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Columbia DENTAL MEDICINE

COLUMBIA UNIVERSITY College of Dental Medicine

Fall/Winter 2017


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CDM History: Endodontics • Global Citizenship • Graduation 2017 • "MaxFac" Clinic

Features



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Dentistry's Revolution

By Merrill Douglas

A new era in dentistry is underway with changes that include technology that remembers a patient's optimal chair position, deep data mining that could show the most effective treatments, and wireless technology to assess student learning.



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Expanding the CDM Footprint to East Africa, China, Guatemala, Puerto Rico

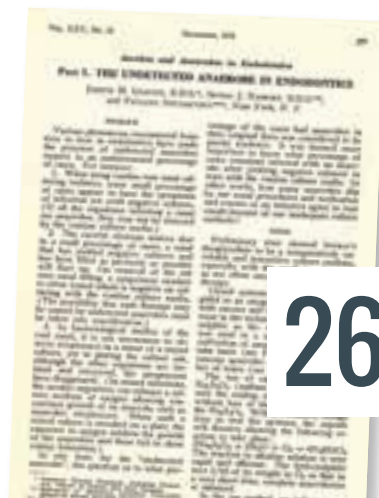
By Alexander Gelfand

Successful global engagement requires a coherent strategy that uses research, the dental curriculum, and service to emphasize sustainability, empowerment of local communities, and mutual benefit. Current global projects at CDM and others in development meet those criteria.

Columbia Dental Medicine at 100: 50 Years of Columbia Endodontics

By Martha T. Moore

A celebration of 50 years of endodontics education, research, and patient care at CDM focuses on the contributions of Joseph Leavitt and Irving Naidorf, who spent close to a combined 100 years at Columbia.



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ON THE COVER: Kevin Francois '18 and Lynda Torre, DDS, assistant professor of dental medicine at CUMC and group practice leader, pose in the new Center for Precision Dental Medicine, a key component of the school's initiatives to shape the future of dental medicine.

Photograph by Jörg Meyer

Editor

Bonita Eaton Enochs

Editorial Assistant

Avichai Assouline

Contributing Writers

Avichai Assouline
Jordan Davidson
Merrill Douglas
Alexander Gelfand
Anne Harding
Andrea Kott
Martha T. Moore
Lauren Savage

Alumni Section Editor

Melissa Welsh, Director of Alumni Relations
and Continuing Education

Proofreader

Zoila Noguerole

Design and Art Direction

Eson Chan

Columbia Dental Medicine is published for alumni, faculty, students, and other supporters of the College of Dental Medicine at Columbia University.

Christian S. Stohler, DMD, DrMedDent

Dean, College of Dental Medicine
Senior Vice President,
Columbia University Medical Center
CDM-Dean@cumc.columbia.edu

Anna Spinner

Director of Communications,
College of Dental Medicine

Address correspondence to:

Columbia Dental Medicine
630 W. 168th St., Box 20
New York, NY 10032
212-342-2964

E-mail: CDMcommunications@cumc.columbia.edu



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Letters

Historical Questions (and Answers)

I've been enjoying receiving and reading the CDM publications. However, I have a friendly note regarding a possible misprint.

I received my MS in dental hygiene in 1985. The RDH program was also still in existence; I'm not sure which year it actually closed, maybe 1986? Page 24 of the CDM publication shows a caption dating the closing as 1982.

Thank you for all of your wonderful articles and photos; it was fun to reminisce and take a stroll down memory lane.

Sherry Gateman Joyce, RDH, MS'85

Via email

Editor's Note: Ms. Joyce and others who noticed the error are correct, as we confirmed upon further research in the CUMC Archives & Special Collections. Enrollment in the dental hygiene program dropped significantly when community colleges began offering dental hygiene training at lower tuition. By 1987 enrollment had decreased to such a level that the program was no longer viable; it was phased out in 1988, with the last students graduating in 1990.

I was a graduate of Northwestern University Dental School (1963) and Columbia University Dental School Department of Orthodontics (1968). The ad on Page 9 of the Fall/Winter 2016 issue calls William Gies the "founding father of modern dentistry" but the Spring 1970 issue of *Desmos* [the publication of the Delta Sigma Delta international dental fraternity] calls G.V. Black "the father of modern dentistry." Obviously two individuals cannot hold the same titles. It would be most appreciated if you could clarify the distinctions.

Robert E. Griffin, DDS
San Rafael, Calif.

Editor's Note: Dr. Griffin, another eagle-eyed reader, is correct. Our ad should have described Dr. Gies as the father of modern dental education, as that gets to

the heart of his contributions to the field. Interestingly enough, a Google search for "father of modern dentistry" results in yet another name—Pierre Fauchard (1678-1761), a French physician, but "modern" may not apply to someone a few centuries removed from what we consider today to be modern. Dr. Griffin is a member of the Pierre Fauchard Academy, as are many CDM faculty.

Not all feedback about Columbia Dental Medicine comes in the form of letters. Beverly Rosenstein called to ask why the article on the history of the school (Fall/Winter 2016 issue) did not mention pediatric dentistry and the pioneering contributions of her late husband, Solomon N. Rosenstein. Space limitations kept us from mentioning every individual contribution in the school's 100 years, but we note here some of the contributions Dr. Rosenstein, a 1930 graduate, made to CDM and the dental profession: A faculty member for more than 65 years, Dr. Rosenstein helped establish the pediatric dentistry division, then known as pedodontics, in 1950 and served as its third director. He was a pioneer in treating patients with disabilities, authoring a textbook that set the standard for oral health care of patients with neuromuscular disease. The postdoctoral program at Columbia was among the first to train dentists to treat the disabled. Dr. Rosenstein was among the first practitioners to call attention to the special problems of children's oral health, writing a seminal paper on infant baby-bottle tooth decay, and he was an early proponent of prevention long before the introduction of fluorides and other preventive techniques. He retired as professor emeritus in 1975.

Send Letters to:

Editor, Columbia Dental Medicine
630 W. 168th St., Box 20
New York, NY 10032
CDMcommunications@cumc.columbia.edu

ThinkTank

A DISCUSSION ABOUT
THE FUTURE OF OUR SCHOOL



Carol Kunzel



Jaffer Shariff and Joseph V. Errante

PHOTOGRAPHS BY JÖRG MEYER

Collaborations, New Ideas

Our last issue included a one-on-one interview between a student and me, but galvanizing the energy and ideas that CDM needs to shape the future cannot come from one person. Our future will require collaborations among faculty, students, staff, and more, and far beyond our school, our field, our university, or even our continent, so we brought together a handful of people to discuss subjects that can spark further conversations. Jaffer Shariff, DDS, a periodontal postdoc, led our discussion. His interdisciplinary approach and research represent the type of work that will make CDM a leader in the field.

— Christian S. Stohler, DMD, DrMedDent

JAFFER SHARIFF, DDS, MPH (Postdoc in Periodontics):

I see partnerships as key to my own work, and I think collaboration is a great point to lead with. My question is open to the group: How is your own area affected by increasing collaboration?

CAROL KUNZEL, PHD (Director of Research):

Research, by its nature, invites teamwork. In my years at CDM, I have been delighted to watch research collaborations develop, especially when our students seek out faculty mentors outside the bounds of dental medicine. We saw that in this year's edition of the Jarvie Journal, which included research from

students across the school and mentors in schools across CUMC, the greater university, and even internationally.

LETTY MOSS-SALENTIJN, DDS, PHD (Professor of Dental Medicine and Vice Dean for Curriculum Innovation and Interprofessional Education):

I believe that you must cross disciplines, as you, Jaffer, and I have done. Your public health background and my work with engineers have established connections you could not make with a dental degree alone.

DEAN STOHLER: In our centennial year, I am especially aware that movement toward interdisciplinary collaborations will help us further realize the vision of our founder, William Gies, who 100 years ago called our work the oral health specialty of medicine. Our work must focus on the whole body. Our colleagues in other disciplines—from public health to medicine to data science—have so much to add to understanding oral health in the context of overall wellness. We cannot be so myopic by looking at just a handful of disease parameters. Today, one-third of the patients we treat have multiple chronic conditions.

Growing bodies of research, including work from our own researchers, show correlations between oral disease and many other condi-

tions. It's exciting to think about the tremendous number of new data points we'll gather in the new Center for Precision Dental Medicine. This opens up so many doors for new research to understand not just connections between diseases and conditions, but also procedures and outcomes.

JOSEPH V. ERRANTE, DDS (Senior Associate Dean for Clinical Affairs): Another shift is happening. Like our colleagues in medicine, we increasingly find ourselves working interprofessionally, and we will be judged and compensated for outcomes. This is a controversial point, but we will have to integrate ourselves into larger health care systems. We must train our students to be leaders who can help guide these changes rather than to be shaped by them passively.

DR. KUNZEL: As we talk about dentistry in a larger health care system, a central concept about the evolving oral health care landscape is, again, teamwork.

DR. SALENTIJN: I agree. But this involves a new skill set. Learning to communicate

well and across disciplines is not intuitive, but it is essential. When working in a multiprofessional environment, students must learn to think and speak across disciplines. This is one of the many reasons I partnered on a program that brought social work students to the clinic. [See article, Page 9.] And I am delighted that we are introducing a new humanism course, which will help with that.

DR. SHARIFF: As we work across professions, this begs the question: What are we doing to increase individual students' collaborations across Columbia to customize their educational and research experiences?

DR. KUNZEL: This is an important area that is growing in the school as we explore dual degree programs in areas across the university. I applaud Dr. Salentijn and Joseph Finkelstein, MD, PhD, the director of our Center for Bioinformatics and Data Analytics in Oral Health, for their work to design a data sciences course for DDS and postgraduate students.

DR. SALENTIJN: Overall, we are building an educational institution that allows students to take hold of their own education.

DR. SHARIFF: Thinking more broadly, what are the other steps we need to take? How can we make Columbia the best dental school in the country or even the world?

DEAN STOHLER: This question is for everybody. All of us have a stake in this.

DR. SALENTIJN: There is a wealth of ideas bubbling up around the school right now. It is an exciting time. But we need to prioritize them, structure them, and truly focus on those that need a chance to develop.

DR. ERRANTE: One challenge is packaging the many powerful pieces we offer—the biomedical training predoctoral students receive, opportunities for educational customization, and advances in technology and research that the Center for Precision Dental Medicine will offer. We have many differentiating ingredients; we need to address how they come together and how we can create our own unique value proposition.

DR. KUNZEL: I always bring this back to my own field of research. How do we best support student work? Fostering more collaborations for our students is key to our future as a field.

DEAN STOHLER: I agree that the focus must be the students. To be the best dental school, we cannot just impart the knowledge we learned decades ago. Our field is changing too rapidly for us to envision the world that you, Jaffer, and your colleagues will be practicing in, even a few years from now. We may not know the materials or technology you'll be using, but we can help you develop the tools of practice, scholarship, flexibility, and collaboration to ensure that you are on the leading edge of dental medicine.





GRADUATION 2017

Class of 2017 Embraces the Future of Dental Medicine



In May, 80 students completed the College of Dental Medicine's final rites of passage and left campus as newly minted doctors of dental surgery. This fresh crop of graduates will embark on careers at a unique moment when dentistry is rapidly evolving. With skills refined by an education closely aligned with the medical profession, which Dean Christian Stohler, DMD, DrMedDent, noted is one of the school's defining features today, these new dentists have made their mark at CDM, both within and outside of the classroom.

The Class of 2017 includes veterans, entrepreneurs, educators, community volunteers, public health researchers, and a chorus of passionate and articulate voices. Their education under the instruction of both dental and medical faculty, among others, has prepared them to be competent clinicians as well as innovative scholars who

will help shape the future of oral health care. “As you transition to the next phase of your career, I urge you to continue the tradition of service work that you started here and to become an advocate for your profession as well as your patients,” said graduation speaker Ross A. Frommer, vice president of government and community affairs for Columbia University Medical Center, whose father, Herbert Frommer, graduated from CDM in 1957.



These graduates have offered treatment to underserved populations both locally and abroad, won accolades for original research, experimented with new technologies, offered critical support as the school underwent accreditation, and even helped the administration make changes to preclinical training. They did all of this while successfully completing particularly stringent licensing exams—the Class of 2017 had the highest pass rates at Columbia—and juggling major life events that included getting married and having children.

They also endured an especially competitive application year for residencies. The entire graduating class matched in postdoctoral programs, including 26 students in general practice residencies; 18 in oral and maxillofacial surgery; 12 in advanced education in general dentistry (7 of those 12 in Uniformed Services); and 8 in pediatric dentistry.

Though their career paths vary, all of them will face new challenges and opportunities as dental medicine is transformed by new technologies and new health care delivery models. Many say they will draw on the strong bonds they made at Columbia as they embark on their next steps, helping to carve out the future of dentistry.

— Lauren Savage

// GRADUATION 2017

Postdocs and Residents Graduate

The CDM postdoctoral ceremony, held in June at the Alfred Lerner Hall on Columbia’s Morningside campus, recognized the achievements of 64 dentists who completed postdoc programs and residency training. The graduates, who came from across the United States and 12 other countries, completed from one to five years of rigorous, specialized study in dental public health, endodontics, implantology, orthodontics, periodontics, prosthodontics, advanced education in general dentistry, general practice residency, pediatric dentistry, and oral and maxillofacial surgery-MD integration.

Although graduates took unique paths to postdoctoral programs—the graduates included musicians, economists, dancers, and scientists—they arrived at CDM with the same desire to deepen their expertise in key specialties.

Their training will launch various careers, ranging from private practice to academic dentistry, including three who have joined the CDM faculty.

“As you move forward in your careers,” said graduation speaker Michael C. Alfano, DMD, PhD, “I present one, single challenge: to promulgate the connection between oral inflam-



Posing at the postdoc graduation are dentists who completed the two-year program designed to prepare them for the independent practice of endodontics. From left are Yasuhiko Kamura, Neha Khandhadiya, Claire Lee, Bita Shakiba, and Dianna Zosche Volk with Sahng G. Kim, director of the postdoctoral endodontics program, and Charles Solomon, professor of dental medicine at CUMC. Not pictured is graduate Rachel Snyder.

mation and systemic diseases.” Dr. Alfano, dean emeritus of the New York University College of Dentistry, said that in meeting this challenge, the class will become leaders of change as dentistry becomes more integrated into the total health care system.

// SCHOOL NEWS

CDM Welcomes New Administrators

New administrators who have joined CDM in recent months:

Maureen Agostini has been appointed executive director of development to lead fundraising and alumni relations programs in collaboration with the CUMC Development Office. Ms. Agostini served as senior philanthropic advisor at Dartmouth College. She previously served as principal gift officer at NewYork-Presbyterian/Columbia.

Joseph Harney, Columbia's vice president of procurement services, has joined CDM as vice dean for finance and administration. He succeeds Wil McKoy, who served in that role for two years. At Procurement Services, Mr. Harney oversaw the university's sourcing and provision of goods and services across all campuses as well as global operations in more than 30 countries.

Tina Stimpson joined CDM as chief operating officer of clinical services. She will be responsible for clinic management operations in the CDM teaching clinics and in the ColumbiaDoctors dentistry locations. For the past 15 years, she has been director of orthopedic and general medicine service lines at NewYork-Presbyterian.



DOUGLAS MCANDREW

// GLOBAL REACH

CDM, University of Puerto Rico Sign Partnership

CDM Dean Christian S. Stohler, DMD, DrMedDent, and Ana N. López Fuentes, DMD, dean of the School of Dental Medicine at the University of Puerto Rico, signed a memorandum of understanding for a new partnership to advance oral health through community-based research, education, and care. The agreement identifies shared interests, such as community needs assessment and continuous care, oral health literacy, research on biomedical services, and management technology. The partnership will pool academic and research resources to offer opportunities for students and faculty to develop joint ventures. Student opportunities available through the partnership may help address the shortage of Hispanic and Spanish-speaking dentists in the continental United States. "By working with communities in Puerto Rico and New York City, we will encourage cultural competence in future clinicians," said Dr. Lopez Fuentes. "I believe this can help strengthen care for underserved Hispanic communities throughout the nation."

// COLLEGE NEWS

CDM Reaccredited

CDM has received national reaccreditation from the American Dental Association's Commission on Dental Accreditation after a Feb. 2 meeting. The commission accredited the school's pre-doctoral program and advanced specialty programs (endodontics, orthodontics, periodontics, prosthodontics, and oral and maxillofacial surgery), giving the school the highest designation the commission grants.

The commission, which oversees 66 accredited dental schools throughout the

United States, reassesses each program every seven years, except for oral and maxillofacial surgery, which is reviewed every five years.

The evaluation began with a comprehensive self-study process and documentation led by James Fine, DMD, senior associate dean for academic affairs. Commission representatives reviewed the self-study before visiting campus in September 2016 to tour facilities and interview faculty, students, and staff. The commission completed a

thorough examination of resources, curriculum, policies, and operational standards before granting accreditation.

"Reaccreditation affirms the strength of our programs and the direction of our school," says Dean Christian S. Stohler, DMD, DrMedDent. "As we celebrate the school's centennial anniversary, this process has helped us—through the efforts of a tremendous team—assess strengths, weaknesses, and chart the course toward the future of dental medicine."

Expanding a Commitment to Diversity

A summer enrichment program that has for many years provided minorities with an inside look at dental and medical careers expanded this year to include other health care professions.

The pipeline program is now called the Summer Health Professions Education Program. CUMC is one of 13 institutions to host the expanded program that offers 80 underrepresented minority and socio-economically disadvantaged first- and second-year college students an opportunity to spend six weeks in the CUMC residential program.

Starting this year, the program, funded by the Robert Wood Johnson Foundation, exposes students to nursing, public health, occupational therapy, physical therapy, and nutrition in addition to medicine and dentistry.

“Program scholars have the opportunity to meet current students who look like them, have the same backgrounds, and often shared histories,” says Sandra Garcia, assistant dean for admissions and student affairs at CDM. “It makes them realize, often for the first time, that they are not alone and that their aspirations are not out of reach.”

Today, CDM has a critical mass of underrepresented minorities—at least 20 percent in every 80-student class—and roughly 30 percent of those students are graduates of the pipeline program. Nine of the students currently at CDM are graduates of the pipeline program at CUMC.

“We’re very proud of what we’ve accomplished, but we have a long way to go,” says Dennis Mitchell, DDS, Columbia’s vice provost for faculty diversity and inclusion and senior associate dean for diversity and inclusion at CDM. “This requires a constant commitment because that’s the only way diversity succeeds.”

Class of 2021 Receives White Coats

Columbia’s 80 new dental students were presented with crisp new white coats in an August ritual that kicked off orientation and welcomed them to CDM.

The Class of 2021 is diverse, with 20 percent underrepresented minorities. They represent 21 states plus China and South Korea. They graduated from 58 colleges with majors in wide-ranging subjects, including architecture, theater, and neurobiology.

Regardless of their previous areas of study, the students already demonstrate remarkable promise in their chosen field. The average Dental Admissions Test score for the class exceeds the 98th percentile and the ratio of students to applicants is 1:21. This driven group arrived on campus with impressive experience and focus; for example, one student had already completed his oral surgery externship before his admission to dental school. Another student, a future clinician-scientist, has been conducting her own research since the eighth grade.

This class is matriculating at an important moment in the college’s history. This fall, CDM opened a state-of-the-art clinical facility with the potential to help transform education, patient care, and research. Passive tracking technology, including de-identified video recording of patient care, will help students review and improve their skills. Data collected also will offer fodder for research both within the school and outside.

The Class of 2021 will be the first to experience a newly revamped biomedical curriculum, more strongly aligned with that of the College of Physicians & Surgeons. Grading systems and exam formats will be matched with P&S for the first time. Partnerships between the student bodies will deepen as dental students and medical students work in pairs in gross anatomy class. Additionally, CDM students will have new elective offerings in data sciences, entrepreneurship, operational tools and progress, and others.

These changes are designed to give students opportunities to lead in a rapidly changing field. But these students will seize such opportunities by drawing on the strength of their past. “At the white coat ceremony, we saw more involvement and enthusiasm from the parents than ever before,” says James Fine, DMD, senior associate dean for academic affairs. “There are many students who are part of multigenerational families in the dental and medical professions. These students are carrying on a family tradition and you could see how important this is to them.”



// CENTENNIAL NEWS

Celebrating CDM at 100 with Loyal Donors

More than 125 alumni, faculty, students, and friends attended a festive CDM centennial celebration and 1852 Society donor recognition dinner May 23. The event featured tours—with hard hats provided—of the Center for Precision Dental Medicine and dinner in the Vagelos Education Center.



William J. Gies II spoke about the important legacy of his grandfather, Dr. William J. Gies, professor of biochemistry at Columbia and a founder of the College of Dental Medicine.



Hard hat tour of the Center for Precision Dental Medicine



Louis Mandel'46, OMFS'51, associate dean and clinical professor in the Division of Oral & Maxillofacial Surgery, received the Lifetime Achievement Award from Dean Christian Stohler, right, for his important contributions to the school as a teacher, clinician, and salivary gland expert. Joining them, at left, is Sidney Eisig, chair of the Section of Hospital Dentistry.

// CENTENNIAL NEWS

A Sweet Start to a Year of Anniversaries

A cake baked to commemorate the centennial of CDM won the popular vote in a medical center Cake Off competition in January. The cake, sculptured as the CDM mobile dental van with a working traffic light, was made by the Bizcocho De Colores bakery. The cake received the most votes among those cast by faculty and staff who attended the event.

The year 2017 marks numerous historical milestones at Columbia University Medical Center. In addition to CDM's 100th anniversary, the College of Physicians & Surgeons is celebrating 250 years, the School of Nursing is celebrating 125 years, and the Mailman School of Public Health is commemorating 95 years. The Cake Off competition kicked off the year's celebrations of anniversaries by presenting locally baked cakes that were judged on taste, appearance, and how well the cakes represented each school's mission. More than 850 faculty and staff cast votes for their favorite cake, after tasting samples.

While CDM's cake won the popular vote, a panel of judges from the community selected the P&S cake, which depicted the stairs leading to the new Vagelos Education Center, as the panel's winner. The P&S cake was made by Make My Cake bakery.



CHARLES MANLEY

New Education Suite

After 35 years on the third floor of the P&S building, sharing space with other administrative units, the CDM Admissions and Student Affairs Office has moved to the west wing of the seventh floor of the Presbyterian Building, where it occupies its own suite.

The new location, which has a modernly furnished reception area and pantry, is an upgrade for an office that welcomes prospective students. The suite also offers current students a “one-stop” shop for student services.

The location’s proximity to students in the clinic is a plus. “We have already seen an increase of third- and fourth-year students dropping in between patient appointments, which would have been difficult for them to do when we were on P&S 3,” says Sandra Garcia, assistant dean for admissions and student affairs.

The suite of offices is now home to admissions and student affairs for both DDS and postdoctoral students, diversity affairs, curricular affairs, and the student government office. The suite also accommodates activities for more than 28 student clubs. During admissions season, the suite will welcome up to 400 prospective CDM students for interviews.

The location puts these offices closer to CDM leadership and administrative offices, which are located on the east wing of the same floor. “It will facilitate collaboration and sharing of timely information to improve the student experience,” says Ms. Garcia.



Named Professorships

Two CDM faculty members have been appointed to named professorships.

Roseanna Graham’05, who received a PhD degree from Teachers College, was appointed as the James Winston Benfield Associate Professor of Operative Dentistry. Dr. Graham is director of the Division of Operative Dentistry and a specialist in teaching and learning in dental and health science education. She chairs the Section on Educational Research, Development and Curriculum at the American Dental Education Association.

Sunil Wadhwa’96, who earned a PhD degree from the University of Connecticut, was named the Leuman M. Waugh, DDS, Associate Professor of Orthodontics. Dr. Wadhwa directs the Division of Orthodontics. He is the president of the Craniofacial Biology Group of the American Association of Dental Research.

Seeing Beyond the Mouth

A new program that resulted from a collaboration between CDM and Columbia’s School of Social Work was launched last year to identify and help address psychological barriers that prevent patients from getting adequate and consistent oral health care. The program, called “Patient Support Services: Bringing Smiles to Patient Care,” was initiated by deans of both schools, who saw value in designing and implementing a social work unit in the dental teaching clinic.

The social work unit, consisting of two first-year social work graduate students and a program director, aims to empower patients and promote positive oral health through patient-centered care. The social work students identify the psychosocial needs of the patients coming to the clinic by using screenings and assessments, then offer counseling services or interventions. Some interventions, such as reduction of drill noises or providing stress balls, may appear simple but can effectively ease a patient’s anxiety during dental procedures.

“There is more to patients than just their teeth,” says Jennifer Frias, a social work graduate student who interns in the program. “We help the dental students to see beyond the mouth and understand other factors impacting the patient’s ability to successfully complete the dental treatment.”

In addition to encouraging dental students to see their patients holistically, the program offers social work students multidisciplinary experience and skills learned through exposure to a medical setting, including daily interactions with patients, case management responsibilities, and patient follow-up.

“The collaboration creates a solid infrastructure for patient service delivery and a psychosocial screening tool designed to allow for effective patient-centered care,” says Letty Moss-Salentijn, DDS, PhD, professor of dental medicine and vice dean for curriculum innovation and interprofessional education at CDM. “The program is a high quality social work field placement that further enhances the relationship between both schools of Columbia University.”

Stacey Whalen, director of the program, plans to advance the collaboration of the two schools. “We are still in the infancy stage of the social work integration,” she says. “I would like us to expand more into the dental curriculum, bring our services to other clinics, and create additional field placements.”

// RECOGNITION

Teaching Awards

At the Greater New York Dental Meeting in November 2016, CDM faculty Philip Kang and David Albert were honored for dedicated teaching. Dr. Kang is assistant professor of dental medicine at CUMC, and Dr. Albert is associate professor of dental medicine at CUMC.



// RECOGNITION

Prestigious Awards to CDM Leadership

The current dean, a former dean, and a current chair have received awards recently:

Formicola Receives Gies Award

Allan J. Formicola, DDS, dean emeritus, has received a William J. Gies Award for outstanding achievement as a dental educator. Named after the Columbia biochemist and CDM co-founder, the award honors individuals and organizations that exemplify the highest standards of vision, innovation, and achievement in dental medicine. CDM and its faculty have received two previous Gies Awards, which are given by the American Dental Education Association.

As dean from 1978 to 2001, Dr. Formicola oversaw a number of critical advances of the school's educational, patient care, and service missions. Driven by the college's founding principle that oral health is inseparable from overall health, he led the charge in restructuring the predoctoral curriculum and expanding hospital residency programs. He helped shift the focus of CDM's dental service from primarily emergency care to comprehensive oral health care.

To expand the school's outreach, Dr. Formicola in 1995 helped create the Community DentCare Network, which now provides patient-centered dental services through six school-based clinics and a mobile dental van that reaches communities throughout Northern Manhattan.

Papapanou Receives Distinguished Scientist Award

Panos N. Papapanou, DDS, PhD, professor and chair of the Section of Oral, Diagnostic and Rehabilitation Sciences, has received the 2017 Distinguished Scientist Award in Basic Research in Periodontal Disease from the International Association for Dental Research.

The award, given annually to a researcher chosen by previous honorees, recognizes Dr. Papapanou's diverse and prolific contributions to areas of study including the epidemiology of peri-

odontal diseases, their pathobiology, the assessment of microbial and host-derived risk factors, and the diseases' role as health stressor in heart disease and pregnancy complications.

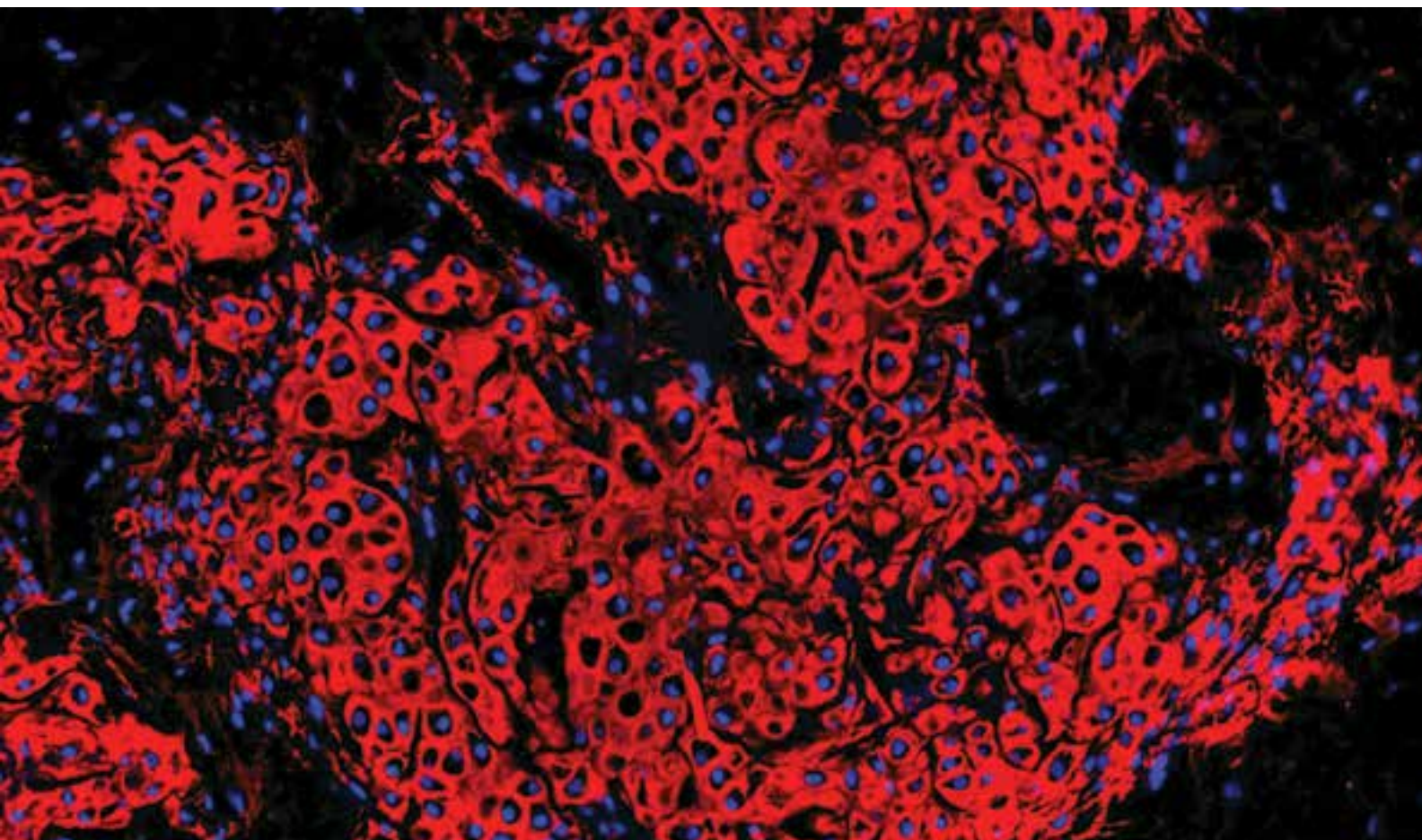
Dr. Papapanou's previous honors include the 2015 William Gies Award in Clinical Research and the 2016 Yngve Ericsson Prize for Research in Preventive Odontology, which the Swedish Patent Revenue Fund awards only once every three years.

Stohler Receives Public Service Award

Christian S. Stohler, DMD, DrMedDent, dean of CDM, has received the 2017 Jack Hein Public Service Award given by the American Association of Dental Research for his work promoting and supporting oral health research.

Each year, the Jack Hein Public Service Award honors a person who has demonstrated exemplary service to the interests and activities of oral health research. Dr. Stohler was recognized for his leadership of the Friends of the National Institute of Dental and Craniofacial Research, of which he served as president from 2011 to 2015. Dr. Stohler led the integration of the operations of the Friends of the National Institute of Dental and Craniofacial Research with those of the American Association for Dental Research. The integration has helped contribute to a single, amplified voice advocating on Capitol Hill for more research in dental and oral health and craniofacial issues.

Dr. Stohler has led CDM since 2013. In the prior decade, he was dean of the University of Maryland School of Dentistry. As a researcher, he helped lead NIH-funded work exploring the genetics, endocrinology, and neurobiology of the human response to pain. He was a member of the first scientific team to demonstrate that a patient's belief in a placebo painkiller can prompt the brain to release endorphins, the body's natural painkillers. He has authored more than 120 articles and chapters and is the recipient of numerous awards and honors, including an honorary doctorate from Nippon Dental University in Japan.



COURTESY OF TMJ BIOLOGY AND REGENERATIVE MEDICINE LAB

Stem Cells From Jawbone Repair Damaged Joints

CDM researchers have identified stem cells that can make new cartilage and repair damaged joints. The cells reside within the temporomandibular joint (TMJ), which articulates the jawbone to the skull. When the stem cells were manipulated in animals with TMJ degeneration, the cells repaired cartilage in the joint. A single cell transplanted in a mouse spontaneously generated cartilage and bone and even began to form a bone marrow niche.

“This is very exciting for the field because patients who have problems with their jaws and TMJs are very limited in terms of clinical treatments available,” says Mildred C. Embree, DMD, PhD, assistant professor of dental medicine and lead author of the study, published in an October 2016 issue of *Nature Communications*. Dr. Embree’s team, the TMJ Biology and Regenerative Medicine Lab, conducted the research with colleagues that included Jeremy

Mao, DDS, PhD, the Edwin S. Robinson Professor of Dentistry (in Orthopedic Surgery) and co-director of the Center for Craniofacial Regeneration at Columbia.

“The implications of these findings are broad,” says Dr. Mao, “including for clinical therapies. They suggest that molecular signals that govern stem cells may have therapeutic applications for cartilage and bone regeneration. Cartilage and certain bone defects are notoriously difficult to heal.”

Cartilage helps to cushion the joints and allows them to move smoothly. Fibrocartilage, the type of cartilage within the TMJ, is also found in the knee meniscus and in the discs between the vertebrae. Because fibrocartilage cannot regrow or heal, injury or disease that damages this tissue can lead to permanent disability.

Identification of
fibrocartilage stem cells
(blue) from the TMJ that
spontaneously regenerate
cartilage (red) when
transplanted in vivo.

Up to 10 million people in the United States suffer from TMJ disorders, according to the National Institutes of Health. Options for treatment currently include either surgery or palliative care, which addresses symptoms but cannot regenerate damaged tissue. Dr. Embree's findings suggest that stem cells already present in the joint could be manipulated to repair it.

Medical researchers have been working to use stem cells to regenerate cartilage. Given the challenges of transplanting donor stem cells, such as the possibility of rejection, researchers are especially interested in finding ways to use stem cells already living in the body.

In a series of experiments described in the paper, Dr. Embree, Dr. Mao, and their colleagues isolated fibrocartilage stem cells—FCSCs—from the joint and showed that the cells can form cartilage and bone, both in the laboratory and when implanted into animals.

Dr. Embree and her team also identified a molecular signal, Wnt, that depletes FCSCs and causes cartilage degeneration. Injecting a Wnt-blocking molecule called sclerostin into degenerated TMJs in animals stimulated cartilage growth and healing of the joint. She and her colleagues are now searching for other small molecules that could be used to inhibit Wnt and promote FCSC growth. The goal, says Dr. Embree, is to find a drug with minimal side effects that could be injected directly into the joint.

Ultimately, Dr. Embree and her team say, the findings could lead to strategies for repairing fibrocartilage in other joints, including the knees and vertebral discs. "Those types of cartilage have different cellular constituents, so we would have to really investigate the molecular underpinnings regarding how these cells are regulated."

"MaxFac" Clinic: Restoration of Faces, Voices, Dignity

Patients with severe maxillofacial defects caused by trauma, cancer, or other diseases and those who can no longer speak due to neuromuscular disease can turn to maxillofacial prosthodontist Candice Zemnick, DMD, to restore their faces and voices.

"We often have to step in when conventional treatments are just not possible or have failed," says Dr. Zemnick, associate professor of dental medicine (prosthodontics) at CUMC, who has directed the Maxillofacial Prosthetics Clinic at Columbia for more than a decade. The clinic was founded in 1993.

Dr. Zemnick recently treated a patient who lost most of her upper jaw and the contents of her eye socket after cancer surgery. The patient was unable to speak and eat without food going into her nasal and sinus cavities and orbit. The treatment also left her with less humidification of the nasal area, allowing the internal anatomy to become dry.

To protect the area, restore function, and allow for facial esthetics, an obturator—a prosthesis that closes off defects of the upper jaw—and an orbital prosthesis were created. "The patient was then able to communicate and eat and drink and

the rebuilding of the eye and surrounding soft tissue allowed the patient to be more comfortable in public," says Dr. Zemnick.

Another recent case involved an ALS patient whose soft palate had become too weak to create closure at the back of the throat, making his voice unintelligible. Dr. Zemnick fabricated a palatal lift prosthesis to support the soft palate and reduce the excessive throat opening. "With treatment, the ALS patient does not have to expend as much effort in creating speech and can conserve energy, which is precious with this debilitating illness," she says.

"We try to improve the quality and dignity of life, and for our patients who are terminal we try to support the quality and dignity of dying," says Dr. Zemnick. "Sometimes we are creating prostheses just so that they can say goodbye to their grandchildren without frightening them. We do not care how long the prosthesis will be used. It could be a day, a month, a year. If it offers any comfort for any period of time, it completely validates our efforts."

Dr. Zemnick collaborates with specialists in otolaryngology, oncology, radiation oncology, neurology, pediatrics, plastic surgery, speech pathology, and oral & maxil-

lofacial surgery. "Collectively we focus on providing compassionate care and empowering patients to achieve their highest level of recovery," she says. "It is amazing to be in a position to observe and learn from other disciplines."

Dr. Zemnick first heard about maxillofacial prosthetics as a dental student at

“”“

We focus on providing compassionate care and empowering patients to achieve their highest level of recovery.

– Candice Zemnick

Tufts University, where she heard "amazingly poignant and informative lectures that illustrated the humanitarian scope of this field and the creative approaches needed to address the challenges of severely compromised patients," she says.

At Columbia, former faculty member John Piro, DDS, mentored Dr. Zemnick as she specialized in prosthodontics, followed by completion of a subspecialty in maxillofacial prosthetics at Columbia and the James J. Peters VA Medical Center.

Dr. Zemnick is among fewer than 200 maxillofacial prosthodontists actively practicing in the United States. With the nation's small number of training programs—only five domestic programs plus Navy and Air Force programs—graduating a few fellows each year, the specialty will remain limited. She has seen patients who have traveled great distances from various countries, including Saudi Arabia, the Dominican Republic, countries in Africa and Central America, and patients from across the United States. “It is not uncommon for a patient to tell me that they could not find a maxillofacial prosthodontist in their state and that is why they have traveled to see me.”

Though technology has transformed many medical and dental procedures, facial prosthetics is a field that still relies on a specialized artistic approach that current technology cannot emulate. “My approach to the patient has remained largely the same using traditional methods we’ve successfully used for decades,” she says. “This may change as technology improves and becomes more versatile.”

Dr. Zemnick has received several teaching and mentorship awards during her Columbia career. In addition to encouraging her students to apply common sense and logical thinking to developing their cognitive and manual operative skills, she emphasizes the importance of empathy. “Treatment involves the ethical and expert application of clinical care, but the impression left with the patient on a personal level is often far more impactful,” she said. “Mastering empathy for the patient and the patient’s circumstance allows for a greater acceptance of treatment and trust. This fosters a far more enjoyable experience for everyone. I try to instill empathy in students through case-based vignettes that go beyond biomedical and interdisciplinary didactics and clinical procedures and merge with patient psychosocial needs.”

— Anne Harding

// RESEARCH BRIEFS

Children’s Oral Health Under Medicaid Lags Despite Equal Access to Dental Care

A CDM study reveals that the oral health of children who receive dental care through Medicaid lags behind their privately insured peers, even though the children receive the same amount of dental care.

The study by two dentists who also have MPH degrees considered parent reports of oral health and use of dental care for 79,815 children and adolescents (age 1 to 17 years) of all social stratifications. While no differences were found in dental visit frequency or preventive treatment, parents of children enrolled in Medicaid were 25 percent more likely to report that their child did not have an “excellent or very good” dental condition and were 21 percent more likely to report that their child had a dental problem within the last year than were parents of commercially insured children.

“Because we found that low-income kids are seeing dentists at similar rates as privately insured children, we believe that other issues may negatively impact low-income children’s oral health,” said Jaffer A. Shariff, DDS, a research associate in the Section of Population Oral Health, a periodontal postdoc at CDM, and co-author of the study. “Addressing this would require attention from those currently outside the dental profession, such as social workers, health educators, nutritionists, and community health workers.”

“If poor and low-income children now enjoy equal access to dental care but do not have equal oral health, then the remedy should focus more tightly on the day-to-day factors that put them at higher risk for dental problems,” says the study’s lead author, Burton L. Edelstein, DDS, chair of the Section of Population Oral Health, professor of dental medicine at CUMC, and professor of health policy and management at Columbia’s Mailman School of Public Health. “Dentists need to rethink the nature of oral health care by seeing it as part of a child’s total health care and by treating tooth decay as the chronic disease that it is.”

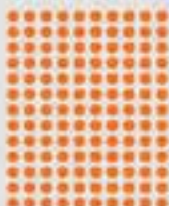
Marijuana Use Linked to Increased Gum Disease Risk

CDM research led by Jaffer A. Shariff, DDS, MPH, shows that frequent recreational use of cannabis, including marijuana, hashish, and hash oil, may be associated with elevated risk of periodontal disease.

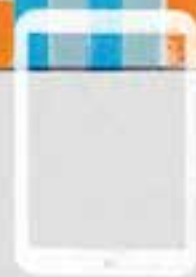
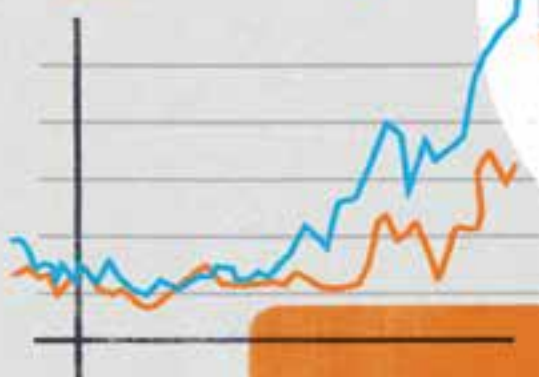
The study, reported in the *Journal of Periodontology*, aimed to examine periodontal pockets and their depth around the teeth in frequent and less frequent users of recreational cannabis. Pocket depths are critical indicators of periodontal disease, measuring the space between a tooth and surrounding gum tissue. Healthy attachment of gum tissue measures between one and three millimeters in depth. Pocket depth measurements indicative of disease can range from three to five millimeters deep for mild periodontal disease to more than seven millimeters deep in more severe cases.

Participants who identified themselves as frequent users of recreational cannabis demonstrated an average of 29.2 sites around the teeth with periodontal pocket depths of greater than or equal to four millimeters; 24.8 sites with pocket depth of greater than or equal to six millimeters; and 24.5 sites with at least eight millimeters of pocket depth. Study participants who reported less frequent cannabis use indicated a much lower average of 22.3, 19.2, and 18.9 sites, respectively.

The research was reported by Dr. Shariff, a periodontal postdoc; Kavita P. Ahluwalia, DDS, MPH, associate professor of dental medicine at CUMC; and Panos N. Papapanou, DDS, PhD, professor of dental medicine.



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DENTISTRY'S REVOLUTION

Informatics, Digital Innovations Help
Propel Dentistry into a New Era

A patient takes her seat in the dentist's office. On her last visit, six months ago, she found that when the chair tipped back too far, a problem in her back flared up, causing serious pain. She and the hygienist went through several minutes of uncomfortable trial and error to figure out the range of safe positions. Now, the patient is nervous. Will they need to go through the whole procedure again?

Luckily for her, there's no need to worry. On the patient's last visit, a processor installed in the chair recorded her seating preferences and transmitted them to her electronic health record, or EHR. Now, as the hygienist brings up the patient's file, the EHR sends her parameters back to the chair, which then automatically adjusts to stay within her comfort zone.

One day, dentists will use such personal information—captured in perhaps a thousand data points or more—to build a detailed portrait of every patient and then tailor treatment to his or her specific needs. Columbia is leading the way toward this age of personalized dentistry, using digital technology and information science to stretch the boundaries of dental research and education.

"We want to redefine dentistry in a health environment, where you no longer look at siloes of care," says Christian Stohler, DMD, DrMedDent, dean of CDM. "You look at totally integrated care, with all the diseases that co-exist, and try to customize care for that particular person."

The digital revolution is reshaping the dental profession, Dr. Stohler says. "We have been doing business in a certain way for a long time. Suddenly, new technologies allow you to do it differently."

CDM's pioneering work in information science and precision dentistry comes from two new entities at the college, the Center for Bioinformatics and Data Analytics in Oral Health and a state-of-the-art facility for preclinical and clinical instruction and patient care.

Insights From Health Records

CDM launched the Center for Bioinformatics and Data Analytics in Oral Health in 2016. Joseph Finkelstein, MD, PhD, associate professor of dental bioinformatics at CUMC, and Joseph Errante, DDS, senior associate dean for clinical affairs, co-founded the center and co-lead it.

By Merrill Douglas



Joseph Errante and Joseph Finkelstein during construction of the school's new Center for Precision Dental Medicine

JÖRG MEYER

The discipline called informatics uses data to generate knowledge that, when applied correctly, leads to wisdom, says George Hripcsak, MD, the Vivian Beaumont Allen Professor, chair of the Department of Biomedical Informatics in the medical school, and director of medical informatics services for NewYork-Presbyterian Hospital. “With electronic health records and other sources, such as imaging, we now have a ton of data. Turning that data into knowledge is the hard part.”

Ultimately, of course, the goal of informatics in health care is to improve health, says Dr. Hripcsak. “How do we learn something from the data and then apply it so that future patients get better care?”

At CDM’s Center for Bioinformatics and Data Analytics in Oral Health, researchers work in three areas: translational informatics, clinical informatics, and public health informatics.

Translational informatics uses sophisticated software tools to analyze data, drawn from many thousands of EHRs, on patients’ characteristics, treatments, and outcomes. The results indicate which treatments have been most effective for specific kinds of patients, producing knowledge that helps clinicians deliver personalized care. “The personalization may be based on a variety of factors such as genetic polymorphisms, metabolomics, microbiome, an underlying disease trajectory, and patient preferences,” says Dr. Finkelstein.

Today, a dentist who chooses a treatment for a patient has limited evidence to point to one choice over another, says Dr. Finkel-

stein. “Which is preferable—a root canal or an implant—from a long-term survival perspective? If it’s an implant, which implant would work best for this particular person? How can the optimal diameter, length, chemical composition, and implant procedure be defined, taking into account individual constellation of oral and systemic health factors as well as patient preferences?”

Dentists make these choices based on their training and their own rich experience, Dr. Finkelstein says. “But it would be great to enhance their decisions by proactively analyzing large data sets to provide evidence-based recommendations at the point of care.” Deep data mining reveals which treatments worked best in the past for patients who fit a wide range of profiles—from people taking certain kinds of anti-depressant medications, for example, to individuals with osteoporosis.

Deep data mining also could pave the way for learning health care systems—systems of care that continually assimilate new evidence showing which treatments are most effective. “We can use the data to assess how well we’re doing and try to improve and constantly correct our performance,” says Dr. Finkelstein.

One translational informatics project underway at the center involves dry socket, a condition that causes extraordinary pain after tooth extraction. “We want to predict who can potentially develop dry socket, so the treatment can be better tailored,” Dr. Finkelstein says.

Unfortunately, the current EHR does not reliably identify all dry socket cases, making it hard to locate all people who suf-

fer this condition. Using a strategy called deep phenotyping, researchers at Columbia are developing algorithms to determine the signature traits of dry socket, then identify patients who share those traits. These might, for example, be patients who return after an extraction complaining of serious pain, get prescriptions for codeine-based pain medication, and then report that the drug is not helping.

Once researchers identify the patients who have suffered dry socket, they can start to figure out what else those patients have in common and use that knowledge to develop treatments better tailored to their needs. A similar approach is attributable to other important side effects of dental care allowing proactive interventions to enhance patient safety and improve quality of dental care.

Decision Support and Patient Education

Clinical informatics uses big data to find ways to improve care delivery. For example, Dr. Finkelstein says, one could develop a decision support tool that looks at a patient's EHR and considers knowledge developed through translational informatics to make suggestions that pop up on a screen near the chair as the dentist works. "The final decision would be made by a certified provider, but the software would help in making an educated decision," he says.

Some researchers in the center are analyzing publicly available databases to learn how to reduce medical errors, says Dr. Errante. "In New York state alone, malpractice claims paid out over the past 20 years have totaled about half a billion dollars.

"Using artificial intelligence, we can develop a smarter way of teaching, so that we deal with a problem not after the fact but before it occurs." — Christian Stohler

We're looking at who is most likely to be the victim of malpractice and who is most likely to be the dentist involved, based on factors such as age, sex, and education."

Public health informatics explores how best to deliver health care and health education to specific populations. Members of certain societal groups might not fully understand the importance of oral hygiene, dental exams, and related practices, Dr. Finkelstein says. "Interactive education provided by social media, engaging apps, and portals can be instrumental in delivering empowering messages to promote oral health in those populations."

Before joining CDM, Dr. Finkelstein developed a tablet-based interactive educational program for use in the hospital by older adults with diabetes. Tailored to each patient's comprehension level and to the details in his or her health records, the program led the patient through a series of screens to explain the importance of taking medications as prescribed. "The result was

improvement in their diabetes control." One could apply the same methodology to oral health education, he says.

The Wired Operatory

Researchers at the center draw upon data from many sources, but they are particularly excited about a potential source at CDM itself, the new teaching clinic on the fifth floor of the Vanderbilt Clinic building—the Center for Precision Dental Medicine.

The 15,000-square-foot operatory, which opened this fall, provides space for both preclinical and clinical instruction. Technology installed throughout the facility records students' activities as they work on simulated and real patients, providing a wealth of data for use in instruction and research.

That data come from radio frequency identification—RFID—tags attached to instruments and supplies, to ID badges worn by students and clinic staff, and to wrist bands worn by patients. Using the same wireless technology sometimes employed to track products in warehouses and retail stores, devices installed throughout the facility capture data from the tags to create a detailed record of activities in the clinic. The system records, for instance, how a dental student uses instruments and supplies and how long a patient spends in the waiting room, in the dentist's chair, and at the financial services desk.

CDM already uses RFID tags on instruments to track their movements through the sterilization process, Dr. Errante says. "But in the new center, with RFID readers in the area of the patient's headrest, we know which instruments are used in what sequence and for how long."

Using software to analyze these data, instructors gain knowledge they can tap to advise students about technique. "If we've trained providers to do the sequence A-B-C-D and they're doing something different, we now have that information, and we can coach the provider," Dr. Errante says.

"We would like to give students advice on where they differ from colleagues who are more successful than they are," says Dr. Stohler. "This may add significant value to education, where you get an individual assessment at an extreme level of granularity."

In addition, data captured from the tags help instructors provide feedback on the amount of supplies used. That is important information for dentists going into practice, Dr. Stohler says. "If you use more supplies than anybody else, that will ultimately affect your bottom line and the cost of care that you provide to your patients."

The Center for Precision Dental Medicine has two video cameras at each chair to record interactions between provider and patient and get a close-up look at the provider's technique. Faculty monitor live video streams to supervise students' work in real time. Faculty and students can also refer to video recordings when discussing students' work.

Besides providing rich opportunities for instruction, data collected in the Center for Precision Dental Medicine also provide information for bioinformatics research. For example, researchers might compare providers who use the same instruments to

DENTAL CHAIR AS DATA COLLECTION HUB



perform the same procedure but in different sequence to see if either practice produces a better outcome, Dr. Errante says.

Researchers could tap the video streams as well. “Video is supposed to give us insight into what procedures are indicative of downstream failure,” Dr. Stohler says. By analyzing video streams, researchers might learn which events during treatment signal problems-in-the-making, so instructors who spot such events can intervene. “Using artificial intelligence, we can develop a smarter way of teaching, so that we deal with a problem not after the fact but before it occurs,” Dr. Stohler says.

In its use of electronics to study clinical procedures and tie them to patient outcomes, the Center for Precision Dental Medicine is leading the way not only for dentistry, but for health care in general, says Dr. Hripcsak. “We’re not doing this in medical clinics. This is truly innovative across all of biohealth.”

Total Health Perspective

Since the goal of the digital initiative at CDM is to develop personalized care within the context of total health, researchers inevitably will launch some projects that look beyond dentistry. One area of strong interest is the oral microbiome—the microorganisms that live in the oral cavity.

Recent research shows that the trillions of microbial cells that live in an individual’s body may heavily influence that person’s health. The oral microbiome is part of that population.

“When you look at the totality of genes that are available in these microbes, you have about a million genes that add to the metabolic

“By identifying multiple risks on the basis of genetics, the microbiome, behaviors, social factors, and other elements, we can build much more personalized and effective ways to prevent all diseases.” — Joseph Finkelstein

power of a person,” Dr. Stohler says. “You cannot exclude that power from the mere 23,000 genes that man has. The totality will determine what we are going to see as metabolized, affecting our health.” Given the vast number of genes involved, it is impossible to study the human microbiome without bioinformatics.

Oral microbiome research at CDM investigates how microbes in the oral cavity affect oral health and overall health. “Several studies suggest that periodontal disease has a significant impact

on general health,” Dr. Finkelstein says. “Periodontal disease has been independently associated with cardiovascular disease, cancer, and even cognitive decline.”

Researchers at CDM also explore how a person’s genetic makeup and medical conditions might make them susceptible, or resistant, to bacteria in the mouth. This work is important because the key to cutting health care costs lies in better preventive treatments, Dr. Finkelstein says. “By identifying multiple risks on the basis of genetics, the microbiome, behaviors, social factors, and other elements, we can build much more personalized and effective ways to prevent all diseases.”

The overlap of oral and systemic health lends itself to collaborative research. Dr. Hripsak cites a project that brought together dental and medical records to find associations between periodontitis and several other diseases, including type 1 and type 2 diabetes, hypertension, high cholesterol, hyperlipidemia, and several conditions connected with pregnancy and childbirth, plus a previously unknown connection to enlarged prostate. The paper was published in the *Journal of Clinical Periodontology* in 2013. “We had co-authors on that study from both the dental school and the medical school,” Dr.

Hripsak says. “With the new developments at CDM, I think there is an opportunity to increase those kinds of collaborations.”

Researchers at the Center for Bioinformatics and Data Analytics in Oral Health plan to work with colleagues in other parts of the university, says Dr. Stohler. “We are expecting a major collaboration with the Department of Biomedical Engineering and others to look into the ergonomics in care and related subjects.”

Sensing Stress

One opportunity for studies linking dentistry and overall health lies within the chairs that CDM has purchased for the Center for Precision Dental Medicine. Unlike most dental chairs today, these use digital technology rather than hydraulics to control their movements. Along with computers, the manufacturer equips the chairs with Internet communications to enable data to be transmitted to maintenance technicians.

CDM will take advantage of these same electronics for research purposes. “Sensors in the chair capture a variety of biometric measures,” says Dr. Errante. By collecting data on factors such as heart rate, sweat, and changes in body temperature, the chairs could become laboratories for studying how different individuals experience stress.

The dental clinic is an ideal place to collect these data, because everyone who sits in a dental chair feels stress of some kind, Dr. Stohler says. “You have noise, you have instruments in your mouth, you don’t see with your own eyes what is happening.” But some people feel stress more keenly than others, and the strength of that reaction might say something about each patient’s chances of developing certain medical conditions.

Since the chairs can receive data as well as transmit it, CDM could also use them to further personalize the care it provides. Consider that patient with back problems, who worries about how far back she can lean in the chair. “Not every physician remembers that this patient has this issue,” says Dr. Stohler. “The chair can take information about the patient’s likes or dislikes from the patient record and automatically adjust its functions, without anybody knowing about it.”

While looking for more opportunities to collaborate on bioinformatics research across health care disciplines, members of the CDM faculty hope to inject more bioinformatics—and information technology in general—into the dental school curriculum. “There’s no doubt we need to do more,” says Dr. Stohler. One possibility is a dual degree program for dental students that would grant a master’s degree in bioengineering, and more programs are in the pipeline, such as bioinformatics and, possibly, public health systems design. The school also is looking into adding a doctor of medical science degree in dental medicine.

Dr. Stohler also says he aspires for dental education at Columbia to put increasing emphasis on using data to deliver personalized care. “What you are seeing here are early steps toward building a curriculum that takes advantage of what the public would like to see—better care at a lower cost.”



George Hripsak

JÖRG MEYER

EXPANDING

THE **CDM** FOOTPRINT TO
EAST AFRICA, CHINA,
GUATEMALA, PUERTO RICO

BY ALEXANDER GELFAND

PORTRAITS BY JÖRG MEYER

Kavita Ahluwalia was only 17 years old when she left her native Kenya to pursue her education in the United States. Yet even then, she knew that she would one day return home to help her country address its oral health needs.

She is now doing precisely that—albeit on a scale her teenage self probably could not have imagined.

Now as associate professor of dental medicine at CUMC, Dr. Ahluwalia, who has DDS and MPH degrees, directs CDM's post-doctoral program in dental public health. In 2016 she conceived of, sought funding for, organized, and convened the first East African Oral Health Summit in Nairobi, co-hosted by Columbia Global Centers | Nairobi, Columbia University Medical Center, and the University of Nairobi, to launch an initiative to improve oral health care and disease prevention across the region.

Together with more than 100 stakeholders, including oral health experts, academicians, policymakers, researchers, and health care providers from East Africa and the United States, Dr. Ahluwalia helped create a blueprint for addressing pressing oral health issues

in a sustainable manner and for integrating oral health care into general health prevention and education programs. The intent is to determine how best to integrate oral health and health both programmatically and through policy initiatives.

During the summer following the March 2016 summit, Dr. Ahluwalia

traveled to a village maintained by Nyumbani, Kenya's largest provider of AIDS services and home to 1,000 children and 100 grandparents who have been displaced by Kenya's AIDS epidemic. Under her mentorship, five students from CDM, the Mailman School of Public Health, and the Columbia School of Nursing assessed the oral health needs of the community's children.

Later last year, Dr. Ahluwalia invited Regina Mutave, PhD, dean of the School of Dental Sciences at the University of Nairobi, to meet with faculty and students at CDM to discuss ways to advance oral health in Kenya at the community level.

Dr. Ahluwalia's ambitions are not limited to Kenya, however. With support from the Columbia Global Centers and an array of local partners (corporations, clinicians, researchers, NGOs, and government agencies), she plans to broaden her efforts to include Uganda and Tanzania through an ambitious to-do list: Empower communities to improve oral health, build capacity at the local and national levels, and collaborate on research projects with African colleagues, all while helping Columbia students acquire the experience, knowledge, and skills that come from engaging with cultures and contexts far removed from their own.

Dr. Ahluwalia's activities in East Africa are but one piece of a much broader effort by CDM to reimagine how it engages the world at large.

CDM has a proud history of global engagement. Faculty regularly collaborate with colleagues around the world on research projects, and nearly half of all CDM students participate in work abroad in locations ranging from Central America to South Asia.

CDM Students Join Their Generation of Global Citizens to Reach Across Borders



Recently, however, the college has turned its attention to considering how it can achieve a more lasting impact abroad—contributing to oral health over the long term by focusing on prevention, building capacity by working collaboratively with local health professionals, and addressing the real needs of specific communities.

Much of the impetus, explains CDM Dean Christian S. Stohler, DMD, DrMedDent, has come from students, who are eager to learn more about the world beyond Washington Heights and their place in it.

By the same token, the college wants to train leaders who are capable of developing oral health-related systems that can be used not only here at home, but around the globe. And exposing students to the unique challenges found in other parts of the world can drive innovation here, as well.

Accomplishing all of that, however, is no small task.

Lois Cohen, PhD, a consultant specializing in global oral health at the National Institute of Dental and Craniofacial Research who has been advising the college, says the key to successful global engagement lies in developing a coherent strategy—one that encompasses research, the curriculum, and service and emphasizes sustainability, the empowerment of local communities, and mutual benefit.

More than a year ago, Dr. Stohler asked the college's Board of Advisors to form a global engagement task force to determine how best to achieve the college's goals. He

Colleagues in China are interested in adopting elements of the college's predoctoral curriculum and pursuing postdoctoral training and research opportunities at CDM.

also invited the faculty to form a global initiatives group to review CDM's extant global efforts with an eye toward enhancing existing programs, exploring new ones, and expanding the college's globally oriented collaborations with other members of the Columbia community, including colleagues throughout the medical center.

Those efforts are ongoing. But new global opportunities for CDM students and faculty are already taking shape, with many more on the horizon. And all promise to bring lasting benefits to the communities that CDM will engage abroad—and to CDM itself.

Dr. Ahluwalia's work exemplifies many of the values and goals of CDM's evolving global agenda. Kenya has a population of 40 million, yet its Ministry of Health budgets only \$4,500 for oral health, and the country has, at most, 900 registered dentists, most of

them concentrated in urban areas. As a result, most Kenyans have limited access to dental care, a situation that has consequences that reach beyond oral health.

Poor periodontal health has long been associated with common chronic diseases, such as diabetes and cardiovascular disease. But in a country that continues to grapple with a severe AIDS epidemic, the negative consequences become even broader. By suppressing the immune system, AIDS may contribute to serious oral health problems. Those, in turn, only make it harder for already weakened individuals to take in the nourishment they require to maintain their overall health.

Common conditions like fluorosis, which is associated with stained teeth, can also make it difficult for individuals, such as the AIDS orphans at Nyumbani Village, to find marital partners, increasing their social isolation and further undermining their quality of life.

All of these factors make oral health care and education a priority. And Dr. Ahluwalia sees a way forward that would take advantage of the country's existing health care infrastructure and leverage the power of community-based organizations.

With support from the World Health Organization, countries across East Africa have developed cadres of community-based health care providers. In Kenya, community health volunteers are dispatched to rural villages to provide outreach and education, and organizations such as Nyumbani employ health workers in clinics in the slums of Nairobi. By and large, however, those workers are not trained to provide oral health services.

Dr. Ahluwalia plans to work with policymakers, academics, organized dentistry, corporate partners, and NGOs such as Nyumbani to offer oral health services more equitably by, for example, retraining community health workers to support oral health and empowering community-based organizations to do the same.

After performing a needs assessment at Nyumbani Village last summer, Dr. Ahluwalia's students realized that the community had no system in place for distributing donated toothbrushes and toothpaste or for ensuring that they would be used properly. So they developed a system and offered basic oral health education to teachers and children alike, training the kids themselves to act as role models for one another. Nyumbani residents stood to gain over the long term from the exercise, but so did the Columbia contingent.

"It was eye-opening for our students," says Dr. Ahluwalia. "They really learned how to do community-based work and how to think about integrating oral health into existing systems."

In a similar vein, Dr. Ahluwalia will be working with partners in Tanzania to integrate oral and general health



Kavita Ahluwalia

services by retraining nurses and other health providers. And she traveled to Kampala, Uganda, in March with dental public health resident Abisola Jegede to give a talk on integrating oral health and health in adolescents at a conference targeting adolescent health providers, jointly sponsored by Columbia and Makerere University, a leading African research institution. A student devoted the summer to assessing pediatricians' oral health knowledge, opinions, and practices at Makerere University.

Dr. Ahluwalia's colleague, Yiping Han, PhD, professor of microbial sciences in dental medicine and microbiology & immunology, has been to Kampala recently herself. Her goal, however, is to collaborate with Ugandan colleagues at Makerere to study the relationship between oral bacteria and serious pregnancy complications.

Dr. Han studies the oral microbiome, the assortment of microorganisms that shelter inside the mouth and not infrequently find their way to other parts of the body, sometimes to ill effect. Much of her work has focused on the bacterium *Fusobacterium nucleatum*, a building block of plaque that has long been tied to periodontal disease. Over the past decade, Dr. Han has linked this common oral bug to colorectal cancer and to adverse pregnancy outcomes such as preterm birth, stillbirth, and neonatal sepsis.

Working with pregnant mice, Dr. Han has determined that *F. nucleatum* is capable of causing potentially devastating intrauterine infections by entering the bloodstream and invading the placenta. This appears to be what happened to a woman who approached Dr.

Han several years ago. Before suffering a stillbirth at term, the woman experienced both a brief respiratory illness and a case of pregnancy-related gingivitis, a common condition that usually attracts little attention.

"It's often overlooked because it's a mild and reversible condition that typically subsides after childbirth," says Dr. Han.

Using cutting-edge genomic techniques, Dr. Han identified identical strains of *F. nucleatum* in the woman's mouth and in the lungs and stomach of her fetus. She concluded that the woman's underlying medical condition, coupled with the immune suppression that naturally occurs during pregnancy, permitted *F. nucleatum* to successfully colonize the placenta, infecting and killing the fetus.

That hypothesis accords well with Dr. Han's animal model. But corroborating it further in human subjects, and determining just how many pregnancy complications are caused by oral bacteria, will require further research. So Dr. Han is now undertaking a human study in partnership with the departments of dentistry and of obstetrics and gynecology at Makerere and its affiliated Mulago Teaching and National Referral Hospital.

Attending physicians at Mulago will enroll approximately 100 women, sampling their oral and vaginal microbiomes after they give birth. The women's pregnancy outcomes will be correlated with the catalog of microorganisms that Dr. Han and her colleagues identify through genomic analysis.

The study will refine Dr. Han's understanding of the mechanisms that enable oral bacteria like *F. nucleatum*

to wreak havoc beyond the oral cavity. And it promises to help Ugandan health care providers understand the factors that drive adverse pregnancy outcomes among local populations, enabling better prevention.

Dr. Han also has been involved with CDM's efforts to expand its footprint in China, a country that has seen rapid advances in oral health care over the past decade. CDM has signed memoranda of understanding with several leading Chinese institutions, including the School of Stomatology at Zhejiang University and the College of Stomatology at Guangxi Medical University. The agreements have much to offer both sides, opening the door to everything from student exchange visits to joint research projects.

Dr. Stohler says colleagues in China are particularly interested in adopting elements of the college's predoctoral curriculum and in pursuing postdoctoral training

and research opportunities at CDM; CDM stands to learn much from the rapid pace of innovation in China, especially with regard to the use of smartphones and wearable devices as potential tools for advancing oral health. Because Chinese hospitals and schools of stomatology serve large populations with a high degree of genetic homogeneity, the collaborations might offer opportunities to develop personalized oral health solutions tailored to the genomic characteristics of specific patients.

Dr. Han, who helped broker agreements with Hunan Maternal and Child Health Care Hospital and LBX Pharmacy, China's leading pharmacy chain, says that LBX has already agreed to fund a visit to the hospital by a group of CDM students; when hospital and pharmacy representatives visited Columbia last year, she discussed potential research opportunities. Recreating her Ugandan study in China, for example, would not only buttress Dr. Han's model of how the oral microbiome affects systemic health, but also help the Chinese understand how oral health affects pregnancy outcomes among their own population.

CDM has been building bridges to other parts of the world, as well. Last year, the college signed a wide-ranging agreement with the Faculty of Dentistry at the Universidad Francisco Marroquín—UFM—in Guatemala City.

Evanthia Lalla, DDS, professor of dental medicine and senior associate dean for faculty development who chairs the global initiatives faculty group and serves as faculty representative to the global engagement task force, explains that in addition to its own well-appointed facilities in the capital, UFM enjoys a close relationship with a community medical clinic, Centro de Salud Barbara, in a small town about a two-hour drive from the city. Medical students from UFM and from foreign institutions rotate through the clinic and visit the town's outlying communities, providing primary care to local underserved populations. But the program lacks an oral health component, and students from the UFM Faculty of Dentistry do not currently participate in rotations.

For Dr. Lalla, having CDM students and faculty visit UFM's Guatemala City campus and the Barbara clinic would represent an opportunity to do sustainable work on multiple levels. "Guatemala seems a perfect place to start a program where students can go and get these different experiences, both in the countryside and in the city," she says.

Dr. Lalla envisions CDM beginning with a needs assessment to determine the level of oral disease and the access to oral health education and care in these different settings and eventually establishing broad service, education, and research collaborations with both the Faculty of Dentistry and the Faculty of Medicine, which has shown interest in



CDM's work on the relationship between oral and general health. She is equally enthused by the prospect of CDM students returning to the United States with newfound insights into what it takes to address underserved and under-resourced populations wherever they exist.

"Bringing experiences like that to everyday interactions with patients here on the clinic floor can be very helpful," she says. "It's so important to understand where the people you are serving as a health care provider are coming from and to meet them where they are."

An agreement signed in January between the college and the School of Dental Medicine at the University of Puerto Rico, the leading educational institution for oral health professionals in Latin America and the only bilingual dental school recognized by the Commission on Dental Accreditation, promises to yield similar benefits.

UPR Dean Ana N. López Fuentes, DMD, MPH, says UPR students and faculty will gain much from CDM's innovative approaches to educating the public, training oral health care providers, and collaborating with colleagues in the biomedical sciences and engineering disciplines. "We can learn so much from Columbia," she says, adding that Columbia advised the Puerto Rican government on the establishment of the School of Dental Medicine 60 years ago.

Yet Columbia stands to learn much from UPR, which works with local dentists to care for underserved populations at a number of sites, and Dr. López Fuentes believes that by rotating into these community settings, Columbia students could learn how to structure and deliver services that are responsive to local needs. The fact that Columbia students live and work in a part of New York that has a large Latin-American population would make those experiences more relevant.

"It's a way of learning cultural details that will help them become better providers," says Dr. López Fuentes.

Opportunities for joint research projects also abound. Cleft lip and palate are far more common in Puerto Rico than in mainland United States, for example; UPR not only runs a craniofacial clinic in conjunction with the School of Medicine, but also recently inaugurated a new craniofacial genomics center to investigate the genetic basis of the disorder. UPR also plans to launch a pan-Caribbean saliva repository, which Dr. López Fuentes hopes will yield biomarkers for systemic diseases.

[As this issue went to press, UPR and its academic community were recovering from the unprecedented devastation caused by Hurricane Maria. The dental school suffered no major damage and, with the support of ADEA, the ADA, and others, is resuming classes. Columbia is in touch with Dean López Fuentes and looks forward to continuing our partnership.]



"Guatemala seems a perfect place to start a program where students can go and get these different experiences, both in the countryside and in the city." — Evanthia Lalla

The benefits of these multiple initiatives will accrue both to CDM and to its partners abroad, yielding opportunities for both sides to learn from one another; to improve the quality and depth of oral health care services, training, and disease prevention; and to drive research and innovation across a wide range of disciplines.

In the end, however, those who stand to gain the most are the very people Dr. Stohler credits with having spurred the college's renewed commitment to a deeper, more lasting, and more productive form of global engagement in the first place: CDM students themselves. "Twenty-first century students want to know about the world, and they want to understand how they fit into a global context," says Dr. Stohler. In that sense, he adds, "global engagement is just one of many things we are doing to create a curriculum that allows students to follow their passion and to find their niche in life."

50 Years of Columbia Endodontics

By Martha T. Moore

Even though CDM celebrated the 50th anniversary of the Division of Endodontics this year, endodontic study at the dental school began long before 1967.

One alternative birthday could be 1950, when Joseph Leavitt, DDS, who became the endodontics division's first chair, was hired in what was then the Division of Operative Dentistry to teach "endodontia." Another date of note is 1955, when Dr. Leavitt and his colleagues, Irving Naidorf, DDS, and bacteriologist Pauline Shugaevsky, published a paper on "The

Undetected Anaerobe in Endodontics" in the New York Journal of Dentistry.

Dr. Leavitt and Dr. Naidorf both practiced and promoted endodontics at Columbia as the field of root canal therapy became more prominent at Columbia in the 1950s. The two men, who had been pre-World War II classmates at Columbia's dental school and were lifelong friends,

together contributed to the growth of endodontics as it evolved from the catchall of "operative dentistry" into a specialty.

"It is very clear that Joe Leavitt and Irv Naidorf were very prominent at that time in contributing to the field's establishment as a recognized specialty," says Allan J. Formicola, DDS, longtime dean of the dental school and author of a history of CDM's first century. "They were early on in setting up teaching programs for predoctoral students in endodontics as well as having a postdoctoral graduate program."

Both were early diplomates of the American Board of Endodontics and Dr. Naidorf served as editor of the Journal of Endodontics. "For the outside world, he was the face of endodontics," says Gunnar Hasselgren, DDS, PhD, interim director of the Division of Endodontics and chair of the Section of Cariology and Restorative Sciences.

The work of Drs. Leavitt and Naidorf—along with the birth of endodontics at Columbia—is the subject of a documentary made by Dr. Leavitt's son, Marc Crawford Leavitt, to celebrate the endodontics division's anniversary.

Endodontics is a specialty with a mission: to save natural teeth. In 1953, Dr. Leavitt told senior students in the undergraduate dental program that if they did not learn the techniques of endodontics, they would be afraid to try it in practice and would continue to extract infected teeth that could



Joseph Leavitt



Irving Naidorf

be saved. In short, they would be guilty of "moral malpractice."

The endodontics specialty offers a special appeal to many because of its ability to offer immediate relief to patients in great pain, says Charles Solomon, DDS, professor of dental medicine at CUMC and former director of the Division of Endodontics. "It's instant gratification. One visit can eliminate the pain and suffering."

Even though Columbia had seven diplomates of the American Board of Endodontics on its faculty in 1966, the formal endodontics division was not created until well after the American Dental Association recognized the specialty in 1963. During 1966-67, the dental school inaugurated a two-year postgraduate program in endodontics directed by Dr. Leavitt. Initially, training was offered to four students on a half-time basis over four years with a curriculum that combined new courses specifically for endodontics postdocs with existing courses in other disciplines. The full-time two-year program began in 1971.

Although Drs. Leavitt and Naidorf continued to conduct research, the Columbia program emphasized clinical technique. "First, seat the patient," Dr. Leavitt used to say. "He wanted them to know that, first and foremost, there is a patient attached to the tooth," Dr. Hasselgren says in the anniversary video.

Students spent time not only in the school clinic, but also working in endodontic practices "to gain more hands-on experience," recalls Jack Levi, DDS, a 1974 graduate and now a member of the division's volunteer faculty.

But there was an added element to the program that had little to do with academics or technique, says Robert Ambinder, DDS, who graduated from the endodontics postdoctoral program in 1971 and became a faculty member. "The beauty of the Columbia program was in the attitude of the faculty to the students," he says in the video. "We treated them as doctors and not as kids."

Priscilla Konecky, DDS, was one of the first two women in the endodontics

postgraduate program. She graduated in 1981 and went to work with Dr. Naidorf. "I felt very lucky because I was being taught by some of the pioneers in the specialty," she says. "They were excellent researchers and clinicians, but they were also some of the nicest people you could ever learn from."

Drs. Leavitt and Naidorf also were instrumental in fundraising at the dental school. Dr. Naidorf created the 1852 Society, a group for major donors. Dr. Leavitt led the dental school's effort in the first joint campaign of the Columbia University Medical Center's four schools, which, in the 1970s and 1980s, along with federal and state

Dr. Leavitt and his colleagues, Irving Naidorf, DDS, and bacteriologist Pauline Shugaevsky, published an important paper in the New York Journal of Dentistry in 1955

grants, resulted in raising an additional \$6.6 million to help rebuild the school's facilities and its endowment.

By the middle of the 1980s, a second generation of leadership succeeded Dr. Leavitt, who stepped down as head of endodontics in 1980, and Dr. Naidorf, who died in 1984. Since then, the division has been led by Syngcuk Kim (now at the University of Pennsylvania), Dr. Hasselgren, George Huang (now at the University of

Aerobes and Anaerobes in Endodontics

Part I. THE UNDETECTED ANAEROBE IN ENDODONTICS

JOSEPH M. LEAVITT, D.D.S.*, IRVING J. NAIDORF, D.D.S.**,
and PAULINE SHUGAEVSKY***, New York, N. Y.

PROBLEM

Various phenomena encountered from time to time in endodontics have made the presence of undetected anaerobes suspect in an undetermined percentage of cases. For instance:

1. When using routine root canal culturing technics, some small percentage of cases appear to have the symptoms of infection yet yield negative cultures. (If all the organisms infecting a canal are anaerobes, they may not be detected by the routine culture media.)

2. The careful clinician notices that in a small percentage of cases, a canal that has yielded negative cultures and has been filled as perfectly as possible will flare up. On removal of the old root canal filling, a sanguinous exudate is often found which is negative on culturing with the routine culture media. (The possibility that such flareups may be caused by undetected anaerobes must be taken into consideration.)

3. In bacteriological studies of the root canal, it is not uncommon to observe streptococci in a smear of a mixed culture, yet in plating the culture out, although the other organisms are isolated and recovered, the streptococci have disappeared. (In mixed infections, the aerobic organisms can exhaust a culture medium of oxygen allowing concomitant growth of an anaerobe such as anaerobic streptococci. When such a mixed culture is streaked on a plate, the exposure to oxygen inhibits the growth of the anaerobes and these fail to show colony formation.)

In our tests for the "undetected anaerobe", the question as to what per-

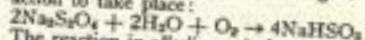
centage of the cases had anaerobes in their original flora was considered to be purely academic. It was deemed more important to know what percentage of cases remained infected with an anaerobe after yielding negative cultures to tests with the routine culture media. In other words, how many anaerobes slip by our usual procedures and medication and remain as an infective agent in root canals because of our inadequate culture methods?

TESTS

Preliminary tests showed brewer's thioglycollate to be a comparatively unreliable and insensitive culture medium, especially with the small inoculae such as are often encountered in root canal therapy.

Closed systems using alkaline pyrogallol as an oxygen absorber were tried with success and this led to an improvement in the technic using sodium hydrosulphite as the reducing agent. This was used in a system which allowed cultivation of anaerobes on a single test tube basis (see Fig. I), or the simultaneous anaerobic cultivation of a number of tubes (see Fig. II).

The use of capsules enclosing the $\text{Na}_2\text{S}_2\text{O}_4$ (sodium hydrosulphite) permits the sealing of the closed systems without loss of the reducing power of the $\text{Na}_2\text{S}_2\text{O}_4$. Within 5 minutes, enough time to seal the systems, the capsule will dissolve allowing the following reaction to take place:



The reaction in alkaline solution is very rapid and efficient. The hydrosulphite uses 1/10 of its weight in O_2 so that in a very short time, complete anaerobiosis is obtained.

In the jar method, an indicator can be used to detect the presence of a possible leak in the system. A small gela-

* Assistant Clinical Professor, Columbia University, School of Dental and Oral Surgery.
** Instructor in Endodontics, Columbia University School of Dental and Oral Surgery.
*** Bacteriologist, Endodontic Section, Columbia University School of Dental and Oral Surgery.

A Son Honors Legacy of Two CDM Pioneers

As the son of endodontist Joseph Leavitt, DDS, Marc Crawford Leavitt grew up with agar-filled test tubes in the bathroom cabinet and Columbia dental faculty as frequent guests at the dinner table and house parties.

Today, Marc Leavitt sits on CDM's Board of Advisors and has turned his lifelong involvement with the dental school into a documentary about his father, a 1940 CDM graduate, and Irving Naidorf, two men who were key in creating the endodontics division half a century ago at what was called the School of Dental and Oral Surgery.

"I think that my father was the Johnny Appleseed of root canal. He was the proselytizer," Mr. Leavitt says. He and Dr. Naidorf "helped develop the strategy and the techniques for making it safe and functional and reliable. But my father is the one who lectured all over and basically explained to dentists, 'You can do this root canal therapy stuff.' And then he'd have slide presentations and explain how to do it."

The 14-minute video premiered in January at an event celebrating the 50th anniversary of the endodontics division and on the same day CDM held the 22nd Dr. Irving Naidorf Annual Memorial Lecture in Endodontics to honor Dr. Naidorf, who graduated from CDM in 1941. After further tweaking, the video is available on the CDM website www.dental.columbia.edu/endo-50.

A video is the most relevant, and accessible, way to celebrate the two men, especially for current dental students, says Mr. Leavitt. "My dad died before the Internet. There's nothing on the Internet about my dad except his obituary. That needs to change."

After discussing with dental school leadership his initial idea for a documentary about his father, Mr. Leavitt expanded the scope of the project to include Dr. Naidorf. That was appropriate, he says, because the two endodontists were fast friends as well as colleagues and research partners: Together with their wives, Harriet and Blanche, they shared a box at the opera for 30 years.

Narrated by Mr. Leavitt, the video features interviews with CDM faculty and alumni to paint a warm portrait of two committed educators and mentors to a generation of Columbia-trained endodontists.

One of those interviewed is Robert Ambinder, DDS. "Next to my father, I think Joe and Irv were my parents," he recalls. "They became family to me." Dr. Ambinder graduated from the endodontics postdoctoral program in 1971.

Snapshots of conferences, classes, and faculty parties bring to life a tight-knit group of dentists whose intellectual lives went beyond endodontics to include painting, music, and travel.

"Irv Naidorf was an absolute giant in our field," says Nelson Mendell, DMD, who joined Dr. Leavitt's private practice, completed the endodontics postgraduate program in 1974, and now



Marc Crawford Leavitt with his dad and mom in 1982.

serves on the volunteer faculty. "He was a microbiologist, an immunologist, and a real first-class scholar and teacher. He was a genuine renaissance man. He was a pilot, he knew literature. He was just a wonderful guy."

Mr. Leavitt recruited his high school classmate, filmmaker Alan Lebow, and editor Francisca Bogden to help with the project, but it was Mr. Leavitt who spent months plowing through decades of his father's papers, from his lectures to his letters home from the Pacific during World War II to the research papers coauthored with Dr. Naidorf.

Though Marc Leavitt spent a high school summer sterilizing instruments for his father's endodontics practice on Central Park South, he dashed his father's hopes when he decided dentistry was not for him. Instead, Mr. Leavitt graduated from Columbia Law in 1974. He practices estate and elder law in Sunnyside, Queens, describing himself as "the neighborhood lawyer" (he also has offices in Manhattan). He also writes and performs musical political satire. In 2009, he ran for Queens borough president.

Mr. Leavitt's focus on elder law meshes well with the Columbia dental school's focus on oral health care for the elderly; he served on the committee that launched the ElderSmile oral health program in 2003. "It was very satisfying to get involved with the public health aspects of dentistry," says Mr. Leavitt. "Kind of honoring my father," for whom Columbia "was his whole life."

Dr. Naidorf died in 1984 and Dr. Leavitt in 1999. To Marc Leavitt, the video—and his involvement in the College of Dental Medicine—is an act of remembrance similar to the Jewish observance of the anniversary of a death. "I celebrate my *yahrzeit* at Columbia. That's the way I honor my father, by being part of Columbia, an institution that was so important to him."

With the video now available online, "I want future dentists to see it. I want the world to see it. He deserves it."

— Martha T. Moore

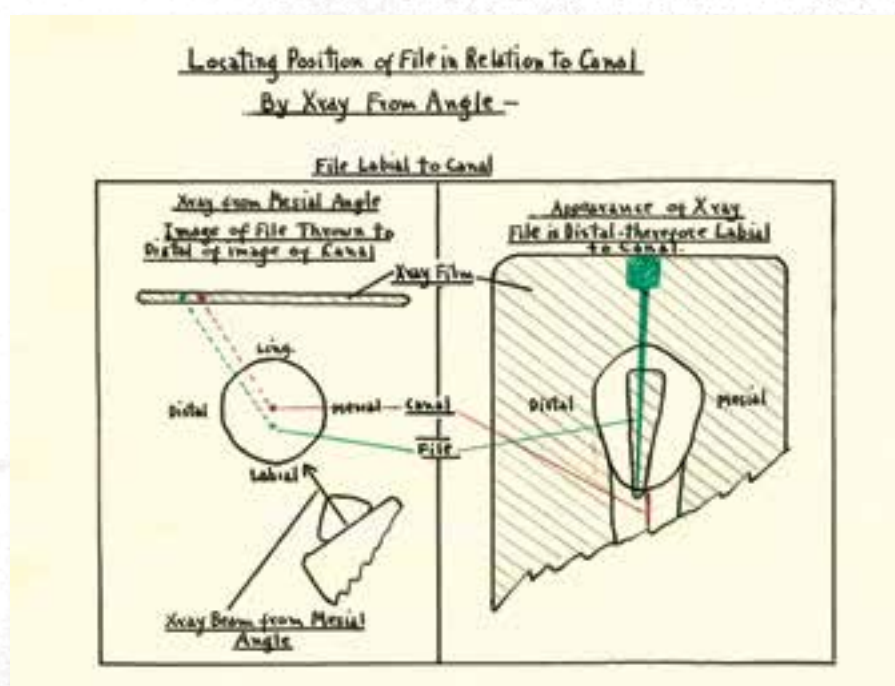
Tennessee), Dr. Solomon and, again most recently, Dr. Hasselgren.

The next wave of endodontics instructors “were very good practitioners in the field and were dedicated to teaching and research,” Dr. Formicola says. “This whole notion of renewal through bringing in younger faculty and helping them develop is very special. It looks like the next generation is going to be just as strong. That doesn’t happen often in academia.”

Like the dental school overall, the endodontics division has sometimes struggled to have a strong research program—in line with the traditional Columbia commitment to science-based dentistry.

Money and facilities, or lack thereof, can hamper the ability to conduct research, but intellectual curiosity within the endodontics program has been constant, Dr. Formicola says. “They’ve always had people curious enough to want to research different problems. It isn’t only research dollars in; it’s a whole attitude. They’ve tried very hard to keep that alive in the division.”

In 1986, when Dr. Hasselgren arrived, he found Columbia “behind” and sensed resistance to research among faculty. “The



do root canals three times a month.” His current focus, with Helen Lu, PhD, director of the Biomaterials and Interface Tissue Engineering Laboratory at Columbia’s engineering school, is to develop an injectable hydrogel, potentially with antibiotics,

Joseph Leavitt’s hand-drawn illustration that was projected during lectures on how to perform root canals

Dr. Mao said at the 2017 Naidorf Memorial Lecture, which focused on pulp regeneration. “Endodontics should have been regenerative in the first place.”

Dr. Hasselgren says he divides dentists into “biologists” and “carpenters” and hopes the increase in research activity will mean the dental school graduates more of the former. That goal is what defines academic dentistry.

At age 50, the Columbia postdoctoral endodontics program has continued to grow in popularity. When Dr. Solomon became director of the Division of Endodontics eight years ago, about 40 students applied for each year’s six endodontic postgraduate positions, “and none of our own students seemed to be interested,” he says. Last year, more than 100 students, including CDM graduates, applied for the spots.

The faculty get excited too. Research is fun, Dr. Hasselgren says, but “the other fun part is to deal with the students. The feeling when you realize that a student is, so to say, ‘getting it’ is very satisfying.”

“I felt very lucky because I was being taught by some of the pioneers in the specialty.”

– Priscilla Konecky, one of the first two women in the endodontics postgraduate program

attitude was, “This works in my hand, so it’s good. I don’t need to read the research.”

Early on, Dr. Hasselgren reached out to other disciplines at Columbia to collaborate on research. “Little by little, we started to build up things.” A project with the engineering school attempted to automate some of the technical challenges of endodontics, with the intention of facilitating treatment by a general practitioner without jeopardizing quality of care. “It’s one thing to be an endodontist and perform endodontic procedures every day,” Dr. Hasselgren says. “It’s another to be a general practitioner and

for root canal treatment. “Bioengineering is the future for us,” he says.

The school’s current push to increase NIH-funded research and the tantalizing prospect of regenerating tooth pulp have revitalized endodontic research. “Pulp regeneration has suddenly become popular after having been looked at as a curiosity, so now,” as Dr. Hasselgren says, “God and his grandmother are doing regenerative endodontics.”

Sahng Gyoon Kim, DDS, and Jeremy Mao, DDS, PhD, are both exploring pulp regeneration. “Gutta percha is just a phase,”

Lois Cohen: Expertise to Expand CDM's Worldview



JÖRG MEYER

Lois Cohen, PhD, has never filled a cavity or asked a patient to “open wide.” Yet, thanks to a lifetime spent crunching large data sets, asking tough questions, and charting her own career path, she has broad knowledge about oral diseases, their social determinants, and aspects of health care delivery systems as well as lifestyles of the public regarding self-care, nationally and globally.

That is what happens after writing more than 150 peer-reviewed papers, editing four books, and racking up countless awards and honors. And that is why Harvard, Purdue, the University of the Sciences in Philadelphia, and the International Association of Dental Research’s Behavioral, Epidemiological and Health Services Research Group all have

granted awards in her honor. It is also why Columbia University invited her to serve as a consultant to the Board of Advisors Task Force for Global Engagement.

Her journey started in 1964 when she arrived in Washington, D.C., with a PhD in sociology and joined the U.S. government in what was then called the Department of Health Education and Welfare, now known as the Department of Health and Human Services. As a social science analyst, she became part of a small team that gave rise to the field of social and behavioral science research in dentistry.

“We looked at the data on dentists’ practice behaviors regarding the early detection of oral cancer, public opinion

on community water fluoridation, interest in careers in oral health especially during times of national health workforce shortages. We discovered that dentists were comfortable examining hard tissue, but oral cancers were in the soft tissue and they were less comfortable dealing with those tissues and the associated possibility of life or death consequences should cancer be detected,” she says. “Those observations contributed to an effort to accelerate changes in dental education curricular content to ensure there was appropriate instruction about the soft tissue. Now oral cancers, using more accurate technology than what was available in the 1960s, are often caught much earlier.”

That was just the beginning of her illustrious career as she shifted her focus to places outside the United States seeking information about the effectiveness and efficiencies of alternative models to deliver oral health services to enhance population health nationally. “Domestic problems and global problems are not mutually exclusive,” she says. “When we look at the world, it helps us gain clarity about our own country. So we want to produce graduates with a worldview instead of just a clinical view. We can learn to solve our national problems from innovations acquired from anywhere on the globe, be it another industrialized country or even from low-cost but effective interventions employed in low-resourced settings in the least developed countries of the world.”

Dr. Cohen’s worldview allowed her to twice co-lead the world’s largest dental research projects ever undertaken with the World Health Organization, serve as a visiting lecturer at Harvard Medical School, direct the Division of Extramural

Research at the National Institute of Dental Research (now the National Institute of Dental and Craniofacial Research), and serve as the national institute’s associate director for international health. She retired in 2006 from the NIH’s National Institute of Dental and Craniofacial Research, where she headed the WHO Collaborating Center for Dental and Craniofacial Research and Training.

Like any workaholic, though, retirement just meant a chance to start something new. She still uses data, an insatiable curiosity, and scientific inquiry to explore questions of dental care domestically and abroad as a consultant and in her role as a Paul G. Rogers Ambassador for Global Health Research.

“I guess I have been doing this a long time, but I don’t feel tired,” she says. “The passion and excitement of young health professional students, faculty, administrators, and practitioners fuels me. The work of connecting oral health to global health is extremely important to the movement of disease prevention and health promotion, so I can’t imagine slowing down.”

In her consulting capacity to CDM, Dr. Cohen is serving as an adviser to enhance global programs to engage dental students and faculty to use their educational and research experiences to think about a globalized world, to understand the complexities of working in multicultural contexts to advance population health while focusing on person-centered health. (See “Expanding the CDM Footprint” in this issue, Page 20.)

“Oral health is part of a quality of life,” she says. “Dentistry should not be separated from the rest of the body or from issues around clean water, industrialization, sanitation, agriculture, and educa-

tion, all issues critical to health, including oral health. It’s wonderful to see student-led interest in tackling these problems. Many students make contact with other parts of the university outside of the medical center. It shows that they’re seeing the

“““

Domestic problems and global problems are not mutually exclusive. When we look at the world, it helps us gain clarity about our own country. So we want to produce graduates with a worldview instead of just a clinical view. We can learn to solve our national problems.

many extra-medical factors that contribute to disease outside the biological and clinical domain. I just hope to facilitate the expansion of their perspective in their clinical work. Maybe some students will even develop careers in public policy, focusing on advocacy for healthy public policies and supportive to their efforts to provide essential services to people in communities of need.”

Roseanna Graham: Dentist and Educator with Degrees in Both Disciplines

When Christian Stohler, CDM dean, needed a new director of the Division of Operative Dentistry last year, he turned to a faculty member with a unique skill set—an accomplished dentist with a PhD in science education: Roseanna Graham, DDS, PhD, the first graduate of Columbia’s DDS/MA in Science and Dental Education dual-degree program and the first faculty member to receive a PhD in science education.

When she first enrolled in the CDM/Teachers College dual degree program in 2003, the shortage of qualified dental educators was acutely felt. Dr. Graham credits Letty Moss-Salientijn, DDS, PhD, vice dean for curriculum innovation and interprofessional education and the Edward V. Zegarelli Professor of Dental Medicine (in Anatomy & Cell Biology), and Marlene Klyvert, EdD, former assistant dean for special projects and multicultural affairs, for recognizing the issue and identifying a solution.

“The dual degree program they created was likely the first of its kind in the country and it was because of their deep concern for the future of the profession that it became a reality and continues to succeed,” says Dr. Graham.

“““
I truly believe
we are helping
shape the
future of dental
education.”

Dr. Graham set the tone for a new crop of dental instructors. Now that she serves as a director of the DDS/MA in Science and Dental Education dual-degree program in addition to directing the Division of Operative Dentistry,

she works to ensure success in both roles. “It’s encouraging to see our dual degree graduates take their expertise to schools around the country,” she says. “And nothing is more heartwarming than hearing from them about how meaningful the education they received is to their work. I truly believe we are helping shape the future of dental education.”

Dr. Graham also shapes the future of dentistry as she and her colleagues rework the curriculum to adapt to CDM’s new clinical and simulation facility on the fifth floor of Vanderbilt Clinic, which allows a more fluid integration of the preclinical and clinical curriculum. Students train in the same environment in which they will provide care to patients, creating earlier exposure to a more realistic setting. “This is a departure from the approach taken by most other dental schools and it provides us the ability

to link preclinical and clinical education in a way not normally able to be done,” says Dr. Graham.

To adapt the curriculum, Dr. Graham leans heavily on her unique training, which provided insight into cognition and how the mind gains, retains, and applies knowledge. “It has traditionally been thought that students must be educated preclinically in a laboratory, all at once, moving at the same pace,” she says. “Everything we know about how people learn indicates that this may not be the best approach.”

Dr. Graham is enthusiastic when she talks about what is possible in the new Center for Precision Dental Medicine, mentioning not only the state-of-the-art technology and real-time feedback that allows the faculty to quickly identify and respond to each student’s needs, but also the clinical research opportunities for the faculty.

“I was honored to be given the opportunity to lead a division that has a rich history at the College of Dental Medicine as well as a diverse group of faculty members, especially during this time of change and growth” says Dr. Graham. “Dean Stohler has set the stage for CDM to create a new standard for dental education and there is nothing more exciting than working in such an environment.”



JORG MEYER

Cathy Lee: Combining Dentistry, Public Health, and Writing

While studying biology and chemistry in college, Cathy Lee'18 wanted to find a career that combined science with her love for art. Ms. Lee, who grew up playing violin and piano, sought to work with her hands and to create beauty in her work. She saw an opportunity to do both as a dentist.

"Dentistry is a lot like handling an instrument," she says. "It requires creativity, dexterity, and sensitivity. When you're carving and drilling a tooth, you have to think about aesthetics and function. You want to make something that's beautiful, but also strong for the future. It's quite exhilarating."

When it came to choosing a dental school, Ms. Lee had a unique pull toward Columbia—her twin sister, Judy Lee'17. They started at CDM together, but their paths diverged when Cathy decided to pursue a dual degree in public health.

"Columbia encourages us to strive to be better; their faith in each of us is a huge driving source for us to go beyond expectations," Ms. Lee says. "The population oral health section helped me make this rather daunting decision that required a full-year commitment, but I'm so happy that they did."

In her public health program, Ms. Lee teamed up with Kavita P. Ahluwalia, DDS, MPH, associate professor of dental medicine (community health) at CUMC, to visit elderly adults who receive home-delivered meals from City Meals on Wheels and to study their oral health, nutrition, and oral health-related quality of life.

"It truly opened my eyes about the social status and environment these elderly adults live in," she says about visiting meal recipients in their homes.

"Normally we meet the patients at the clinic so we do not get to fully know and understand their living conditions. It gave me a much deeper understanding of the population we serve."

She parlayed that project into research that focuses on the oral health needs of elderly Koreans in Queens. Growing up in South Korea and moving to the United States in high school, she has a unique understanding of the cultural obstacles Kore-



JORG MEYER

ans face in New York. "Many of these elderly adults are underserved and have language and financial barriers to receiving dental care," she says. "My goal is to come up with oral health-related interventions that meet the specific needs of this community."

The dual degree in dentistry and public health will pave the road for Ms. Lee toward the intersection between dentistry and public policy. "This is just a beginning of many exciting projects I can and will do in the future," she says.

In addition to her studies, research, and clinical work, Ms. Lee likes to write. "I love to share my own and other people's stories through writing," she says. "I want to bring positive changes in the lives of people through dentistry, public health, and writing."

Last summer she delivered a series of lectures to encourage high school students in South Korea to also follow their dreams. Her tales of challenges she overcame on her way to a DDS/MPH degree attracted the attention of a Korean publisher, who asked to publish her story. "I'm going to be a published author. I'm so excited," she says. Her book will be out in South Korea next year.

“““

Columbia encourages us to strive to be better; their faith in each of us is a huge driving source for us to go beyond expectations.

Panos Papapanou: Pursuing Multiple Interests as Dentist, Researcher, New Yorker

CDM is one of the few places to find an opera-loving Greek native who is fluent in Swedish, who carves down the steep slopes of Banff while on vacation, and also happens to be one of the world's leading experts on periodontal disease. The person who fits all those descriptors is Panos N. Papapanou, DDS, PhD, professor and chair of oral, diagnostic and rehabilitation sciences at CDM.

With his research, clinical work, chair responsibilities, and administrative duties as director of the Division of Periodontics, Dr. Papapanou is busy and overextended, but he loves that. "Every year, I resolve to cut back a little, but there's nothing I want to give up," he says. "I love my time in the clinic treating patients. I love putting on scrubs and working alongside a resident. And my research in the pathobiology of periodontitis is intellectually stimulating. So, I'll work long hours as long as it is fun."

He recently added the awards circuit to his packed calendar. In March, Dr. Papapanou received the Distinguished Scientist Award in Basic Research in Periodontal Disease from the International Association for Dental Research.

"This is a lifetime achievement award that is especially meaningful because you have to be nominated by a previous winner," says Dr. Papapanou. "I was hoping to get it sometime."

Dr. Papapanou is no stranger to the International Association for Dental Research. In 2015, it awarded him the Wil-

liam Gies Award in clinical research for a paper his lab published on the molecular differences between chronic and aggressive periodontitis. And, in 2016, Dr. Papapanou received the Yngve Ericsson Prize for Research in Preventive Odontology, which the Swedish Patent Revenue Fund awards once every three years.

In the laboratory, Dr. Papapanou and his team of researchers analyze gum tissue biopsies to find transcriptional signatures that may

“I chose periodontology because it combines both surgery and biology and offers infinite possibilities for research.”

explain differences between periodontal disease that progresses slowly and more aggressive forms of periodontitis that lead to tooth loss and are associated with heart disease and oral cancers.



JORG MEYER

"It would be very useful to develop a way to identify not only the specific genes that, when expressed, lead to aggressive periodontitis but also the triggers that may cause these genes to express," says Dr. Papapanou. "That way we can figure out who is susceptible to gum disease early on and intervene before it sets in."

His interest in periodontics started in his fourth year of dental school in Athens when he took an elective on the immunology of periodontal disease. "I chose periodontology because it combines both surgery and biology and offers infinite possibilities for research," he says. "It is a specialty that requires use of both your brain and your hands."

That led to a PhD program in Sweden, a postdoc at the Forsyth Institute in Boston, and, in 1998, a faculty position at Columbia.

"I came to New York because my wife had just received a faculty appointment after her graduate training at Columbia," he says. "I've stayed because we have great, great students, wonderful colleagues, and because the medical center is an academic environment where you find people who inspire you. Also, living in New York is the best place to be if you love the arts."

Alumni News & Notes

ALUMNI OF THE COLLEGE
OF DENTAL MEDICINE

Monroe Gliedman '52, one of the longest serving faculty members in CDM history, stepped down as a volunteer faculty member in the Division of Orthodontics last spring after 62 years. Dr. Gliedman and his twin brother, **Richard Gliedman**, who were classmates in dental school, joined the faculty when they were 28 years old and taught as a team for 48 years, until Richard died in 2002. Monroe Gliedman continued teaching until he turned 90. He notes, "We consider ourselves a Columbia family. My wife graduated from Barnard and received a master's degree in art history from Columbia. My son, Michael, graduated from the business school, his wife, Jennifer, from Teachers College, and my daughter-in law, Bridget Ferguson, is currently on faculty at CDM in oral surgery." Dr. Gliedman shared this memory of his time as a student: "I'll never forget when

General Ike Eisenhower, who had just become president of the University, came to give us a few words of encouragement. He told us that 'membership in a health profession comes with a special blessing, the ability to make a positive change in another person's life. Dentists make a difference every day in their practice, by improving appearance, easing pain, and preventing disease.' It made a big impression on our class."

John Grippo '53 has completed a textbook, "Noncarious Cervical Lesions and Cervical Dentin Hypersensitivity: Etiology, Diagnosis and Treatment," co-authored with Paulo V. Soares from the University of Uberlandia, Brazil. Dr. Grippo spent more than two years working on the textbook, which was released for publication one day after his 89th birthday. He notes, "In this landmark textbook we discuss for the

first time the new mechanism biocorrosion, which replaces the term erosion which has been erroneously used since the time of Pierre Fauchard in 1728." Dr. Grippo is a retired adjunct professor in biomedical engineering at Western New England University.

William Silver '55 Ortho is deputy chief of forensic odontology in the Miami Dade Medical Examiner's Office, chief of forensic odontology in

Forensic Odontology at the age of 76, the oldest ever to pass that rigorous exam. Dr. Silver has lectured worldwide, served on federal task forces during the World Trade Center attack and Hurricane Katrina, and published a textbook, "Dental Autopsy." He notes, "All in all, life after orthodontics is good."

Al Thompson '60 was among the many people who attended the launch event for Allan J. Formicola's book, "The Columbia



Broward and Monroe counties, and a consultant in Palm Beach. He became a diplomate of the American Board of



University College of Dental Medicine, 1916-2016: A Dental School on University Lines." Dr. Thompson stayed after the

Alumni Gatherings



From left: Donald Tanenbaum '82, Steve Syrop '80, Dean Stohler, and Josh Most '80 pose for a photo at the reception that followed the November 2016 Greater New York Dental Meeting.



Alumni who attended the Boston alumni reception in January during the Yankee Dental Meeting included, from left, Damien Domenech '01, Mariko Kato-Koo '02, and Yong-Han Koo '01.

talk to get his copy of the book signed by the author.

Robert Goldstein'64 shared recollections of his time at Columbia in a letter to Dean Stohler: "My class was the first to extern at Roosevelt Hospital. We lived there for two weeks, observing in the OR. Those of us that were motivated worked in the ER at night and became adept at suturing. We rode ambulances and experienced handling trauma. This experience was unique and life altering." Dr. Goldstein is retired after spending 16 years at Duke



and Emory. He has three sons, an interventional neuro-radiologist, an oculoplastic surgeon, and commercial realtor. He sails the Caribbean in the winters.

Steve Cohn'68, Endo'74 is a founding and honorary life member of the Australian and New Zealand Academy of Endodontists and a diplomate of the American Board of Endodontics. He teaches endodontic CE courses at the University of Sydney and helps run an endodontic postdoctoral program in Cambodia. He also volunteers there with KIDS International, an organization founded by **Robert Renner'68**.

John Feeney'75 was appointed to the New Jersey State Board of Dentistry by Gov. Chris Christie last fall. In June 2016, he was awarded the

VOLUNTEER AEGD FACULTY NEEDED

Volunteer faculty positions are available in the Advanced Education in General Dentistry residency program. The AEGD program, under the leadership of Marc Schlenoff, DDS, presents unique opportunities for clinical mentorship and supervision of advanced procedures in a comprehensive care setting, using state-of-the-art concepts and equipment.

Responsibilities include clinical teaching, supervision, and guidance for one full day per week. The program places strong emphasis on treatment planning and includes most aspects of restorative treatment, endodontics, periodontics, oral surgery, and implant dentistry.

Dr. Schlenoff, a 1981 graduate of the University of Maryland dental school, has practiced general and esthetic dentistry in New Jersey, is on staff at Morristown Medical Center, and previously was an attending at Weill Cornell Medical Center. He also is an instructor for the Aesthetic Advantage course.

Alumni with at least three years of experience in practicing general dentistry are encouraged to apply. Further information is available from Dr. Schlenoff at mds2235@cumc.columbia.edu, or 973-886-5828.

Presidential Lifetime Achievement Award from the New Jersey Dental Association in recognition of four decades of contributions in community service, volunteerism, and leadership roles. In his remarks upon receiving the award, Dr. Feeney said,

"Dentistry has allowed me to live the dream of a 12-year-old boy from the inner city of Paterson to become a dentist and dedicate my professional life to the welfare of society."

William Reiker'76 is still working and enjoying dentistry. He

Endodontists Receive Alumni Awards

Six alumni were honored in January at an event celebrating the 50th anniversary of the endodontics division at CDM. The alumni recognition awards were made for outstanding contributions to advancing endodontics.

The awardees in attendance:

- **Emad Alshwaimi'06 Endo**, vice dean and chair of the Restorative Dental Department at the College of Dentistry, University of Dammam, Saudi Arabia
- **Syngcuk Kim'76, Endo'78**, professor and chair of the Department of Endodontics at the University of Pennsylvania School of Dental Medicine
- **Hany Makkawy'85 Endo**, assistant professor and director of undergraduate endodontics at the College of Dentistry, University of Nebraska
- **Kenneth Namerow'72 Endo**, professor and chair of the Department of Endodontics, Nova Southeastern College of Dental Medicine
- **Eric Wong'96 Endo**, chair and clinical professor of the Division of Endodontics at UC San Francisco's School of Dentistry

The sixth awardee, **Matthias Zehnder'01 Endo**, was unable to attend the event. Dr. Zehnder is head of the Division of Endodontology at the Institute for Preventive Dentistry at the University of Zurich Center of Dental Medicine.



Syngcuk Kim



Kenneth Namerow



From left: Eric Wong, Hany Makkawy, and Emad Alshwaimi

teaches part time at St. Francis general practice residency program in Hartford, Conn.

Joseph Ruisi'76 reports that his twin sons have become board-certified interventional cardiologists. Phillip trained at Brown University and Michael at Mount Sinai Hospital.

Roy Stevens'76 is professor of endodontics at Temple University's Kornberg School of Dentistry and professor of microbiology at Temple's Katz School of Medicine. He is also director of the Laboratory of Oral Infectious Diseases.

Jack Irwin'78, who has a practice in Brooklyn, traveled to Jerusalem in February with the Dental Volunteers for Israel program.

Ronnie Myers'79, Peds'80 was appointed dean of the Touro College of Dental Medicine at New York Medical College in July. Dr. Myers joined Touro as senior associate dean of academic and administrative affairs in 2016, shortly before the school welcomed its inaugural class. He succeeds Jay Goldsmith, founding dean, who was named dean emeritus. Before joining Touro, Dr. Myers spent 34 years at CDM and held a number of positions, including interim dean in 2012. He is a member of the ADA and a fellow of the American College of Dentists.

Chad Gehani'80 Ortho received the Lifetime Achievement Award from the Indian Dental Association at the annual awards ceremony in Mumbai, India, in recognition of his significant contributions to organized

dentistry, oral health care, and dental education. Dr. Gehani, an ADA Trustee representing New York State, practices orthodontics in Queens.

Vinnie Mascia'80 shares an update on his endeavors outside of orthodontics: "I decided to complement traditional orthodontics about 20 years ago, leaving my multidiscipline group practice to head overseas for an MBA at Cambridge (and managed to row on their college team) in my 40s, forming a film company while a student there and shuttling back and forth between school projects to the Cannes Film Festival seeking funding and star attachment with a fellow student/Hollywood director. Back in the States, I acquired an MPH at UVA then worked on the Hill on the U.S. Senate Finance Committee on legislation and national health care issues as the ADA Congressional fellow. Presently I'm living in my college town of Charlottesville, Va., working full time for the Dental Services Group (a 60+ dental lab network across the United States, with manufacturing facilities in the United States, Canada, Mexico, China, and Taiwan) as director of government business development. I meet with Congressional staff and U.S. government agency heads to discuss strategic partnerships and creative new procurement methods. It's a lot like dentistry mixed in with making movies...as well as occasionally helping friends with their orthodontic practices to keep nimble fingers."

Karen Lewkowitz'82 announces the birth of her grandson,

Benjamin Alexander (Avraham Benyamin), born at Columbia University Medical Center Dec. 23, 2016, to her daughter, Dr. Hilana Lewkowitz-Shpuntoff, and husband Neil Ruben.

Michael Gelb'82 published a new book, "GASP: Airway Health. The Hidden Path to Wellness." The book is a best-seller in several dental categories. An innovator in airway, breathing, sleep, and painful TMJ disorders, Dr. Gelb pioneered the airway centric method. He is clinical professor in the Department of Oral Medicine and Pathology at NYU College of Dentistry and former director of the TMJ and Orofacial Pain Program.

Joyce Johnson'87 is current president of the New York Academy of Dentistry.

David Pitman'88 Perio is chairman of the American College of Dentists, New York Section, and vice president of the New York Academy of Dentistry. He is also finishing his term as trustee of

the Northeastern Society of Periodontists.

Michael Schreck'88 Perio was inducted as a fellow of the American College of Dentists in recognition of his leadership and contributions to dentistry and society. He serves on the NYSDA Board of Trustees, representing Nassau County Dental Society, and practices in New Hyde Park.

Alan Rothstein'90 was inducted as a fellow of the International College of Dentistry



and in May 2017 became president-elect of the New Jersey Dental Association.

Susan H. Yang'92 has welcomed **Reyna Nguyen'06** as part-time OMFS consultant in her Houston practice. She offers

ASSOCIATION OF DENTAL ALUMNI

All graduates of the College of Dental Medicine are automatically members of the Association of Dental Alumni. Led by an executive board, association members work closely with the Alumni Relations and Development Office to establish goals and programmatic priorities. For information on becoming involved, contact Melissa Welsh at 212-305-6881 or mmw7@columbia.edu.

Current officers of the association:

Michelle Mirsky'77, president, msm80@cumc.columbia.edu
Abraham Chahine'09, vice president, aychahine@gmail.com
Stephanie Dumanian'11, treasurer, sd2147@caa.columbia.edu
Mina Kim'10, secretary, minakimdds@gmail.com
Michael Leifert'04 Ortho, immediate past president, docml@aol.com

SAVE-THE-DATE REUNION 2018

All alumni are invited to the next class reunion day on Friday, April 20, 2018. Special recognition will be given to classes ending in '3 and '8. For details or to help organize participation by your class, contact Melissa Welsh at mmw7@columbia.edu or 212-305-6881.



special thanks to **Davis Alfi'06, OMFS'12** for making the connection possible by establishing the CDM Houston Alumni Study Club.

Shahram (Sean) Shekib'96 is a board member, delegate, and area vice president of the New York State Academy of General Dentistry. Dr. Shekib serves on the volunteer faculty at CDM as assistant clinical professor in the Division of Operative Dentistry.

Courtney Chinn'00 Peds received a five-year \$1.3 million award from the Health Resources and Services Administration to establish "Growing Faculty Success in Community-based Educational Settings," a faculty development program to recruit, develop, and retain faculty who are committed to teaching the delivery of quality care for underserved pediatric, adolescent, and special needs populations. Dr. Chinn is director of the postgraduate

program in pediatric dentistry at NYU.

Renuka Bijoor'03, Peds'05 chairs membership and communications for the Ninth District Dental Association and is vice chair of membership at NYSDA. Her committee organized the second annual Celebrating Women Dentists event, "Frills & Drills," a networking and CE evening held at the Briarcliff Manor, N.Y., with more than 100 participants. Dr. Bijoor is assistant clinical professor in the Section of Population Oral Health at CDM and she serves on the Admissions Committee. She practices pediatric dentistry in Westchester County.

Maria (Mia) L. Geisinger'03 is president of the American Academy of Periodontology Foundation, which focuses on supporting academicians and promoting research in periodontology. Dr. Geisinger is the first female president in the foundation's

26-year history and she is also a former foundation award recipient. Dr. Geisinger received her certificate in periodontics and implant dentistry and an MS degree in dentistry from the University of Texas Health Science Center at San Antonio. She is a diplomate of the American Board of Periodontology. She is associate professor and director of advanced education in periodontology at the University of Alabama at Birmingham. Dr. Geisinger also serves on the Council of Scientific Affairs

and Committee for Continuing Education for the American Dental Association. She adds, "Thank you for your support and for the education I received at Columbia to allow me to pursue my academic career."

Arthur Volker'03 was installed as vice president of the New York State Academy of General Dentistry in January.

Peter Grieco'11 has been appointed director of predoctoral prosthodontics at the

SHARE YOUR NEWS & STORIES

Let your fellow graduates know about your accomplishments, such as awards and achievements; personal milestones; following a family member or mentor who attended CDM; or how your CDM experience shaped who you are today.

Email stories and photos to:
Melissa Welsh, mmw7@columbia.edu
Columbia University College of Dental Medicine
630 W. 168th St. | New York, NY 10032

Harvard School of Dental Medicine. He completed his prosthodontics training at Harvard in 2015.

Joseph Stern '14, Endo '16 was one of 10 winners of the AAE/DENTSPLY Resident Award

at the annual endodontics conference in San Francisco last year, presenting a research poster with his mentor, Dr. Sahng Gyoong (Martin) Kim, director of postdoctoral endodontics, titled, "The Periapical Status



JORG MEYER

Related to the Quality of Endodontic and Restorative Treatment of Root Canal-Treated Teeth." He is a volunteer instructor in clinical dentistry at CDM while practicing endodontics in New Jersey.

InMemoriam

Joseph Randi '51, DDS, died Jan. 4, 2017. A long-serving faculty member in the Division of Prosthodontics, he was the father of Anthony Randi '82, assistant clinical professor in the Division of Prosthodontics, father-in-law of Ruth Chesney Randi '85, instructor in clinical dentistry in the Division of Operative Dentistry, and grandfather of William Randi, a dental student in the Class of 2018.

Irving Kittay '41, DDS, died Feb. 4, 2017. A dental surgeon for the 854th Aviation Engineer Battalion during World War II, he had a private dental practice in Manhattan until 1990. After closing his office, he taught at Stony Brook University, CDM, and Mount Sinai Hospital. He was on the faculty at Columbia from 1984 until June 2015, serving in the Section of Hospital Dentistry as adjunct assistant professor. An honorary fellow of the American Academy of Craniofacial Pain, Dr. Kittay was recognized for his lifetime achievements by the International College of Cranio-mandibular Orthopedics and the Mount Sinai Department of Dentistry. He is survived by his wife, Irene Singerman.

Alvin J. Grayson, DDS, clinical professor of dental medicine,

died Feb. 6, 2017. Dr. Grayson began his tenure at Columbia in 1962 and contributed to the school over the next several decades. He practiced prosthodontics in Manhattan, having trained at a time when understanding prosthodontic concepts received greater emphasis than technology and materials. His expertise allowed him to provide high quality and caring treatment to all of his patients. In recognition of his significant contributions to postdoctoral education, he was recognized by the Allan J. Formicola Award for Outstanding Volunteer Faculty Member in 2015. A strong philanthropic supporter of the school, an operator in the implant center bears his name. When Renuka Bijoor '03, DDS, met Dr. Grayson last fall, she suggested writing a profile on him for an alumni publication. Dr. Grayson died before it could be published, but Dr. Bijoor offers her impressions after meeting Dr. Grayson: "I was stunned to find that we had amongst us such a doyen of our profession. At 95, he was still doing what he liked doing the most, lecturing in prosthodontics and implantology to the PG prosthodontics students every Monday. 'It's all about being with these bright students at

Columbia,' he said when asked about what it is that makes him still come to Columbia to teach once a week. Until he turned 85, he had taught every Tuesday and Thursday. He thoroughly enjoyed being with the students and felt that he was continuously learning from and with them. Discovering more about Dr. Grayson's life was like turning a few pages of a history textbook." Born in 1921 in Manhattan, he graduated high school in New Jersey and decided to pursue engineering at the Newark College of Aeronautical Engineering, securing a position at the Glenn L. Martin Company in Baltimore designing bombers for the Air Force. Wanting to be part of the war effort, he became a naval midshipman at the U.S. Merchant Marine Academy, graduating in 1944. He was recruited as chief engineer for the Merchant Marine Services. As a Naval officer, he crossed the Atlantic 10 times and was in the Pacific waters on the way to the Philippines when the first atomic bomb was dropped. When the war was over, he went back to engineering until his brother-in-law, Dr. Robert Bausch, a Manhattan dentist, got him interested in pursuing dentistry. Dr. Grayson wanted to attend a school which would

allow cadaver dissection, so due to the antivivisection law in New Jersey, he attended Indiana University. He graduated dental school in 1952 and completed his training in prosthodontics in 1954. Around that time, Dr. Bausch died and Dr. Grayson took over the practice. He joined the maxillofacial prosthodontics faculty at Columbia in 1962 and helped to establish the PG prosthodontics program. Dr. Grayson is survived by two sons.

OTHER DEATHS REPORTED:

Helen S. Aderholdt '42 HYG
Jeremiah J. Desmond '45 DDS
Doris L. Greenwald '46 HYG
Bert Ballin '46 DDS/ '48 Ortho
Gene C. Maillard '48 DDS
Stanley I. Schwartz '50 DDS/ '69 Ortho
Edward M. Griffin '51 DDS
Stanley E. Machenberg '51 DDS
Mervin Eisenberg '51
CERT Oral Surgery
Irwin A. Small '53 DDS
Morrey Berkowitz '54 DDS
Norene P. Harff '56 HYG
Richard J. Whelan '57 Ortho
Arnold E. Max '57 DDS
William A. Dwyer Jr. '58 DDS
Ronald A. Hausman, DDS/ '63 CERT Oral Surgery
Aukse J. Trojanas '71 DDS
Georgia G. Hall '71 HYG
Andrew B. Weisenfeld '76 DDS
Kym L. Johnson '92 DDS

Alumni Reunion 2017



1) Richard Lichtenthal Award

The Distinguished Alumni Award was presented to Richard Lichtenthal '62 by Michelle Mirksy '77, vice president of the alumni association

2) Class of 1952

Monroe Gliedman (class rep) and Robert Steiner

3) Class of 1962

From left: Mark Tenner, Morton Schoenberg, Richard Lichtenthal (class rep), Philip Terman, and Frank Mellana

4) Class of 1967

Standing, from left: Donald Stammer (class rep), Stanley Kaplan (class rep), Loretta Donovan, John Donovan, Brian Alpert (class rep),

and Joseph D'Onofrio; Seated, from left: Richard Smith, Michael Barnett, Arnold Reisfeld, and Stephen Kaplan

5) Class of 1977

From left: Michelle Mirksy (class rep), Karen Hammer, Richard Low, and Jane Taylor

6) Class of 1982

From left: Matthew Sorkin, Joseph Haggar, Karen Lewkowitz (class rep), Louis Scannura, and Marc Leffler (class rep)

7) Class of 1987

From left: David Dane, Frank Valdinoto (class rep), Eileen Morrissey, Joyce Johnson, Joseph Locurto, Alejandra Costantino, Dena Greenbaum-Lieblich,

Lesley Roth, Michele Jehenson, David Weedon, Barry Mitchel, Gabriela Lee (class rep), and Kenneth Cohen

8) Class of 1992

Standing, from left: Robert Hwang, Mark Webster (class rep), Anthony Pagano, and Susan Yang, (class rep); Seated, from left: Holly Kholdani (class rep), Fariba Kalantari, Rosemary Ryan (class rep), and Karen Reisner

9) Class of 1997

Standing, from left: Steven Yun, Wladimir Gedeon, Francis Shin, Chi Sun Han, Jean Kang, In Kim, and Jean Binda (class rep); Seated, from left: Mehran Azar, Richard Yang, Sue Chang, Maria Shin, Haesin Jung, and Young Kim

10) Class of 2002

Standing, from left: Garo Nazarian, Angelo Ostuni (class rep), Jonathan Mender, Michael Duong, and Michel Kalimian; Seated, from left: Stacey Piedad (class rep), Gabriela Hricko, Michelle Lieberman, Christine Dowling, and Alexis Fermanis

11) Class of 2007

Members of the class celebrated during their 10-year reunion.

12) Class of 2012

Standing, from left: Amy Herbert, Aaron Myers (class rep), Meryl Brown, Bari Steinberg, Matthew Hickin, and Nana Odoo; Seated, from left: Megan Swanson, Lisa Van Eyndhoven (class rep), and Grace Sun Ae Hur

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TO LEARN MORE, CONTACT

Maureen Agostini
Executive Director of Development
cdmdevelopment@cumc.columbia.edu
212-305-4782



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IF YOU ARE 65 OR OLDER, you can get income for life as well as a tax deduction this year through a charitable gift annuity from Columbia University. But, best of all, while you are providing for your future, you will be leaving a lasting legacy at the College of Dental Medicine.

In this time of economic uncertainty you can count on a Columbia University's CDM Charitable Gift Annuity for a steady return on your investment.

Sample Annuity Rates for an Individual

Age 65	4.7%
Age 70	5.1%
Age 75	5.8%
Age 80	6.8%
Age 85	7.8%
Age 90	9.0%

Sample Annuity Rates for Two Individuals

Ages 65 and 70	4.4%
Ages 70 and 75	4.8%
Ages 75 and 80	5.3%
Ages 80 and 85	6.1%
Ages 85 and 90	7.3%
Ages 90 and 92	8.5%

**To learn more please contact the
Office of Development at the College of Dental Medicine:**

Maureen Agostini
Executive Director of Development
cdmdevelopment@cumc.columbia.edu
212-305-4782



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