

Medical Bulletin

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL

SPRING 2017



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Made in Minnesota

How we can meet our state's need for family physicians

14 Scientists interpret the brain's complex connections

18 Mentor program adds diversity to the physician pipeline

22 Can a new device make more donor hearts available?





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Extending the pipeline

With support from a U medical student mentor, high school students Sabrina Ali (left) and Ramla Mohamud are on the path to medical careers.

The *Medical Bulletin* is published twice a year by the University of Minnesota Foundation.

Editor
Meredith McNab

Managing Editor
Nicole Endres

Design and Production
Woychick Design

Printing and Distribution
Sexton Printing

For more information or to update your address, please contact:

Meredith McNab, editor

612-625-0657 or 800-775-2187
mmcna@umn.edu

University of Minnesota Foundation
200 Oak Street SE, Suite 500
Minneapolis, MN 55455-2010

give.umn.edu

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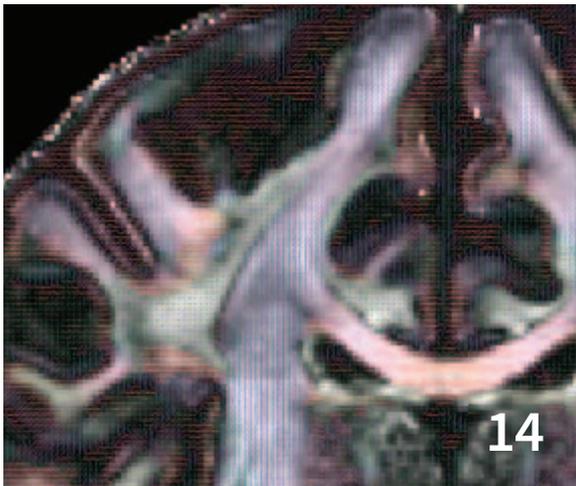


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Advancing our mission



PHOTO: SCOTT STREBLE

Accomplishments and ambitions. The *Medical Bulletin* is brimming with both.

In this issue, for example, you will read about Macaran Baird, M.D., M.S., outgoing head of the Department of Family Medicine and Community Health. The department, which has thrived under Dr. Baird's leadership, is currently ranked third by the National Institutes of Health and is the U.S. leader in training family medicine physicians. Despite its success, however, the program requires greater support to meet our state's growing need for family physicians (see story, page 8).

Recently, StartClass ranked our Medical School No. 20 out of 174 medical schools nationally, based on admission standards, rankings such as *U.S. News & World Report's*, student resources, and research funding. Innovative longitudinal clerkships, competency-based education, and new pipeline programs have made our school stronger and helped to improve our standings. Find out how one program feeds the physician pipeline by pairing high school

students from diverse backgrounds with medical student mentors (page 18).

Our colleagues' achievements advance our mission, too, and I am pleased to congratulate John Wagner, M.D., pediatrics professor and executive medical director of the Pediatric Blood and Marrow Transplant program, who in February received a lifetime achievement award from the Pediatric Blood and Marrow Transplant Consortium.

Finally, I want to introduce Chainbreaker, a bike ride to support the Masonic Cancer Center and cancer research across the University (see page 5). The August 11–13 event is modeled after Ohio State University's Pelotonia ride, which has raised more than \$130 million in eight years. I know we can be just as successful, and I will be riding. Will you? Visit chainbreakerride.org to register.

Thank you for backing our greatest ambitions. MB

Thank you for backing our greatest ambitions.

Brooks Jackson, M.D., M.B.A.

U cancer drug increases survival in dogs, shows potential for humans

A University of Minnesota study evaluating a new homegrown drug is resulting in improved survival rates for dogs with a cancer called hemangiosarcoma (HSA).

Canine HSA is a common, aggressive, incurable sarcoma. It is remarkably similar to angiosarcoma, which affects humans. Both cancers typically spread before diagnosis, and the survival time for those affected by these cancers is extremely short, even with aggressive treatment. Only 50 percent of humans diagnosed with angiosarcoma live longer than 16 months, and fewer than 50 percent of dogs with HSA will survive four to six months after diagnosis.

The study tested a drug called eBAT, developed by Medical School professor and Masonic Cancer Center member Daniel Vallera, Ph.D. "eBAT was created to specifically target tumors while causing minimal damage to the immune system," he says.

HSA is a cancer of the blood vessels. eBAT was selected for this study because it simultaneously targets the tumor and its vascular system, Vallera says.

The drug was given to 23 dogs of various breeds with HSA of the spleen. These dogs received three treatments of eBAT after surgery to remove the tumor but before conventional chemotherapy. The drug treatment improved the dogs' six-month survival rate to about 70 percent. Five of the 23 dogs lived more than 450 days.

The results were published February 13 in the journal *Molecular Cancer Therapeutics*.

"This is likely the most significant advance in the treatment of canine HSA in the last three decades," says study coauthor Jaime Modiano, V.M.D., Ph.D., a professor in the U's College of Veterinary Medicine and a Masonic Cancer Center member.

These results, combined with the similarities between HSA and angiosarcoma in humans,



U veterinarians Jaime Modiano, V.M.D., Ph.D., and Antonella Borgatti, D.V.M., M.S., with patient Valky

make a case for translating this drug into clinical trials for human cancer patients.

"This drug was invented here at the University of Minnesota, developed here, manufactured here, tested here, and showed positive results here," Modiano says. "We would also like this drug to achieve positive outcomes for humans here." MB

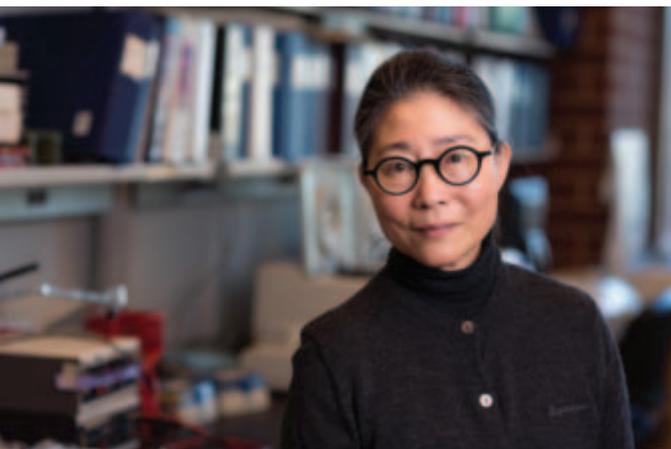


PHOTO: BRADY WILLETTE

U team pinpoints potential target for Alzheimer’s treatments

Medical School researchers have identified a potential target for treating Alzheimer’s disease. The study provides insight into what may be causing the disease and one day could help find an effective treatment.

Karen Hsiao Ashe, M.D., Ph.D., founding director of the University’s N. Bud Grossman Center for Memory Research and Care and a professor of neurology, and her team homed in on the protein tau as the likely culprit about 12 years ago. Although it’s normally part of a healthy body, tau changes and clumps together irregularly in people who have Alzheimer’s disease.

In the new mouse study, the team looked for a mechanism that could be affecting tau and found that caspase-2, a naturally occurring enzyme, may be to blame. The researchers also discovered that tau accumulates in neurons when caspase-2 “cuts” healthy tau at a particular point.

By reducing levels of the enzyme or preventing it from cutting tau entirely, Ashe believes it could be possible to recover memory deficits or even restore cognition. “Next, we hope to collaborate with our colleagues in drug development to translate this toward care,” she says.

Published in the journal *Nature Medicine*, the research was funded by the National Institutes of Health, the Thomas M. Grossman Family Charitable Trust, Beverly Grossman, and Karin Moe. [MIB](#)

By reducing levels of a naturally occurring enzyme, it may be possible to recover memory deficits or even restore cognition.

PHOTO: BECCA BEETS

Leaders assume new roles

SHAILEY PRASAD, M.D., M.P.H., associate professor in the Department of Family Medicine and Community Health and associate director of the North Memorial Family Medicine Residency Program, assumed the role of executive director of the Center for Global Health and Social Responsibility on April 1. In his new position, Prasad will help to strengthen the Academic Health Center’s global partnerships and increase opportunities for faculty, students, and staff to collaborate with colleagues worldwide. He will continue to oversee the Metropolitan Physician Associate Program, a nine-month urban preceptorship program, at North Memorial Medical Center in Robbinsdale.



SAMUEL C. DUDLEY Jr., M.D., Ph.D., will join the Medical School faculty on May 31 as director of the Department of Medicine’s Cardiovascular Division, director of the Lillehei Heart Institute, and holder of the Fred C. and Katherine B. Andersen Foundation Chair in Adult Clinical Cardiology. He comes to the U of M from Brown University, where he holds the Ruth and Paul Levinger Chair in Medicine at the Warren Alpert Medical School and investigates the mechanisms and treatments of arrhythmia and diastolic heart failure. [MIB](#)



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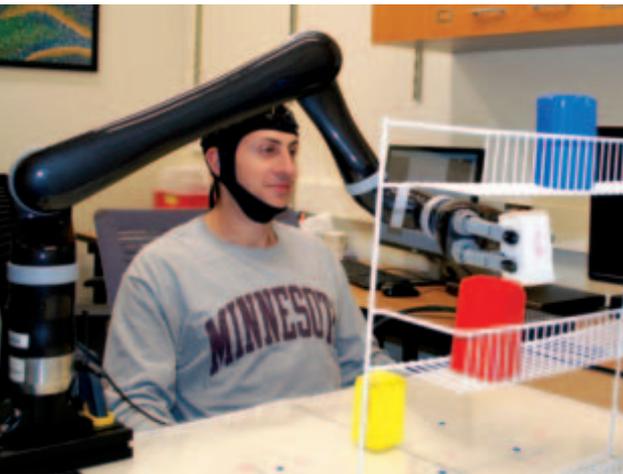


PHOTO: RHONDA ZURN, COLLEGE OF SCIENCE AND ENGINEERING

U study: Mind alone can control a robotic arm

UNIVERSITY OF MINNESOTA scientists have made a major breakthrough that allows people to control a robotic arm using only their minds. The research has the potential to help millions of people who are paralyzed or have neurodegenerative diseases.

“This is the first time in the world that people can operate a robotic arm to reach and grasp objects in a complex 3-D environment using only their thoughts, without a brain implant,” says Bin He, Ph.D., director of the U’s Institute for Engineering in Medicine and the study’s lead researcher. “Just by imagining moving their arms, they were able to move the robotic arm.”

The noninvasive technique, called electroencephalography-based brain-computer interface, records weak electrical activity of the subjects’ brains through a specialized, high-tech cap fitted with 64 electrodes that convert the “thoughts”

into action by advanced signal processing and machine learning.

The brain-computer interface technology works because of the geography of the motor cortex—the area of the brain’s cerebrum that governs movement. When humans move, or think about a movement, neurons in the motor cortex produce tiny electric currents. Thinking about a different movement activates a new assortment of neurons.

He anticipates the next step of his research will be to develop the technology further by creating a brain-controlled robotic prosthetic limb attached to a person’s body and to examine how this technology could work for people who have had a stroke or are paralyzed.

The study was published in December in *Scientific Reports*, a *Nature* research journal. It was supported by several federal grants and the University’s state-funded MnDRIVE Initiative. **MB**

This is the first time that people can operate a robotic arm to reach and grasp objects using only their thoughts, without a brain implant. – Bin He, Ph.D.



WEB EXTRA

See the technology in action at z.umn.edu/roboticarm.

Meet Fairview’s next president and CEO

James Hereford has joined Fairview Health Services as the organization’s president and CEO. He made the move to Fairview in December from his previous role as chief operations officer at Stanford Health Care in California.

At Stanford, Hereford spearheaded inpatient care, ambulatory operations, and a wide array of administrative functions. He also advanced its Accountable Care Organization provider network strategies with a focus on improving care while reducing costs.

Prior to his role at Stanford, Hereford was chief operations officer at the Palo Alto Medical Foundation, where he was responsible for operations serving more than 800,000 people in the San Francisco Bay area. While there, he successfully implemented a “lean management system” to improve all medical care outcomes. He also was the “lean champion”

charged with implementing the Group Health Management System while serving as executive vice president of the Group Health Care Delivery System in Seattle.

A Montana native, Hereford earned his bachelor’s and master’s degrees in mathematics from Montana State University. He has taught courses at Stanford University’s Graduate School of Business, University of Washington’s Master of Health Administration program, and the Ohio State University’s Master of Business Operational Excellence program. Hereford also is a frequent presenter and writer on lean management systems and transformation. **MB**

James Hereford moves to Fairview from Stanford Health Care.



PHOTO: COURTESY OF FAIRVIEW HEALTH SERVICES



HHMI recognizes immunology scientist for bold research

David Masopust, Ph.D., studies the value of using “dirty” mice in research.

The Medical School’s David Masopust, Ph.D., has been named to the inaugural class of Howard Hughes Medical Institute (HHMI) Faculty Scholars, in recognition of his dedication to creative and innovative solutions in science.

An associate professor in the Department of Microbiology and Immunology and a Masonic Cancer Center member, Masopust is focused on immunosurveillance research and how resident memory T cells control infections and cancer.

The Faculty Scholars program – led by the HHMI, Simons Foundation, and Bill and Melinda Gates Foundation – targets early-career researchers and provides flexible

funding resources to allow them to take chances and pursue creative research ideas.

Eighty-four scholars were selected for the honor out of more than 1,400 applicants.

“This recognition of Dave’s work puts him in a class with some

of the most elite investigators in the nation,” says Tucker LeBien, Ph.D., vice dean for research in the Medical School and associate vice president for research in the U’s Academic Health Center. “His fundamental research on immune cell function has changed the field in incredible ways, and this program will only provide more opportunity for discovery.”

Masopust’s recent work includes a new model of mice called “dirty” mice, which are designed to mimic the adult human immune system in the unhygienic real world, as well as investigations into how the immune system patrols the body for detection of infected and cancerous cells. [MIB](#)

CHAINBREAKER

Ready to join a quest to defeat cancer? Participate in Chainbreaker, a cycling event and celebration supporting the Masonic Cancer Center and lifesaving cancer



research conducted across the University of Minnesota.

Chainbreaker

: CHASING DOWN CANCER

RIDE 08.11.17 - 08.13.17

Chainbreaker participants can choose a ride that matches their skill levels, including one-day rides of 25, 50, or 100 miles and a two-day ride of 180 miles. The August 11–13 experience will include cycling, entertainment, and volunteer opportunities.

Get geared up and ready to ride! [MIB](#)

Learn more or register: chainbreakerride.org.

STUDY: MRI CAN PREDICT AUTISM WITH 80 PERCENT ACCURACY

Using magnetic resonance imaging (MRI) in infants who have older siblings with autism spectrum disorder (ASD), researchers were able to predict with 80 percent accuracy which infants would meet the criteria for an ASD diagnosis at age 2. Typically, the earliest an autism diagnosis can be made is between ages 2 and 3.

Intervening early could lead to improved outcomes, as the brain is more malleable in the first years of life compared with later in childhood.

“This research highlights the best of contemporary science,” says study coauthor Jed Elison, Ph.D., an assistant professor in the University of Minnesota’s Institute of Child Development and Department of Pediatrics, who worked with researchers from around

the country and Canada on the study. “It’s collaborative and informed by technology and multiple areas of expertise, with the common goal of helping families.”

Researchers conducted MRI scans of infants who have an older sibling with an ASD diagnosis at 6, 12, and 24 months of age. They found that the babies who developed autism experienced a hyperexpansion of brain surface area from age 6 to 12 months, as compared with babies who had an older sibling with autism but did not show evidence of the condition at age 2.

The increased growth rate of the brain’s surface area in a child’s first year of life was linked to an increased growth rate of overall brain volume in the second year of life. Brain overgrowth was tied to the emergence of autistic social deficits in the second year.

The researchers found that brain differences at 6 and 12 months of age in infants who have older siblings with ASD correctly predicted 8 out of 10 infants who would later meet criteria for autism at age 2. In addition, the researchers predicted with 89 percent accuracy which babies would not go on to receive an ASD diagnosis by age 2.

The study, published February 15 in the journal *Nature*, was led by researchers at the University of North Carolina with contributors from the University of Minnesota, University of Washington, Washington University in St. Louis, Children’s Hospital of Philadelphia, McGill University, University of Alberta, College of Charleston, and New York University. [MIB](#)

LOCATION: Twin Cities, Minnesota MISSION: Elevating global health equity, starting in our own neighborhoods



Thinking globally, right here

HEALTH AND DISEASE don't exist in a vacuum. They are heavily influenced by family, community, culture, history, politics, and economic conditions. That's the proposition at the center of a new U of M course, Global Health in a Local Context, that encourages participants to think globally, even at home.

The inaugural course, offered by the Center for Global Health and Social Responsibility over 13 weeks last fall, included medical, dental, and public health students, as well as working health professionals from several fields. They represented various ages, races, socioeconomic backgrounds, even countries of origin. That diversity enriched every discussion, says assistant professor Michael Westerhaus, M.D., who led the course. "I think it was eye-opening for students to see how they each may approach a similar situation with a different set of responses, ideas, and solutions."

Each week, the group met in a different community setting, from a rural Hmong farm to Mixed Blood Theatre to St. Paul's Center for Social Healing. The changing locale "kept us from getting too comfortable," Westerhaus says, and "attentive to the different dynamics and forces in neighborhoods. It prompted us to prioritize humility and respect of the places we entered and the people we encountered." It also, he believes, stimulated creative ways of thinking.

For second-year medical student Hanna Nedrud, the class—particularly a session on getting to know your neighbors, facilitated by photographer Wing Young Huie in his Minneapolis studio—crystallized the importance of connectedness. "Isolation makes people sick; connection heals us," Nedrud says.

PHOTOS: SCOTT STREBLE



SUBMIT YOUR WORK

The *Medical Bulletin* is seeking compelling global health photos and stories by or about U of M Medical School students, alumni, or faculty members. Selected submissions will be published in future issues of the *Medical Bulletin*.

For more information or to submit your photo or story, email managing editor Nicole Endres at nendres@umn.edu.



The new U of M course Global Health in a Local Context met at a different community setting each week during the fall semester. In December they heard from Minneapolis photographer Wing Young Huie at his studio.

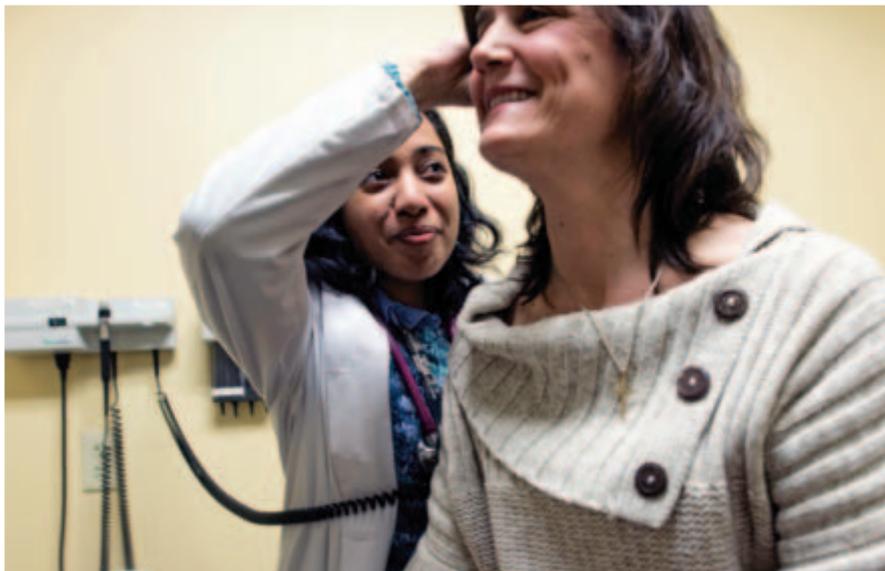
Luis Ortega, also a second-year medical student, was inspired by the session on narrative medicine. “It emphasized the healing potential inherent in storytelling and mindful listening,” Ortega says, adding that it helped underscore how therapeutic it can be for patients to have their stories “witnessed and validated.”

And while Western medicine has traditionally encouraged healers to remain objective and neutral in patient interactions, the class explored how a medical professional’s unique life experiences can actually help him or her provide better care, Ortega says. “I’ll feel more empowered to bring all of myself and the various aspects of my identity – second-generation immigrant, person of color, working-class background – into [the clinic] in a way that can help me relate to patients and their communities.”

By Susan Maas, a freelance writer who lives in Minneapolis

I’ll feel more empowered to bring the various aspects of my identity into [the clinic] in a way that can help me relate to patients and their communities.

– Luis Ortega, second-year medical student



Made In MINNESOTA

Though it trains more family medicine physicians than any other program in the country, the U of M must fight to keep its hard-won system in place

BY BARBARA KNOX

ON A TYPICAL DAY at Smiley's Clinic in south Minneapolis, the parking lot just off Hiawatha Avenue is more than half full by the time doors open at 8 a.m. To kick off his day, one of the clinic's family medicine residents, Richard Brown, D.O., sees two siblings with lice, then a college student with symptoms of depression. Next come a husband and wife—one needs an X-ray, the other a procedure on a cyst—followed by a fussy and feverish toddler, a woman with diabetes complications, and a patient needing a straightforward pre-op exam.

And it's not yet lunchtime.

As a third-year resident, Brown typically sees 11 patients in the morning and another 11 in the afternoon. On top of that, he does curbside consults with colleagues, makes follow-up calls to patients, handles medication refills, updates medical records, delivers the occasional baby, and, through it all, keeps learning.

"There's never a boring day in family medicine," says Brown, "and since I'm not a fan of saying, 'That's not what I do,' it's a perfect fit for me."

Fifty years ago, around the time Marcus Welby, M.D., reigned supreme on American TV, the family-doctor life was a good fit for about half of the country's physicians. But today, fewer than one in three doctors works in primary care. Now, as the nation faces a worsening shortage of family physicians, medical schools across the country are scrambling to figure out how to encourage more students to choose family medicine.

They would do well to look to the north, to the University of Minnesota.

AT LEFT, FROM TOP Richard Brown, D.O., examines 6-year-old Mohamed Haibe at Smiley's Clinic. Second-year resident Kriti Choudhary, M.B.B.S., M.P.H., examines Rebecca Stuber. Smiley's residency program director Patricia Adam, M.D., M.S.P.H., confers with the attending and resident physicians on the afternoon shift.



ABOVE LEFT First-year resident Sujitha Yadlapati, M.B.B.S., huddles with first-year resident Leesa Larson, M.D., integrated behavioral health provider Ryan Engdahl, Ph.D., L.P., and attending physician Denny Peterson, M.D., associate director of the St. Cloud Hospital Family Medicine Residency Program.

ABOVE RIGHT First-year resident John Tronnes, M.D., consults with third-year resident Steve Solum, M.D., at the CentraCare Family Health Center in St. Cloud.



PHOTOS: ANDRA JOHNSON, CENTRACARE HEALTH

According to the American Academy of Family Physicians, only about 9 percent of students graduating from MD programs in the United States choose to enter family medicine residency programs. But at the U of M Medical School, that number is around 19 percent—typically about 40 students per year—more than twice the national average and the highest in the country.

To understand how Minnesota wound up on top means going back more than four decades, when two significant plans were implemented. First, the Medical School launched the Rural Physician Associate Program (RPAP), giving third-year students a chance to spend nine months in a rural community learning about family medicine. Established in 1971, RPAP was

the first program of its kind in the world; since then, more than 1,300 U of M medical students have participated in RPAP, and four out of five of them have gone on to practice primary medicine, many of them right here in Minnesota.

Then, in 1972, after the state Legislature charged the U with increasing the number of both primary care physicians and Native American doctors, the Medical School opened its Duluth campus, which was the starting point for many of the family practitioners coming out of Minnesota.

“It starts with recruiting the right students,” says Jim Boulger, Ph.D., a Duluth-based family medicine professor and director of the U’s Center for Rural Mental Health Studies. “We seek out students who have grown up in rural settings, who love that life, and have indicated a desire to practice family medicine.”

Even first-year Duluth campus medical students spend time in smaller Minnesota communities, living with practicing physicians and their families, to get a real sense of what it’s like to be a family doctor. The approach works: 47 percent of these students go on to practice family medicine, and 40 percent of them end up practicing in rural areas. Even better news? Seventy-five percent of Duluth’s students choose to practice in Minnesota and western Wisconsin—a big retention win.

These initiatives, of course, depend on a veritable army of practicing family medicine doctors working in small-town clinics and hospitals across the state who regularly welcome students into their homes and voluntarily teach them about family medicine. These preceptors play an essential role in Minnesota’s winning formula for training primary care physicians.



PHOTO: DEREK MONTGOMERY

Preceptor and alumnus Thomas Heinitz, M.D., discusses a patient’s care plan with first-year resident Jesse Susa, M.D., at the Duluth Family Medicine Clinic.

“The problem now? We can’t squeeze any more medical school graduates into our existing residency programs,” says Boulger. “They’re all full. But with Minnesota coming up short by a couple thousand family docs within the next 10 years? We desperately need more residency spots to train these doctors.”

Boulger’s concerns are well founded. According to studies from the Robert Graham Center, Minnesota will be short by a projected 1,187 primary care physicians by 2030.

STEADY HAND AT THE HELM

“It gets frustrating when we know so much about how to do it right and we still can’t make that happen,” says Macaran Baird, M.D., M.S., who has led the Medical School’s Department of Family Medicine and Community Health for 15 years and is now planning his retirement (see sidebar, page 13).

Given his genial nature, it’s not surprising that Baird seems to know everyone: state legislators, insurance executives, Medicaid administrators, and a legion of practicing physicians. And it’s a good thing. In the course of his day, he may well need to call on any or all of them to help keep his ship on course.

“It’s a complicated business, sure,” says Baird, who points out that the rest of the world already emphasizes primary care, because it costs less.

In a 2013 speech, Margaret Chan, O.B.E., J.P., the director-general of the World Health Organization, drove home the point when she said, “In some countries where chronic diseases are the principal health burden, family doctors manage 95 percent of the health problems while absorbing only 5 percent of the health budget.”

Baird’s second point: When primary doctors serve as the linchpin for all of the patient’s health care needs, morbidity and mortality are reduced.

“The best scenario is to place rich resources within a single facility, a place like Smiley’s,” says Baird, “because once patients leave that site to chase down problems on their own, it becomes ‘fragmented care.’ The enemy in the system is fragmented care, and it’s a huge problem in the U.S.”

It starts with recruiting the right students. We seek out students who have grown up in rural settings, who love that life, and have indicated a desire to practice family medicine.

– Jim Boulger, Ph.D.





The more primary doctors you have in a community, the cheaper and more effective health care will be.

– Will Nicholson, M.D.

OPPOSITE

Adnan Kassim gets a cast from Smiley’s Clinic third-year resident Moaweya Zayed, M.D.



WEB EXTRA

See more photos of U of M family medicine residents at work and read about how a Minnesota program is opening doors to immigrant physicians at z.umn.edu/familymed.

Bottom line, he says, the state must support and grow family medicine residency programs to meet needs as Minnesota’s population ages and today’s primary care doctors retire.

“It’s too bad I can’t come up with a sexy slogan that boils it all down to a couple of words that fire people up,” Baird says, “but this is the best I can do: We need to integrate mental health and public health into primary care, and make fragmented care a never-event, because it costs lives and yields suffering. I’ll fight to the grave for that.”

‘RAISE OUR VOICES’

The U’s family medicine residency program got an unwelcome jolt last year when a public bidding process eliminated UCare as a provider of health insurance to low-income Minnesotans through the state’s Medical Assistance and MinnesotaCare programs.

UCare, which was started by the U’s Department of Family Medicine and Community Health before becoming an independent nonprofit organization, also supported the department’s residency programs financially, typically providing about 10 to 15 percent of the department’s funding. Without those dollars, the U is now scrambling to keep precious residency programs afloat.

“It’s not financially feasible to run a residency program—they don’t pay for themselves,” says Patricia Adam, M.D., M.S.P.H., the residency program director at Smiley’s Clinic. “Most residency programs across the country get funding from state or federal governments. But Minnesota doesn’t subsidize [most] U of M

residencies.” (Of the U’s eight family medicine residency programs, only St. Cloud receives state funding.)

This year, the U has asked the state Legislature for \$5.25 million in annual funding for family practice residency training beginning in 2018, with an additional \$2 million tacked on in 2019, for what it calls “health training restoration,” following the loss of UCare funding. Those dollars would support clinical training, education, and research programs within the family medicine department and at its eight training sites in Minneapolis, St. Paul, Duluth, St. Cloud, and Mankato, and the UCare Mobile Dental Clinic.

“Without that state support,” says Baird, “several residency programs may be at risk.”

Adam feels the urgency keenly.

“As a family medicine doctor, I’ve also had to become political,” she says. “I’m scheduled to go to the state Legislature to talk about how important primary care is, about how critical we are to the well-being of the state of Minnesota. Do I like doing that? No. That’s not why I became a doctor. But now we all have to raise our voices.”

THE GOOD LIFE AS A FAMILY DOCTOR

Will Nicholson, M.D., is one of those family doctors who is from Minnesota, trained in Minnesota, and now practices in Minnesota. And he loves it.

“I love the idea that family doctors are part of the community and become real advocates for their patients, looking for the root causes of recurrent problems,” he says.



PHOTOS: SCOTT STREBLE



Nicholson, who grew up in White Bear Lake and finished his residency in 2009, now heads up the family medicine hospitalist program at St. John's Hospital in St. Paul.

"The more primary doctors you have in a community, the cheaper and more effective health care will be," he says. "We're lucky to be here in Minnesota, where we've figured that out to a greater degree than most other places in the U.S."

Another U of M graduate, Ryan Fier, M.D., who now practices family medicine in Baxter, Minnesota, agrees. "I feel like the U's residency programs are the hotbed of family medicine in the country. As I traveled to interview with other programs, I saw there just wasn't a better place to train than here in Minnesota."

As the physicians who work closest to patients, family medicine doctors represent the first and, arguably, best line of defense for improving outcomes for a society increasingly plagued by chronic health problems. In that, the University remains laser-focused.

"Research has shown us that we have better health care when it's built on a primary care system," says Boulger. "At the U, we understand that and, top to bottom, we're all unified behind the mission to educate outstanding family medicine doctors." ^{MIB}

Barbara Knox is a freelance writer and editor and a frequent contributor to the *Medical Bulletin*.

MAKING WAY FOR A NEW CAPTAIN

After 15 years as head of the U's Department of Family Medicine and Community Health – and having amassed awards too numerous to list – Macaran Baird, M.D., M.S., plans to retire in June.

Baird – who completed a master's degree in environmental health (1971), medical school (1975), and residency training (1983) at the U – has led the department through significant challenges while increasing research productivity and the number of faculty, residency programs, and fellowships. Besides its top ranking in graduating students choosing family medicine, the department ranks third among family medicine departments nationally in funding from the National Institutes of Health.

"The Department of Family Medicine and Community Health is known for impactful research, highly qualified and dedicated educators, and service to our community," says Brooks Jackson, M.D., M.B.A., dean of the Medical School. "Mac's replacement will have big shoes to fill."

Baird plans to reduce his professional roles to spend more time with his wife, Kris; his children; and two grandsons.

"I love what I do, but now I think it's time to turn it over to someone else – someone who will think up new things to do," says Baird. "But what I won't stop? Championing the U of M, because this enterprise needs, and deserves, our support."

Read more about Baird's career at z.umn.edu/bairdretires.

INTERPRETING THE BRAIN'S CONNECTIONS

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MORE THAN SIX YEARS AGO, the University of Minnesota spearheaded the technological advances behind the most ambitious brain imaging study ever conducted, the Human Connectome Project. It mapped the vast network of about 90 billion neurons and trillions of interconnections in the brains of young, healthy adults at the millimeter scale.

The U's Center for Magnetic Resonance Research (CMRR) developed the imaging methods and directions on reconstructing the images to make sense of the data. Colleagues at Washington University in St. Louis did the bulk of the brain scanning—in total, 1,200 volunteers, made up of 300 sets of twins and two non-twin siblings—and, together with investigators from Oxford University, developed the image processing pipelines.

Findings from this National Institutes of Health (NIH)-funded project, now complete and celebrated as a success, are publicly available to scientists and anyone else who wants them. The insights gleaned so far are fascinating.

“Our consortium [found] that the brain networks that we can detect very much correlated with behavioral measures, lifestyle measures,” says CMRR director Kamil Ugurbil, Ph.D. “For example, they are correlated very strongly with IQ, with education, with drug use or alcoholism, etcetera.”

Other researchers used the Human Connectome Project data to show that brain networks are unique to individuals, much like fingerprints. That's encouraging, Ugurbil says, because if researchers can identify networks unique to individuals, they may be able to identify abnormalities unique to individuals as well.

BY NICOLE ENDRES



The Lifespan Human Connectome Project
launches phase two of the national brain
mapping initiative

A CLOSER LOOK AT THE HALLUCINATIONS OF SCHIZOPHRENIA

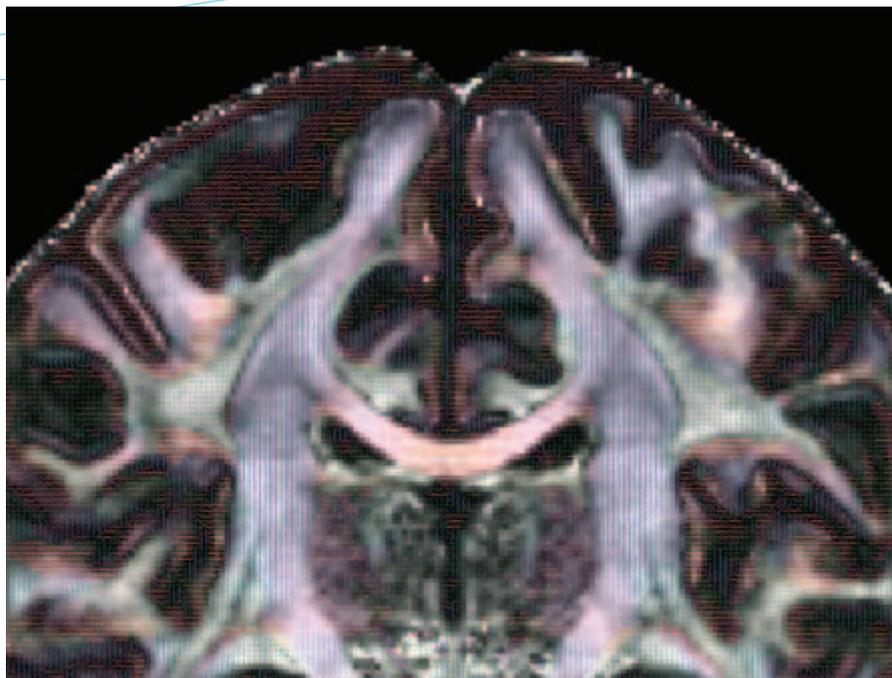
Scientists don't know exactly what causes the visual hallucinations some 3 million people with schizophrenia experience. But a new project led by the Medical School's Scott Sponheim, Ph.D., a professor of psychiatry and staff psychologist at the Minneapolis VA Health Care System, will explore why these episodes of visual distortion occur, potentially leading to improved treatments.

Funded by a \$3 million grant from the National Institutes of Health and part of the disease arm of the Human Connectome Project, Sponheim will collaborate with the University's Center for Magnetic Resonance Research to obtain detailed brain images of 150 people who have schizophrenia while they perform tasks that prompt activity in the brain's visual and prefrontal cortexes. He will also scan the brains of 100 people who are their immediate relatives and 50 other healthy people who are not related to someone who has schizophrenia.

Sponheim expects that people who have schizophrenia will have abnormal activity in both the prefrontal and visual cortexes, while healthy relatives who carry genetic vulnerability for the disorder will have only abnormal activity in prefrontal areas. He thinks the interplay between both abnormalities in the brain causes the hallucinations and represents problems with brain connections that result in schizophrenia.

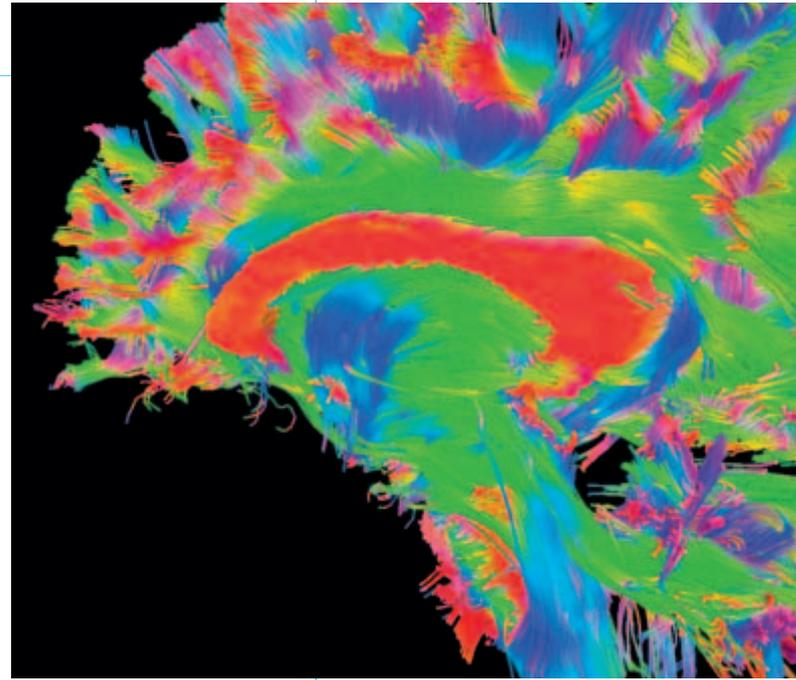
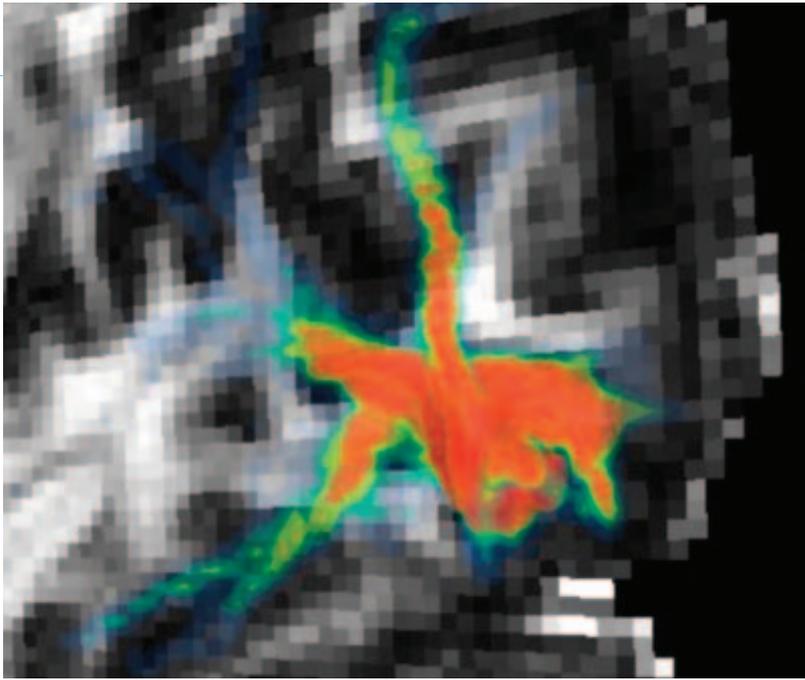
"By identifying mechanisms for the hallucinations, we can eventually develop more targeted treatments that might improve compromised portions of the brain," he says.

- David Martinson



What's next? Extensions of this immense undertaking. The NIH is now funding a Lifespan Human Connectome Project, designed to track normal brain changes in humans from infancy to "as old as we can get," Ugurbil says.

- The **Baby Connectome Project** focuses on children from birth to early childhood to map structural and functional changes that occur in the brain during typical development. The U's Jed Elison, Ph.D., McKnight Land Grant Professor, and Ugurbil will lead this effort with partners at the University of North Carolina.
- The **Lifespan Human Connectome Project: Development** targets ages 5 to 21 and will track changes in the brain, behavior, and mood as children move through puberty. The U's Essa Yacoub, Ph.D., and Kathleen Thomas, Ph.D., will lead this arm of the study, which will also take into account physical and mental health, thinking and decision-making skills, and behavioral and emotional regulation.



Images derived from Human Connectome Project data give researchers unprecedented views of the brain.

IMAGES: VU, A.T., AUERBACH, E., LENGLET, C., MOELLER, S., SOTIROPOULOS, S.N., JBABDI, S., ANDERSSON, J., YACOB, E., UGURBIL, K., 2015. HIGH RESOLUTION WHOLE BRAIN DIFFUSION IMAGING AT 7T FOR THE HUMAN CONNECTOME PROJECT. *NEUROIMAGE* 122, 318-331.

□ The **Lifespan Human Connectome Project: Aging** will characterize several factors that influence cognitive function alongside the comprehensive brain connectivity mapping in healthy volunteers aged 36 and up. This study—led by Ugurbil and the CMRR’s Melissa Terpstra, Ph.D.—will track risk factors for Alzheimer’s disease, cognitive symptoms associated with perimenopause, and key aspects of socioeconomic and health status.

The NIH is also funding 13 connectome projects focused on specific neuropsychiatric diseases to identify where and how alterations occur—and potentially to find ways to intervene in the disease processes.

“Predominantly, this drive comes from the hypothesis that all neuropsychiatric diseases are circuitry diseases and you cannot study them with just normal magnetic resonance imaging,” says Ugurbil.

U psychiatry professor Scott Sponheim, Ph.D., is leading one such project on schizophrenia (see sidebar, page 16).

The CMRR’s experts will continue to refine and develop the technologies needed for all of the connectome studies—and they’re disseminating these techniques to scientists around the world (at nearly 300 sites) in the name of advancing brain science.

“At the expense of sounding immodest, I think there has been a revolution in imaging the brain through the Human Connectome Project,” says Ugurbil, adding that anyone who uses functional imaging and diffusion imaging—the two imaging types used in the studies—in their research will benefit. “The technological development has been really fantastic.” ^[MIB]

Nicole Endres is managing editor of the *Medical Bulletin*.

GET INVOLVED

The University is recruiting healthy volunteers for the Lifespan Human Connectome Project. Study participants will spend one day at the U and will be compensated for their time.

Learn more at z.umn.edu/lifespanhcp.



WEB EXTRA

View more brain images from the Human Connectome Project at z.umn.edu/connectome.

Extending the pipeline



High school students Sabrina Ali (middle) and Ramla Mohamud (right) ask their medical student mentor Huy Donguyen about practical things like applying for scholarships and which classes to take to best prepare themselves for college.

A U mentoring program helps put a greater diversity of high school students on the path to medical school

HIGH SCHOOL SENIOR Ramla Mohamud is excited about becoming a doctor, and her University of Minnesota Medical School mentor aims to keep it that way. Both are from communities under-represented in medicine—a connection that helps build Mohamud’s confidence and resolve.

Sabrina Ali, her classmate at Higher Ground Academy in St. Paul, knew from a very young age that she wanted to pursue a medical career. She says her U of M mentors exposed her to different types of medicine and helped solidify her plans to become a doctor.

Ali and Mohamud, whose families are from Somalia, belong to the first group of teenagers to be paired with University medical students through the Twin Cities chapter of the Student National Medical Association’s High School Mentoring Program.

Both teens say the program helped keep them on course. “It broadened our horizons so we could know more about what we’re getting into and what we need to do to get where we want to be,” says Ali. Adds Mohamud, “We would say we want to be doctors, but the mentors kept us on that path by reminding us about applying for colleges or scholarships or answering our questions, like how to adapt to college from high school.”

The initial cohort was established in 2013–14 with 20 Higher Ground Academy ninth graders and first-year medical students. Typically, the pairs stay together throughout the program, and this spring, the first cohort of mentors and mentees will attend each other’s graduations.

Mentoring early

The High School Mentoring Program aims to expand the pipeline of minority medical students much earlier by encouraging them to study STEM subjects that could spark their interest in medicine. The idea came from Nathan Wanderman, ’15 M.D., then a U of M medical student, who saw the benefits of mentoring as an AmeriCorps teacher.

Mary Tate, the Medical School’s director of minority affairs and diversity, put the wheels in motion for the pilot by building on an existing Medical School partnership with Higher Ground Academy and similar mentoring programs for premed students at the U. The mentors encourage teens to take classes that will make them competitive college applicants, give advice about taking the SAT/ACT, and share their own Medical School experiences, such as how they handled the rigorous coursework during the first two years or how clinic rotations work in different specialties.

“By the time you get into college, it’s almost too late for some of these programs. You need to be knowledgeable at the high school level to explore different professions and test them out,” says Tate. “We also want to encourage [these students]. If this is something they want to do, they will have a circle of people who will help them be successful. It can be a long venture and a lonely one for minority students.”

Bill Wilson, founder and executive director of Higher Ground, was troubled by the lack of diversity in medicine and wanted to do some-

DIVERSITY ACROSS THE MEDICAL SCHOOL

The Medical School has commissioned an expert panel to promote diversity, equity, and inclusion throughout the school's curriculum, teaching, research, service, and clinical environments. The 28-member committee, chaired by Dimple Patel, M.S., associate dean of admissions, and radiology professor Alex McKinney, M.D., will collect data on the school's current climate and diversity initiatives, identify best practices at other institutions, and develop a diversity plan with measurable outcomes over the next few months.

thing to guide more students into the health professions. Many underserved students do not consider medicine as a career option, lacking role models. "At the end of the day, if we want to impact the field, we need to grow our own," says Wilson.

He notes that high school students gain more when they are mentored by people who are close to their own age. "The peer-to-peer connections they make are very important. They understand each other better, and they can talk about their shared experiences," says Wilson. "It's more relevant, and the connections are very powerful."

Increasing diversity in its Medical School is one of the University's goals, too. On the Twin Cities campus, 53 of 170, or 31 percent, of first-year medical students are from multicultural backgrounds—an increase from 20 percent in 2006. On the Duluth campus, 12 of 60 first-year medical students, or 20 percent, are from multicultural backgrounds, compared with 16 percent in 2006.

Demands for diversity

The University wants to promote student diversity in the Medical School and across the health professions for a number of reasons, but chiefly because communities and patients want to see providers who reflect their heritage, Tate says. Hospitals and clinics want to hire physicians from different backgrounds for the same reason—because patients benefit.

By encouraging a greater diversity of students to pursue undergraduate and medical degrees, the mentoring program should "enhance the ways we help the state of Minnesota fulfill the diversity needs for health care providers," says Tate.

Today's students, having grown up in a more diverse society, seek classmates from a variety of cultures, too, she says. "And when we have diversity, it just enhances the experience for everyone."

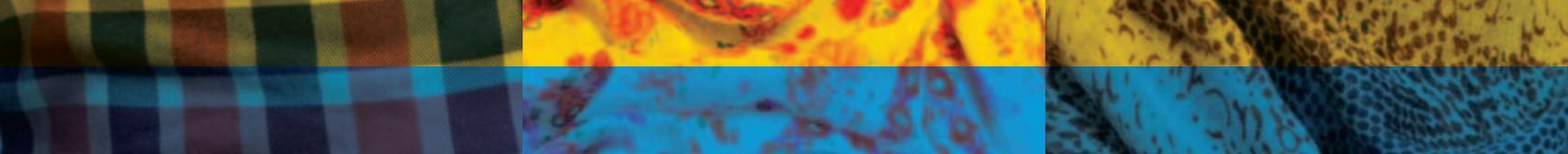
Fourth-year medical student Huy Donguyen is a founding member of the mentoring program and Ali and Mohamud's mentor. He wanted to give back after receiving similar mentoring through the Medical School's Minnesota Future Doctors program.

"I was a beneficiary of the U's pipeline organization that helps minorities in Minnesota get to medical school. Without all of that assistance and guidance about what it takes to get into medical school, I don't know if I would be here today," says Donguyen. "It exposes ... a whole population to the medical field that otherwise might not be exposed to that career."

Donguyen meets with his mentees every month, staying in touch by text and email in between. He says he tries to help Mohamud and Ali keep their minds open about the variety of opportunities in science and health care. "We are trying to give them a sense of what to look forward to," he says. "I make sure they know that the entire journey, while long and arduous, is nevertheless enjoyable and worthwhile."

This attention from Donguyen and other Medical School mentors means a lot to Ali and Mohamud. "They have time to listen to my problems and understand me," Mohamud says. "It's a friend and a connection rolled into one." **MB**

Freelance writer and journalist Suzy Frisch covers health and medicine, entrepreneurship, and other topics.



The peer-to-peer connections they make are very important. They understand each other better, and they can talk about their shared experiences.

– Bill Wilson, executive director, Higher Ground Academy



FROM LEFT Huy Donguyen, Sabrina Ali, and Ramla Mohamud enjoyed getting to know each other over the past four years through a mentoring program. This spring they'll attend each other's graduation ceremonies.

SUPPORTING FUTURE PHYSICIANS

THERE ARE MANY WAYS the Medical School reaches out to current and potential students who are from communities underrepresented in medicine and supports them while on campus. The Minnesota Future Doctors program admits 10 college students each year to help them develop a competitive portfolio for applying to medical school. That support includes help with MCAT preparation, guidance on the American Medical College application, and opportunities to shadow physicians and participate in research.

In addition, the Minority Association

of Pre-Medical Students and the Student National Medical Association both provide mentoring and guidance to current and aspiring medical students. Events held throughout the year, such as the Physician Networking Event and poster sessions, help medical students build connections with doctors and enhance their research and presentation skills.

Students from the Duluth campus participate in Minnesota Future Doctors as well as other programs that encourage underrepresented students to pursue medical school. The Center of American

Indian and Minority Health offers the Native Americans into Medicine program, while Pathways to Advanced Degrees provides a summer academic research program, workshops, and faculty-directed research opportunities.

The University's new B.A./M.D. pipeline program, offered jointly by the Medical School and College of Liberal Arts, is another effort to invest in future physicians earlier in their education and create a more diverse workforce. The first cohort of up to 10 students will start next fall.

U cardiovascular surgeon
Kenneth Liao, M.D., Ph.D., has
evaluated four donor hearts
using the TransMedics Organ
Care System so far. Two have
been used for transplant.



HEART IN A BOX



IT'S THE EVER-PRESENT CHALLENGE of heart transplantation — too few donor hearts and too many people who need them.

Last year, 3,191 suitable hearts were transplanted in the United States. But more than 100,000 patients could benefit from a new heart, according to University of Minnesota Health cardiologist Cindy Martin, M.D.

The result of this mismatch: highly selective waiting lists, and many people who never get the new heart they need. Thousands of people on waiting lists die each year. Says Martin, “There are always more people waiting than there are donors.”

But a new clinical trial at the University of Minnesota and seven other heart transplant centers across the country may help make use of good hearts that don't meet today's stringent guidelines for transplantation. The potential result: more hearts for more patients.

If successful, the clinical trial involving a portable device known as the TransMedics Organ Care System (OCS)—or more colloquially, the “heart in a box”—could have a “huge impact on the donor organ allocation system,” says Kenneth Liao, M.D., Ph.D., surgical director of the University's heart transplant program and principal investigator in the University's portion of the trial.

Challenging convention

Hearts for transplant have been carried from a brain-dead organ donor to a waiting recipient in essentially the same way for nearly half a century. The heart is placed in a plastic bag of cold saline rich in nutrients and packed in a plastic cooler filled with ice.

Time is of the essence because the icy conditions soon begin to damage the heart. Time out of body—what is called “ischemic time”—is best kept to under four hours. “Between four and six hours is acceptable in the right situation,” says Martin, who is a member of the transplant team working with Liao. “We try to avoid greater than six hours if we can.”

That's a narrow window in which to achieve organ removal, and account for traffic, air transport, and operating time at the recipient's end. “That ischemic time does limit the availability of organs,” says Martin.

The OCS is designed to open that window a bit wider. TransMedics bills it as “the world's first commercial, portable, warm blood perfusion system.” The device stands waist-high and rolls around on a cart. Inside the device, the heart continues to beat and circulate the donor's warm, oxygenated, nutrient-laden blood until the heart is disconnected and implanted into the recipient. If the heart should begin to beat abnormally, the machine's settings can be adjusted to change the blood flow.

A CLINICAL TRIAL AT THE U OF M MAY HELP SURGEONS MAKE MORE EFFICIENT USE OF DONOR HEARTS AND BENEFIT PATIENTS WHO ARE WAITING FOR A TRANSPLANT

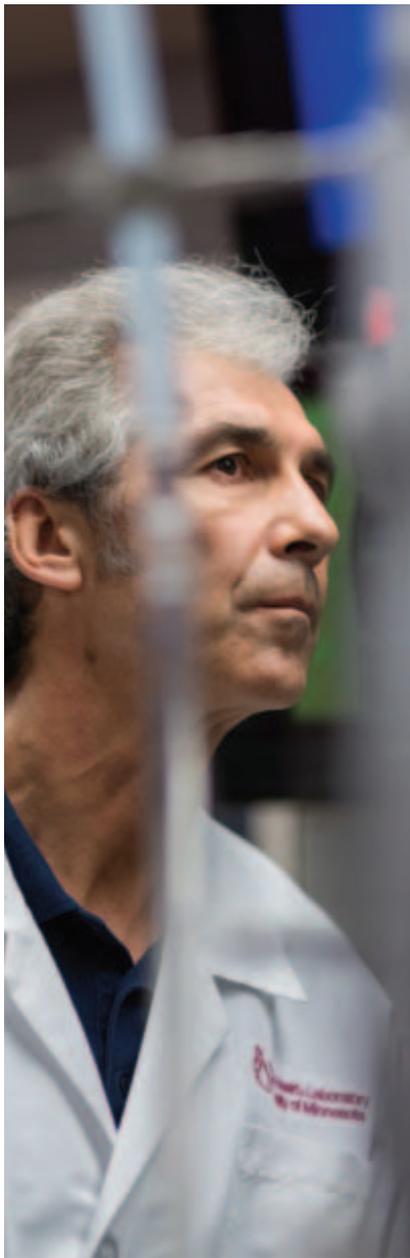


PHOTO: BRADY WILLETTE

ABOVE Paul Iazzo, Ph.D., plans to use a research-dedicated TransMedics device to find ways to extend the time a donor heart can safely be kept outside the body.

AT RIGHT Cardiologist Cindy Martin, M.D., says the number of heart transplants performed in a year largely comes down to luck in matching donor hearts to recipients.

♥ THE OCS GIVES SURGEONS AN OPPORTUNITY TO CONTINUOUSLY MONITOR THE HEART DURING TRANSPORT AND TO CONTINUE TO EXAMINE ITS FUNCTION, EVEN AT AN ENZYMATIC AND CELLULAR LEVEL.

The goal is to increase the time the heart can safely be kept outside the body, even if only by a few hours. That in itself would allow some donor hearts to be used that otherwise would be ruled out because transport time was too long. In fact, an initial clinical trial conducted from 2010 through 2013 showed that the OCS is every bit as effective at protecting the heart as the conventional method of icing the organ. That finding opened the door to the latest trials.

(The University has been involved in a separate clinical trial with a similar OCS designed for lungs. Surgeons here have successfully performed several dozen lung transplants using the device.)

While extending ischemic time is key, other features of the system may be just as important.

When a heart is packed on ice the conventional way, a surgeon has no way to test its condition before transplanting it into the recipient.

“Whether the heart is good or bad, we’ll put it in, regardless. There’s no option. We do not know,” Liao says. “But now [with the OCS] it is different. We’ll bring the heart back. We’ll watch the heart work, pumping, until we’re totally satisfied that this heart is usable, that it is a good heart. And then we’ll take the recipient’s heart out and put this heart in. So we have more time to watch this heart to make sure that it is indeed working before we put it in.”

Otherwise, the operation is the same, for the patient and surgeon.

EXPANDED criteria

The current clinical trial of the OCS is known as EXPAND Heart; it expands the criteria for what is an acceptable donor heart in a long-term effort to expand the number of organs available. In fact, TransMedics officials say the device has the potential to double the number of heart transplants in the United States.

The traditional criteria for an acceptable heart includes a donor who is younger than 55 years old with no history of chest trauma or cardiac disease, no history of low blood pressure or low oxygen in the blood, and a normal electrocardiogram and echocardiogram. The heart must pump with sufficient force. Another factor is the time it will take to transport—the ischemic time.

But in the clinical trial, the University is looking for “marginal donors” whose hearts might be rejected under the traditional criteria. Says Martin, “Often it’s not one big thing that rules out a heart, but a lot of little things that make it a poor candidate, that start adding up to tip the scale.”

The OCS gives a surgeon such as Liao an opportunity to continuously monitor the heart during transport and to continue to examine its function, even at an enzymatic and cellular level. That gives surgeons more confidence in using a heart that might have come from an older-than-optimal donor or a heart that has been in transit for more than four hours.

“This gives us time to assess the heart until about 10 minutes before we put it into the recipient,” says Liao. “That helps a lot.”

The alternative, of course, might be no heart at all for that patient.

continued on page 26



the number of donor hearts that become available according to well-established selection criteria set by the International Society for Heart-Lung Transplantation, including blood type, size, physical condition of the donor, and other physiological factors. Says Martin, “The pair has to match, and you never know when that’s going to happen.”

Donor hearts are also allocated by geography, with preference given to

For one, the University has a growing list of potential heart recipients simply because it has been a major heart center for so long. University surgeons have placed many left ventricular assist devices (heart pumps), which are beginning to wear out. As complications develop, more patients move to the transplant waiting list.

Second, the clinical trial of the Organ Care System accounted for two transplants that otherwise would not have occurred.

Finally, the heart transplant team has “been trying to be aggressive about really making sure that we’re looking carefully at donors,” says Martin. “Some of that is just really digging in for information.”

Donor information sometimes suggests at first blush that the heart is unsuitable. But further investigation can reveal that it may be OK. The fatal trauma—such as drug overdose, suicide, motor vehicle accident—may have left the heart stunned but otherwise healthy.

“If you have a 19-year-old heart and someone tells me its function is slightly abnormal but it was only a couple of hours after the event, I think, well, let’s look at that again in 12 hours, because that heart shouldn’t have anything structurally wrong with it,” Martin says. “The last thing you want to do is let a good heart not be used because of incomplete information.”

More heart transplants—a trend?

UNIVERSITY OF MINNESOTA Health surgeons transplanted 33 hearts in adults and children last year—more than double the 16 heart transplants performed in 2015.

That increase far outpaces the national increase in heart transplants—3,191 operations in 2016, a 14 percent increase from 2,804 in 2015.

So is the University setting a trend for a dramatic increase in heart transplants?

Probably not, says Cindy Martin, M.D., an associate professor of cardiology at the U and medical director of the M Health Heart Failure Program.

The number of transplants performed at a big center like the University of Minnesota Medical Center is limited chiefly by

medical centers located nearer the donor. As a result, patients on a waiting list at the University are often vying with patients at Mayo Clinic, Abbott Northwestern, and Hennepin County Medical Center.

So some of the success in finding a suitable donor heart is just the luck of the draw—how well do the University’s patients match up with the hearts that become available, and how many patients are waiting at other big heart centers in the area? Martin suspects, in some ways, the University simply got lucky this year, with a fortuitous alignment of donors and recipients.

But other factors suggest the University may be doing some things to boost transplant numbers—if only modestly, she says.

♥ **THE LAST THING YOU WANT TO DO IS LET A GOOD HEART NOT BE USED BECAUSE OF INCOMPLETE INFORMATION.** – Cindy Martin, M.D.

♥ **IF SURGEONS COULD USE 50 PERCENT OF SO-CALLED MARGINAL HEARTS THAT THEY WOULD OTHERWISE REJECT, THAT'S VERY SIGNIFICANT.** – Kenneth Liao, M.D., Ph.D.

continued from page 24

So far in the U's portion of the clinical trial, four donor hearts have met the criteria as "marginal" and were removed and transported to the U in the OCS. Two were deemed unsuitable for transplantation upon arrival at the University of Minnesota Medical Center, but the other two were judged satisfactory and were transplanted into patients. One patient survived and went home. The other patient experienced an episode of rejection, which was successfully treated, but the patient later died of non-heart-related complications. Liao sees no indication that the OCS played a role in the rejection.

The transplant team is evaluating additional donors for the study. Liao says his team hopes to obtain 10 donated hearts and be able to transplant at least half of them. He anticipates concluding the study late this year or in early 2018. U.S. Food and Drug Administration approval of the device will hinge on the results of the EXPAND Heart study. (The OCS for hearts is already approved for commercial use in Europe.)

Liao says that if surgeons could use 50 percent of these so-called marginal hearts that they would otherwise reject, "that's very significant, if you look across the nation, if this were to become the practice."

Beyond EXPAND

Meanwhile, the University's Visible Heart Lab hopes to buy an OCS to experiment with donated hearts that don't pass muster for transplantation.

Paul Iaizzo, Ph.D., director of the renowned lab and Medtronic Professor of Visible Heart Research, and colleagues want to better understand cellular and tissue changes that affect the heart during long periods on the device. They aim to discover whether various medical treatments before removing the heart and during transport can extend the time the heart can safely be kept outside the body.

"We really have expertise in trying to do pre- and postconditioning of hearts to make them more viable for transplant," Iaizzo says.

Admittedly, expanding the list of donors and increasing the viability of the heart during transportation won't eliminate the vast imbalance between the number of hearts available and the number of people who need them.

But a device like the OCS, if these clinical trials prove successful, might help to chip away at the disparity. Says Liao, "A lot of patients can benefit from that." ^{MIB}

Greg Breining is a journalist and author based in St. Paul.

Walking (and biking, and skiing) the talk

AS THE LEADER of University of Minnesota Health's brand-new Signature Health and Wellness program, Bill Conroy, '86 M.D., is essentially his own target audience: a busy person who wants to take care of himself but has limited time to do so.

That's why the program offers executives and other busy people convenient access to comprehensive health care – including a thorough preventive exam, appropriate laboratory tests, world-class physical fitness and nutrition assessments, and specialist eye, hearing, and skin examinations, among other evaluations determined on an individual basis – all in the course of one business day.

Depending on the outcomes of those appointments, patients can schedule follow-up care with highly skilled specialists who, as part of an academic medical center, draw on the most up-to-date knowledge about evidence-based care.

"I think a lot of these [busy] people know what preventive services they need," Conroy says. "It's just so hard to make it happen. We want to make it easy for them to do the right thing."

Conroy came back to the University – he completed his medical school, internal medicine residency, and fellowship training here – last April to lead the M Health Signature Health and Wellness Program. He had been part of a similar program at another Minnesota health care system for the previous decade. He says his care philosophy has always centered on prevention.

"Prevention goes a long way," he says. "It's not the entire story, and it's not to condemn people who have had the misfortune of compromised health, but I try to control any aspect of my health that I can."

And with his own packed schedule, how does Conroy make his health a priority?

He loves cross-country skiing and biking, and he always takes the stairs to his fifth-floor clinic in the state-of-the-art Clinics and Surgery Center. He also began riding a fat tire bike so he could make the 5-mile commute to and from work on two wheels.

"I think it's a great way to start the day. To get the blood flowing," he says. "I try to practice what I preach." ^{MIB}

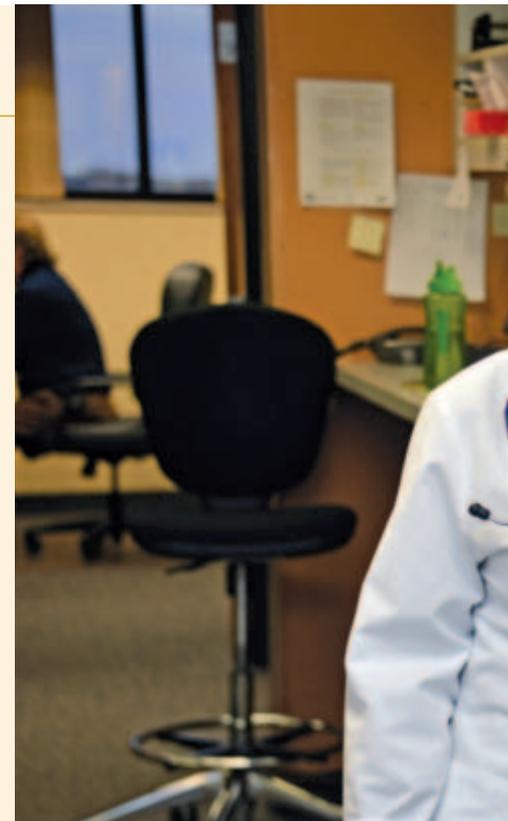
– Nicole Endres

Learn more about the M Health Signature Health and Wellness Program at www.mhealth.org/signature.



PHOTO: BRADY WILLETTE

Busy people know what preventive services they need. It's just so hard to make it happen. We want to make it easy for them to do the right thing.



Halfway 'round the world and back again

IT'S A FRIGID WINTER MORNING and Laamy Tiadjeri, M.D., is in the midst of her Saturday hospital rounds. The ob-gyn hasn't delivered any newborns yet today, but it's early. And Rice Memorial Hospital in Willmar, Minnesota, is a busy place—more than 800 babies enter the world here each year.

Tiadjeri, a 2010 U of M Medical School graduate, could hardly be farther from home. She grew up 6,000 miles away in Lomé, the bustling capital of Togo and an important West African port on the Gulf of Guinea. Like nearly every day there, today it's sunny and hot—almost 90 degrees.

"After residency in Michigan, I tried to find a warmer place to practice," says Tiadjeri, laughing, but the warmth of Willmar's residents drew her back. "They're really nice people. The patients are great and really grateful to have you."

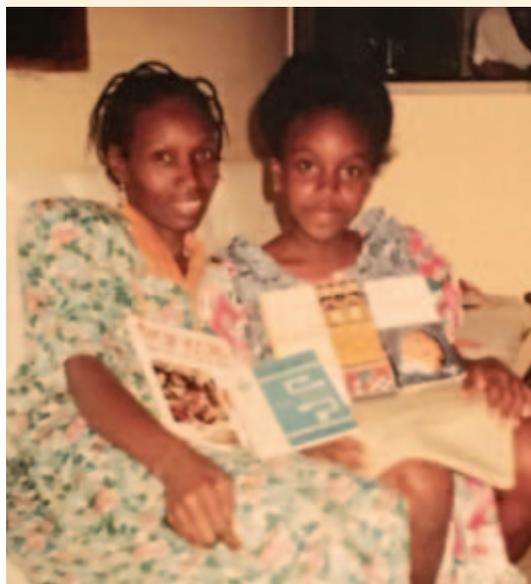


PHOTO: COURTESY OF LAAMY TIADJERI, M.D.

Laamy Tiadjeri says her mother (left), a lawyer, made many sacrifices so Laamy and her sister could get a quality education.

This increasingly diverse city of 19,000 residents—more than 20 languages are spoken here—first welcomed Tiadjeri in 2008, when she participated in the U of M's Rural Physician Associate Program (RPAP) as a third-year medical student. While she had two-week rounds here in urology and orthopaedics, it was her six weeks in ob-gyn that helped her decide to pursue the specialty.

"I felt that selecting ob-gyn would be helpful if I wanted to go back home occasionally and work with my surgical skills, specifically in women's health," she says.

FINDING HER CALLING

Inspired by physicians she knew as a child, especially her own pediatrician, Tiadjeri recognized from an early age that she wanted to become a doctor. After graduating from college in Oklahoma, she was attracted to the University of Minnesota Medical School for two major reasons: it allowed students to study an extra year in international locations, and it offered RPAP.

RPAP—a nine-month, community-based program—offers a wide range of opportunities, she says. At a rural hospital, students learn directly from veteran physicians and get hands-on patient experience in many specialties.

Following her RPAP training, Tiadjeri returned to Togo, where she participated in two rotations offered by the U's Global Medical Education and Research program. She spent four months at a private hospital and three months at a public hospital, focusing on ob-gyn at the latter. "In the capital, if a woman has the means and can go to a private clinic, then she probably has better care," Tiadjeri says. "But women in rural areas don't have the same level of care, and a lot of health education is needed."

That's in part why she went back to Togo again for a year following her residency, reconnecting with family members and working at three hospitals—two rural and one urban—before she decided to return to Willmar.

MENTEE TO MENTOR

Today Tiadjeri works at Willmar's Affiliated Community Medical Center with two of the physicians who mentored her as a student; three others have since retired. "They were really great at teaching and letting me do deliveries with them," she says. "They had a big impact on me, and I'm glad to be back working with them."

The feeling is mutual. Colleague and mentor Stan Antkowiak, D.O., describes Tiadjeri as "spectacular," noting that the RPAP program has done exactly what it intended—getting excellent physicians like Tiadjeri to serve rural communities.

Now Tiadjeri is continuing the cycle by mentoring RPAP students of her own. "I learned preparation from her," says Brooklyn Leitch, a third-year U of M medical student, RPAP participant, and Willmar native.

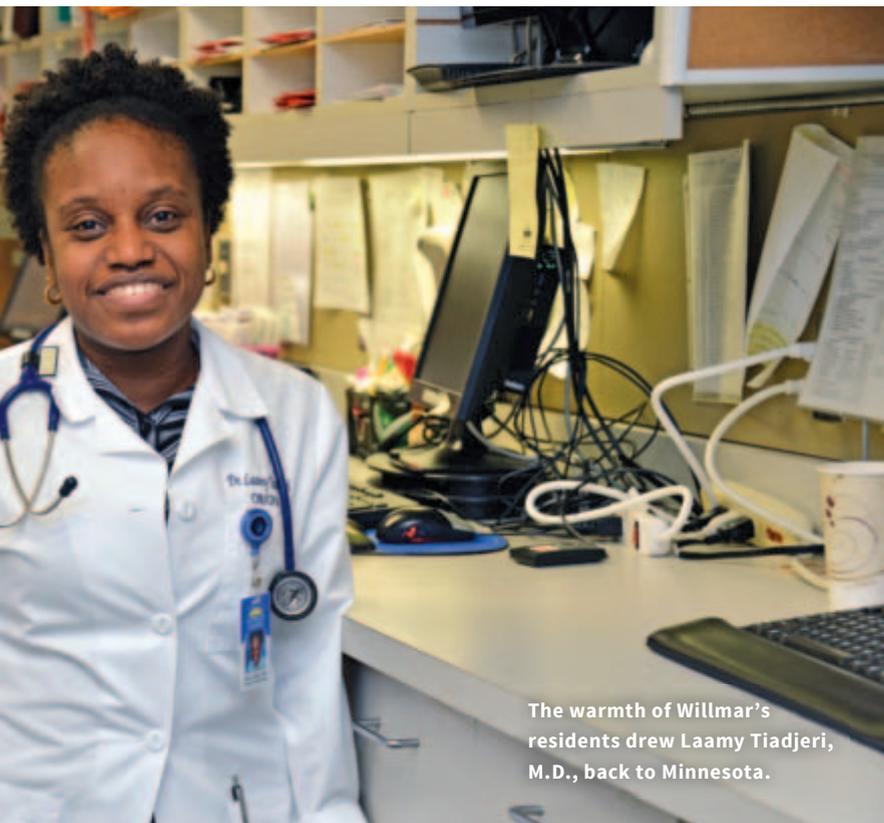


PHOTO: COURTESY OF AFFILIATED COMMUNITY MEDICAL CENTERS

The warmth of Willmar's residents drew Laamy Tiadjeri, M.D., back to Minnesota.

Though she grew up in the West African nation of Togo, after her residency in Michigan and a year working in both rural and urban hospitals in her home country, Tiadjeri decided to return to Willmar, Minnesota.

"I really appreciate observing Dr. Tiadjeri. She comes in early, and she's prepared for every patient. When she's off the clock, she's still thinking about her patients."

When Tiadjeri does have down time, you might find her traveling, a favorite pastime, or, more likely, at home – reading, watching movies, or cooking for friends. "I'm kind of a homebody," she says, adding that's especially true in the winter. Indeed, her family still wonders about her decision to live in this climate. "Sometimes I do, too," she says, smiling. ^[MIB]

By Karin Miller, a writer and editor in Minneapolis

Save the date for Alumni Celebration, October 11–14

All Medical School alumni, including the reunion classes of 1957, 1962, 1967, 1977, 1987, 1992, 1997, 2002, 2007, and 2012, are invited back to campus to reunite with friends, engage with students, and see what's new at the Medical School. Join us for this annual celebration of the Medical School and its alumni.

- Attend tours, faculty presentations, and student forums to find out what's new in medical education and research
- Celebrate scholarship donors and student recipients at the Scholarship Reception
- Pay tribute to our distinguished alumni at the Alumni Awards Banquet
- Cheer on the Golden Gophers as they take on the Michigan State Spartans at TCF Bank Stadium
- Connect with old friends at the reunion class lunches, receptions, and dinners

Invitations and registration materials will be mailed in August. Until then, please visit med.umn.edu/alumni to find a schedule of events, lodging information, and more. ^[MIB]

HOW YOU CAN GET INVOLVED

Alumni are needed to contact classmates, join the reunion planning committee, or serve as reunion giving volunteers. To learn more about these opportunities, please contact Katrina Roth at roth0103@umn.edu or 612-625-0336.

Gaining perspective

WHEN KATHRYN DEL VALLE was in high school, her mother fell ill with a neurological condition that required frequent doctor appointments. As del Valle accompanied her mother on many of these visits, she gained insight into how good physicians approach their work.

“They would listen intently and deliberately,” she says. “They wanted to understand everything. I came to appreciate just how much it matters when a doctor really seems to care about you – not about just your disease, but about you and your circumstances and your family.”

She says she was also struck by the “sleuth aspects” of the job – the way a doctor puts clues together to draw conclusions and make a diagnosis, much like a detective might work to solve a case.

Her mother eventually regained her health and, after graduating from high school, del Valle left home in Minnesota for California to attend Stanford University. Her skills in writing and rhetoric led her to major in history, but she also completed a minor in biology and ultimately decided to apply to medical school.

Del Valle chose the University of Minnesota because it is known for having a strong clinical training program, it felt like home, and it offered scholarship support in the form of the Martin and Charlotte Janssen Endowed Scholarship for Medical Students, which gives preference to students from Minnesota.

“Besides the obvious financial incentive, it signaled to me quite clearly that the U of M really wanted me to be here, and that was invaluable for me,” del Valle says. “It was also a huge testament to the school’s confidence in me, which was both overwhelming and humbling.”

When her mother fell ill, del Valle came to appreciate how much it matters “when a doctor really seems to care about you – not about just your disease, but about you and your circumstances and your family.”

WORKING WITH THE ELDERLY

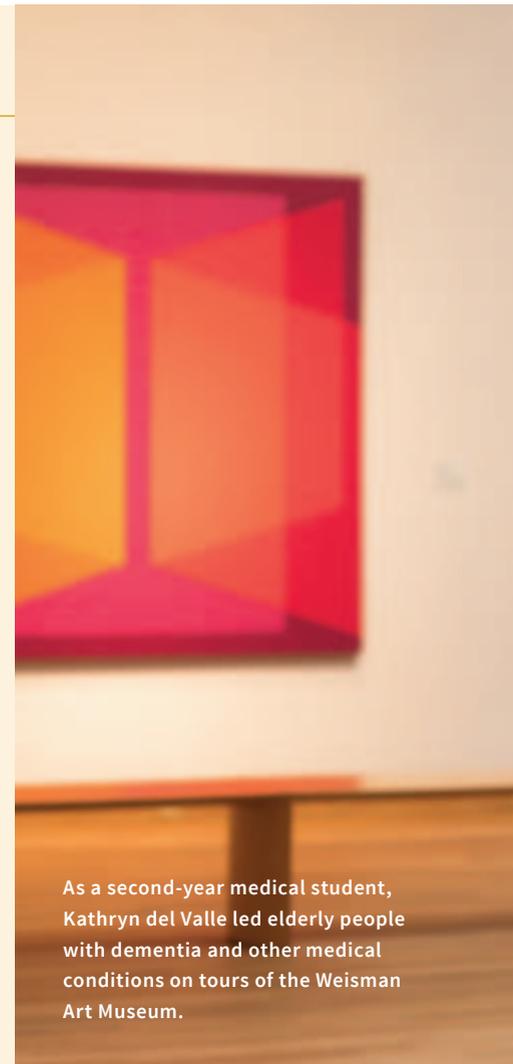
Now a fourth-year medical student, del Valle says she has been impressed by the support she has found among students and staff. What’s more, she observes, the Medical School provides students with many opportunities even early on to participate in clinical settings and encourages them to engage with the campus and the wider community.

As a second-year medical student, del Valle led elderly patients with dementia and other medical conditions on tours of the U’s Weisman Art Museum. “I’ve always been interested in the humanities, so this allowed me to tap into that side of me while also providing service,” she explains.

It also fit well with her interest in the elderly. In high school, a long-term volunteer experience at a nursing home eventually led del Valle to work there as a dietary aide. While in college, she helped a geriatrician with research for a longitudinal study of geriatric health.

“I love older people. They’re hilarious,” del Valle says. “I enjoy their sense of humor and hearing about their life experiences – especially people in their 90s, who have lived through the Depression or World War II, or who grew up on family farms in remote places without most of the things we now see as essentials.

“For me, it’s wonderful to be around older people because it keeps everything in perspective,” says del Valle, who matched



As a second-year medical student, Kathryn del Valle led elderly people with dementia and other medical conditions on tours of the Weisman Art Museum.

to a residency at the Mayo Clinic School of Graduate Medicine in internal medicine, a specialty that promises regular interaction with older patients.

“When you’re in medical school, it’s really easy to get bogged down in the everyday stresses of work and school. But when you’re around people who have lived a long life, it makes you take a step back and say, ‘This isn’t going to matter in 20 years – or even a month.’” ^[MIB]

By Joel Hoekstra, a Minneapolis freelance writer and editor

To support Medical School scholarships or to learn more, visit give.umn.edu/p/scholarships, or contact Dan Brasch at dbrasch@umn.edu or 612-624-6453.



PHOTO: BRADY WILLETTE

Envelopes, please

Anticipation filled the air at the University of Minnesota's McNamara Alumni Center on March 17. It was Match Day, a day that signified for medical students many years of hard work, determination, and life change.

Of the 224 students who matched, 99 will join residency programs in Minnesota. Nearly half (48.2 percent) matched to primary care residencies; in fact, the three most popular specialties were internal medicine (20.2 percent), family medicine (18.8 percent), and pediatrics (7.6 percent), followed by emergency medicine, psychiatry, anesthesiology, and surgery. [MIB](#)

Tim Kummer (right), with his wife, Nicole, and their daughters, and Tarissa Lai (far right) will be part of the emergency medicine residency program at Hennepin County Medical Center.

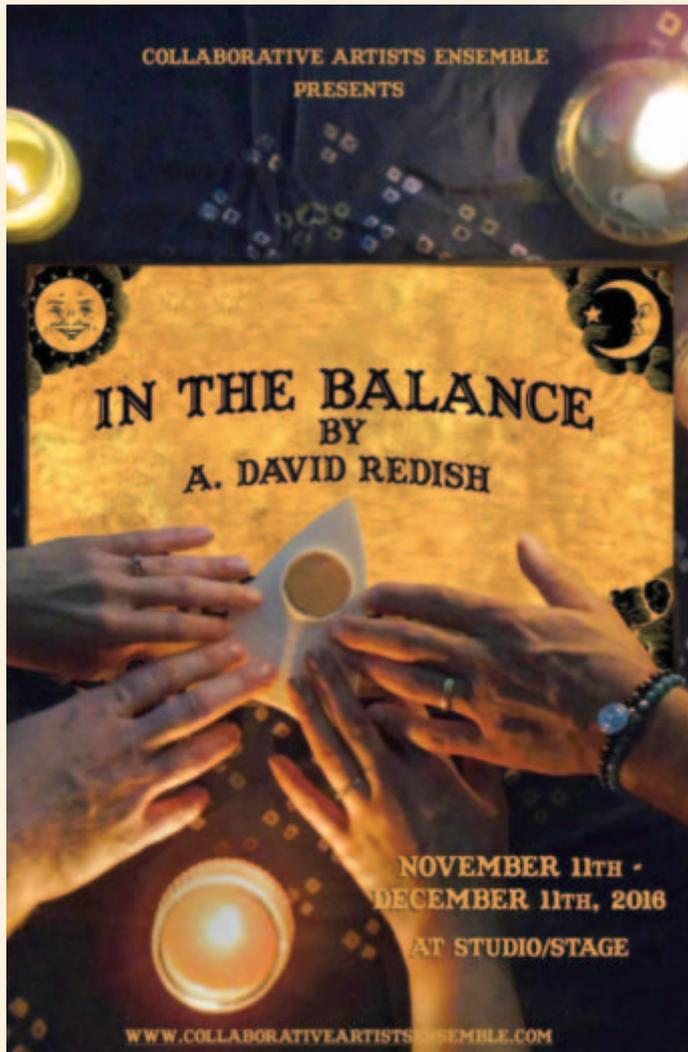


PHOTOS: MEGAN ZEHER

WEB EXTRA

See stats and more photos from the emotional day at z.umn.edu/matchday2017.





Alumni Connections

A well-balanced brain

CRISP, STARTLING, ELECTRIC.

Such words are rarely used to describe the writing of basic scientists. But they are precisely the words one critic chose to praise the writing of neuroscientist David Redish, Ph.D., in a review of the West Coast premiere of his play, “In the Balance,” last fall.

Redish, a Distinguished McKnight Professor in the University of Minnesota Department of Neuroscience, is an accomplished poet, author, and playwright. He began writing plays in his teens, and two of them were produced by the renowned playwright Edward Albee when Redish was an undergraduate at Johns Hopkins, pursuing dual degrees in computer science and writing.

He continued to pursue his interest in theater as a graduate student at Carnegie Mellon University, famous then and now for both its computer science and theater programs. An adviser at CMU sparked Redish’s shift to neuroscience, leading to his current focus on decision-making, cognitive recognition, and computational psychiatry.

On the surface, “In the Balance” is about two couples, a new baby, and a haunted house overlooking Big Sur. But Redish describes it as a riff on Sylvia Plath and Ted Hughes. What has always fascinated him, as both scientist and writer, he says, is the human condition.

How does he account for his writing prowess?

“A lot of practice,” Redish says. “And poetry has given me a taste for metaphor that helps a lot in academic writing.” ^[MIB]

–Kristine Mortensen

Alumnus Forrest Adams, M.D., receives Outstanding Achievement Award

Forrest Adams, '43 M.D., has been named a recipient of the Outstanding Achievement Award by the University of Minnesota Board of Regents for his pioneering contributions to pediatric cardiology. A respected leader whose research, teaching, and service have had lasting impact, Adams performed the first heart catheterization on a newborn, founded UCLA’s Division of Pediatric Cardiology, and coauthored *Heart Disease in Infants, Children, and Adolescents*, used by specialists in the field worldwide and considered the

gold standard for pediatric cardiology textbooks. Adams received the award, among the University’s highest honors, in February in Rancho Santa Fe, Calif. ^[MIB]

To learn more about Adams’ influential research and practice, visit z.umn.edu/adamsaward.

Jakub Tolar, M.D., Ph.D., the Medical School’s executive vice dean, presents 97-year-old Forrest Adams, M.D., with his award.



PHOTO: SANDY HUFFAKER PHOTOGRAPHY



Legislative requests

THE UNIVERSITY of Minnesota's Academic Health Center has three requests in front of the state Legislature this session, and all are critical to our success in training, research, and care delivery.

Health sciences education facility:

We are seeking funding for a state-of-the-art health sciences education facility. Last year, a legislative impasse suspended this request. Currently, our students learn and train in outdated, underground facilities. This new building will encourage interprofessional and simulation training and small-group learning.

Having such a building will help our health sciences programs recruit the best students and train them to work collaboratively in today's fast-changing health care marketplace. Funding for this request is especially important because the national medical school accreditation body has cited the Medical School's inadequate facilities.

Family medicine residency funding:

We have also requested restoration of funding to the Medical School's Department of Family Medicine and Community Health and to the School of Dentistry that was discontinued when UCare lost its state contract in 2015 (see cover story, page 8). These funds help pay for residency training programs for family physicians

and help fund the University's Mobile Dental Clinic, which provides dental care in underserved areas of Minnesota.

Expanded cancer clinical trials:

Our third request seeks funding to expand cancer clinical trial opportunities in greater Minnesota. Cancer is the leading cause of death in Minnesota. One in four Minnesotans will be diagnosed with potentially fatal cancer in his or her lifetime; over half live more than 30 miles from a clinical trial site. Clinical trials offer the latest new treatments, drugs, and devices. We propose building a clinical trials network to give more Minnesotans access to these trials while expanding Masonic Cancer Center research that would bring treatments to market faster. The Minnesota Cancer Clinical Trials Network initiative is part of the University's Minnesota Discovery Research and Innovation Economy (MnDRIVE) request, and, if funded, will be implemented in partnership with local providers across the state.

All three of the requests were included in Gov. Mark Dayton's proposed budget and are under consideration by the Legislature. To succeed this session, we need your voice. Please visit www.advocates.umn.edu and encourage your state lawmaker to support the University of Minnesota's health sciences initiatives. MIB

HONOR AN OUTSTANDING ALUMNUS

Nominations are being accepted for the 2017 Medical Alumni Society alumni awards. Honor a fellow alumnus with the Harold S. Diehl, Distinguished Alumni, Early Distinguished Career Alumni, or Alumni Philanthropy and Service Award. Awards will be presented at the Medical School Alumni Awards Banquet on Thursday, October 12. MIB

Visit med.umn.edu/alumni/alumni-awards for award criteria, nomination requirements, and a list of past recipients.

NOMINATIONS ARE DUE MAY 12.

ALUMNI HOSTS NEEDED

Interviewing for your residency can be a nerve-racking process. The Medical Alumni Society is seeking alumni who live outside Minnesota to host medical students as they travel for residency interviews. Besides offering a friendly face and camaraderie, hosts help ease the financial burden of travel for students. MIB

To sign up, visit z.umn.edu/alumnihost, or contact Katrina Roth, 612-625-0336, for more information.

In Memoriam

ERNEST A. AGER, M.D., Class of 1951, Warm Beach, Wash., died Aug. 17, 2016, at age 90. Dr. Ager was chief of epidemiology for the state of Washington for 7 years, until he opened a private family practice in 1967. In 1976, he became director of Physical Medical and Rehabilitation at Northwest Hospital in Seattle, where he continued until his retirement in 1989. He was preceded in death by his first wife, Shirley; 1 son; and his second wife, Doris. He is survived by 6 children and 10 grandchildren.

PETER A. AHLES, M.D., Class of 1964, St. Cloud, Minn., died Oct. 2, 2016, at age 77. Dr. Ahles was a general practitioner in Anaheim, Calif., for 37 years. He is survived by 1 son.

THOMAS K. ALDRICH, M.D., Class of 1975, Pelham, N.Y., died Sept. 5, 2016, at age 65. Dr. Aldrich was a professor of medicine at Montefiore Medical Center in New York. He is survived by his wife, Susan; and 2 children.

HARLAN G. ALEXANDER, M.D., Class of 1962, Evanston, Ill., died Oct. 16, 2016, at age 80. Dr. Alexander was a private practitioner who recently finished his long career at Aunt Martha's Youth Service Center. He is survived by his wife, Marcy; 3 children; and 8 grandchildren.

BRUCE O. BERG, M.D., Class of 1955, Tiburon, Calif., died Oct. 5, 2016, at age 85. Widely considered a founding father of child neurology, Dr. Berg established the child neurology department at University of California, San Francisco, as an internationally recognized training center for pediatric neurologists. He is survived by his wife, Linda; 2 daughters; and 5 grandchildren.

JOSEPH B. CARTER, M.D., Class of 1974, Novelty, Ohio, died Aug. 5, 2016, at age 66. Dr. Carter was a practicing otolaryngologist at MetroHealth Hospital. He is survived by his wife, Alison; and 3 children.

ROBERT P. DICKEY, M.D., Class of 1970, Washington, D.C., died Sept. 12, 2016, at age 77. Dr. Dickey was a pediatrician who served urban families in D.C. for 40 years. He is survived by his wife, Michelle Fennell-Dickey; 1 daughter; 1 stepson; and 2 grandchildren.

VERNON D. ERICKSON, M.D., Class of 1952, Grand Rapids, Minn., died Nov. 3, 2016, at age 89. Dr. Erickson was a general practitioner at the Grand Rapids Clinic from 1954 until his retirement, often caring for several generations of families. He was preceded in death by 1 son. He is survived by his wife, Carole; 3 children; 3 grandchildren; and 1 great-grandchild.

MARY GOEPFERT, M.D., Class of 1951, Watertown, S.D., died Jan. 4 at age 88. Dr. Goepfert was a psychiatrist.

GEORGE W. HEINE Jr., M.D., Class of 1948, Waterloo, Iowa, died Oct. 22, 2016, at age 90. Recruited by the Navy to enter medical school while still in high school, Dr. Heine became an anesthesiologist. He was preceded in death by his wife, Mary. He is survived by 5 children and 11 grandchildren.

DAVID A. HILDING, M.D., Class of 1954, Salt Lake City, Utah, died Nov. 5, 2016, at age 86. Dr. Hilding was a professor and medical researcher at Yale Medical School before going into private practice as an otolaryngologist in Price, Utah. He conducted research on deafness and helped to develop technology used to test newborns' hearing. He is survived by his wife, Sonja; 5 children; and 8 grandchildren.

FRANK J. INDIHAR, M.D., Class of 1967, Lilydale, Minn., died Oct. 23, 2016, at age 74. Dr. Indihar was an internist who served as president of the Ramsey County Medical Society and chaired the Minnesota delegation to the American Medical Association House of Delegates for several years. He delighted in mentoring medical students and completed his professional career as CEO of Bethesda Hospital and a vice president of Health-East. He is survived by his wife, Anita Pampusch.

PAUL J. ISAKSON, M.D., Class of 1963, Eagle Point, Ore., died Sept. 25, 2016, at age 78. Dr. Isakson was a private practitioner in San Francisco with affiliations at various hospitals until he became medical director of Laguna Honda Hospital, where he served at the forefront of the AIDS crisis. He was preceded in death by his first life partner, Robert Noeltner. He is survived by his second life partner, James Johnson.

ANTHONY C. JASPERS, M.D., Class of 1973, Lake Crystal, Minn., died Jan. 15 at age 68. Dr. Jaspers was a family physician for 40 years and was named Minnesota Family Physician of the Year in 1998. He was preceded in death by 1 son. He is survived by his wife, Mary; 3 children; and 3 grandchildren.

MARVIN W. JOHNSON, M.D., Class of 1952, Rochester, Minn., died Nov. 28, 2016, at age 93. Dr. Johnson was a general practitioner until 1971, when he became a radiology fellow at the Mayo Clinic. He then practiced radiology in Worthington, Minn., until 1990. He is survived by his wife, Mary Ann; 3 children; and 6 grandchildren.

SHELDON M. LAGAARD, M.D., Class of 1943, Minneapolis, died Aug. 17, 2016, at age 98. Dr. Lagaard served military medical duty in Western Europe during World War II before returning home to practice orthopaedics. He was preceded in death by his wife, Marguerite; and 2 children. He is survived by 2 children, 8 grandchildren, and 7 great-grandchildren.

MYRON D. OLMANSON, M.D., Class of 1956, St. Peter, Minn., died Oct. 17, 2016, at age 85. Dr. Olmanson practiced family medicine at the St. Peter Clinic until 1988, when he became certified in geriatrics and started the Olmanson Diagnostic Clinic. After retiring in 1995, Dr. Olmanson continued to serve as medical director for the Good Samaritan Nursing Home and the Health Care Center until 2011. He is survived by his wife, Barbara; 6 children; 18 grandchildren; and 9 great-grandchildren.

DALE H. PETERSON, M.D., Class of 1972, Sapulpa, Okla., died Nov. 27, 2016, at age 69. Dr. Peterson was a family practitioner who served as president of the Oklahoma Academy of Family Physicians and chief of staff at Edmond Regional Medical Center. He is survived by his wife, Rosalie; 2 daughters; and 5 granddaughters.

JAMES J. FLORDE, M.D., Class of 1959, Seattle, Wash., died Jan. 11 at age 82. Dr. Florde was a professor of medicine at the University of Washington and chief of infectious disease and microbiology at the Seattle Veterans Hospital. He is survived by his wife, Jo Ann; 3 children; and 3 grandchildren.

ROGER H. PRINCELL, M.D., Class of 1960, Oxford, Ohio, died Oct. 4, 2016, at age 80. Dr. Princell was a family physician who served the Oxford community for 53 years. He is survived by his wife, Diane; 8 children; and 5 grandchildren.

BARBARA M. PUUMALA, M.D., Class of 1959, Cloquet, Minn., died Jan. 28 at age 82. Dr. Puumala was a family practitioner in northern Minnesota for 41 years. She is survived by her husband, Ricard; 4 children; and 7 grandchildren.

A. BRUCE SUNDBERG, M.D., Class of 1956, Minneapolis, died Oct. 17, 2016, at age 88. Dr. Sundberg was an orthopaedic surgeon at Abbott Northwestern and Gillette Children's hospitals and served as chief of staff during the merger of Abbott and Northwestern hospitals in 1978. He is survived by his wife, Janice; 4 children; and 10 grandchildren.

DONALD B. SWENSON, M.D., Class of 1951, Spring Park, Minn., died Sept. 24, 2016, at age 92. Dr. Swenson specialized in adult cardiology with St. Paul Internists for 39 years and served on the University of Minnesota Medical School Admissions Committee. He was preceded in death by his wife, Geraldine. He is survived by 3 children and 6 grandchildren.

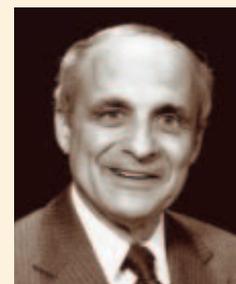
FLOYD J. SWENSON, M.D., Class of 1958, Lyons, Colo., died Nov. 7, 2016, at age 84. Dr. Swenson was a family physician for more than 50 years. He was preceded in death by his second wife, Delores; and 1 stepson. He is survived by his first wife, Ruth; 3 children; 1 stepdaughter; 4 grandchildren; and 2 step-grandchildren.

RALPH F. WELLS, M.D., Class of 1957, San Antonio, Texas, died Aug. 10, 2016, at age 84. Dr. Wells was a gastroenterologist who completed many national and international medical assignments with the U.S. Army, including the care of President Lyndon B. Johnson, until 1976, when he joined San Antonio Medical Associates and practiced for 32 more years. He was preceded in death by his first wife, Barbara; and 1 son. He is survived by his wife, Ruth.

H. MEAD CAVERT, M.D., Ph.D., Class of 1950, St. Paul, Minn., died Nov. 4, 2016, at age 94. Dr. Cavert served the Medical School for nearly 40 years as a professor of physiology, operational chief, and associate dean, becoming known around campus as the "bicycling dean" for his at-the-time uncommon habit of biking to work. Dr. Cavert's research focused on cardiovascular and transport physiology, cardiac function and performance, and myocardial metabolism. He also helped to institute the Rural Physician Associate Program, which allows medical students to train in underserved Minnesota communities, preparing them for rural primary care. He was a founder of the Minnesota Medical Foundation and a 2000 recipient of the Medical Alumni Society's Harold S. Diehl Award. He was preceded in death by 1 son. He is survived by his wife, June; 2 sons; 4 grandchildren; and 2 great-grandchildren.



PAUL C. ROYCE, M.D., Ph.D., Class of 1952, Boston, Mass., died Jan. 6 at age 88. Dr. Royce served as dean of the University of Minnesota Medical School, Duluth campus from 1982 to 1987, during which time he launched several initiatives to encourage Native Americans to pursue health careers. He also brought medical expertise to popular television with the award-winning public television program "Doctors On Call." He is survived by his wife, Jacqueline; 3 children; and 6 grandchildren.



JOHN B. SANFORD, M.D., Class of 1948, Duluth, Minn., died Oct. 31, 2016, at age 90. Dr. Sanford was a dedicated and caring surgeon who served as chief of surgery at both St. Mary's and St. Luke's Hospitals in Duluth and greatly enjoyed teaching medical students in the anatomy lab at the University of Minnesota Medical School, Duluth campus, where he was honored as a professor emeritus of clinical medicine. Dr. Sanford received the Harold S. Diehl Award from the Medical Alumni Society in 1998. He is survived by his wife, Julie Moller Sanford; 4 children; and 12 grandchildren.





Object lessons

The Wangensteen Historical Library uses old texts and artifacts to teach new generations about medicine

IMAGINE YOU'RE A MEDICAL STUDENT on the first day of anatomy class, a course you've awaited eagerly – or perhaps dreaded. You know only one thing about it – you'll be dissecting a cadaver.

But first, it turns out, you will look at centuries-old anatomy textbooks from the U's Wangensteen Historical Library. Following a brief lecture on the history of anatomy, you will have the chance to turn the pages of several anatomy books, including a 500-year-old coffee-table-sized volume with drawings of the human form that look like fine art.

Why provide students this brush with history? "It's all part of acclimatizing students into the world of anatomy," says Anthony Weinhaus, Ph.D., director of the Medical School's program in human anatomy. "I want to make the transition as easy as possible." He also wants students to know they are joining a long line of serious scientists who have done what they are about to do. "Dissection is not normal, but medical students have been doing it for 300 years."

For first-year medical student Kersten Schwanz, who has a background in art, looking at the historical anatomy books was inspiring. As someone who has drawn the human form herself, she noted the level of detail in the drawings. "I really appreciated how they saw the art of the human body," she says of the early anatomists. "Dissection ... makes you realize every person is unique. You need to be expecting that if you're a physician."

Weinhaus, her anatomy professor, is one of a number of faculty members who use the Wangensteen's collection of rare books and artifacts to teach students not just about history but to help them understand large ideas about science and medicine today. The library contains more than 80,000 rare books, journals, and manuscripts dating from 1430 to 1930 as well as old medical devices and other artifacts.

INSTILLING PROFESSIONALISM

Peter Kernahan, M.D., Ph.D., retired surgeon and medical historian, is another who finds the library a helpful teaching aid. Kernahan works with the student-run surgical interest groups on campus, which bring undergraduates and medical students



PHOTOS: SCOTT STREBLE

I think you can only understand why surgery is as it is by understanding how it got to that point.

– Peter Kernahan, M.D., Ph.D.

to the Wangensteen to introduce them to surgery. At these events, the students try their hand at the very modern skills of suturing and ultrasound, and learn about surgery in the days before antisepsis and anesthesia.

The library's curator, Lois Hendrickson, selects artifacts and books that exemplify themes or turning points in the history of surgery; she and Kernahan describe how they were used. The point is to spark the students' curiosity about and deepen their understanding of the specialty. "I think you can only understand why surgery is as it is by understanding how it got to that point," Kernahan explains.

Kernahan also tries to show students what a surgery career will demand of them. He reminds them to be humble, as the techniques of one generation seem primitive to the next. "We want to lay the seeds for a sense of professionalism and an understanding of the commitment required for a surgical career," he says, referring to the years of required training. "It's a heavy responsibility to operate on someone." The artifacts, he says, make these lessons more real.

JOINING THE COMMUNITY OF SCHOLARS

Hendrickson, who became the library's curator two years ago, has a knack for connecting the very old things in her charge to the world of students. To her, a collection of 100-year-old letters and notes about Caesarean section can be a springboard for a conversation about evidence-based medicine, for example; or a tray of glass eyeballs once owned by a company physician can lead to a lesson on occupational medicine or ethics. Above all, Hendrickson wants students to see that a community of scholars has been communicating for centuries, and they can now join that community and expand on others' achievements. "They're part of a continuum," she says, "Their work will be something others build on." ^{MIB}

By Carmen Peota, a freelance writer and editor who lives in Minneapolis

ABOVE, LEFT TO RIGHT A Civil War-era amputation kit provides fodder for historian Peter Kernahan, M.D., Ph.D., to demonstrate how to use the tools and discuss the impact of then-new inventions like the tourniquet. Students can learn about anatomy as their colleagues did centuries ago, using a reproduction of an anatomy flip book by Andreas Vesalius. Ether inhalers provide a reminder of how the advent of anesthesia changed medical practice.

T WEB EXTRA

Test your knowledge of historical medical devices with our quiz at z.umn.edu/historicalhealth.



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