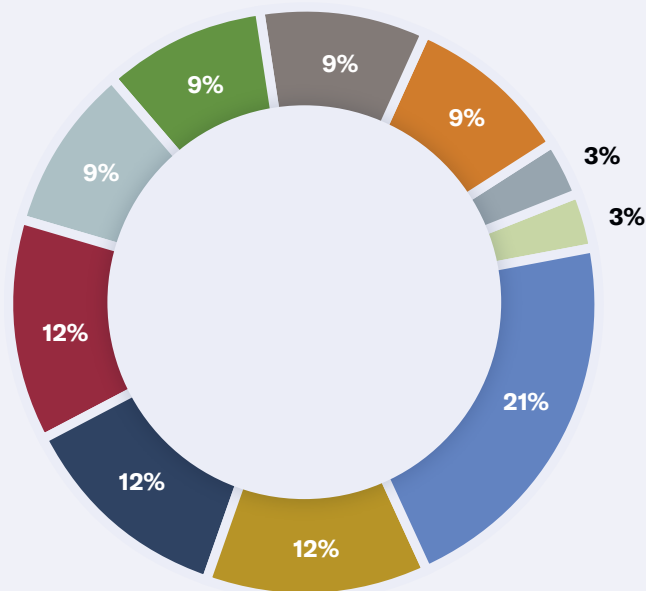
As one chapter closes and another begins, students in the Class of 2024 reflect on their last four years spent at HSDM.

“This experience has expanded my academic and professional boundaries and has been a profound personal growth journey,” said Chung. “The varied experiences at HSDM have enriched me both personally and professionally, laying a strong foundation for my future endeavors.”

The Class of 2024 will commemorate their accomplishments during Harvard’s 373rd Commencement and HSDM/Harvard Medical School’s Class Day ceremony on Thursday, May 23. ♥

CLASS OF 2024

MATCH DISTRIBUTION BY SPECIALTY PROGRAM



- 21% Oral and Maxillofacial Surgery
- 12% General Practice Residency
- 12% Health Professions Scholarship Program Scholars (Military service after graduation)
- 12% Orthodontics
- 9% Endodontics
- 9% Private Practice
- 9% Periodontology
- 9% Pediatric Dentistry
- 3% Prosthodontics
- 3% Advanced Education in General Dentistry

Alumni Focus

Former Classmates Turn Compassion into Action

How a Lifelong Friendship Began at HSDM



ABOVE: (Left to right) Drs. Greg Borah, Jose Marchena, Shahid Aziz, and Jungsuk Cho, on a Smile Bangladesh mission trip

BOTTOM RIGHT: Shahid Aziz (last row, fifth from left) and Jose Marchena (second row, third from left) standing with the Class of 1996 on the front steps of HSDM

“IT WAS FATE THAT WE MET THAT DAY,” said Shahid Aziz, DMD96, of his first encounter with Jose Marchena during a class photo. “I completed my undergrad in three years, instead of the typical four. If it wasn’t for that we never would have met on those front steps of Harvard School of Dental Medicine (HSDM). I remember Jose was standing right in front of me when that photo was taken.”

That fateful moment for Aziz and classmate Jose Marchena, DMD96, MD98, sparked a brotherhood that has lasted 33 years. As predoctoral students, the two spent almost every day together taking the same classes and attending the same labs with their peers. The Class of 1996 finished their degrees in five years, marking the last class to do so before returning to a four-year predoctoral program. The fifth year of the program was devoted to either conducting research, managing a public health project, or beginning specialty training.

“My experience at HSDM was like no other. The faculty members were faithfully dedicated to the

students, and they took a great deal of time and effort to foster a spirit of excellence among all of us,” said Marchena. “That close relationship allowed the faculty to closely monitor our progress and shape us into the type of practitioners we are today.”

Both Aziz and Marchena went on to pursue oral and maxillofacial surgery residencies after graduating from HSDM. Now, they have well-established careers in surgery and academic medicine, crediting their mentors at HSDM for opening the door into the world of academic oral surgery.

“Having role models, such as Dean Donoff, Dr. Leonard Kaban, and Dr. Guralnick, as a dental student really inspired me to go into academia instead of private practice,” said Aziz. “I had a lot of great instructors, many of whom encouraged me to train in oral and maxillofacial surgery.”

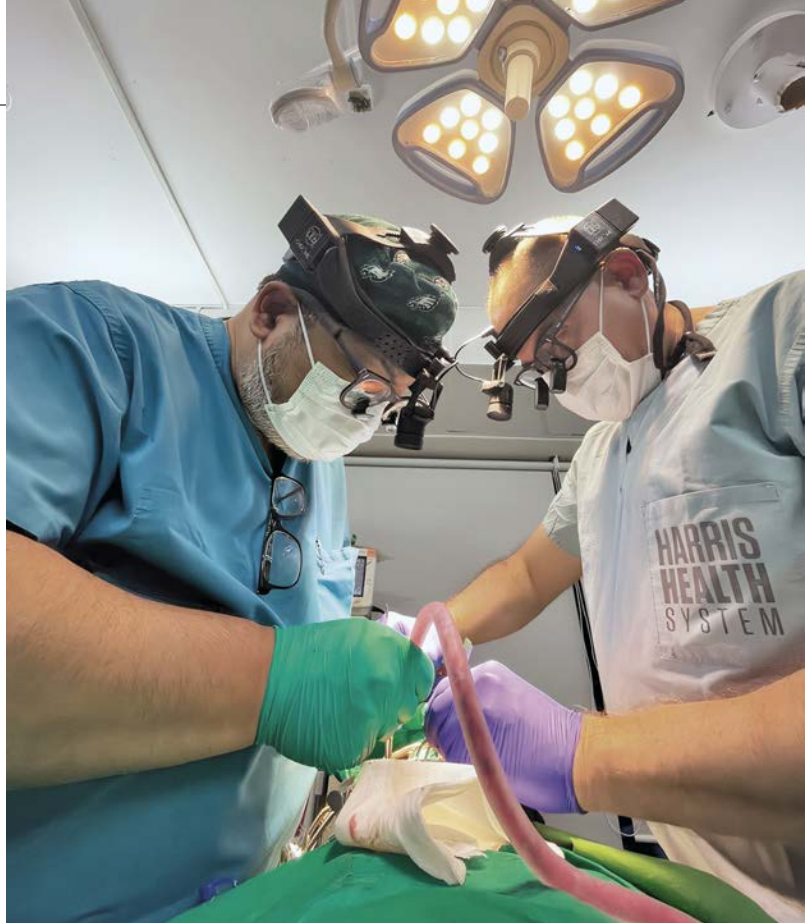
Marchena serves as an associate professor in the Bernard and Gloria Pepper Katz Department of Oral and Maxillofacial Surgery at The University of Texas Health Science Center at Houston School of Dentistry. Aziz is the division director of Oral and Maxillofacial Surgery and professor of Otolaryngology at Hackensack Meridian School of Medicine.



“

My experience with Smile Bangladesh continuously reminds me of the primary purpose of choosing a healthcare profession. It brings like-minded people together and touches the lives of doctors, residents, students, and patients alike.”

DR. JOSE MARCHENA



In 2006, Aziz started the nonprofit organization, Smile Bangladesh—an organization dedicated to providing care to children and adults in Bangladesh with facial cleft deformities. The organization provides free treatment with the help of surgeons and nurses who volunteer their time and expertise.

“My father was from Bangladesh. Before he passed away, he asked me to never forget where I came from and always try to help those less fortunate,” said Aziz. “During my residency with Dr. Steve Roser, DMD68, I had the chance to travel on surgical missions to South America, where he taught me how to run a humanitarian mission. In 2006, I had my first mission to Bangladesh and Smile Bangladesh was born!”

To date, the organization has treated nearly 2,000 children with cleft lip and palate deformities. After running Smile Bangladesh on his own for a few years, Aziz was looking for additional help to grow the organization. In 2011, he recruited Marchena to become vice president of Smile Bangladesh to expand upon the organization’s vision and effort. The same year Marchena went on his first mission trip.

“That first trip is one I’ll never forget,” Marchena said. “I realized how important patient care really is. It’s just you and the patient. I’ll never forget the look on the parents’ faces after their child has been taken care of.”

Now in its eighteenth year, they don’t plan to slow down anytime soon. Twice a year the team travels to

Bangladesh to provide free cleft lip and palate repairs to children in need. Many of the surgeons and residents who join are HSDM graduates, including Gregory Borah, DMD76, MD76, PD81, who also serves on the board of Smile Bangladesh.

“My experience with Smile Bangladesh continuously reminds me of the primary purpose of choosing a healthcare profession. It brings like-minded people together and touches the lives of doctors, residents, students, and patients alike,” said Marchena.

There is also an educational component to the organization. Aziz and Marchena have traveled all over the globe, lecturing on a wide range of oral surgery topics. Their ongoing commitment to making a difference in the lives of their patients has led the pair to receive recognition for their work with the organization. In 2017, Aziz received the American Association of Oral and Maxillofacial Surgeons (AAOMS) Humanitarian Award. Marchena was honored with the same award in 2023.

Aziz hopes that in the future, they can develop a devoted team and center in Bangladesh to provide educational training for local surgeons and alleviate the wait time for patients needing critical care.

“The whole organization is a labor of love. I never would have predicted that first interaction on the steps would lead me, lead us, to the path we are on today,” said Aziz. “I’m so thankful to HSDM for bringing us together.” ♥

ABOVE: Drs. Shahid Aziz and Jose Marchena perform a cleft lip and palate repair on a patient.

Research Focus

Harnessing Immune Checkpoint Therapy for Oral Precancer Treatment

IN ONE OF THE FIRST CLINICAL TRIALS to explore treatment of an aggressive form of oral precancer with immune checkpoint therapy (ICT), researchers from the Harvard School of Dental Medicine (HSDM), Dana-Farber Cancer Institute, and other collaborators, found promising results for treating a high-risk oral precancerous disease with ICT.

Their study, “Nivolumab for Patients With High-Risk Oral Leukoplakia,” published in *JAMA Oncology*, followed the treatment of 33 patients with high-risk oral proliferative verrucous leukoplakia

(PVL), an uncommon but aggressive oral precancerous disease characterized by its tendency to progress to invasive oral squamous cell carcinoma in at least 60% of patients.

PVL first appears as white patches usually on the gums but may occur anywhere in the mouth, spreading over time. This condition is particularly difficult to control because by the time it is finally diagnosed, the precancerous patches are very large and often involve multiple areas of the mouth. To date, there have been no therapies shown to affect the progression of the disease.

“This is the first study of its kind that treated this condition, which is highly associated with cancer development, using systemic immunotherapy therapy rather than surgery or laser,” said Sook Bin Woo, DMD89, MMSc91, PD91, co-author of the article and professor of Oral Medicine, Infection, and Immunity (OMII) at HSDM and program director of Oral and Maxillofacial Pathology based at Brigham and Women’s Hospital.

After treating leukoplakia lesions with nivolumab, a targeted therapy drug that acts as an immune checkpoint inhibitor, findings showed a positive clinical response. Twelve patients (36%) demonstrated the best overall response in the change in their clinical-pathologic composite score, with three (9%) demonstrating a greater than

80% reduction in composite score. Two patients had complete resolution of at least one target lesion.

Although few patients had complete lesion regression, this encouraging trial lays the groundwork for greater study by demonstrating potential clinical activity and acceptable safety with the use of ICT in a population with high-risk precancer.

“The data generated from this study regarding the mutations associated with PVL as well as the types of immune cells within the lesion that affected treatment response, sets the stage for further innovation regarding treatment of this and other precancerous lesions in the mouth,” Woo said.

As cohort principal investigator for the InAdvance Study 22-200, Woo is leading a biobanking effort launched to evaluate state-of-the-art early detection and precision prevention strategies for people at higher risk of developing cancer and to foster collaboration between researchers. She is building a cohort of oral leukoplakia patients, collecting patient reported data, medical record data, family history, and biospecimen samples. The InAdvance Study is part of the Centers for Early Detection and Interception of Cancer (CEDI) within the Dana Farber Cancer Institute and will be a unique resource to better understand oral precancerous lesions, progression, and treatment. ♥



Dr. Sook Bin Woo

Research Focus

Multidisciplinary Team Will Study Temporomandibular Disorders

TALKING, LAUGHING, CHEWING, AND SMILING are daily facial movements everyone makes with little to no thought; however, for individuals with temporomandibular disorders (TMDs), those simple movements may cause sharp pain or persistent discomfort.

A multidisciplinary team of researchers from the Harvard School of Dental Medicine (HSDM), Tufts University School of Dental Medicine (TUSDM), and Massachusetts General Hospital (MGH) has been awarded a grant from the National Institute of Dental and Craniofacial Research (NIDCR) to support their research on TMDs and train the next generation of clinicians and scientists.

Fernando Guastaldi, assistant professor of Oral and Maxillofacial Surgery at HSDM and director of the Skeletal Biology Research Center, Division of Oral and Maxillofacial Surgery at MGH, along with his colleague, Shruti Handa, PD20, assistant professor in Oral and Maxillofacial Surgery at HSDM and MGH, will serve as principal investigators for the grant. The pair are leading experts in the field of temporomandibular disorders.

Affecting roughly 5–10% of the U.S. population, TMDs are a group of more than 30 conditions—including arthritis, dislocation, injury, or infection—that cause pain and dysfunction in the jaw joint and muscles that control jaw movement. For many, symptoms of TMD won't last long, but for others the pain and discomfort can become chronic and made worse by clenching, chewing, swallowing, or grinding teeth over time.

“Many TMDs last only a short time and go away on their own. However, in some cases they can become chronic,” said Guastaldi, whose research has focused on bone tissue engineering for maxillofacial regeneration and TMJ regeneration in



LEFT TO RIGHT: Drs. David Keith, Shruti Handa, and Fernando Guastaldi presenting at Faculty Research Day

preclinical animal models. “Our program aims to train the next generation of clinicians and scientists who can recognize the unmet clinical needs in the field of TMD and develop bench-to bedside solutions to improve patient outcomes.”

The funding will support the planning phase of the project—Boston Collaborative for Temporomandibular Disorders (BCTMD)—to better understand patient needs and address gaps in dental school curriculums and treatment of TMDs.

“Orofacial pain is the most recently accredited dental specialty recognized by the American Dental Association, recognized only recently in 2020,” said Roxanne Bavarian, DMSc19, PD22, lecturer on Oral and Maxillofacial Surgery at HSDM, and a researcher with the BCTMD. “Because of this, there is a lot of variability throughout the field of dentistry in terms of what is taught and practiced in the diagnosis and management of temporomandibular joint and muscle disorders.”

Planning grants from the NIDCR are intended to enable institutions to develop partnerships, infrastructure, and capabilities needed to address the major goals of a future collaborative.

“The nationwide collaboration can help build tools to study and understand this patient population’s disease progression and treatment outcomes,” said Handa. “This can help us build guidelines for treating patients with TMDs and improve outcomes.”

The team hopes to also find ways to better understand disease progression in temporomandibular disorders and treatment outcomes by building a central data bank. By obtaining this data from the patient population with TMDs, they intend to develop universal outcome measures, and promote interprofessional education in the field of TMD.

“We are very excited about the NIDCR TMD IMPACT grant and the opportunity to advance the research and knowledge on the diagnosis and management of TMD,” said Bavarian. ♥

Community Focus

Addressing Immigrant Oral Health

HSDM Effort Meets Growing Needs



ABOVE: Dr. Alec Eidelman and dental student Narjes Bencheikh

FOR IMMIGRANTS WHO HAVE JUST ARRIVED IN BOSTON, a critical oral health concern may be one of the first issues that leads them to seek care within the U.S. healthcare system. Navigating their options for dental care can be extremely difficult for many refugee families with language barriers and cultural differences. Thousands of immigrant households live in shelters or hotel rooms throughout Massachusetts’ shelter system, compounding the growing need for care.

“I was struck by the number of individuals and families, as well as the depth of the barriers they’ve experienced getting to any sort of medical or dental clinic,” said Alec Eidelman, PD19, a faculty member in the Department of Oral Health Policy and Epidemiology (OHPE) at Harvard School of Dental Medicine (HSDM).

On a recent chilly day in January, families lined up at a shelter in Everett to receive oral health screenings, advice, and oral care supplies from Eidelman and third-year pre-doctoral student Narjes Bencheikh. The fledgling program is one that has recently gotten off the ground after over a year of planning and legwork by Eidelman, Bencheikh, and shelter volunteers.

Eidelman’s work with the Community Health Department of the Cambridge Health Alliance (CHA), opened his eyes to the growing need for oral health care in the recently arrived migrant communities, specifically those currently sheltered in Malden and Everett, Massachusetts. In 2022, he directed the

“
We know that they will ultimately have dental needs that need to be treated, it’s just a matter of how and when. How can we get them connected with dentists for future check-ups? What needs to be treated right away?”

DR. ALEC EIDELMAN

collection and publishing of an Oral Health Assessment that documented the oral health barriers and needs that included these communities.

“We know that they will ultimately have dental needs that need to be treated, it’s just a matter of



ABOVE: Dental student Narjes Bencheikh collects patient information to be able to connect individuals with oral health services in the community.

how and when. How can we get them connected with dentists for future check-ups? What needs to be treated right away?" he said.

As one of Eidelman's students, Bencheikh became interested in ways she could help. A child of Moroccan immigrants, she was drawn to help vulnerable individuals at a young age. She volunteered at a local dental clinic in Northern Virginia, where she witnessed firsthand the impact dental care can have on a patient in need. She received a master's in public health before applying to HSDM for dental school.

"Through my studies, I delved into the intricate interplay among social, cultural, and environmental factors and their impact on health. I uncovered racial and ethnic disparities in dental service utilization, along with persistent barriers to equitable care access, including poverty, unemployment, and transportation limitations," said Bencheikh. "Recognizing the significant potential to address these disparities and promote oral healthcare equity, I became deeply committed to the field of dental public health."

Eidelman and Bencheikh began exploring literature around refugee oral health and quickly realized that there are very few examples of how programs were built locally.

"After reaching out to some international connections, we were provided with some basic guidance and support on how we might be able to



Recognizing the significant potential to address these disparities and promote oral healthcare equity, I became deeply committed to the field of dental public health."

NARJES BENCHEIKH, DMD25

begin assembling offerings here locally," said Eidelman.

During their first oral health outreach event in Everett, Eidelman and Bencheikh spent the morning working alongside community health workers and talking to refugees about their dental needs. They checked for oral health issues they may need to address right away, and provided education on how to brush and floss correctly. They also collected contact and insurance information to connect individuals and families in need with eligible oral health services in the community.

Michelet Beauge, a shelter resident from Haiti, came to get an oral health screening and to receive basic dental supplies including floss, toothpaste, and a toothbrush. "It has always been important for me to get my teeth looked at. I'm excited to make this connection with a dentist and have this experience."

Seeing the overwhelming success of the one-day event, both Eidelman and Bencheikh are looking forward to hosting more oral health outreach days like the one in Everett in the future.

"It's all about building trust with members of the community," said Eidelman. "It's exciting to be involved in work that feels needed and rewarding." ♥

BELOW: Dr. Alec Eidelman performs an oral health screening on an individual.





ABOVE: (Left to right) UGHE medical students Marlene Muhongerwa, Betty Kabarungi, and Gislaine Mutatsineza teaching oral health principles to third graders at Kabyaza Primary School

Global Focus

Returning to Rwanda

New Program Focuses on Training Future Physicians

BUILDING ON STRONG PARTNERSHIPS in Rwanda that led to the formation of a new dental school in the country in 2013, Harvard School of Dental Medicine (HSDM) faculty have returned to Rwanda to expand oral health training, this time with a focus on future physicians. While most global medical curricula lack oral health training, the University of Global Health Equity (UGHE) saw a unique opportunity to include a full competency-based module on oral health with classroom, skills lab, and clinical experiences, and partnered with HSDM to launch it.

“It was exciting to be involved in this transformative effort to train future physicians in key oral health concepts,” said Donna Hackley, PD95, assistant professor of Oral Health Policy and Epidemiology (OHPE) who serves as department head and course director of Oral Health at UGHE.

Hackley, along with HSDM lecturers Eleana Stoufi, DMSc84, and Michael Ray,

in collaboration with UGHE faculty colleagues in Rwanda, taught a four-week oral health module to 30 medical students at the UGHE. In addition, HSDM students Nikki Aflatooni, DMD23, Kristie Kaczmarek-Stewart, DMD23, and Katy Cardenas, DMD25, contributed to content development and delivery.

The Rwandan medical students were immersed in learning dental anatomy and terminology, disease processes, disease prevention and health promotion, and the oral presentations of systemic disease.

“I am struck by the profound impact of integrating oral health into the medical curriculum. By bridging the gap between dentistry and medicine, we not only enhance our understanding of holistic patient care but also empower healthcare professionals to address oral health disparities with greater efficacy,” medical student Samson Habineza said. “Moving forward, I envision a future where

collaboration between physicians and dental professionals is seamless, resulting in improved patient outcomes and a paradigm shift towards comprehensive healthcare delivery.”

Didactic and skills lab teaching took place at the UGHE campus, while clinical rotations occurred at Butaro Teaching Hospital and Kinyababa Health Center. The medical students completed oral surgical training, learned how to manage infections, complete simple biopsies, and handle trauma cases under the supervision of the Butaro Hospital dental staff—several of whom were graduates of the first dental school in Rwanda.

“The curriculum represents the first step in providing a new avenue for oral health disease prevention and overall health promotion for the Rwandan population, and could be a promising model for boosting health and closing the health disparity for other countries, including ours,” Hackley said.

The vision for the program came from the late Paul Farmer, MD90, founder of the UGHE in Rwanda, and Dr. Abebe Bekale, Dean of UGHE, who recognized that oral health is vital to overall health. As an independent university with a mission to



The curriculum represents the first step in providing a new avenue for oral health disease prevention and overall health promotion for the Rwandan population, and could be a promising model for boosting health and closing the health disparity for other countries, including ours.” DR. DONNA HACKLEY



train global health professionals to deliver equitable, quality healthcare, integrating oral health into the university's new seven-year medical training program was a natural fit.

“The collaborative team kept UGHE’s mission of equity at the forefront in designing a contextually relevant and sustainable program,” said Hackley.

“We were able to incorporate community-based education and oral screenings that demonstrate the opportunities to advance disease prevention through a primary care approach.”

The focus on co-teaching with UGHE faculty and leveraging university resources ensured interdisciplinary training and supported capacity strengthening and program sustainability. The training included anatomy exercises in UGHE’s

state-of-the-art simulation laboratory as well as experiences in the field that incorporated community-based education and oral screenings for 250 second and third graders at a local primary school.

Medical student Heritier Mfura conducted oral health screenings for school children. “I loved most the concept of the oral cavity being the window to the body’s overall health,” he said. “This concept illuminated how oral screenings serve as a vital tool in unmasking silent adversaries like cancers and diabetes, enabling timely detection and intervention.”

The future physicians learned to recognize oral presentations of systemic disease, identify common oral pathology, manage dental trauma and infections, and provide a new avenue for disease prevention and health promotion for the population.

Betty Kabarungi, another medical student, presented oral health concepts to the school children. “I was amazed by how much oral health is related to systemic health and how by examining the oral cavity, one can detect many diseases,” she said. “It was my first time learning about this and as a future physician, I hope to always perform oral examination in the routine physical examinations of patients.”

ABOVE RIGHT: Drs. Eleana Stoufi and Donna Hackley in the mountains of northern Rwanda, en route to UGHE

LEFT: UGHE medical student Heritier Mfura providing an oral screening for a student at Kabyaza Primary School

In 2024, an expanded UGHE faculty team will include three dentists, one physician and one oral surgeon. Faculty will take advantage of UGHE’s state-of-the-art eLearning studio by creating professionally curated presentations for interactive case discussion sessions. Thirty-six students in the class will also rotate to the Rwanda Military Hospital in Kanombe for clinical experiences in the oral surgery department.

Medical student Materne Nshuti was so motivated by the oral health course that he applied for a Brick Grant to support the development of an online oral health “brick” in oral health for medical students globally.

“Exploring community oral health promotion and disease prevention activities during my course was truly enlightening. It was more than just studying pathology; it was about actively engaging with communities and making a real difference in overall health. Thanks to the course, I was able to win an award to create a learning material highlighting the interconnectedness of oral and systemic health, reinforcing oral health knowledge as essential in medical schools.”

Hackley and others from the HSDM team are encouraged by the positive feedback from the first cohort of medical students. They will return to UGHE in May to support the launch of the course for the next cohort.

“The UGHE medical students are the top performers of the region. They engaged with the content enthusiastically and mastered oral healthcare clinical competencies seldom, if ever, taught in any medical school globally,” said Hackley. “UGHE-trained physicians stand ready to close the gap of health disparity.” ♥



News & Notes

Alumni News

1 Alumnae **Brooke Blicher, DMD07**, and **Alice Li, DMD23, MMSc26**, along with HSDM Director of Predoctoral Endodontics Jarshen Lin and faculty lecturer Rebekah Lucier Pryles, published a new textbook on Clinical Endodontics. The text, written by HSDM alumni and faculty, provides a manual that covers everything dentists need to know about basic endodontics. “We’re excited to share this update on the HSDM predoctoral manual several years in the making!” said Blicher.

2 **Patricia Brown, MMSc76, MPH76**, was recently honored with a Lifetime Achievement Award by the American Academy of Dental Science (AADS), which was presented to her by faculty member Dr. Herb Birnbaum. The award recognizes her service to the AADS, the oldest dental society in the United States, and salutes her achievement in spearheading Proposal 2 on last year’s Massachusetts ballot. Additional faculty and alumni inducted into AADS include **Drs. Supattriya Chutinan, Bernard Friedland, Alejandro Lanis, Paul Levi, Luis Lopez, Hiroe Ohyama, MMSc96, DMD03**, and **Dominique Rousson**.

Natalie Inoue, MMSc22, and **Olivia Nguyen, MMSc22**, were recognized for their prosthodontic board certifications during the 2023 Annual Session of the American College of Prosthodontists (ACD).



Cameron Lee, DMD16, MD19, received the inaugural David Stanton Award for Resident Research at the American Association of Oral and Maxillofacial Surgeons (AAOMS) Annual Meeting.

Francis Manasek, DMD66, recently published a new book, *A Treatise on Moon Maps: Visual Studies on Paper*.

3 **Jose Marchena, DMD96, MD98**, received the American Association of Oral and Maxillofacial Surgeons Humanitarian award for his work with the nonprofit Smile Bangladesh. To date, Smile Bangladesh has provided free facial surgery to nearly 2,000 children and adults in Bangladesh. Marchena is pictured (center) with **Steve Roser, DMD68, MD72**, and **Shahid Aziz, DMD96**, (on his right) and Jon Helinski and **Tony Chammas, DMD96, PD96**, (on his left).



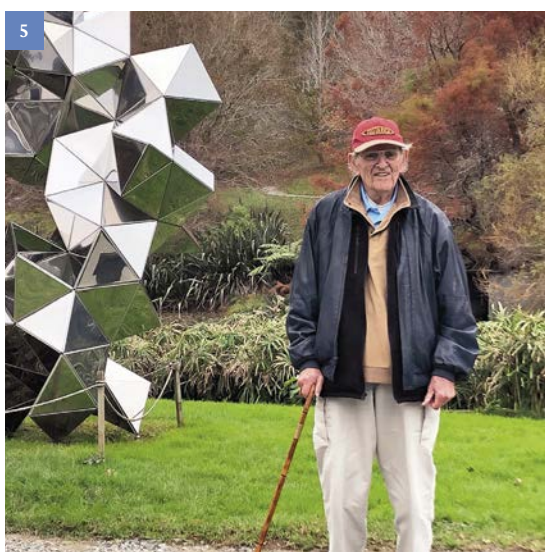
Miguel Roque, DMD16, MMSc19, opened up his second Endodontics practice in Wellesley, MA in 2023.

Mindy Greenblatt Stroom, DMD05, recently left private practice to join ClearCorrect as a clinical advisor.

4 Patrick Vaughn, DMD17, and **Jason Kim, MArch17,** met during their graduate programs at Harvard. They graduated together in 2017 and moved to Minnesota to pursue Patrick’s training in Oral and Maxillofacial surgery residency at the Mayo Clinic. After 10 years together, Patrick pulled off a surprise engagement proposing in front of their friends in January. The couple currently lives together in Seattle.



5 George H. Wyshak, BA47, DMD56, former director of the Harvard Faculty Group practice and assistant clinical professor of Prosthetic Dentistry at HSDM, is enjoying an active retirement in Colorado at the age of 97. Two heart



6 Several HSDM alumni and faculty received awards during the 2023 American Academy of Periodontology annual meeting. Congratulations to **David Wu, DMSc23; Marc Nevins, MMSc97, PD97; Maurizio Tonetti, MMSc89, PD89; Kathleen Mascardo, MMSc23; Sahar Dowlatshahi, MMSc21; Luciano Andrada, MMSc16; William Giannobile, DMSc96, PD96; Lorenzo Tavelli;** and **Shayan Barootchi.**



7 On October 18, 2023, over 60 alumni and guests gathered together at the Harvard Club of New York City for a chance to connect with one other and Dean Giannobile.

8 On January 20 and 21, HSDM traveled to Sarasota and Boca Raton, Florida, to meet with alumni and friends in the region. Dean Giannobile connected with guests over lunch and visited with many during his time there.



On January 26, HSDM hosted its annual alumni and friends reception at the Yankee Dental Congress. Over 100 alumni, students, faculty, and friends gathered together to reconnect and share memories.

surgeries have not slowed him down. He participates in senior yoga two times per week and enjoys traveling. Last spring he completed a 3-week tour of the north island of New Zealand with his daughter and granddaughter. In the words of his

granddaughter Nicole, “George continues to blaze the trail for all of us to see passion and ageless living.”

Wyshak has been a member and past president of the Boulder Luncheon Optimist Club: Friends of Youth since 2007. Both George and his wife Maria served for 10 years on the Board of Directors for CALMING KIDS: Creating a Non-Violent World, an organization that uses an evidence-based curriculum in schools to decrease violence, increase mindfulness, and balance mental health.

In memory of alumni who passed away between March 1, 2023– March 1, 2024, HSDM recognizes: **Duane Francis Carbone, DMD62; Frederick Coleman, DMD75, PD77; Robert Minkoff, DMD55; Richard F. Black, DMD83, MPH84; Edward H. Caul, DMD48, MD50; Edward M. Mahoney, DMD50, MD50; Walter S. Krawczyk, PD69; William S. Falla, DMD64; Louis S. Bortnick, DMD61; Robert C. Lincoln, DMD52; Edward Rosenthal, DMD60; Norton Fishman, DMD54.**

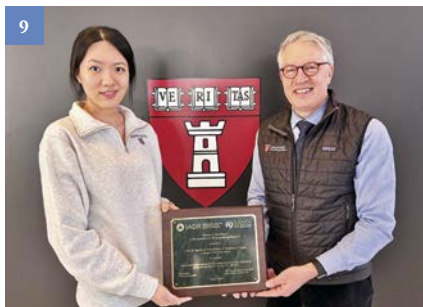
Please contact Alumni Relations with any updates to this list.

Faculty News

Elizabeth Alpert, part-time lecturer in Oral Health Policy and Epidemiology (OHPE) completed her 5th year volunteering as a dental director for the annual Seattle/King County Clinic. The free clinic provided health care for nearly 3,000 individuals this year.

Morgan Celistan, MMSc23, has joined the Endodontics department as a part-time predoctoral instructor. **Natali Nunez, MMSc20**, is expanding her role to teach weekly in AGE Endodontics.

Daniel Choi, instructor in Oral and Maxillofacial Surgery, was honored with the Faculty Educator Development Award during the American Association of Oral and Maxillofacial Surgeons (AAOMS) Annual Meeting.



9 Dean William Giannobile and a multidisciplinary team from HSDM, the University of Michigan, the University Medical Center Freiburg, and Tokyo Medical and Dental University were honored with the IADR/AADOCR William J. Gies Award in the field of biomaterials and bioengineering for their paper titled “Multicompartmental Scaffolds for Coordinated Periodontal Tissue Engineering.” The award recognizes the best paper published in the *Journal of Dental Research* during the preceding year.

Fernando Gustaldi, assistant professor of Oral and Maxillofacial Surgery at HSDM and director of the Skeletal Biology Research Center, Division of Oral and Maxillofacial Surgery at

Mass General Hospital, was elected to serve as vice president for the Boston Section of the American Association for Dental, Oral, and Craniofacial Research (AADOCR).

10 Tien Jiang, DMD14, assistant professor in Oral Health Policy and Epidemiology, has been honored with an Eleanor and Miles Shore Fellowship. The Shore program funding will provide Jiang with essential protected time and resources to concentrate on a new educational area of focus—oral health literacy and health communication.



11 Jason Lee, MMSc13, was named program director of the AGE Prosthodontic Program within the Department of Restorative Dentistry and Biomaterials Sciences (RDBS). In this role, Lee is committed to leading the program with a focus on clinical and academic excellence, diversity, and knowledge generation, while fostering collaboration across AGE programs.



12 Andrew Lerner, PD23, was appointed as program director of the General Practice Residency (GPR) Program, affiliated with HSDM at the Boston VA Healthcare System. Lerner, a part-time lecturer on Oral Health Policy and Epidemiology and a practicing general dentist, earned his DMD degree from the



Boston University Henry M. Goldman School of Dental Medicine. He completed his GPR at the Boston VA, earning an Advanced Graduate Education Certificate in General Dentistry from HSDM.

13 Vicki Rosen, professor and chair of the Department of Developmental Biology, was selected as a recipient of the 2023 Barbara J. McNeil Faculty Award for Exceptional Service to HMS/HSDM.



Andre Weissheimer, clinical director of Orthodontics, was recently honored with the 2024 Angle Society Award for the Most Difficult Case with an Excellent Finish during the Edward Angle Society meeting.

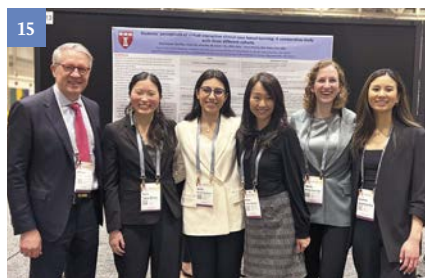
Yingzi Yang, professor of Developmental Biology, and associate dean for Research, was elected by the Council of the American Association for the Advancement of Science (AAAS), to the rank of AAAS Fellow. Each year, the Council elects members whose “efforts on behalf of the advancement of science, or its applications, are scientifically or socially distinguished.” Yang was selected for her outstanding contributions to the understanding of molecular mechanisms underlying Wnt and Hedgehog signaling in skeletal biology and diseases.

Student News

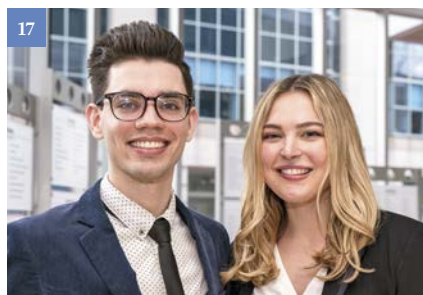
14 Samuel Akhondi, an ITI Scholar, won the clinical research competition and **Stacy Cho**, a periodontology resident, won the basic research competition at the Academy of Osseointegration Annual Meeting.



15 Students represented HSDM at the 2024 American Dental Education Association (ADEA) Annual Session & Exhibition in New Orleans, participating in engaging workshops and education sessions. Third-year DMD students **Anita Nasserri**, **Betty Ben Dor**, **Juanna Xie**, **Bart Voto**, and **Tara Zhou**, presented their research during the conference.



16 Betty Ben Dor, DMD25, was selected as a recipient of the 2024 ADEA/Haleon Preventive Dentistry Scholarship for her excellence in preventive dentistry.



17 Kelsey Hebert, DMD24, was named a recipient of the Matthew Boylan Scholarship, awarded annually during Yankee Dental Congress. **Joe Montesano, DMD24**, was recognized as a recipient of the Student Leader Award from the American College of Dentists.



18 Grace Huang, MMSc24, was selected as the winner of the 2024 Eugene L. Gottlieb Journal of Clinical Orthodontics (JCO) Student of the Year Award, presented by American Orthodontics. Huang was selected over 19 other students from schools around the United States and Canada in a two-stage, months-long competition judged for clinical excellence by members of the JCO editorial board.



19 Eren Keles, DMD27, was selected as a finalist for the Massachusetts Institute of Technology (MIT) Sloan Healthcare Innovations Prize (SHIP) for

his patented device, The Keles Keyless Expander. The expander device has a built-in activation arm that eliminates the need for a key to be used.



20 Cami Tussie, DMD25, and **Anita Nasserri, DMD25**, were named Ingenuity Award finalists of the 2024 Harvard President's Innovation Challenge for their work on an automated periodontal probe, PerioSense. The device calculates probing depth with reproducible accuracy, making dental periodontal charting more efficient.

Second-year prosthodontic resident **Kyle Radomski** earned 3rd place for his work on 3D printed zirconia at the 2023 Annual Session of the American College of Prosthodontists research poster competition.



21 Second-year pediatric residents and Dr. Isabelle Chase traveled to Washington, DC, to lobby for support for pediatric dentistry oral health and advocacy issues, including advocating for the reintroduction of the Ensuring Lasting Smiles Act (ELSA) to Congress. The group also met with congressional leaders and senators on the Hill.

HSDM News

22 Alison Hardy joined HSDM in December as the new registrar for HSDM, serving as custodian for the official academic records of all students, from matriculation through degree conferral. Hardy spent the past 20 years at Harvard T.H. Chan School of Public Health, where she worked in the registrar's office most recently as senior associate registrar.



23 Chyree Heirs-Alexandre joined the Harvard Dental Center as associate director, HDC Cambridge. She brings over 10 years of experience in medical/dental operations, most recently working at the Family Health Center of Worcester (FHCW) where she was the director of Clinical Operations. Prior to her work at FHCW, Heirs-Alexandre worked in healthcare operations with Brockton Neighborhood Health Center, Stamford Health, and NextGen Healthcare.



24 Tashima Sorhaindo joined the Harvard Dental Center as associate director of Patient Services and Clinical Affairs. Sorhaindo spent the past 12 years in healthcare operations, working at



Beth Israel Deaconess Medical Center (BIDMC) where she was the division manager in surgery. Prior to her work at BIDMC, Sorhaindo worked in clinical operations at Dana Farber Cancer Institute. In her new role with the HDC, she supervises the Patient Services and Clinical Affairs teams.



25 Carrie Sylven, director of Student Affairs, was chosen as a recipient of the 2023 Daniel D. Federman Staff Award for Exceptional Service to HMS/HSDM.

Ally Traphagen joined HSDM in February as the Faculty Affairs Coordinator. Traphagen is responsible for providing assistance with faculty searches, appointments, and promotions for the School. She was previously the faculty coordinator for Harvard faculty appointments and promotions. Traphagen graduated from Westfield State University where she studied media arts and communications.

26 Catherine Utt joined HSDM in October as the School's Chief Financial Officer, responsible for leading financial strategy, budgeting, planning, and reporting. She brings more than 13 years of executive-level finance experience from roles in nonprofit institutions.

Most recently, she served as director of Finance and Administration at Jane Doe Inc., the Massachusetts Coalition Against Sexual Assault and Domestic Violence. She received her MBA from McGill University in 2008 and completed her undergraduate degree at UMass Amherst in 2003.



27 HSDM's Bridge to Dental School Program was named a recipient of the 2023 Program Award for a Culture of Excellence in Mentoring at HSDM and Harvard Medical School for their efforts to foster innovation and excellence in mentoring. The program—organized by HSDM's Office of Diversity, Equity, Inclusion & Belonging **Assistant Dean Fadie Coleman** and student ambassadors (pictured back row, left to right) **Dahee Chung, DMD24**; **Tashauna Holmes, DMD25**; **Aryeh Iosif, DMD26**; **Aisha Oshilaja, DMD25**; (pictured front row, left to right) **Kaila Daniels, DMD25**; **Sufiya Hassan, DMD25**; **Yuying Guo, DMD24**; **Stephanie Yang, DMD24**; and **Jeeshriya Rajan, DMD26** (not pictured)—is aimed at helping pre-dental students navigate the process of applying to dental school. Student ambassadors also serve as instructors for the program.



Upcoming Events



May 23
Class of 2024
Commencement
and Class Day

Harvard Yard and Harvard
 Medical School Quad



Saturday, May 25
American Academy of
Pediatric Dentistry Meeting
Alumni Reception

Toronto, Canada



June 4–5
HSDM Initiative to Integrate
Oral Health & Medicine
Leadership Forum

Joseph B. Martin
 Conference Center
 Harvard Medical School



September 12
AAOMS Annual Meeting
HSDM Alumni Reception

Orlando, Florida

Friday, June 7–Saturday, June 8, 2024

HSDM Alumni Days

Harvard School of Dental Medicine

Schedule

Friday, June 7

- 8:15 a.m.** Continental Breakfast
- 9:15 a.m.** HSDM State of the School Address and Harvard Dental Alumni Association Annual Meeting
- 10:30 a.m.** HSDM Alumni Day Symposium, “The AI Revolution in Dentistry”

SPEAKERS

Robert A. Faiella, DMD, MMSc85, PD85, Periodontist
 Christina Bonebreak Jackson, DMD14, Head of Clinical Affairs, Lightforce Orthodontics
 Moderated by Dean William V. Giannobile, DMSc96, PD96
(This session will be eligible for 1.5 CE credits)

- 12:00 p.m.** Portrait Unveiling for R. Bruce Donoff, DMD67, MD73, HSDM Dean from 1991–2019
- 12:30 p.m.** Lunch with Dean Giannobile
- 2:00 p.m.** Tours of HSDM Campus
- 3:15 p.m.** HSDM Student/Alumni Networking Reception

Saturday, June 8

- 11:00 a.m.** Party on the Quad
 Harvard Medical School Quad



SEE A FULL LIST OF EVENTS AT:
[HSDM.HARVARD.EDU/CALENDAR](https://hsdm.harvard.edu/calendar)





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School of Dental Medicine

188 Longwood Avenue
Boston, MA 02115
617-432-2072
hsdm.harvard.edu

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HARVARD

School of Dental Medicine

ALUMNI DAYS

Friday, June 7 – Saturday, June 8

Renew bonds with your fellow alumni, get updates on the School's priorities, and hear about the future of dental medicine.

New this year, all alumni are invited to join the family-friendly Party on the Quad event on June 8.

Register and learn more

