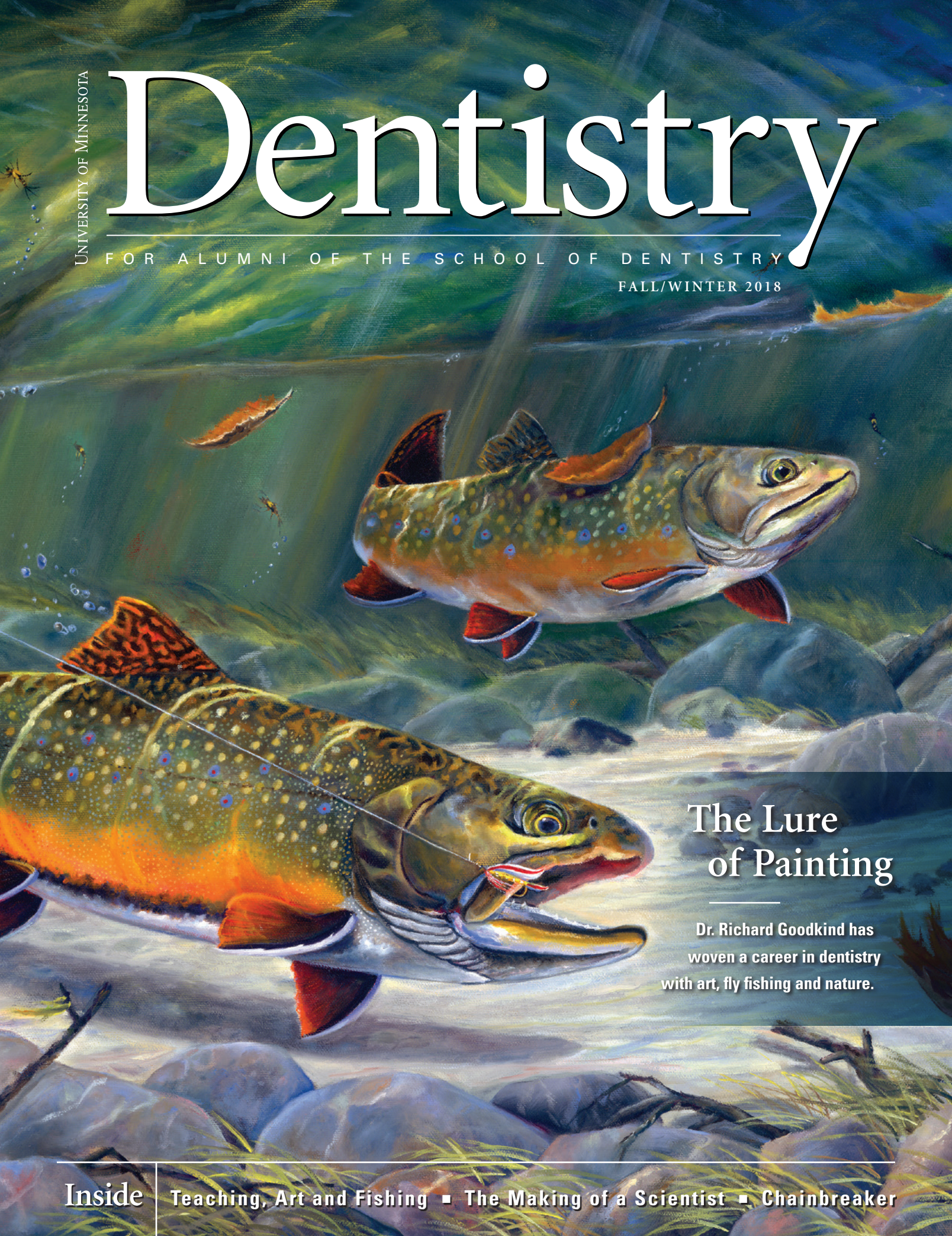


UNIVERSITY OF MINNESOTA

Dentistry

FOR ALUMNI OF THE SCHOOL OF DENTISTRY

FALL/WINTER 2018



The Lure of Painting

Dr. Richard Goodkind has woven a career in dentistry with art, fly fishing and nature.

Inside

Teaching, Art and Fishing ■ The Making of a Scientist ■ Chainbreaker



PHOTO BY STEVE WOIT

from the Dean

Dear Colleagues,

The profession of dentistry evolved as a healing art and science. Just as in medicine, it was recognized that dentistry must be science-based, but the *art* of its application required “a combination of medical (dental) knowledge, judgment, and intuition” (Fauci, et al, *Harrison’s Internal Medicine*, 2008). In addition, for dentistry the fundamental esthetic aspects of the visual arts such as form and color have always been important.

This issue of *Dentistry* magazine could not provide better examples of lives lived in pursuit of a refined “art and science” than Drs. Richard Goodkind and Mark Herzberg, the subjects of the two feature articles. As you will learn, Dr. Goodkind recognized the value of using art to help develop an eye for dental esthetics in his prosthodontic residents. In fact, one of his paintings graces the cover of this magazine. Dr. Herzberg is driven by a passion for discovery of basic biological mechanisms. In his interview, he describes the extent of his passion and the paths along which that passion has led him. I think you will agree that both individuals are defined by a curious spirit and a need to see things in new ways. I know you will enjoy reading about them.

Significant accomplishments in both the basic and clinical sciences are represented in many ways throughout the magazine. Recent efforts of the members of the Institute for Molecular Virology under the direction of Dr. Lou Mansky have led to an improved understanding of a virus that is implicated in leukemia. This work on basic mechanisms may lead to new treatments.

Our student researchers have been recognized with many awards and you will be inspired by their accomplishments. Of particular note are the publications by our faculty, which are included in this issue. I think you will agree these publications are remarkable for the breadth and diversity of topics. We enjoy a truly accomplished faculty.


Our school is also defined by its passion for community service. For the past two years, a bike ride has been held to raise money for our Masonic Cancer Center. In both years, the School of Dentistry has fielded the largest group of riders and led all fundraising efforts. Our students, led by Drs. Madden, Clay and Swift, made all of the difference. They are truly dedicated and passionate about community service.

We also were able to celebrate, in Hibbing, Minnesota, one of our greatest community service accomplishments. Led by the efforts of (now) Dean Emeritus Michael Till, the School of Dentistry launched the Hibbing Community College Dental Clinic in fall 2001. This past August, the Northeastern District Dental Society of the Minnesota Dental Association co-hosted an event with the School of Dentistry to recognize the clinic’s founders, directors, staff, and the many students who have provided care within its walls.

These and many other stories fill the issue. Please enjoy the read. It will be well worth it!

Sincerely,

GARY C. ANDERSON, DDS, MS
Dean

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Contents

FALL/WINTER 2018

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PAINTING BY RICHARD GOODKIND

4

FEATURES

4 The Lure of Painting

Professor Emeritus Dr. Richard Goodkind has woven a career in dentistry and teaching with art, fly-fishing and nature. The award-winning artist returns to the dental school each year to teach painting and the 'mastery of color' to prosthodontic residents.

BY TERRI PETERSON SMITH

DRIVEN TO DISCOVER:

8 The Making of a Scientist

School of Dentistry Oral Biologist Mark Herzberg describes his 40-year research career as an adventure informed by clues, collaborations, course-corrections and roads less traveled.

INTERVIEW BY CLAUDIA KANTER

12 Pedal Power

The School of Dentistry community gears up for Chainbreaker, a bike-a-thon to support cancer research.

BY TERRI PETERSON SMITH



PHOTO BY STEVE WOIT

8

IN EVERY ISSUE

2 NewsBites

The Human T-Cell Leukemia Virus, Hibbing Community College Dental Clinic, digital dentures, Board of Visitors, and 70-year anniversary of federal funds for dental research.

18 School News

Faculty and student news, awards and milestones.

19 Alumni News

Letter from SODAS president, alumni activities, and *Class Notes*.

24 Events Calendar

Special events and opportunities you won't want to miss.

25 Continuing Dental Education

Upcoming continuing dental education programs to enhance your practice.



PHOTO BY JAKE SCHROEDER

12

FALL/WINTER HIGHLIGHTS

14 Research Publications

Research at the School of Dentistry.

On the Cover Painting by Professor Emeritus Richard Goodkind.



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Driven to DiscoverSM

The University's mission, carried out on multiple campuses and throughout the state, is threefold: research and discovery, teaching and learning, and outreach and public service.

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DENTISTRY FALL/WINTER 2018

1

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News Bites

Pathway for Human Cancer Virus Creation Discovered

Finding out where inside the body a virus replicates is key to understanding how to stop an infection from spreading. In the case of the first human cancer virus discovered—human T-cell leukemia virus type 1 (HTLV-1)—researchers at the School of Dentistry-based Institute for Molecular Virology (IMV) have discovered a novel pathway for how this deadly distant cousin of the human immunodeficiency virus (HIV) is created.

The study, published in *mBio*, was the result of looking at live-cell image studies to determine where the major viral protein—called Gag—is assembled. The Gag protein is the key driver for virus particle assembly in retroviruses and is crucial to how a virus spreads. The key imaging technique used, called total internal reflection fluorescence (TIRF) microscopy, allowed for precise identification of Gag protein. Researchers discovered it along the periphery of cells.

“With recent and alarming HTLV prevalence studies, there is heightened awareness of the increased need for research on this potentially devastating human cancer virus,” said Louis Mansky, PhD, director of the Institute for Molecular Virology, professor in the School of Dentistry, and Masonic Cancer Center member. “Uncovering where particle creation occurs will aid in efforts to prevent the spread of this virus.”

Recently, remote parts of central Australia have seen a dramatic rise in HTLV-1 cases. HTLV-1 is transmitted through sexual contact, blood transfusion

and from mother to child by breastfeeding. Along with being a potent carcinogen, the virus can lead to other serious health conditions and cause a chronic progressive disease of the spinal cord. However, most people who are infected never exhibit symptoms.

Mansky and his collaborator, Joachim Mueller, PhD, professor in the School of Physics and Astronomy in the College of Science and Engineering, sought to conduct a careful comparison between how HTLV-1 and HIV-1 particles are

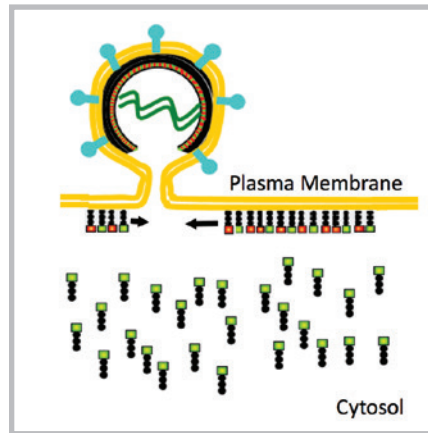
formed. The pathway used by HTLV-1 Gag to reach the virus assembly site was distinct from that of HIV-1.

“The use of quantitative fluorescence in live-cell imaging experiments allows us to distinguish differences between these viruses,” said Mueller.

“We were surprised by the striking difference observed between HTLV-1 and HIV-1 Gag proteins in our live-cell imaging experiments,” said John Eichorst, PhD, senior postdoctoral researcher. “Researchers believed that viruses related to HIV-1 would behave the same, so this difference was quite surprising.”

The next step of this research is to understand the mechanism that determines the pathway used by HTLV-1 Gag to reach the virus assembly site. Blocking this pathway could be an effective means for preventing HTLV-1 transmission and disease.

This research was supported by funding from the National Heart, Lung and Blood Institute, and the National Institutes of Health.



DIGITAL DENTURES

In about 1440, Johannes Gutenberg changed history by inventing the printing press with movable type. Today, we are experiencing a second revolution as 3D technology proves itself capable of printing everything from prosthetic body parts to buildings and cars. The additive process uses a digital file and a printer that lays down successive layers of material until the 3D item is created.

The School of Dentistry is beginning to incorporate 3D technologies and has printed TMD and speech appliances (for patients with cleft palates), and more than 400 denture bases. In September, Interim Associate Dean for Clinical Affairs Paul Olin DDS, MS, was a presenter at the 2018 *International Digital Denture Symposium*. With an eye on the future, the school has identified 'preparing students for the digital age of dentistry' as a priority focus for curriculum re-design and fundraising initiatives.

COMMUNITY LEADERS CELEBRATE THE HIBBING COMMUNITY COLLEGE DENTAL CLINIC

The School of Dentistry and the Northeastern District Dental Society (NEDDS) co-hosted an August 31 event to celebrate the Hibbing Community College (HCC) Dental Clinic and Dean Emeritus Michael J. Till, DDS, MS, PhD, whose leadership and vision led to the clinic launch in fall 2001. More than 70 professional and community leaders attended.

The dental clinic was the first cooperative initiative between the School of Dentistry and Minnesota State (formerly MnSCU). It brought together academic and community dentists, elected officials, community leaders, and both higher education systems to educate students

and address a community need for expanded access to oral health care.

The HCC clinic also marked the first expansion of the dental school's outreach program that's now grown to include clinical rotations at 15 sites throughout Minnesota, and North and South Dakota.

Since fall 2001, the School of Dentistry has sent more than 1,000

students to Hibbing to treat 9,000 patients. About 350 HCC dental assisting students have treated patients alongside U-M dental and dental hygiene students, and 15 young University of Minnesota-educated dentists now practice in the area.

"The School of Dentistry is the state's only dental school," says Till. "We have always had a strong commitment to com-

munity outreach and to applying our skills and talents to address the needs of Minnesota communities."

The event included a presentation on opioids and prescribing protocols by Harold Tu, MD, DMD, followed by a luncheon and program that recapped

the history of the clinic and Dr. Till's role in shaping dental education in Minnesota.

Third-year dental students Jennifer Enich and Andy Aldrich—both recipients of the Michael J. Till Northern Minnesota Dental Scholarship—unveiled a sign for the clinic reception area that recognized Dr. Till and the HCC Dental Clinic for contributions to the community.



PHOTO BY BREKKE HUDSELSON

The original leadership team reunites: (L to R) Dr. Anthony Kuznik, president, Hibbing Community College (1985-2003); Dr. Jerome Pedersen, HCC Dental Clinic director (2001-2013); and Dr. Michael J. Till, School of Dentistry dean (1996-2000).



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70 Years Ago | Minnesotans Help Launch National Institute of Dental Research

With Minnesotans in key leadership positions, the American Dental Association concluded its eight-year campaign to acquire federal funds for dental research when Congress established the National Institute of Dental Research as a branch of the National Institutes of Health in 1948. The name of the institute was changed to the National Institute of Dental and Craniofacial Research (NIDCR) in 1998.

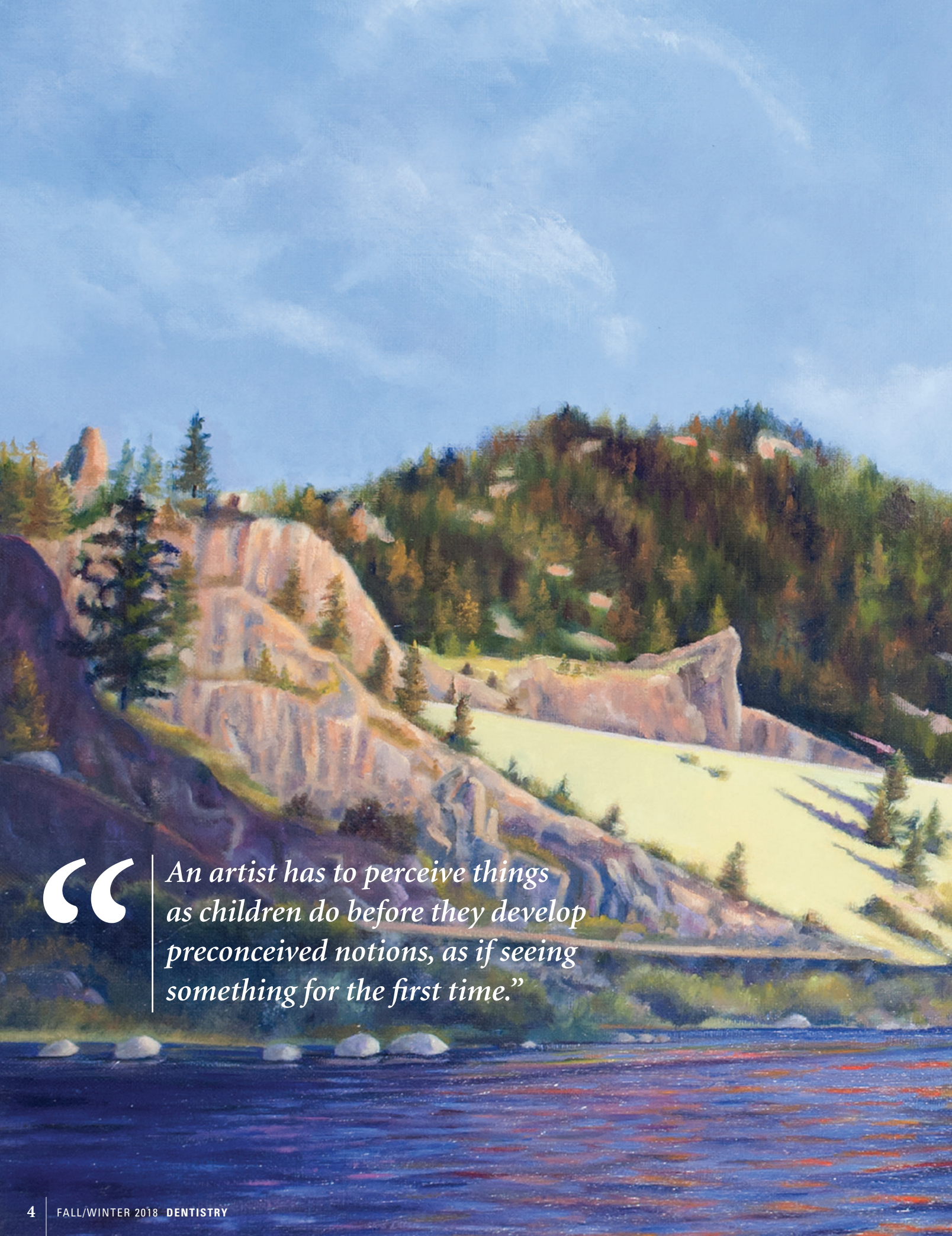
Photo: President Harry Truman signs the Dental Research Bill of 1948. (L to R): Carl O. Flagstad, clinical professor at the University of Minnesota School of Dentistry and chair of the ADA Committee on Legislation; Bruce D. Forsyth, U.S. Public Health Service; and ADA President Harvey B. Washburn, White Bear Lake practitioner and School of Dentistry alumnus, class of 1901.

Veterans Day

The Minnesota chapter of the American Student Dental Association (ASDA) celebrated Veterans Day on November 12 by signing a large "Thank you for your service" poster which will be displayed in the School of Dentistry to show support and thanks for our students, staff, faculty and patients who are serving—or have served—in the military. The organization also sponsored a military family and accepted donations for two military charity organizations—*Soldiers' Angels* and *31 Heroes*.

Board of Visitors

Twenty-five alumni and professional representatives met with Dean Gary Anderson on September 27 to share insights and feedback about issues of concern to the school and professional community. Topics discussed included addressing student debt, driving research innovations, curriculum enhancements, digital dentistry, access to care for underserved communities, and responding to the opioid epidemic. Dr. Harold Tu, director of the Division of Oral and Maxillofacial Surgery, shared statistics about the U.S. opioid epidemic along with information about the dental school's new opioid prescribing protocols.



“

An artist has to perceive things as children do before they develop preconceived notions, as if seeing something for the first time.”

The Lure of Painting

Dr. Richard Goodkind has woven a career in dentistry with art, fly fishing and nature.

BY TERRI PETERSON SMITH

Four students, brushes in hand, gaze intently at a colorful still life arrangement of pottery and fruit. They quietly dab away, mixing paints to duplicate on canvas the shapes, colors, shading and hues they see before them.

Though it looks more like art school than the School of Dentistry, the students are all prosthodontic residents studying painting under the tutelage of Dr. Richard Goodkind. For the last five years, the retired professor emeritus of prosthodontics has returned to the school to teach a four-day painting class during spring break.

Since retirement, he has gained wide recognition for his art. Goodkind's acrylic painting of a brook trout swimming under a fallen tree recently made him a two-time winner of Minnesota's annual trout and salmon stamp contest. His art will be featured on the 2019 stamp (necessary for anglers who wish to fish for trout in Minnesota waters) after previously winning in 2010.

Now 81, the mostly self-taught artist shares his vast knowledge of dentistry, art and life to help students create more beautiful teeth and also to perhaps inspire them to develop life-enriching interests long before retirement.

Art and Science

Goodkind actually taught painting to prosthodontic residents in the early 1980s and one of those former students is Gary Anderson, dean of the School of Dentistry. "Dr. Goodkind strongly believes that as restorative dentists, we need to understand the artistic application of color, as well as the science of color," he says. "There is no better way to understand color than through painting."

Goodkind retired in the mid-1990s and spent some time away from the dental school. He returned in 2013 to teach a painting course to first-year prosthodontic residents as a thank you, of sorts, to Associate Professor Heather Conrad who is now interim chair of the Department of Restorative Sciences and director of the Advanced Education Program in Prosthodontics. The two met in 2012 when Conrad led the school's initiative to raise funds to remodel the graduate prosthodontics conference room that was dedicated to Dr. Goodkind and (then) Program Director Dr. James Holtan. Funds raised also supported the renovation of the prosthodontic resident office.

"Dentistry is as much an art form as it is science," says Conrad. She notes that students who are motivated to pursue specialty training in prosthodontics are ☺



PHOTO BY JAMES LEE



PHOTO BY JAMES LEE

typically artistic or have a developing eye for subtleties in color, shape, and texture. “Dr. Goodkind incorporates the science of color into his course so that the residents are able to appreciate the variances in color in an object. For example, he teaches them to look at an apple carefully and recognize that the red apple is not red. He helps advance them and challenges them to see things differently.”

While on faculty, much of Goodkind’s research dealt with the color of natural teeth. For him, it’s the mastery of color combination along with seeing the subtleties of form that both improves esthetics and makes restorations appear natural and attractive.

“We want to make prosthetic teeth that look like the natural teeth around them. That requires understanding the science of color—hue, value and chroma. There’s no such thing as white teeth,” he says. “They’re yellow or yellow red. A low chroma—a lighter yellow—and a higher value make teeth look white.”

He explains, “An artist has to perceive things as children do before they develop

preconceived notions, as if seeing something for the first time.” Similarly, prosthodontists “must perceive shadows, highlights, and the effects of light. There are important details in what you put in and what you leave out. These nuances have made me a better dentist.”

“We want to make prosthetic teeth that look like the natural teeth around them. That requires understanding the science of color...”

— DR. RICHARD GOODKIND

Trout to Dentistry

The thousands of patients who have benefitted from Goodkind’s skills and those of his students have Goodkind’s grandmother, Rose, to thank for their beautiful teeth. Goodkind grew up in Brooklyn, New York, and when he was a small boy his grandparents took him

to Prospect Park to catch sunfish. They later vacationed in the Catskills where his grandmother fashioned a fishing pole by tying a string to a stick with which he caught his first rainbow trout. “He’s been ‘hooked’ ever since,” says Sandi Goodkind, his wife of 58 years.

Grandma Rose also launched Goodkind’s painting career by challenging him to draw freehand. At age seven he took art lessons at New York’s Pratt Institute and at the Brooklyn Museum. “You’re not necessarily Michelangelo to start. It’s not a thing you’re born with; you have to want to do it and you’ll be good,” he says.

He initially wanted to become a professional artist, but his father, a dentist, said, “You’ll starve!” Ditto for his interest in a career in the outdoors. So he became a dentist after attending Columbia University, graduating first in his class at Tufts University School of Dental Medicine, followed by a master of science degree in graduate prosthodontics at the University of Michigan. He is now a life diplomate of the American Board of Prosthodontics.



2



PHOTO BY JAYME HALBRITTER

3



PAINTING BY RICHARD GOODKIND

4

1 Professor emeritus and visiting instructor/guest lecturer for the Advanced Education Program in Prosthodontics, Dr. Richard Goodkind teaches staining techniques to first-year prosthodontic residents in March 2018. 2 Prosthodontic Resident Ornanong Jirapongsananurak in Dr. Goodkind's 2018 painting class. 3 Dedication ceremony of the donor-supported Goodkind-Holtan Conference Room. 4 Dr. Richard Goodkind's acrylic painting of a brook trout swimming under a fallen tree branch won the Minnesota Department of Natural Resources trout and salmon stamp contest and will be featured on the 2019 stamp. Goodkind is a two-time winner of the contest, winning also in 2010.

See more paintings at: www.rich-artstudios.com.

After his training, Goodkind enlisted in the Air Force, served from 1964 to 1966 and attained the rank of captain, stationed in San Antonio, Texas. When it came time to leave the service, one of his Air Force mentors connected him to the University of Minnesota School of Dentistry and Dean Erwin Schaffer hired him. Minnesota was a little different from Brooklyn or San Antonio, he says, but "I liked Minnesota. It had good fishing."

Still Hooked

Says Heather Conrad, "I admire Dr. Goodkind for his talents and for using those talents to have a meaningful and productive retirement. Although he has been retired for more than 20 years, his prosthodontic mind is as sharp as ever!"

That's an observation made abundantly clear on a tour with Goodkind through his home. One gets the impression of a person with a mind that never stops investigating, that's constantly curious. He points out a bench where he artfully ties life-like fishing flies, and large tanks where he raises tropical fish and

plants in his home's lower level. Paintings line the walls, not only of fish, but of gorgeous swans, ducks in flight—he also enters his paintings in the Federal Duck Stamp Art Competition—and a huge elephant he saw in Tanzania. He fondly

**"I love the environment,
nature, the ecology of the
trout stream, the insects
they're feeding on, how trout
react to the environment.
It's where I see God."**

— DR. RICHARD GOODKIND

points out a painting of his seven-year-old granddaughter as she fly fishes and a portrait of his former faculty colleague and fishing buddy the late Dr. James Donahue.

"I'm so busy I don't feel like I'm retired," he says. The expert fly fisherman

frequents streams in Minnesota, Wisconsin, and Montana, but also has fished in Wales, New Zealand, Iceland, and Patagonia. This year, he caught a 24.5 inch rainbow trout on a small dry fly in the Missouri River.

"I get the same thrill now fishing as I did as a young boy," he says. "I love the environment, nature, the ecology of the trout stream, the insects they're feeding on, how trout react to the environment. It's where I see God."

Fouad Badr, who was a second-year prosthodontic resident when he took Goodkind's class, says, "Since we do a lot of staining on restorations, knowing color matches and mixes is truly relevant." Beyond that, he says, "Dr. Goodkind taught me that when time is available in the future I can certainly pick up this form of art as it truly is calming and could be developed into something really good with deliberate practice. He also taught me that whatever you do, you do it passionately and try to be the best at it." Such great mentors, he says "are hard to find." ☺



DRIVEN TO DISCOVER:

THE MAKING OF A *Scientist*

PHOTO BY STEVE WOIT

School of Dentistry Oral Biologist Mark Herzberg describes his 40-year research career as an adventure informed by clues, collaborations, course corrections and roads less traveled. “Life is a mystery,” he says, “and you have to follow the clues.”

That perspective has led the former English teacher into and out of a couple of careers, and fueled a lifetime drive for scientific exploration and discovery. Recently, he was elected vice president of the American Association for Dental Research (AADR).

***Dentistry* magazine talked with Dr. Herzberg about his work and life as a scientist. There was one obvious ‘first’ question.**

DM: How did an English teacher find his way into dentistry and research?

MH: I never had a goal to be a dentist or a scientist, or any real goals at all, for that matter. I was in college at age 16, which was too young to make career decisions and I wasn’t a good student. I wanted adventure. I studied engineering for a year, which wasn’t a good fit. I transferred to another college, graduated with a degree in literature, earned a master’s degree in English education, and

taught junior high school in Harlem for two years. Teaching was difficult work and I could see an early burn out.

But I always liked science. I was influenced some by my dentist and, I suppose, by my high school job shelving books in the library where my mother was a medical librarian. I started reading some of the scientific journals and I met cool scientists. I went to dental school and all of a sudden became an engaged student. After dental school, I earned a specialty certificate in periodontics and a PhD in oral biology.

DM: You’ve said that research is your first love. What was the attraction?

MH: I liked—and still like—the adventure and the mystery. There’s a problem out there and you can follow your instincts and hunches in one direction, then veer in a totally different direction, circle back and, if necessary, redirect yet again. The search, itself, is very exciting. I also like the variety—we do cell biology, we do immunology, we do microbiology. I especially like that research is a team sport. I work with a talented group of people from varied backgrounds. It’s more of a game than work in any traditional sense.

DM: What would you say are your career highlights?

MH: They would be the scientists I’ve worked with and my students, postdocs, and what I’ve learned from them. When I was a graduate student, I spent four years purifying and characterizing a single glycoprotein. Now, with contemporary tools, it’s maybe a day’s effort, if we’d even bother. So much of the structural information is more conveniently available. There are so many new tools...the amount and quality of information you can get online

is extraordinary. I do a fair amount of reading and know what new tools will be useful, but I don't necessarily know how to use each of them. I depend on young people with fresh knowledge to provide the technical know-how to do things like analyze the microbiome, to do genome sequencing.

DM: Tell me more about your lab and colleagues.

MH: The 1930s Nobel Prize Winner Albert Györgyi said that research is “seeing what everyone else has seen, but thinking what nobody has thought.” We're definitely idea-driven...interdisciplinary and collaborative. And because we come from different fields, we have insights into diseases and basic biology that sometimes allow us to see novel relationships. We've made a number of, I think, significant and unique insights into diseases interfaced with biology.

DM: Can you share an example?

MH: When I was a young faculty member here, I wanted to study the pathogenesis of infective endocarditis. As a graduate student, I'd read that lesions on heart valves were made up mainly of passively accumulated platelets. To me that was counterintuitive. I knew that endocarditis was an infectious disease caused by bacteria, often bacteria from the mouth. And in a test tube, certain mouth bacteria cause platelets to aggregate immediately and to form a clot.

Back when I was shelving library books, I'd met a senior pathologist, Alfred Angrist, who published the definitive series of pathological reports on infective endocarditis. So, I contacted him years later (he remembered my mother) and posed the question: Is it possible that the lesions—so-called vegetations—on heart valves are really thrombi formed very quickly and triggered by the infecting bacteria? And he said yes, it was very likely. But no one had proven it.

DM: And that was the challenge?

MH: Of course. The adventure is taking the road less traveled. In this case, we began a series of studies with Maurice Meyer* addressing the hypothesis that the platelet vegetations were actually very rapidly formed thrombi. If untreated, the infected thrombi would just sit there, and slowly eat away at the heart valve. And we were right. We bought a used gamma camera that allowed us to image in real time the development of the platelet vegetations in endocarditis. It was fun.

DM: Tell me about something else that was fun.

MH: We did a control experiment in rabbits that showed certain bacteria from dental plaque might be generally thrombogenic. When these bacteria get into the blood they cause signs of heart attacks. That was met with some justifiable skepticism from some corners, and a costly media blitz.

DM: How so?

MH: I wrote a big grant proposal to continue to study the possibility that bacteria might actually cause blood clots and heart attacks in people, which was returned with the comment, more or less, ‘Why should we fund this? You've done it. I read about this in *USA Today*.’ We'd documented findings in rabbits but the media

connected the dots prematurely. We couldn't get funded. So, we switched from focusing on platelets to studying streptococci in the mouth. We wanted to learn how strep caused platelets to clot. We're still studying strep.

DM: You also discovered that an antimicrobial protein in the mouth had tumor-suppressor capabilities. How did that come about?

MH: I'd read about an under-investigated antimicrobial protein called calprotectin that always seemed to be present in inflammation and infection. It's most abundant in protein inside of neutrophils, an early responder inflammatory cell. But calprotectin is also made by mucosal epithelial cells in the mouth and in the genitourinary tract. What was unusual is that calprotectin is expressed in the cytoplasm—of both epithelial cells and neutrophils. Other known antimicrobial proteins are all contained granules—‘encapsulated’ in the cytoplasm. Nature doesn't make many mistakes. Why would there be an antimicrobial protein in cytoplasm? It had to have a purpose. And so, we studied that.

Joel Rudney** performed some elegant experiments showing that the interior of buccal epithelial cells are colonized by bacteria. If that's true, why don't we die of a giant abscess? We've been able to show that calprotectin doesn't entirely prevent the bacterial invasion of epithelial cells, but it limits their ability to do damage.

DM: How did an anti-infection study turn into cancer research?

MH: We followed the clues. To demonstrate calprotectin's ability to protect epithelial cells against invading bacteria, we identified a cell line—a cancer cell line originally isolated as a buccal carcinoma—that didn't make calprotectin. We genetically engineered those cells to express calprotectin. As expected, calprotectin-expressing cells were more resistant to invading bacteria. But they also looked normal in the culture dish. They didn't look like cancer cells anymore.

Later, in an animal model, we confirmed that the cancer cells that expressed calprotectin didn't make tumors. I was hooked. That was in 2004; we've been studying that ever since. But we weren't very sophisticated and, at the time, the idea was so far out that we couldn't get funding. We still don't have grant funding to study calprotectin and cancer. We have published topical scientific papers and have others in the publishing pipeline, though, that support the concept and we hope will prompt interest.

DM: You also followed those clues to California. What did you do there?

MH: I spent four months at the Sanford Burnham Prebys Medical Discovery Institute in La Jolla, to learn about the epigenetics of cancer.

We knew that: 1) in clinical cases, calprotectin is down-regulated during the progression of head and neck cancer from premalignant lesions (which can be reversed) to mild, moderate and severe cancer; and 2) calprotectin is not mutated in human cancers. The implication is that some kind of epigenetic regulation of expression is involved.

So, I needed to learn about how cancer causes changes in organisms by modifying gene *expression*, rather than mutating a gene and changing the structure of the resulting protein. There are multiple levels that might control gene expression. I needed to learn the biology of epigenetics in order to learn how the different

* School of Dentistry research in physiology was headed by Maurice Meyer, DDS, PhD (early 1960s to 1988).

** Joel Rudney, MA, PhD, MS, is an oral biologist and assistant dean for research at the School of Dentistry.

controlling elements of gene expression might be organized and how genes might be directed to be expressed at high or low levels or not at all. And it's very complicated. The ultimate goal could be to silence the epigenetic instructions of the cancer cell. We might want to prevent or reverse the turning off calprotectin in cancer cells.

DM: If there are multiple levels that might control gene expression, how do you know where to start?

MH: Well, there's more to learn, but now I have some vocabulary and can sort of visualize how several epigenetic mechanisms might work in the cell. That's really pretty important. I now have to work with someone to help identify mutations and other marks that occur in epigenetic regions on chromosomes. There are various techniques that will allow us to manipulate epigenetic regions of the chromosome and there are techniques that analyze these epigenetic changes.

DM: So, you're suggesting that science might someday be able to help the body protect and heal itself of infection...of cancer?

MH: We've actually patented, in two jurisdictions so far, a method to suppress cell proliferation and inhibit infection of the cell by conveying encoded calprotectin into epithelial cells to augment their innate immunity. We hope to develop a therapeutic for mucosal infections. It would be a generalized antimicrobial that would suppress a number of pathogens, including *Listeria* and *Salmonella* (common to food poisoning), and *P. gingivalis* (in periodontal disease), as well as a number of commensal organisms that don't cause harm.

DM: And what about cancer?

MH: We did publish that calprotectin is a likely tumor suppressor in oral, head and neck cancer, which is new. But it's one among several suppressors that are known. We also have data to show that the reduction in calprotectin may occur in premalignant lesions. So, low calprotectin might be a marker of premalignancy in suspicious lesions. Early detection might be accomplished through a simple biopsy. As the tissue goes on to become a cancer, calprotectin is more greatly reduced or lost. We've developed techniques to restore the calprotectin to the cell and do so in a way that we think could be done in people. We're thinking that if you restore calprotectin, the cell will behave more normally. So, we might be talking about an autotherapy using the body's own cells and proteins to resolve diseases.

But the cancer story is still an open question. In HPV-positive cancer, calprotectin is downregulated to zero. We haven't done much with HPV-positive cancers, but a little is known from a report of about 10 years ago about why it might be downregulated. It's never been confirmed, but there might be some clues there.

DM: Since we're talking about the future...you edited the *Journal of Dental Research* for 11 years and are vice president of the American Association for Dental Research. What insights can you share about other areas of oral and craniofacial research that need exploration?

MH: There's a lot. We need to understand craniofacial development. We need to understand the microbial communities in the mouth and the oropharynx. We need to understand the relation-

ship between the oral microbiome and the microbiome in the gut. So, for example, we talk about the relationship between oral and systemic health...oral bacteria almost certainly modulate gastrointestinal diseases and are implicated in colon cancer. Cause and effect isn't firmly established, but investigators are pretty certain the bacteria in the colon originated in the mouth because they typically don't colonize the healthy colon. Collaboration with people of different expertise is also important for the future. In science, our teams are formed in response to the questions and the opportunity to explore those questions across disciplines is critical.

DM: What are some of the challenges?

MH: We need to constantly explore new ground. If we are too narrowly focused, we can miss opportunities to make more impactful contributions. At the same time, we can't expect to be expert about everything. Yet we must be sure to be well grounded in any scientific direction we pursue to complement the expertise of collaborators.



Mark Herzberg with Grace Lee, student research assistant and nursing student.

The ability to secure funding for research is another challenge. Research funding in the U.S. is intensely competitive—the National Institutes of Health funds about 10-15% of all applications deemed meritorious. The work that is funded tends to be built on strong foundations. But if it's truly adventurous and innovative, the foundation is not usually very strong. NIH is aware of this conundrum.

A third challenge is that we're culture bound. We're proud of the science that comes out of the U.S., but we're not fully exploring or exploiting our potential. China, for example, invests heavily in research. It funds labs, people, research grants—I don't know all of the details—plus, they actively recruit Chinese scientists who've studied abroad to return to China where they're set up with a lab and funds for personnel and supplies. The European Union is a bit different. There's no ideal system, but if innovation is the driver, there needs to be a better way to encourage and support innovative research. We also need to invest more in the training and launch of the next generation of independent oral and craniofacial researchers.

DM: Isn't that what MinnCResT is supposed to do?

MH: Yes. In 2002, we received a grant from the National Institute for Dental and Craniofacial Research to create The Minnesota Craniofacial Research Training Program (MinnCResT) to train the next generation of independent investigators exploring questions in craniofacial, oral health and dental research. It's important that scientists be conversant in other disciplines. MinnCResT is cross disciplinary, with trainees pursuing research that is fundamental to biology and human health. Teams can include trainees and mentors from such fields as bioinformatics, neuroscience, microbiology, genetics, immunology, engineering, psychology, dentistry, medicine, and more. So, for example, one of our research fellows studied zebra fish as a model system to study craniofacial development. We also supported a student who was doing work on the fecal microbiome that would set the stage for fecal transplants. We recognize that the mucosal tissues are all connected and research problems translate from one anatomical area to another.



PHOTOS BY STEVE WOOT

Mark Herzberg

DM: Is MinnCResT fulfilling its mission?

MH: Our fellows are all doing important work. Some are in academia. Others are at the Department of Health, are teaching in liberal arts colleges and some are in industry. They are in great demand. The goal, though, was to educate the next generation of independent academic scientists. And while academic science is exciting, program graduates face fierce competition for positions and research funding. There are exciting things going on in industry, however, with dynamic teams of scientists who have good careers. And you don't have to write research grants, which takes the burden of generating their own financial support away from young scientists. So, it's a constant challenge to weigh competing careers.

DM: What can we do to create a climate for inquiry as part of dental education?

MH: The greatest challenge for the practicing dentist is to continue to learn...to read the literature and interpret data...and to be able to distinguish between dogma and fact. There will always be

continuing education speakers and advertisers who espouse dogma, sometimes with little evidence. Students need to know how to at least question and evaluate new information. Rather than teach both the problem and the solution, along with a tremendous load of facts to memorize, dental education has adopted some of the concepts of problem-based learning in which students learn by researching the answer to real-life problems. For example, if a medically compromised patient can't tolerate dentures, the student could learn about the basic pathology of diabetes and epithelial pathology to understand why. But opportunities for critical inquiry need to be more widespread. The School of Dentistry does support a summer research program. It might also be worthwhile if every student was required to write a graduation thesis that answered a question—it could be done in the laboratory or at the library or online.

DM: So, how does the American Association for Dental Research fit into the U.S. education and research agenda?

MH: AADR advances research and increases knowledge for the improvement of oral, dental and craniofacial health, and actively pursues legislative outreach and advocacy. It supports and represents our health research community on issues related to health and basic foundational research. The AADR facilitates the communication and application of research findings through scientific exchange and enhanced science transfer to organizations, educators, clinicians and the public.

DM: Why do you want to be president?

MH: In part it's to pay back. AADR provided the forum to present my research and brought together people who shared interests. I also want to improve AADR's ability to reach out to other constituencies—including Congress—and to do so in a way that every member scientist can communicate their message clearly and show the excitement about what they do and the value to the public.

DM: Isn't that a persistent challenge for basic research...that people don't understand the value of 'curiosity science'?

MH: Yes, and there are a number of examples of that. Otto Warburg won the Nobel Prize in 1931 for showing that tumor cells had a different metabolic rate and consumed glucose faster than normal cells. Eighty years later, people have rediscovered the 'Warburg affect' and are using those insights to try to make drugs to suppress or control the oversized metabolism of tumor cells (e.g. tumor cell growth). That was a lot of wasted time.

DM: While 'breakthroughs' are exciting, the everyday life of a scientist is about small wins...an insight or a clue. What keeps people so intrigued with the process?

MH: There's no one personality. I know conservative scientists and some who operate very much on the edge. It helps if you're not risk averse. I won't walk off a cliff because I know I can't fly. But you have to be able to take chances and to recognize that the consequences of failure are just that you need to regroup and head off in a different direction. I do think it's all about the journey and that it's important to find that journey to be worthwhile. When you do, each advance charges your batteries, even though there might not be a eureka moment. But when you do have the eureka moment, it's really quite a thrill. And hopefully the work that we do will have an impact on human health and quality of life. ☉



Pedal Power

The School of Dentistry Community Gears Up for *Chainbreaker* Bike-a-thon to

BY TERRI PETERSON SMITH

The *Chainbreaker* bike-a-thon to support research at the University of Minnesota Masonic Cancer Center isn't supposed to be a race. But that didn't stop the School of Dentistry from shifting into high gear to raise the *most* money (\$117,000) with the *most* riders (78) and the *most* volunteers of any group participating in the event. Dental school faculty, students, alumni and family members formed two pelotons—the *Lytic Cycles* and the *School of Dentistry*—for the ride through southern Minnesota August 10-12. Along the way their efforts raised not only money but awareness and camaraderie, too.

The Inspiration

Patterned after a similar event in Columbus, Ohio, cancer survivor and marketing executive Tom Lennox launched *Chainbreaker* in Minnesota to accelerate cancer research and discoveries at the Masonic Cancer Center-University of Minnesota. This year the event is on track to surpass last year's fundraising total and will likely exceed \$1.5 million, with 100 percent of the proceeds going

directly to support cancer research at the cancer center.

It's not hard to find people who have an interest in beating the disease. Just about everyone knows someone who has been touched by cancer. Yet, for many in the School of Dentistry, the goal is particularly personal. School of Dentistry molecular virology researchers organized their eight-person team, the *Lytic Cycles*, to ride in honor of their beloved colleague, Associate Professor Shelley Grimes, who died of cancer in 2017.

School of Dentistry peloton member Jim Swift, a professor in the Division of Oral and Maxillofacial Surgery, lost his sister-in-law to cancer. And, the mother of third-year dental student Andy Aldrich succumbed to cancer when he was just three years old. He says, "Losing my mom at a young age greatly affected me and instilled the drive to participate in *Chainbreaker* to do my part in ending cancer. I completed 180 miles in 2017 and chose to ride 100 miles this year. After seeing the excitement in the dental school and learning that each dollar raised goes directly to cancer research at the University of Minnesota, I was sold."

The Perspiration

Mike Madden, clinical professor in the Department of Restorative Sciences and captain of the *School of Dentistry* peloton, rode the full 180 miles though he says, "I wasn't overly enthusiastic initially. Yet, I was drawn to the event as a way to challenge myself physically while contributing to my community. I was pleasantly surprised at the energy it generated when I shared the *Chainbreaker* story with others. Dental students, in particular, were excited to participate in many ways. The community around us then chimed in to ride, volunteer, and support our efforts."

Chainbreaker riders sign up to complete 25, 50, 100 or 180-mile routes, which creates opportunities for riders of many levels of ability. Every rider must also commit to raising a minimum amount of money specific to the route they select. So, for example, those riding 25 miles commit to raising \$1,000. The 180-mile distance requires a \$2,000 minimum. There are also 'virtual riders' who raise funds but don't actually ride.

Swift attributes the School of Dentistry teams' fundraising success to the fact that they pooled their funds so that those who were able to raise more helped those with lower fundraising tallies to meet their



PHOTO BY TODD BAUER

Support Cancer Research.

participation goals. They also held events to generate both money and enthusiasm, including a bake sale and coffee fundraiser, the Food Truck/Pig Roast and Dunk Tank Extravaganza, a Talent Show and Cultural Exposition, a carnation sale, and a Blaze Pizza fundraiser.

The actual *Chainbreaker* event started Friday evening as riders and guests enjoyed music, food, and fun. The next day, the field of more than 1,000 riders from throughout the University community took off with riders who felt both eager and anxious. The School of Dentistry staffed the first rest stop at mile 11, handing out snacks, drinks and moral support.

Aldrich, who tends to favor running over biking says, “I’ve run everything from 5Ks to ultramarathons but haven’t done many long distance bike rides. So, the idea of 100 miles on the rolling hills of southern Minnesota was intimidating. Thankfully, I had other friends riding *Chainbreaker* who were willing to train with me. I tried to mimic what I would do during marathon training, one long ride each weekend and a smattering of shorter rides throughout the week. My longest training ride was only about 60 miles, though, and I was sure sore after that. During the event, the heat and hills were

challenging (at times I think I began to hallucinate!) but made crossing the finish line all the more rewarding. The support along the course was phenomenal and the community was unparalleled.”

Dental professionals can be a determined and competitive bunch and several dentists and dental students led the pack on both days of the *Chainbreaker*. Swift laughingly reveals that when he led the pack on the second day he missed a turn and it took a while for him to realize that he was alone and riding the wrong direction. He had to turn back which added an extra ten miles to his ride.

The 25-mile and 50-mile riders celebrated Friday at Welch Village with bands playing and grills smoking. The 100-milers continued riding, ending their day in Northfield. Those riding 180 miles took off from Northfield the next day and finished the ride in Excelsior with more food and music.

More Than a Ride

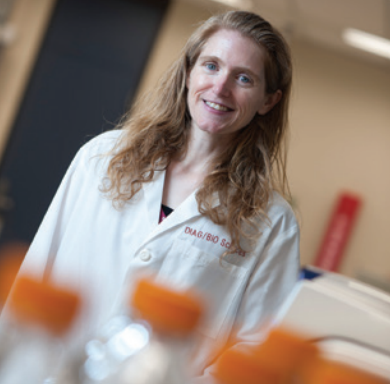
Research grants from *Chainbreaker* will be announced in spring but participants agree that the event brought benefits that weren’t just financial. It allowed researchers to share a bit about life in the lab with fellow riders—how labs are set up and

funded, and how new ideas move to the clinic. The event also created tremendous camaraderie, mixing people of all ages and all parts of the School of Dentistry, Academic Health Center, Fairview Health System, family members and others from the University-wide community.

Says Aldrich, “I feel more closely connected to my peers and faculty after riding *Chainbreaker*. It’s a common cause that we are all passionate about. I rode for about 20 miles with some medical students and we quickly established a bond. We chatted about our goals for the ride, why we were riding, and even compared and contrasted our experiences in our respective careers.”

“It’s unusual to find events that level the hierarchy and give everyone something in common,” says Madden. “The trappings of your day-to-day world give way to the realization that you are involved in something of great meaning and impact.

“I’d like to double our ridership next year,” he says. “This is an opportunity to work toward an altruistic goal of ending cancer. Everyone enjoys being a part of something greater than themselves. *Chainbreaker* is that opportunity. It’s fun, challenging and contributing to the betterment of the world. How can you improve on that?” ☉



Research Publications



David Bereiter

We recognize our colleagues for their contributions to the body of knowledge that forms the foundation for our profession.

The faculty, staff, students and research fellows of the School of Dentistry published 117 articles in scientific and professional journals between June 2017 and May 2018. These articles report on investigations—

in areas of basic, clinical, and social and behavioral sciences, and public health—by collaborating authors from all departments within the dental school and a variety of academic and scientific institutions. This breadth of scholarship

is a testament to the vitality of the School of Dentistry's research programs and the extensive collaborations occurring within the school and with scientists around the world.

The publication list is organized by department and division. The publications, co-authored by collaborators in several divisions, are acknowledged in each participating division.

Sincerely,

DAVID A. BEREITER, PHD

Interim Associate Dean for Research

DEPARTMENT OF DIAGNOSTIC AND BIOLOGICAL SCIENCES

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ANNOUNCING STUDENT RESEARCH AWARDS

Faculty reviewers of projects by 2017 Summer Research Fellows identified the following second- and third-year dental students as recipients of competitive research/travel awards. Awards for research conducted in summer 2018 will be made in June 2019.*

Cheryl (Xue) Wang (D3) *Crawford Award*

This award pays for travel to the 2019 International Association for Dental Research (IADR) meeting in Vancouver (June 19-22).

Sheba Vincent (D3) *DentsplySirona SCADA Award*

The SCADA award pays for travel to the 2019 IADR meeting in Vancouver as a contestant in a poster competition for cash prizes (IADR abstract submission is required).

Hannah Morgan (D2) *Colgate ADA Dental Students' Conference on Research Award*

This conference was held at the National Institutes of Standards and Technology campus in Maryland in October 2018.

Chad Wagner (D3) and **Thomas Vincent** (D3) *Hinman Student Research Symposium Awards*

Sponsored by the University of Tennessee College of Dentistry, the Hinman Student Research Symposium was held in Memphis on November 2-4, 2018.

Kiana Cullinan (D2) and **Galina Yakovlev** (D3) *Dwight Anderson Travel Awards*

The *Anderson Award* supports travel to a national dental professional meeting of the student's choice. The *Dwight Anderson Travel Award* is sponsored by Faculty Emeritus Dwight Anderson, PhD, a virologist whose discovery of a molecular motor that drives the DNA packaging process of the Phi29 virus provided insights into how viruses attack the human body.

ADDITIONALLY...

Congratulations to **Jordan Bolger** (D3) who received a *Dental Student Travel Award* from the American Academy of Oral and Maxillofacial Pathology (AAOMP) to attend the AAOMP Annual Meeting in Vancouver, Canada, June 23-June 28, 2018, where he presented his abstract at the oral session.

* *The Summer Research Fellowship Program is a donor-supported program of the School of Dentistry that provides students with the opportunity to do research under the guidance of a faculty mentor.*

People



Ranier Adarve

Appointed: Ranier Adarve, DMD, MS, MHPE, (Restorative Sci/Prosthodontics) as director of the Program for Advanced Standing Students, effective August 9, 2018.



Hassan Ismail

Appointed: Hassan Ismail, DDS, (Restorative Sci-Operative Dentistry) by Governor Mark Dayton to a four-year term as a member of the Minnesota Board of Dentistry, effective July 4, 2018 to January 2022.



Sara Johnson

as well as both an expanded scope of support for students and residents in the school's advanced education programs and additional responsibility for a portion of the registrar's administrative duties.

Appointed: Sara Johnson (Office of Student and Resident Affairs) as assistant dean. Her new role reflects the continued support she and her staff will provide in the area of student



Kim Mansky

assumed leadership of the NIH-funded training program that provides funding/training to postdocs and DDS/PhD dual-degree students on July 1, 2018.

Appointed: Kim Mansky, PhD, (Developmental/Surg Sci-Orthodontics) as director of the Minnesota Craniofacial Research Training (MinnCResT) Program. Mansky

SORAYA BEIRAGHI, DDS, MSD, MS, MSD, was inducted into the Academic Health Center's (AHC) *2018 Academy for Excellence in Health Care Practice* on November 22. Induction into the *Academies* is the AHC's most prestigious distinction, given to individuals who attain the highest level of recognition by their peers. Dr. Beiraghi was recognized for her 1) international reputation for care of patients with multiple genetically-based craniofacial anomalies and medically compromised patients with significant special health care needs; and 2) demonstrated commitment to excellence in direct patient care, intraprofessional/interprofessional collaborative care, public service and outreach, and innovation in healthcare delivery models.

Dr. Beiraghi is director of the Division of Pediatric Dentistry at the University of Minnesota School of Dentistry.



PHOTO BY SCOTT STREBLE

Soraya Beiraghi with Mark Paller, MD, MS, senior associate dean, University of Minnesota Medical School.



Robert Nadeau

Appointed: Robert Nadeau, DDS, MD, (Developmental/Surg Sci) as director of the Advanced Education Program in Oral and Maxillofacial Surgery.



Sheila Riggs

of Human Services. Her re-appointment to a second, three-year term on the committee and to this new leadership role was effective September 1, 2018.

Appointed: Sheila Riggs, DDS, MS, DMSc (Primary Dental Care-Dental Public Health) as chair of the Dental Services Advisory Committee of the Minnesota Department



Mansur Ahmad

and Maxillofacial Radiologists, effective September 15, 2018. He will be president in 2019-20.

Elected: Mansur Ahmad, PhD (Diagnostic/Bio Sci-Oral Medicine, Diagnosis & Radiology) as president-elect of the American Academy of Oral



Karl Self

implementation of a memorandum of understanding between the University of Minnesota and GCUC that calls for the director of the University of Minnesota Dental Therapy Program to serve as a mentor and external examiner to the GCUC dental therapy education program.

Invited: Karl Self, DDS, MBA (Primary Dental Care-Dental Therapy) to visit Garden City University College (GCUC) in Kumasai, Ghana. The visit is the first step in



Robert Jones

a \$2.8M, NIDCR grant (starting 7/1/18 and continuing for five years) to explore "The unrecognized role of phosphate-accumulating bacteria in oral health."

Awarded: The multi-principle investigator team of **Robert Jones**, PhD, DDS (Developmental/Surg Sci-Pediatric Dentistry) and Jake Bailey, PhD (U-M Department of Earth Sciences)



A Letter from the President

*“We can change the world and make it a better place.
It is in your hands to make a difference.” — Nelson Mandela*

In preparation of writing this short message, I went back through several issues of *Dentistry* magazine to gain some inspiration. I encourage you to do the same. I was thrilled to see the increased diversity in the classes and stories of our featured alumni and students, and I beamed with pride seeing the evolution of the School of Dentistry’s outreach clinics from conception to reality as some of my most formidable, yet valuable patient interactions were in my outreach rotation in Willmar.

I re-read stories on changes in dentistry year after year, alumni giving back to their communities, breakthrough research discoveries, our progression of advocating new licensure standards, and interviews with three different School of Dentistry deans. That doesn’t even scratch the surface of the stories we’ve been told. I still have no clue how the school keeps tabs on thousands of alumni, but each of you has a brilliant story to tell us.

It has been, first and foremost, a privilege to work alongside Dean Gary Anderson. His incredible support of SODAS, the School of Dentistry and organized dentistry as a whole has been a breath of fresh air. I hope we can continue to interweave this relationship during his tenure as his reputation statewide is truly special. Additionally, the support from our SODAS board and Director of Alumni Relations Erin Elliott has not only been inspiring, but a tremendous relief. No one can do this alone, and when you’re met with life-changing events day after day, it’s important to rely on a smart team of individuals, and we have just that in our board. We have some amazing events in the works for our alumni and are developing robust benefits to our members that are unique and worthwhile.

Steve Jobs said, “A lot of times, people don’t know what they want until you show it to them.” I used this quote in another article I wrote for *Northwest Dentistry* a few years ago on disruptive thinking we’ve seen implemented in industry as well as in organized dentistry. I truly believe we are all equipped to handle disruptive thinking, but are sometimes hesitant to implement the change it calls. That’s where we plowed ahead with a few big changes. We added student members to our SODAS board for fresh and integrative perspectives. We have a fun “Alumni Weekend” in the works for 2019. We are developing engagement events to connect our alumni with our students. We want to brand ourselves! I’m still in awe at how much we’ve accomplished in such a short time. I truly look forward to serving you as your SODAS board president and encourage you to please get in touch with us if you want to help.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Aruna'.

ARUNA RAO, D.D.S., '12
President, School of Dentistry Alumni Society
www.dentistry.umn.edu/alumni



CONNECT WITH US
ON LINKEDIN AND FACEBOOK.

We are excited to launch a new program for the alumni community!

In partnership with the School of Dentistry's offices of alumni relations and student affairs, we're inviting alumni to come back to campus to talk about their experience in dental school with current students, and to share exciting employment opportunities in the dental community.

Sign up here: z.umn.edu/LunchLearn

We will do our best to accommodate each request, but we want to provide students with diverse opportunities throughout the year.

Questions? Contact:

Erin Elliott
Director of Alumni Relations
erstrong@umn.edu

Eisenhuth Visits in September

In September, **Dr. Jennifer Eisenhuth** returned to the School of Dentistry to talk to current students about growing her practice and why she decided to specialize after dental school.

Dr. Eisenhuth is a two-time graduate of the University of Minnesota School of Dentistry.

She received her doctor of dental surgery degree in 1994 and completed her orthodontic residency in 1996.



PHOTO BY ERIN STRONG ELLIOTT

A few months after graduation, she opened a clinic in Eagan, Minn., that has now grown to a team of 22, including one associ-

ate dentist. For the last five years, the office has been recognized by *Minnesota Business* magazine as one of the Top 100 Businesses to Work For; in 2018, the magazine named her office 'the' Top Overall Business to Work For, a recognition never before given a single-owner dental clinic.

Meet Your New SODAS President



Why Dentistry?

I have a bachelor's degree in biomedical engineering, but felt like my true calling was in patient care. It has been an amazing ride thus far and I can't believe how much I've been able to do in this field.

far and I can't believe how much I've been able to do in this field.

What are you listening to?

I commute, on average, 120 miles a day, so I listen to A TON of podcasts because I'm a lifelong learner. There are so many phenomenal topics and wonderfully produced podcasts out there, so I have to give some of my favorites and I'm always looking for recommendations!

- "Reply All"
- "Serial"
- "The Sporkful"
- "Dr. Death" – yeah, this one was BANANAS. Give it a listen if you haven't already!
- "How I Built This"
- "Revisionist History"
- "Wait, wait, Don't tell me!"
- And many, many more!

What are you reading?

I'm in a book club with several friends and we rotate picking books. I love being able to read stuff I normally never would pick up on my own. The current read is "The Hate U Give" by Angie Thomas.

What should alumni know about your vision for SODAS?

I believe in bridging the transition from student to professional rather than engaging alumni after they've graduated. One of our biggest initiatives this year was bringing student members on our alumni board. We are excited to see where this takes us!

2018-2019 School of Dentistry Alumni Board



PHOTO BY ERIN STRONG ELLIOTT

Front Row (L to R): Dr. Angela Hilo, Dr. Joey Omlie, Ms. Julie Dunn **Back Row (L to R):** Dr. Tudor Stiharu, Ms. Sheba Vincent, Dr. Aruna Rao, Dr. Mary Pariseau, Ms. Karen Bohnen, Dr. Shivan Nelson, Dr. Chad Rasmussen, Ms. Krista Lill. **Not Pictured:** Ms. Carol Dahlke, Dr. Michelle Scholtz, Dr. Sanket Nagarkar, Ms. Annalise Wallerich, Ms. Kelly Dubois.

SCHOOL OF DENTISTRY ALUMNI SOCIETY

Volunteering to serve on the SODAS board of directors is a great way to support student success, connect with fellow alumni, and give back to the School of Dentistry.

JOIN US!

www.dentistry.umn.edu/alumni

DAY OF SERVICE



The School of Dentistry Alumni Society, along with the University of Minnesota Alumni Association, hosted the 4th Annual U of M Day of Service on September 29, 2018. Fifteen School of Dentistry alumni, students and friends helped to pack food at The Food Group in New Hope, Minn. For more than 40 years, The Food Group (formerly Emergency Foodshelf Network) has partnered with 170 food shelves and meal programs. Since 2015, almost half a million alumni from across the world, students and others have had the opportunity to display their school pride and serve their communities on U of M Day of Service.



Alumni Weekend September 13-14, 2019

- All Alumni Reception
- School Tours
- Class Reunions (Class years that end in 4 or 9)
- Class of 1969-50 Year Reunion
- Football Game

Is it your reunion year? Would you like to help organize it at Alumni Weekend? Contact Erin Elliott, director of alumni relations at estrong@umn.edu or 612-626-6884.

dentistry.umn.edu


SCHOOL OF DENTISTRY
UNIVERSITY OF MINNESOTA

Continuing Dental Education Alumni Series

What's New in 2019? Game Changers & Drivers

January 25, 2019

8:00 a.m. to 3:45 p.m.

Continuing Education Center, St. Paul campus

Register online at: cdeumn@umn.edu

The dental profession always has been in a state of evolution and growth, and 2019 looks to be a continuation of that tradition. We've brainstormed with alumni and thought-leaders throughout the University of Minnesota School of Dentistry-world to find out what they expect to be new and exciting in 2019.

Working together, the 24 professionals who comprise the School of Dentistry's Alumni Society Board and Continuing Dental Education Advisory Committee have keen insights that lend themselves to a full-day training program and ongoing Zoom-based teleconferences/training sessions.

Meet Our Experts

Laurence Gaalaas, DDS, MS, clinical assistant professor, University of Minnesota School of Dentistry. Dr. Gaalaas received his dental degree from the University of Minnesota in 2012 and completed specialty training and a master of science degree in oral and maxillofacial radiology from the University of North Carolina at Chapel Hill in 2015. As a researcher and inventor, his experience includes advanced graphical analysis of images derived from dental imaging modalities, caries detection and diagnosis, contrast performance evaluation of clinical X-ray imaging systems, and development of novel imaging techniques specific to dentistry such as low dose 3D intraoral radiography and dental MRI.

Bryan Laskin, DDS, graduated from the University of Wisconsin-Madison and the University of Minnesota School of Dentistry. He leads a care team at Lake Minnetonka Dental. Dr. Laskin is the founder of Operability, a cloud-based communications company focused on the healthcare industry. He also is the co-founder of Talentship, a firm focusing on human capital, skills inventories, team management and company evolution. Dr. Laskin is an active member of the American Dental Association, Minnesota Dental Association, Minneapolis District Dental Society and several continuing education organizations. He is the host of The Operatory Podcast with Bryan Laskin.

Richard D. Nadeau, DDS, MPH, interim assistant dean for clinical affairs; director, Division of Comprehensive Care; clinical professor, Department of Primary Dental Care; director of clinical treatment planning, University of Minnesota School of Dentistry. Dr. Nadeau also served as director of the Emergency Clinic at the School of Dentistry from 1994 to 2001. He was in private practice in Minneapolis, Minnesota, until joining the School of Dentistry faculty in 1993.

Donna Stenberg, DDS, received her doctor of dental surgery degree from the University of Minnesota School of Dentistry, as well as her certificate in orthodontics and a master's degree. She is a diplomate of the American Board of Orthodontics, an elected Fellow of the American College of Dentists, and an active consultant with St. Paul Children's Hospital cleft palate team. Dr. Stenberg provides care at Minnesota Orthodontics. She is an avid learner and teacher, and has collaborated with the ADA Council on Dental Education and Licensure.

Melissa Zettler, DDS, graduated from the University of Minnesota School of Dentistry and completed her residency at the Minneapolis Veteran's Affairs Health Care System. She practices at Cherrywood Dental Care in Savage, Minnesota. Dr. Zettler is an avid learner and widely sought-after presenter. She has fellowships with the Academy of General Dentistry, American College of Dentists, and the International Congress of Oral Implantologists.

Class Notes

Please submit brief notices about milestone events and activities to: U of M School of Dentistry, Alumni Relations (attn: Erin Strong Elliott), 515 Delaware St. S.E., 15-136 Moos Tower, Minneapolis, MN 55455 or estrong@umn.edu.

Dentistry is published two times a year. Deadlines for submission are: Spring issue: January 1; Fall issue: July 1. Please note: Dentistry cannot publish birth and marriage announcements.

1955

Norval Oakland Morse (D.D.S.), Preston, Minn., died April 12, 2018 at age 95. He practiced dentistry in Worthington, Minn. (1955-1962) and Preston (1962-1992).



Norval O. Morse

Norval enjoyed taking road trips across the country and traveling to Alaska, Hawaii, and Cuba. He was an avid reader, hunter, fisher, and gold and silver-smith. Most of all, he loved spending time with his family.

1956

Robert Isaacson (D.D.S.), Edina, Minn., died September 15, 2018, at age 86. A four-time alumnus of the University of Minnesota—



Robert Isaacson

including a D.D.S., M.S. and Ph.D.—Dr. Isaacson joined the School of Dentistry faculty in the Department of Orthodontics and was named chair in 1965, becoming the youngest full professor at the University of

Minnesota at that time. While at Minnesota, he collaborated with engineering faculty to study the jaw in motion, and was intimately involved in the development of 3-D optical scanning technology. From 1987 to 2000, he chaired the Department of Orthodontics at Virginia Commonwealth University in Richmond. He lectured around the world, published more than 500 scientific papers in research journals, was named “Distinguished Practitioner in Dentistry” in 1995 by the National Academy of Practice, and served as editor-in-chief of *The Angle Orthodontist*. He received the School of Dentistry Alumni Society 2008 *Distinguished Alumnus Award*. In 2009, the AAO Orthodontic Educational Leadership Conference held in Boston was named in his honor. A memorial fund has been established at the School of Dentistry

to honor Dr. Isaacson. Contact Emily Best at emilyj@umn.edu or (612) 625-6811 for more information.

1958

Jane Ann Benson Adams (D.H.), Rotonda West, Fla., died at age 80 on April 11, 2018. She started long distance running in her 40s



Jane Adams

with her daughters and completed 25 marathons. She worked as a dental hygienist for Dr. Jeffrey Hall in Excelsior, Minn., before her retirement at age 50. For many years after overcoming cancer, she volunteered for the American Cancer Society’s Reach for Recovery program for breast cancer survivors.

Eugene S. Ley (D.D.S.), Alexandria, Minn., died on September 5, 2018. He practiced dentistry in Parkers Prairie, Minn., from 1958



Eugene S. Ley

to 1978, and received an AMMED Officer E-1 Diploma in 1986 from the U.S. Army Academy of Health Sciences during his service in the National Guard (1980s-1990s). He also was involved in the Minnesota Dental Association and was an associate editor of *Northwest Dentistry* (1981-1991). Dr. Ley served as director for the Dental Hygiene Program at the University of Minnesota-Duluth (UMD) from 1980 to 1990, then as an associate professor and a professor until his retirement in 2006. In 1984, he was awarded a fellowship in the American College of Dentists. He received the *Jean G. Blehart Award for Distinguished Teaching* at UMD (1996-97) and was appointed to the UMD Academy of Distinguished Teachers in 2005.

1959

Merrill W. Packer (D.D.S., M.S.D. '64), Blackfoot, Ida., died on March 8, 2018. He practiced dentistry in Anoka, Minn., then pursued a career in dental education at the University of Alberta in Canada and the University of Kentucky. He was a lifetime member of the American Dental Association and an active member of the American Association of Dental Schools. He served in Washington, D.C. as director of the Division of Dentistry from 1970-74. He was then recruited to Kentucky and appointed dean of the College of Dentistry, a position which he held from 1974-1986. He retired from the University as professor emeritus in 1995.

1960

The Class of 1960 celebrated its reunion this summer. Event planners were Drs. Bob Faine and Clark LaChapelle.



Class of 1960

1961

George Perpich (D.D.S.), Shoreview, Minn., died September 6, 2018. Dr. Perpich served in the U.S. Navy (1955-57), graduated from



George Perpich

dental school, and then practiced dentistry in Chisholm, Minn., until 1987. He was a Minnesota state senator from 1971-80, during which time he focused on healthcare and mental health issues and chaired the Senate Health, Welfare and

Corrections Committee for several years. His priorities included increasing services to those in state mental and penal institutions and in the transition for their return to their communities; state support for home health care for the elderly; a sliding scale for child care to make it easier for low- and moderate-income mothers to work; and state aid to subsidize adoptions for hard-to-place children with special needs.

1962

Francis J. “Fran” Washburn (D.D.S.) died September 10, 2018. After serving in the U.S. Air Force, he and his wife Kathy moved



Francis J. Washburn

to Rochester, Minn., where Dr. Washburn started the 12th Street Dental Office. He enjoyed working alongside his staff and appreciated all of his patients over the years. He practiced dentistry from 1965 until 1994.

He also served as both the president and secretary of the Southeastern District Dental Society and was active in the Zumbro Valley Dental Society.

1966

Kenneth James Weidman (D.D.S.), died on April 27, 2018. While awaiting a call to serve in the Vietnam War, he accepted an interim



Kenneth J. Weidman

position with Drs. Young and Herder in Breckenridge, Minn., and later took over the practice upon their retirement. He practiced dentistry in Breckenridge until his own retirement in 2011, and then

returned to school as a clinical instructor for the North Dakota State College of Science Dental Hygiene Program where he continued to work until his death. He had a passion since childhood for all things in nature, especially fly fishing and hunting, loved all things Minnesota (the Vikings, the Twins, the Wild, the Gophers, pheasants, grouse and walleye) and found great satisfaction in the time devoted to helping young students excel in their dental careers.

1968

The Class of 1968 celebrated its 50-year reunion this fall on campus. Event planners were Drs. CC Anderson and Barry Godes.

1969

The Class of 1969 will celebrate its 50-year class reunion September 13-14, 2019. Contact: Dr. George Kinney. Additional information to come.

1972

Jeffrey A. Rossmann (D.D.S.), Dallas, Tex., a clinical professor in the Department of Periodontics, Texas A&M College of Dentistry, has been named the director of examinations for the American Board of Periodontology. This new position will be responsible for the certification process for the specialty of periodontics under the direction of the board.

1973

Gregory William Ludden (D.D.S.), Onalaska, Wisc., passed away on June 7, 2018. In January 1974, Dr. Ludden proudly enlisted into the U.S. Navy, achieving the rank of lieutenant, doctor of dental surgery. He then returned to Wisconsin and practice general dentistry in Appleton. He was a proud member of the American Dental Association, the Wisconsin Dental Association, the Outagamie County Dental Society and the Pankey Institute for Advanced Dental Studies.



Kathy Green

1980

Kathy Green (D.H.) was elected central region representative to the National School Board Association (NSBA) and will represent the region on the association's

26-member board of directors, beginning April 9. Green is currently a member of the Austin School Board and president of the Minnesota School Boards Association.

1985

Wallace F. Strow, Jr. (D.D.S.), Mount Vernon, Ill., received the Academy of General Dentistry (AGD) Mastership during the AGD's commencement celebration on June 9 in New Orleans. The award is the highest honor available in the AGD requiring completion of 1,100 hours of continuing dental education, with a minimum number of credits earned in each of 18 dental subject categories, including 400 hours dedicated to hands-on skills and techniques.

2009

Lesley Tuomi (D.H.) was recognized for her service to the profession and dental patients with the 2018 Sunstar/RDH Award of Distinction. Tuomi provides dental services for underprivileged students in North Minneapolis. She leads a school screening program consisting of various health professionals that provides dental, vision, hearing, and nutritional services. She is most proud of her unwavering commitment to her community.



Jeff Remakel

2011

Jeff Remakel (D.D.S.), St. Louis Park, Minn., was the alumni keynote speaker at the School of Dentistry's 2018 White Coat Ceremony on September 14.

2013

Graham Merry (D.D.S.) died on July 13, 2018. Dr. Merry graduated from dental school with an undergraduate degree in biochemistry from the University of St. Thomas. He discovered a passion for real estate development and property management and built a successful rental property business from scratch. Simultaneously, he enjoyed his one day a week as a dentist working at his father's Eden Prairie clinic, Bruce Merry D.D.S., Artistic Dental Solutions.



Mike Steinmetz

Mike Steinmetz

(D.D.S.) takes over Lakes Area Pediatric Dentistry in Fergus Falls, Minn., following the retirement of Dr. Stephen Whoolery (1982).

JOIN US ON CAMPUS NEXT FALL

Alumni Weekend
September 13-14, 2019

- All Alumni Reception
- School Tours
- Class Reunions (Class years that end in 4 or 9)
- Class of 1969-50 Year Reunion
- Football Game

Is it your reunion year? Would you like to help organize it at Alumni Weekend? Contact Erin Elliott, director of alumni relations at estrong@umn.edu or 612-626-6884

Dental Hygiene Program's 100th Anniversary Celebration
October 18-19, 2019

- Continuing education featuring Dental Hygiene alumni
- School Tours
- Celebration event at McNamara

Want to be a part of the planning? Contact Erin Elliott, director of alumni relations at estrong@umn.edu or 612-626-6884

dentistry.umn.edu

EventsCalendar

JANUARY 2019

January 15
School of Dentistry Alumni Society Board Meeting

FEBRUARY 2019

February 9
Give Kids a Smile
University of Minnesota
School of Dentistry
Minneapolis, Minn.

MARCH 2019

(March: Date to be announced)
Arizona Alumni Brunch

March 1
15th Annual Dental Research Updates from the U of M
8:00 a.m. to 3:00 p.m.
Great Hall
Coffman Memorial Union
Minneapolis Campus
School of Dentistry Alumni Lunch:
Noon to 1:00 p.m.
Location: To be announced

March 10-13
American Association of Endodontics Annual Meeting
Montreal, Canada
Alumni Reception:
To be announced

APRIL 2019

April 25-27
Star of the North Meeting
Saint Paul RiverCentre
Saint Paul, Minn.
For information:
(612) 767-8400
(800) 950-3368

April 26
Minnesota Reception
5:30 p.m. to 7:30 p.m.
Saint Paul Hotel
Saint Paul, Minn.

For information and to RSVP:
Ranee Flory
(612) 625-7678
Chan0572@umn.edu

April 26
Dental Hygiene Alumni Lunch
Noon to 2:00 p.m.
Saint Paul Hotel
Saint Paul, Minn.

MAY 2019

May 1
School of Dentistry Alumni Society Board Meeting

May 3-7
American Association of Orthodontics Annual Meeting
Los Angeles, Calif.
Alumni Reception:
May 4
7:00 p.m. to 8:30 p.m.
Tom's Urban
Los Angeles, Calif.

Contacts:
Katie Olsen
kmolsen@umn.edu
Jodi Kelly
roone005@umn.edu

May 9-10
Montana Dental Association Annual Session
Radisson Colonial Hotel
Helena, Mont.

May 16-18
South Dakota Dental Association Annual Session
Rapid City, SD
Alumni Reception:
To be announced

AUGUST 2019

August 14-16
New Student Orientation

SEPTEMBER 2019

White Coat Ceremony
2:00 p.m.
Northrop Memorial Auditorium
University of Minnesota
Minneapolis Campus



For more information

Except where noted, you can obtain further information on the events listed and/or request disability accommodations by contacting:

Erin Strong Elliott
Alumni Relations
(612) 626-6884
estrong@umn.edu

To stay informed about events at the University of Minnesota, see the Twin Cities Campus Event Calendar at www.events.tc.umn.edu

CDE Courses

Discount Available

School of Dentistry Alumni Society members are eligible for discounted continuing education. Members may receive a 10 percent discount for "lecture only" courses offered through the University of Minnesota School of Dentistry. (This discount applies to School of Dentistry Alumni Society members only and not their employees.)

*See smile.umn.edu for updates.

JANUARY 2019

Advanced Composite Restorations: A Hands-on Program
January 11-13

Adult Oral Sedation and Anxiolysis: The Complete 16-hour Training Program
January 19-20

Botox and Dermal Fillers: Live-patient Training
January 19-20

What's New in 2019: Game Changers & Drivers
January 25

Endoesthetics & Contemporary Endodontics: Current Theories of the Restoration of Endodontically Treated Teeth
January 25-26

FEBRUARY 2019

Removal of Bond Material with Rotary Instrumentation: A Hands-on Program
February 7

24th Annual Ski & Lean: Aspen Snowmass
February 7-9

Miniresidency in Cone Beam CT Imaging
February 8-9

Soft Tissue Diode Laser Certification for the Dental Hygienist
February 8-9

Periodontal Surgery Workshop: Pocket Reduction and Crown Lengthening
February 16-17

Miniresidency in Pediatric Dentistry
February 22-24

Office Oral Surgery: A Guided Experience for the General Dentist
February 25-26

MARCH 2019

15th Annual Dental Research Updates from the U of M
March 1

Anatomically Driven Biologic Endodontics
March 1-2

Advanced Occlusion & TMD
March 7-9

Nitrous Oxide/Oxygen Inhalation Sedation: A Training Program
March 15

Dental Equipment Maintenance, Repair & Safety: A Hands-on Workshop for the Dental Team
March 16

Restorative Expanded Functions: An 80-hour Training Program
March 22-24
April 12-14
May 3-5
May 17-19

APRIL 2019

New Materials, Technologies & Laser Training
April 26-28

Local Anesthesia: A Hands-on Training Program
April 29-May 1

MAY 2019

Building a Dental Home Network for Children with Special Health Care Needs
May 3

Office Oral Surgery: A Guided Experience for the General Dentist
May 13-14

Spring Mandatory & Core Training for the Entire Dental Team
May 17

Successful Medical Billing by Dental Practices: Bigger Profits. Better Care.
May 18

JULY 2019

Office Oral Surgery: A Guided Experience for the General Dentist
July 15-16

NOVEMBER 2019

Miniresidency in Pediatric Dentistry
November 8-10

Cuba: Travel & Learn
November 10-16

DECEMBER 2019

Office Oral Surgery: A Guided Experience for the General Dentist
December 16-17

For more information

For more information, to register for classes and/or to request disability accommodations, contact:

Continuing Dental Education

6-406 Moos HS Tower
515 Delaware Street SE
University of Minnesota
Minneapolis, MN 55455

Phone:

(612) 625-1418
or (800) 685-1418

Fax:

(612) 624-8159

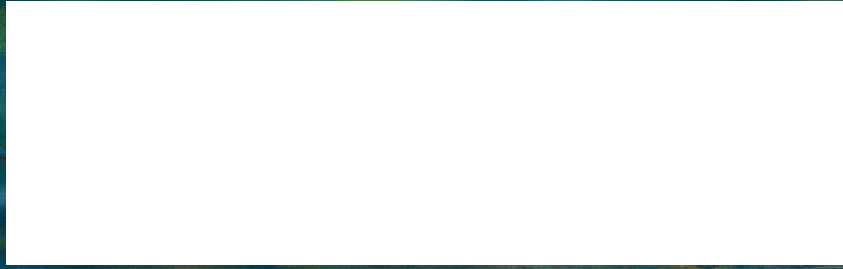
Website:

smile.umn.edu

SCHOOL OF DENTISTRY
University of Minnesota
15-136 Moos Tower
515 Delaware Street S.E.
Minneapolis, Minnesota 55455

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