

Medical Bulletin

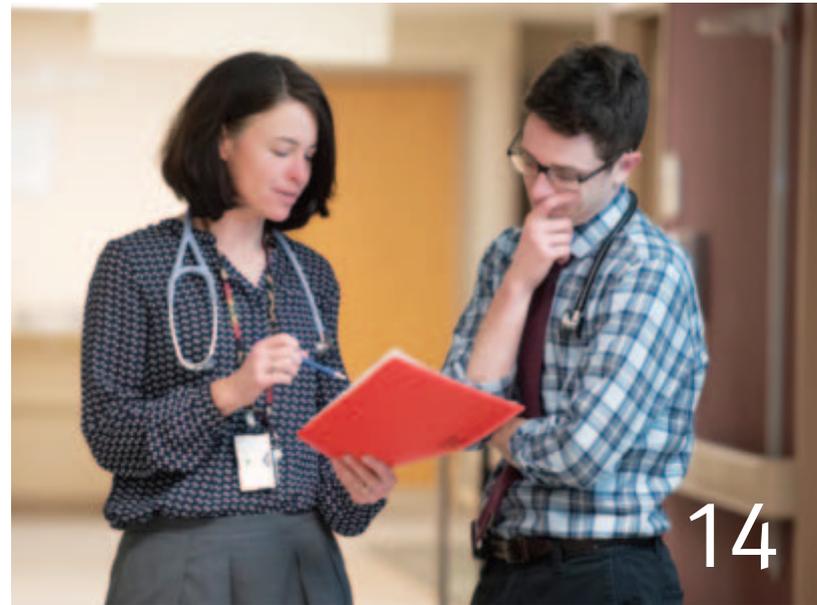
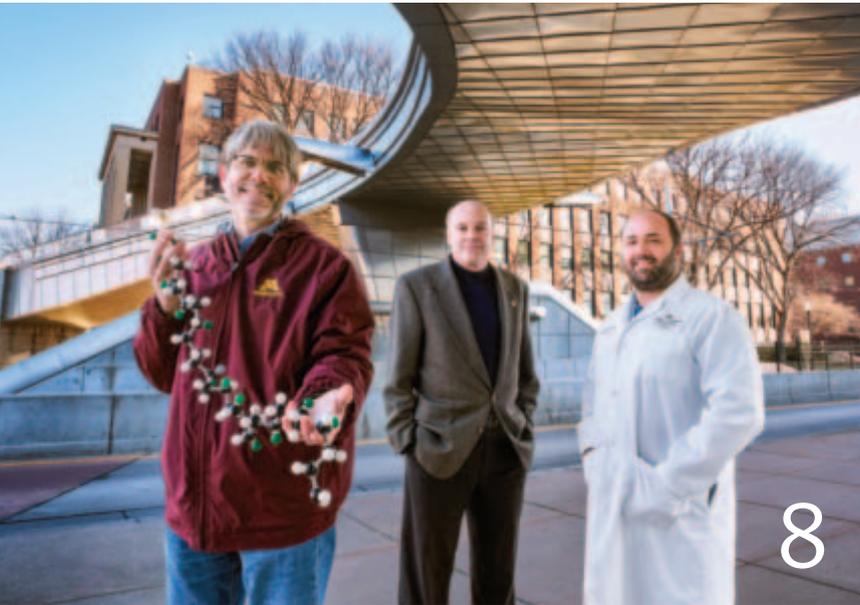
Mending hearts

U experts connect to repair
the body's most crucial muscle



SPRING 2016 New VA clerkship brings students and patients closer □ The small but mighty zebrafish packs a big research punch □ U Medical School charts a path to promote women leaders

SPRING 2016 Contents



About the Medical School

THE UNIVERSITY of Minnesota Medical School encourages collaborations that spur innovations—discoveries that advance biomedical knowledge, patient care, and educational programs. The Medical School now trains nearly 1,000 medical students and more than 1,000 residents and fellows and is home to 1,100 full-time faculty members.

Brooks Jackson, M.D., M.B.A.
Medical School Dean and
Vice President for Health Sciences



UNIVERSITY OF MINNESOTA

Medical School

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Web extras produced by Nicole Endres, Dan Markworth, and Shawn Sullivan



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Medical School News

Now open: Clinics and Surgery Center

THE NEW, STATE-OF-THE-ART University of Minnesota Health Clinics and Surgery Center, which opened in February, includes many features designed to enhance the patient experience, improve care delivery, and advance medical discovery through research.

The five-floor, 342,000-square-foot facility, located on the edge of the University’s East Bank campus, houses 37 medical specialties, as well as lab and imaging services, a retail pharmacy, a café, an outpatient surgery center, and other clinical services.

Offering so many specialties under a single roof promotes greater communication between the various medical specialists who may be part of each patient’s care team. In fact, the building incorporates several “collaboration spaces” for care providers to discuss patients’ care plans.

The Clinics and Surgery Center promotes patients’ awareness of and access to the latest research and medical innovations through its “Discovery Experience.” Visitors will find video monitors describing clinical trials and other research opportunities in the center, a liaison who is available to discuss the studies, as well as kiosks throughout the building that offer quick access to Study-Finder, a U of M website that highlights

health research opportunities for both patients and healthy volunteers.

Other enhancements to the patient experience include an easier-to-access location (just off of I-94), extended clinic hours, convenient scheduling, easy check-in and check-out, and improved valet parking services. MB

Learn more at mhealth.org/clinics-and-surgery-center.



PHOTOS: BRADY WILLETTE



WEB EXTRA

Watch a time-lapse video of the Clinics and Surgery Center being built and get a virtual tour of the new facility at z.umn.edu/cscopen.

U forms transplant research exchange with South Korean institute

The University of Minnesota Medical School has formed a six-year partnership with ASAN Medical Center (AMC) in Seoul, South Korea. The ASAN-Minnesota Institute for Innovating Transplantation draws on the strengths of both groups – the U of M as a leader in stem cell science and ASAN Medical Center as a leader in living-donor liver transplantation – to create a research exchange that allows investigators from both institutions to share their knowledge and skills in an effort to advance medicine.

The partners signed a joint research memorandum of understanding at AMC in a November 2015 ceremony. Under the agreement, AMC researchers will offer expertise acquired in 20 years of transplant and clinical trial work – AMC physicians perform about 300 living-donor transplants annually, according to C.J. Kim, M.D., Ph.D., chairman of the ASAN Institute for Life Sciences – and University researchers will provide their technology to AMC to develop artificial organs

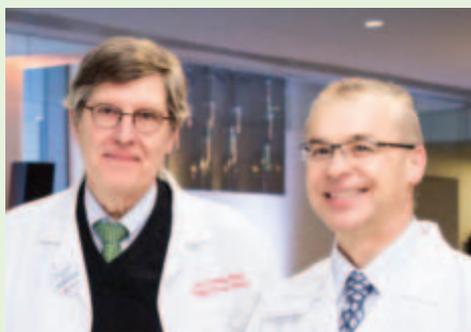


PHOTO: STEPHANIE DUNN

Timothy Pruett, M.D., and Jakub Tolar, M.D., Ph.D.

using stem cells, study tissue regeneration, and help improve transplant outcomes by inducing the immune system to better tolerate transplanted tissues or organs.

The ceremony was attended by the U's Brooks Jackson, M.D., M.B.A., dean of the Medical School; Jakub Tolar, M.D., Ph.D., director of the Stem Cell Institute; Timothy Pruett, M.D., chief of the Division of Transplantation; and John Lake, M.D., director of the liver transplantation program. [MIB](#)

Research leads to record 16 startups in FY15

The University of Minnesota launched a record 16 startup companies – many of them medical – over the past year based on research discoveries and inventions.

The startups stemmed from the work of faculty scientists, including Masonic Cancer Center members Reuben Harris, Ph.D., professor of biochemistry, molecular biology, and biophysics in the College of Biological Sciences, and Daniel Harki, Ph.D., assistant professor of medicinal chemistry in the College of Pharmacy, who developed the technology behind St. Paul-based ApoGen BioTech. The company is developing a new class of pharmaceuticals to detect and block a specific enzyme found in many

types of cancers, including breast, lung, and head cancers. These drugs will slow the evolution of cancer cells and help prevent drug resistance.

Of the 12 new companies that are located in Minnesota, 11 are in the Twin Cities metropolitan area.

The Venture Center, part of the University's Office for Technology Commercialization, matches intellectual property resulting from U of M research with experienced CEOs to provide a platform for that research to reach the public. Since forming in 2006, the Venture Center has worked with entrepreneurs and investors to launch 84 startup companies. [MIB](#)

U recruiting for medical discovery teams

Last year, the Minnesota Legislature committed funding to the University of Minnesota Medical School to support the creation of medical discovery teams focused on tackling four major health concerns facing the state and nation. The teams were part of a recommendation by a blue ribbon commission appointed by Gov. Mark Dayton in 2014 to develop strategies for elevating the Medical School's national ranking.

This state investment will allow the Medical School to hire up to 40 top researchers over 10 years to lead groundbreaking research that will, in turn, attract more funding from the National Institutes of Health. Initial recruitment efforts now under way are aimed at attracting established leaders in their fields who will be able to tap into existing University strengths and build national centers of research excellence.

Faculty-led teams are handling recruitment efforts for medical discovery teams focused on addiction, American Indian and rural health disparities, the biology of aging, and optical brain imaging. [MIB](#)

NIH taps U researchers to study environmental effects on kids' health

The National Institutes of Health is tapping University of Minnesota experts to better assess the impact of environmental exposures on children's health and development.

The Children's Health Exposure Analysis Resource (CHEAR) has three primary goals: to develop new tools to enhance research on how the environment affects disease in children, to take a closer look at exposures during in utero development and at their impact on future conditions, and to foster collaboration and enhance this area of study.

Masonic Cancer Center members Stephen Hecht, Ph.D., and Lisa Peterson, Ph.D., are leading the U's \$5.1 million portion of the study, which is focused on providing wider access to laboratory data and analyses and expanding collaborations.

Hecht, Wallin Land Grant Professor of Cancer Prevention, studies the ways carcinogens in tobacco products and the human environment modify DNA or activate metabolic changes and how to apply this knowledge to prevent cancer. Peterson investigates the mechanisms by which chemicals initiate cancer formation.

Environmental exposures are a leading cause of morbidity and mortality for mothers and children worldwide. Numerous factors—from air pollution, pesticides, and infectious diseases, to education, stress, and neglect—can play a role.

Exposures during crucial developmental windows, including conception and pregnancy, early childhood, and puberty, can have long-lasting effects. MIB

Gift to U children's hospital boosts services for abused kids

TO ADVANCE THE TREATMENT of abused and neglected children in the region, Otto Bremer Trust is donating \$2.5 million to the Center for Safe and Healthy Children at University of Minnesota Masonic Children's Hospital.

It's one of the largest donations ever made for a problem that now causes more childhood deaths than cancer annually in the United States.

"This level of financial support will greatly improve our ability to treat more abused and neglected children," says center director Nancy Harper, M.D. "It is our hope others in the state and region view this investment as the first step in establishing the center as a national leader in combating child abuse and toxic stress."

The Center for Safe and Healthy Children became the first-of-its-kind regional program in 2014 when it started collaborating with Hennepin County Medical Center and Children's Hospitals and Clinics of Minnesota to provide comprehensive care to abused and neglected patients.

Part of the Otto Bremer Trust donation will fund a fellowship program to train more child abuse pediatricians. While there are 26 fellowship programs across the nation designed specifically for treating children who have been abused, no others currently exist in Minnesota, North Dakota, or South Dakota.

The gift also allows Masonic Children's Hospital to hire another child abuse pediatrician and a program coordinator and to bolster telehealth capabilities to assist with cases in Greater Minnesota.



Nancy Harper, M.D., who directs the Otto Bremer Trust Center for Safe and Healthy Children, took the stage at a March 14 news conference announcing the gift.

A relatively new subspecialty, child abuse pediatrics focuses on diagnosing and treating children and adolescents who are suspected victims of any form of child maltreatment, including physical abuse, sexual abuse, factitious illness (medical child abuse), neglect, and psychological and emotional abuse. These physicians are also trained to recognize medical conditions that are often mistaken for abuse and work closely with law enforcement, the judicial system, and community agencies on child safety.

In recognition of the gift, the center has been renamed the Otto Bremer Trust Center for Safe and Healthy Children at University of Minnesota Masonic Children's Hospital. MIB

PHOTO: JIM BOVIN

Reducing nicotine levels in cigarettes may help smokers quit

Would reducing the amount of nicotine in cigarettes curb addiction? Signs point to yes, according to a study published in the *New England Journal of Medicine* in October.

Researchers involved with the double-blind, yearlong study of 840 smokers at 10 sites across the United States, including the University of Minnesota, provided participants with cigarettes that either matched the nicotine levels of their preferred brand, or switched them with one of five investigational cigarettes with lower nicotine levels. The nicotine reduction ranged from 66 percent to 98 percent.

On average, participants given lower-nicotine cigarettes smoked less per day at the end of the six weeks. “Cigarettes with lower nicotine content, as compared with control cigarettes, reduced exposure to and dependence on nicotine, as well as craving during abstinence from smoking,” the study’s authors wrote.

Quit attempts were most likely to occur when the nicotine content dropped to 0.4 mg per gram of tobacco, says the study’s senior author, Masonic Cancer Center member Dorothy

Hatsukami, Ph.D. That level (roughly 2 percent of the nicotine dose found in a regular cigarette) no longer delivered enough nicotine to the brain to make smokers want to smoke more cigarettes.

“If you reduce dependence on cigarettes, then you are likely to reduce the number of people who smoke,” she says.

Hatsukami’s group is now looking at whether it would be best to reduce nicotine content in cigarettes to minimally addictive levels immediately or more gradually. Then, she adds, with the mounting research data, it will be up to the U.S. Food and Drug Administration to decide if, when, and how to enact standards for lower nicotine levels in cigarettes. MIB



Dorothy Hatsukami, Ph.D.

U teams up with HCMC and Abbott to study traumatic brain injury

There are an estimated 2.2 million emergency department visits every year for traumatic brain injuries (TBI), according to the Centers for Disease Control and Prevention. And with every visit, quick evaluation and treatment are critical.

That’s why University of Minnesota researchers are teaming up with Hennepin County Medical Center (HCMC) and Abbott Northwestern Hospital in Minneapolis to launch a comprehensive study aimed at better identifying the range of brain injuries among patients. It will become the largest single-center prospective study on concussion and TBI in the nation.

Researchers plan to screen 9,000 trauma patients and enroll at least 1,000 of them as part of the study. Patients will be followed for up to one year. Investigators will use multiple evaluation tools—including eye tracking, blood-based biomarkers, imaging, and cognitive measures—to develop a new standard approach to classifying brain injuries, including concussions, and providing the information needed to guide treatment decisions.

“We know that there are different types of brain damage that can occur after trauma, whether it’s a mild concussion or a severe injury,” says neuro-

surgeon Uzma Samadani, M.D., Ph.D., Rockswold Kaplan Endowed Chair for TBI Research at HCMC, associate professor at the University, and one of the study’s lead investigators. “Our goal with this study is to combine multiple assessment techniques to quickly assess the severity of brain injuries and enable clinicians to provide appropriate treatments.” MIB

Global Outreach | Jennifer Janssen

MISSION: Bringing medical services to indigenous people living in remote areas

LOCATION: Bocas del Toro, Panama



Special delivery: medicine by boat

When you live on a remote island and get sick – and the nearest hospital may be hours of travel and several months’ worth of salary away – even what developed societies would consider easily treatable illnesses can bring dire consequences.

Unless someone comes to you, of course. Last summer, second-year medical student Jennifer Janssen spent a month with a Floating Doctors team that brought medical and dental care and medications to indigenous people throughout the islands of Bocas del Toro, Panama.

“It’s pretty crazy to think how a small amount of antibiotic or medication can completely change someone’s life expectancy,” says Janssen, a 2015 Judd Fellow, whose experience with Floating Doctors was funded by the Walter H. Judd Fund of The Minneapolis Foundation and additional funds from the Global Programs and Strategy Alliance, with support from individual donors.

Janssen mostly helped to take patients’ vital signs and health histories before they saw the doctor on duty. She shadowed the doctor, as well. “We tried to encourage simple hand washing, as many infected bites, scabies, GI worms, and high maternal and infant mortality could be prevented with sanitation,” she says.

Just like it sounds, the international Floating Doctors organization relies on boats to bring volunteers and donated medical supplies to and from these isolated areas. In Janssen’s case, that boat was a *cayuco* – “essentially a massive, dug-out tree with a 15-horsepower motor on it,” she says. “We stacked in boxes upon boxes of the equipment we needed.”



SUBMIT YOUR WORK

The *Medical Bulletin* is seeking compelling photos and stories featuring U of M Medical School student, alumni, or faculty experiences abroad. 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.



It was a sight to be seen, Janssen says, especially by the local children. She took this photo as her team was getting ready to leave after a clinic day.

“The kids actually get in their little canoes and follow us out as far as they can,” she says. “They’ll wave from the dock or jump in the water and swim after us and wave, depending on how safe it is. This little girl had jumped in and grabbed a spare canoe and was waiting to follow us out.

“Kids will be kids, no matter where you are.” ^[MIB]

– Nicole Endres



WEB EXTRA

See more photos from Janssen's time in Panama at z.umn.edu/janssen.

The expert



across the street

How a U chemical engineer is bolstering medical researchers' efforts to protect heart muscle

Successful scientific collaboration sometimes requires researchers to cross the street—literally and figuratively.

Such is the story of a multidisciplinary team at the University of Minnesota that is investigating the use of a “molecular band-aid” in treating damage to heart and skeletal muscle. What began as a focus on a deadly but rare disease now includes an application that could protect the health of millions of people who have suffered heart attacks.

“It’s a wonderful story of collaboration—collaboration across disciplines,” says Joseph Metzger, Ph.D., a cardiac researcher and head of the Medical School’s Department of Integrative Biology and Physiology. “I think that’s what’s most exciting.”

When Metzger came to the U in 2008, he had already been experimenting with an unusual polymer—a substance made of long, repeating molecular chains—in the treatment of Duchenne muscular dystrophy (DMD), an inheritable and fatal disease.

Caused by a recessive mutation on the X chromosome, DMD rarely affects girls. About 1 in 3,600 boys acquire the degenerative disease. Boys are typically diagnosed when they are 3 to 6 years old, when they begin to show signs of muscle weakness.

“The diagnosis of [Duchenne] muscular dystrophy is devastating,” says Metzger. “Slowly and intractably, the muscular function is going to decay away. A child with [Duchenne] muscular dystrophy will be in a wheelchair somewhere between 10 and 12 years of age. [Most] will die in their 20s.” The majority die from the failure of the heart or respiratory muscles.

The fatal mutation prevents the production of the protein dystrophin. “This dystrophin molecule you can think of as a molecular shock absorber,” says Metzger, who holds the Maurice B. Visscher Endowed Chair in Physiology.

Without dystrophin to reinforce the cell walls of skeletal and cardiac muscles, constant contraction and relaxation

For the first time, the University’s Frank Bates, Ph.D. (far left), put his block copolymer expertise to use for a medical purpose when he started collaborating with cross-campus colleagues Joseph Metzger, Ph.D. (center), and Demetris Yannopoulos, M.D.

An unusual polymer called P188 could represent a new therapeutic approach for preventing or reversing the progression of cardiomyopathy and heart failure in muscular dystrophy.

cause muscle cell membranes to become leaky. Calcium from the blood can infiltrate the cells. Says Metzger, “That has devastating consequences for the functionality of the cell.”

There’s no known way to get dystrophin to the muscles where it is needed. But Metzger began experimenting with a synthetic substitute—an unusual polymer called P188. Working with lab animals, he discovered that the compound seemed to seal leaky cell membranes and “could represent a new therapeutic approach for preventing or reversing the progression of cardiomyopathy and heart failure in muscular dystrophy.”

Confounding compounds

P188 is just one of an infinitely large family of compounds called block copolymers, which are chains of two different large molecules joined at the ends—think of a two-colored gummy worm. Block copolymers are used in industry for, among many other things, manufacturing shoe soles, tire treads, and computer chips.

Ploxamers are a subgroup of these block copolymers—think of a gummy worm with a red belly and two blue ends. The red belly is polypropylene oxide, which shuns water and attracts fats. The blue ends are polyethylene oxide, which is attracted to water.

Some ploxamers have interesting biological properties. P188, for example, has been used for nearly 50 years to thin blood before transfusions. Inside a leaky cell, the water-seeking ends and

the fat-attracting belly somehow attach to or interact with different components of cell membranes, blocking the leaks.

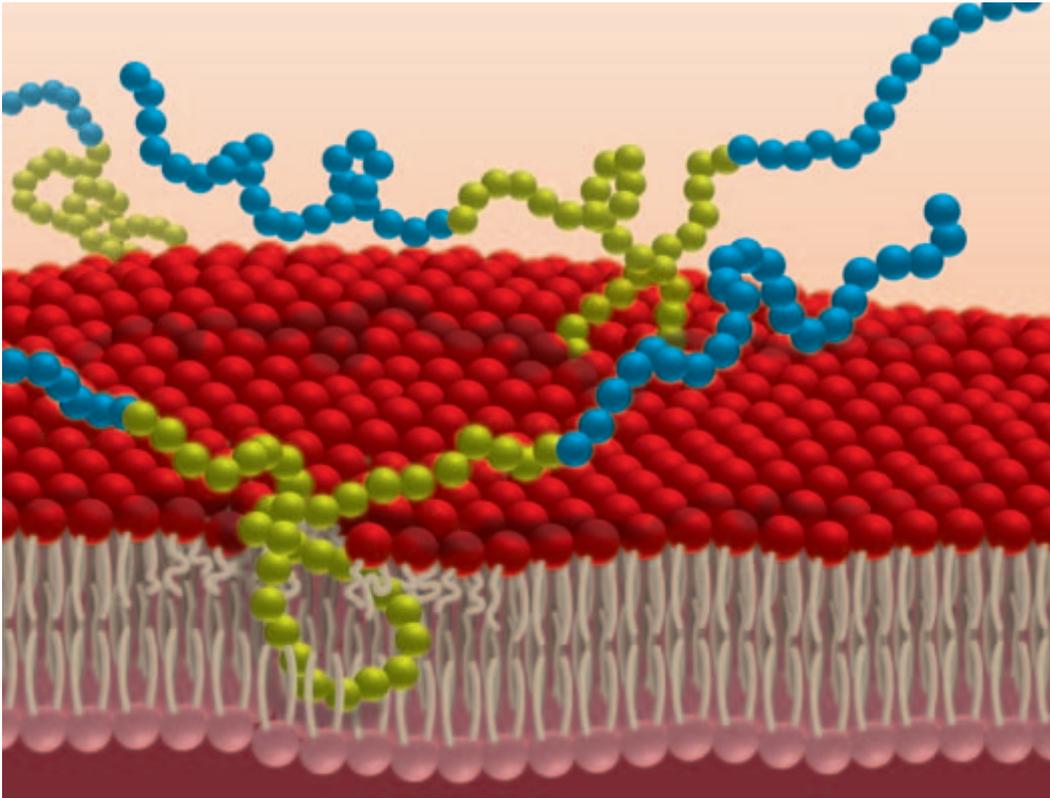
Block copolymers such as P188 can be formulated in a nearly infinite number of combinations, sizes, and weights, each with somewhat different chemical and biological properties. One of the world’s experts in understanding this confounding array of compounds is Frank Bates, Ph.D., a Regents Professor of chemical engineering and materials science in the U’s College of Science and Engineering.

Crossing the street

Meeting Bates was on Metzger’s agenda when he came to Minnesota. “I was very much aware that Frank Bates was, in my view, the world’s leading block copolymer chemical engineer,” says Metzger. “I’d read up on his work. He’s just a superstar.”

Metzger hoped Bates could help him understand why P188 worked as it did and perhaps point him toward similar ploxamers that might work even better. So one day Metzger walked out of his Medical School office and crossed Washington Avenue to Bates’ office.

Bates recalls the meeting. “He said, ‘I understand you know something about block copolymers,’ and I said, ‘I do,’” says Bates. “What I bring is the ability to synthesize these things and to understand them from a physical, chemical, physics, engineering point of view, including the way they interact with other materials.”



The block copolymer known as P188 attaches to a damaged cell membrane to stabilize the membrane and preserve muscle cell function. U researchers are trying to better understand how this “molecular band-aid” process works.

Says Metzger, “I call it the Great Trans-Washington Avenue Collaboration.”

Metzger and Bates first secured a Minnesota Futures grant, a U program designed to nurture extraordinary interdisciplinary research ideas, and then grants from the National Institutes of Health (NIH) and the Muscular Dystrophy Association to study P188’s effect on protecting not just heart muscle but also skeletal muscle. They also are trying to better understand how poloxamers like P188 grab onto and seal membranes and whether different formulations might be more effective.

“I want to know how these work,” says Metzger. “How is this protecting the muscle cells? Then perhaps we can

modify the structure of this synthetic block copolymer to improve its functionality.”

The goal—years ahead—would be to develop a treatment, such as an injection, for Duchenne muscular dystrophy that would delay its worst effects for years. “It would be very much like the life-long treatment and management of diseases such as type 1 diabetes,” Metzger says.

It’s a small University after all

About three years ago, University cardiologist Demetris Yannopoulos, M.D., was talking to a friend at the U, a postdoctoral fellow working in Bates’ lab with the P188 compound that Metzger was testing to reinforce cell walls to treat DMD.



Everyday uses for polymers

While University of Minnesota researchers are exploring the potential of using block copolymers to repair damaged heart tissue, these molecular chains are already used to make many products, including:

- shoe soles
- tire treads
- asphalt
- computer chips
- tape
- spandex
- surgical gloves
- cosmetics
- milk shakes
- medical implants



WEB EXTRA

Bates says there are many uses for block copolymers in medicine. He explains at z.umn.edu/copolymers.

That piqued Yannopoulos' interest. Yannopoulos, who specializes in cardiac resuscitation, was treating heart attack patients whose heart cell walls were damaged as the flow of blood and oxygen were restored to the heart—so-called reperfusion injury.

In a heart attack, Yannopoulos explains, the heart muscle is damaged as the rupture of an atherosclerotic plaque blocks the flow of blood and oxygen. But further damage occurs when the cardiologist restores the flow of blood. The body's own inflammatory response damages heart muscle that is already in disarray. He thought that perhaps a compound such as P188 could strengthen the cells' walls as blood and oxygen are restored.

Now it was Yannopoulos' turn to visit Bates' office.

"After I talked to Frank, I realized the potential was even larger" because of the many varieties of compounds to work with, says Yannopoulos, who holds the R. K. Eddy Endowed Chair in Cardiovascular Resuscitation. "It opens up a huge area of investigation."

With an NIH grant, Yannopoulos began investigating the benefits of this molecular band-aid on pigs. After a heart attack in a pig, he found that injecting a dose of P188 directly into the artery leading to the heart has the "drastic effect" of saving up to half the tissue that would otherwise die.

He anticipates that with further research and clinical trials, P188 or a similar molecular patch will help many of the 1.5 million people who suffer heart attacks in the United States each year.

“By having the ability to decrease the amount of muscle that dies with a simple intervention, you not only save the muscle itself but you save people’s lives, save visits to the hospital for future heart failure,” Yannopoulos says. “People can be more active. They don’t have to be debilitated. Everything stems from our ability to reverse the injury from heart attack.”

From manufacturing to medicine

All three scientists continue publishing research on the use of the P188 molecular band-aid in animal models.

Though the compound isn’t being used in clinical trials in this country, it was recently approved for use in Europe at physicians’ discretion to treat Duchenne muscular dystrophy.

Hoping to limit damage caused by heart attacks in humans, Yannopoulos is working to replicate and verify the success he has had in pig models. He is also working with Bates to select a new compound to test with pigs.

For Bates, this is the first time he has investigated chemical engineering questions in a medical or biological setting.

“It’s kind of an eye-opener,” Bates says. “It’s infinitely complex, but it’s very relevant, obviously.”

“I come back to this notion that there’s this grand challenge to bridge basic sciences and medicine. Those two are very different. You know, when Demetris has somebody on the operating table and he’s got to put a stent in him, he’s not ... thinking about the fundamental molecular interactions that are going on as he sends this cannula through somebody’s coronary arteries. On the other hand, what’s going on on a molecular scale is ultimately responsible for the efficacy of any of these procedures. This connection with the Medical School, if we can foster it and deepen it, I think there are huge benefits.”

This crossdisciplinary work begins, of course, when researchers take advantage of the expertise across the street.

“It’s the most important thing about being an academic faculty working in the University—building bridges between departments,” Yannopoulos says. “Because in isolation, none of us could have done any of this. This is the strength of our University of Minnesota.” ^[MB]

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

By having the ability to decrease the amount of muscle that dies with a simple intervention, you not only save the muscle itself but you save people’s lives. They don’t have to be debilitated. Everything stems from our ability to reverse the injury from heart attack.

– Demetris Yannopoulos, M.D.

Valuable lessons

U medical students and their patients benefit from a new clerkship at the VA hospital that brings them closer



When third-year medical student Tim Kummer first met Tommy Watson in the Minneapolis VA Health Care System primary care clinic, he wasn't just meeting "a diabetic" or "a rehab patient." He met a cheerful, loquacious man who has stories to tell and a firm handshake to share—and who also happens to have diabetes and a couple of other ailments that make him a once-a-week regular at the VA.

"He came in and made me feel so comfortable," says Watson, remembering when he met Kummer. "I love that guy. He's a good communicator and a good listener—he's going to be a great doctor."

In traditional third-year training—known as "block training"—Kummer might have met Watson once and gotten a quick overview of his case from the resident; within a couple of weeks, Kummer would have moved on to his next block in a different hospital, perhaps never thinking about Watson again. But as a student in the U Medical School's new VALUE (VA Longitudinal Undergraduate Medical Education) clerkship, Kummer is spending 10

months at the VA working with Watson and other veterans as they grapple with everything from diabetes and gastrointestinal problems to psychiatric, cardiac, and orthopaedic complaints.

When Watson's primary doctor first asked him if he'd be willing to work with Kummer, Watson was enthusiastic. "It's very important what these students do," he says. "Not that we vets are special, but we have been through a lot, and if I can help train a doctor who might help other vets someday, sure, I'm going to do that."

If block training is the medical school equivalent of speed dating, longitudinal training is more akin to a date that turns into a serious relationship. In



PHOTOS: SCOTT STREBLE

his time at the VA, Kummer will not just learn about his patients' illnesses, he'll call them at home if they miss an appointment. He'll sit with them in clinics, meet their families, learn whom to call when they need help he can't provide. And if they lose their medical battles and move into hospice, he'll be there with them as they die.

A richer way of learning

"On a two-week rotation, students can be more detached because they're not likely to ever see the patient again," says Nacide Ercan-Fang, M.D., a University associate professor in the Department of Medicine and codirector of the VALUE clerkship; Amy Candy Heinlein, M.D., assistant professor of

medicine and a general internal medicine physician at the VA, is the other codirector.

For students in fast-paced training blocks, Ercan-Fang says, patients can be reduced to a diagnosis: "the bypass guy," "flank pain in bed two," "a breast biopsy."

"In the VALUE program," she explains, "we assign 30 or so patients to each student, and they own those patients. Whether they come in for surgery, for an eye appointment, an orthopaedics checkup ... the student follows them through every clinic, every hospitalization for 10 months. They develop connections and commitments to patients like I have never seen before."

Medical student Tim Kummer jokes with Tommy Watson while he examines Watson's legs.

This program is a really unique educational opportunity to follow a patient from primary care to a specialty clinic and back to primary. In a block rotation, those things would never overlap.

– Tim Kummer, medical student in the VALUE program

Teaching students in “longitudinal integrated clerkships,” or LICs, versus block rotations that change every two to six weeks is not a new idea—in fact, the Medical School established the nation’s first LIC, the Rural Physician Associate Program (RPAP), in 1971 to encourage med students to consider rural practice. MetroPAP (Metropolitan Physician Associate Program) and UCAM (Urban Community Ambulatory Medicine) are similar programs for U med students interested in serving urban communities. VALUE at the VA is the newest LIC option.

“A longitudinal clerkship is a much richer way of learning,” says Anne Pereira, M.D., M.P.H., the Medical School’s assistant dean for clinical education. Pereira’s challenge is to

see that the Medical School’s clinical training curriculum evolves to keep pace with the fast-changing world of health care.

“Health care has become more team-based, more patient safety-based,” she explains, “and our curriculum needs to be responsive to those changes.”

According to Pereira, studies have shown that students educated in LICs acquire the same medical knowledge as students who go through block training, but they have higher levels of satisfaction with the education process and develop a sense of themselves as doctors at an earlier point in their training. And the preceptors—doctors who supervise and mentor students closely throughout the length of the clerkship—have reported strong feelings of professional satisfaction as they watch the students grow and develop.

“Medical students want terribly to really contribute to patient care in a meaningful way,” Pereira says. “When students are in a given site for a longer period of time, it’s easier for them to add meaningfully, not just to the care of a patient, but to the hospital itself.”

VALUE students

The lanky and outgoing Kummer is in what he calls his second career, having already worked in health care as a nurse.

“I applied for the VALUE clerkship because I really liked the idea of having a panel of patients whom I would learn from longitudinally,” he says, “and having preceptors I could really build relationships with.”



Nacide Ercan-Fang, M.D., codirects the VALUE clerkship.

Originally assigned 38 patients, Kummer has learned quickly that working in an extended clerkship is much different from experiences he's had on short rotations.

"I've had three patients pass away already," he says, "and two others with terminal cancer. Seeing them go through their illnesses, learning to deal with the emotions of not being able to help fix them is something that doesn't happen in a block clerkship."

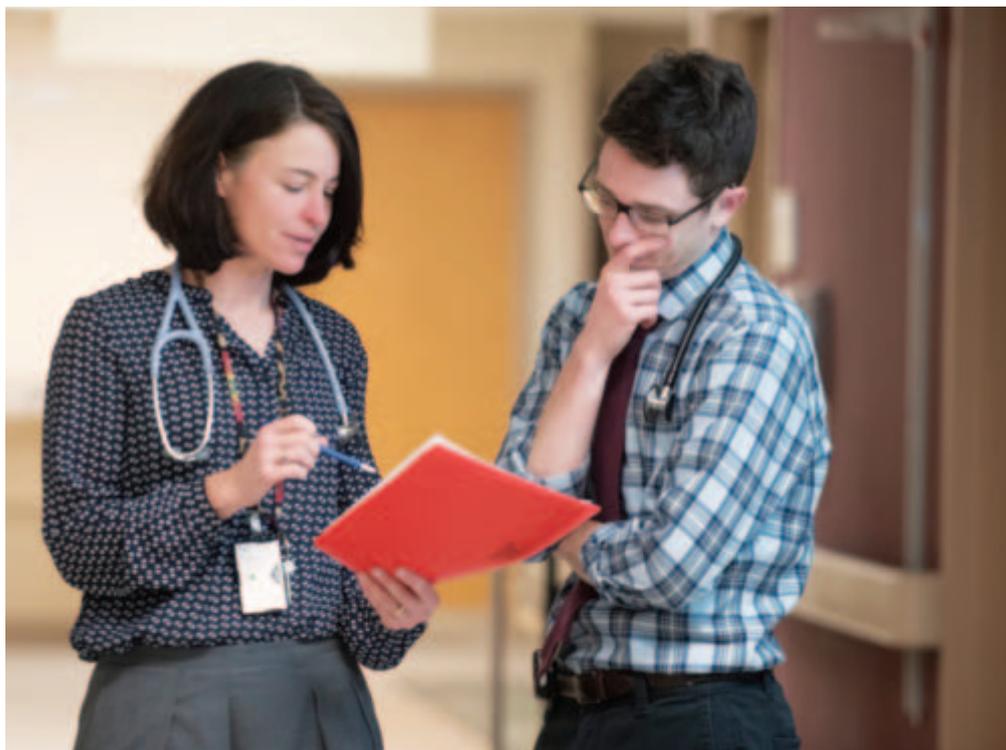
He thinks about his patients a lot, he says, even when he's home with his wife and two young kids. He's gotten attached, too—he grins when he talks about one patient in his late 70s who's had multiple head bleeds but still loves to get out on the ice and play hockey.

Kummer says one thing the VALUE experience is teaching him is that he tends to get too attached, and he's now considering whether emergency medicine might be a better fit for him.

"This program is definitely what I hoped it would be," he says. "It's a really unique educational opportunity to follow a patient from primary care to a specialty clinic and back to primary. In a block rotation, those things would never overlap."

Fellow VALUE student Kathryn del Valle echoes Kummer's thoughts. As she follows her 32 patients, she says, she's learning about far more than just their medical issues.

"We're getting great exposure to medicine, but we're also learning about health care systems and how they work. We're experiencing what it's like



for a patient to have to go through a hospital, to many different clinics, and what a huge burden it is for them to collect all that information, to take that all in."

Another student, Joe Bryant-Huppert, who has 35 patients, sums up the experience as "huge."

"From Labor Day to Memorial Day," he says, "we get such focused attention from practicing physicians who are really dedicated to sharing their knowledge. We get to know them, and they get to know us in ways that residents who spend short periods of time with students in a block rotation never do."

Lasting legacies

When Pereira mentioned that VALUE students contribute not just to the care of patients but to the hospital itself, she was talking about the curriculum requirement that each student design

Mentor-mentee pairs like Kimberly Olson, M.D., and Tim Kummer develop a deep level of trust and camaraderie over the course of the 10-month VALUE clerkship experience.

Our vision is that, in the next five to 10 years, every student will have some sort of longitudinal placement.

– Anne Pereira, M.D., M.P.H.,
assistant dean for clinical
education

and implement a project geared toward improving patient safety or care quality at the hospital.

Kummer and his partner focused their project on the emergency department (ED), where “throughput time” is always under scrutiny.

“How long does it take from the moment the patient is interviewed by the triage nurse to the time the medical team comes up with a decision to either admit or release [the patient] with a set of orders—that’s the ultimate number they look at in the ED to judge how efficiently and how safely staff deal with patients,” he says.

Hoping to improve throughput times, Kummer and fellow student Nate Juergens designed a protocol and standard sets of orders for handling four of the most common complaints seen in the VA’s ED: chest pain, shortness of breath, blood in the urine, and flank pain. Their protocol is now being used in the ED and will be evaluated for its effectiveness before the students finish their clerkships in May.

Bryant-Huppert and del Valle have tackled other common problems: del Valle has devised a system of brightly colored stickers to quickly identify key players in emergency code situations, and Bryant-Huppert, who’s interested in anesthesiology, is working on a protocol to decrease rates of post-operative delirium, a condition that’s often seen in elderly patients.

“Part of the reason we were chosen as the site for this clerkship is that the VA has a long history of working in teams to improve patient safety and care issues,” says Ercan-Fang, who, in addition to the education roles she fills for the U, has been a staff endocrinologist at the VA for 16 years. “By developing these quality improvement projects, the students learn more about how hospitals work, and the hospital gets a lasting legacy of their time here.”

The teachers’ take

No one works more closely with the VALUE students than their preceptors, the practicing physicians who care for patients at the VA, but now also have to take time to teach and monitor students for 10 months. It’s a big commitment, and one that some doctors feared would overburden their already heavy loads. But listening to VALUE preceptors talk about their actual experience is enlightening, even inspirational.

Kimberly Olson, M.D., Watson’s primary doctor and Kummer’s preceptor, says this: “Working with Tim has been energizing and fun—it’s so much easier to invest in someone for the long haul. I do put in extra time preparing information for Tim, or helping him work through particular problems, but it’s so much fun, it doesn’t feel like work.”

Another preceptor, Peter Weissmann, M.D., has become a big fan of the LIC-style of learning. “In typical rotations, it’s tough to evaluate student performance after spending so little

time with [the students]. But here, watching the student grow and learn over 10 months is tremendously satisfying—actually one of the most rewarding experiences of my career.”

What lies ahead

If deans, directors, preceptors, and students all love the longitudinal approach to learning medicine, why not make these clerkships the rule rather than the exception?

“Our vision is that, in the next five to 10 years, every student will have some sort of longitudinal placement,” says Pereira, who is working on plans to roll out two more VALUE-style clerkships in other hospitals as early as 2017. But with 230 medical students to place each year, her challenge is to find enough clinical sites to support the clerkships.

From Watson’s patient perspective, this style of training is a no-brainer. “I already have the greatest doctor, Kim Olson, at the VA. And now she’s teaching Tim to be a doctor? That’s fantastic. And, Tim, I can tell—he has an ear and a heart, and they’re connected. That’s what we need for our doctors.” ^{MB}

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



A VA-trained workforce

THE MINNEAPOLIS VA HEALTH CARE SYSTEM has one of the largest education and training programs in the Veterans Affairs system and boasts a particularly strong connection with the University of Minnesota. Celebrating a 70-year partnership with the nation’s medical schools this year, the U.S. Department of Veterans Affairs provides clinical training in nearly 40 health care professions. Here’s how the numbers line up:

MINNEAPOLIS VA HEALTH CARE SYSTEM

1,500

STUDENTS WHO COMPLETE VA ROTATIONS ANNUALLY

50

AFFILIATED COLLEGES, UNIVERSITIES, AND VOCATIONAL SCHOOLS

10

LENGTH OF THE NEW U OF M VALUE CLERKSHIP, IN MONTHS

U.S. DEPARTMENT OF VETERANS AFFAIRS

70

YEARS THE VA HAS PARTNERED WITH U.S. MEDICAL SCHOOLS

70

PERCENT OF U.S. DOCTORS WHO RECEIVE VA TRAINING

120,000

VA CLINICAL TRAINEES, INCLUDING 20,000 MEDICAL STUDENTS, EACH YEAR

1

VA’S RANKING AS THE NATION’S SINGLE LARGEST PROVIDER OF MEDICAL TRAINING

Mighty, mighty zebrafish



This little aquatic creature packs a big punch for research



They're about an inch long; we're generally 5 to 6 feet tall. They breathe water; we breathe air. Simply put, they're fish; we're mammals.

So what good are zebrafish to the research of human conditions? Plenty, says University of Minnesota Zebrafish Core Facility manager Marc Tye: "The zebrafish genome is about 70 percent similar to the human genome."

Zebrafish are good for studies of human cancers, development, neurobiology, pharmacology, behavior, and more, Tye says. "There's some lung disease research going on here, even though fish don't have lungs," he says. "We do some regeneration work, because if you cut the fin of a zebrafish, they're likely to grow their fin back. And actually, if you damage their heart when they're really young, they'll grow part of their heart back."

On top of that, zebrafish are inexpensive, they reproduce quickly (a male

and female zebrafish can produce up to 300 embryos every week for two years, Tye says), and they develop very quickly.

"They go from a single cell to essentially a full little zebrafish in 24 hours," he says. "They hatch at three days."

Perry Hackett Jr., Ph.D., spearheaded one of the most prolific zebrafish research yields in the University's history. The College of Biological Sciences professor in 1997 found and resurrected an extinct fish gene to integrate segments of mammalian DNA into chromosomes of vertebrates. This Sleeping Beauty Transposon System also has been used to discover functions of genes, specifically genes that cause cancer. It has since been used as a nonviral vector in human gene therapy around the world and has played a major role in finding hundreds of genes thought to be drivers of human cancers.



PHOTOS: SCOTT STREBLE

Here are a few of the ways U researchers are using zebrafish to improve a variety of other human conditions today:

- Pulmonologists Peter Bitterman, M.D., and Craig Henke, M.D., working with the College of Pharmacy’s Carston R. Wagner, Ph.D., are injecting scar tissue-forming cells from lungs affected by idiopathic pulmonary fibrosis into zebrafish eggs to measure their activity and, hopefully, speed the development of new treatments for the disease in humans.
- Yasuhiko Kawakami, Ph.D., an associate professor in the College of Biological Sciences, studies the process by which zebrafish regenerate fins and hearts, in hopes of finding ways to coax different types of human cells to regenerate as well.
- Pediatric hematologist/oncologist Troy Lund, M.D., Ph.D., uses zebrafish to observe how bone marrow stem cells develop after a transplant—in real time—with the goal of improving engraftment success for his patients.
- Neuroscientist Mark Masino, Ph.D., studies zebrafish to understand the properties that underlie the development of locomotor activity, which could help researchers identify therapies for conditions such as restless legs syndrome, periodic limb movement disorder, and Parkinson’s disease.

By Nicole Endres, managing editor of the *Medical Bulletin*

U of M Zebrafish Core Facility

BY THE NUMBERS

10,000

ZEBRAFISH, APPROXIMATELY

110

LINES OF TRANSGENIC FISH

800

TANKS

2

FEEDINGS PER DAY

80

WATER TEMPERATURE IN THE TANKS,
IN DEGREES FAHRENHEIT

Time for a reorg

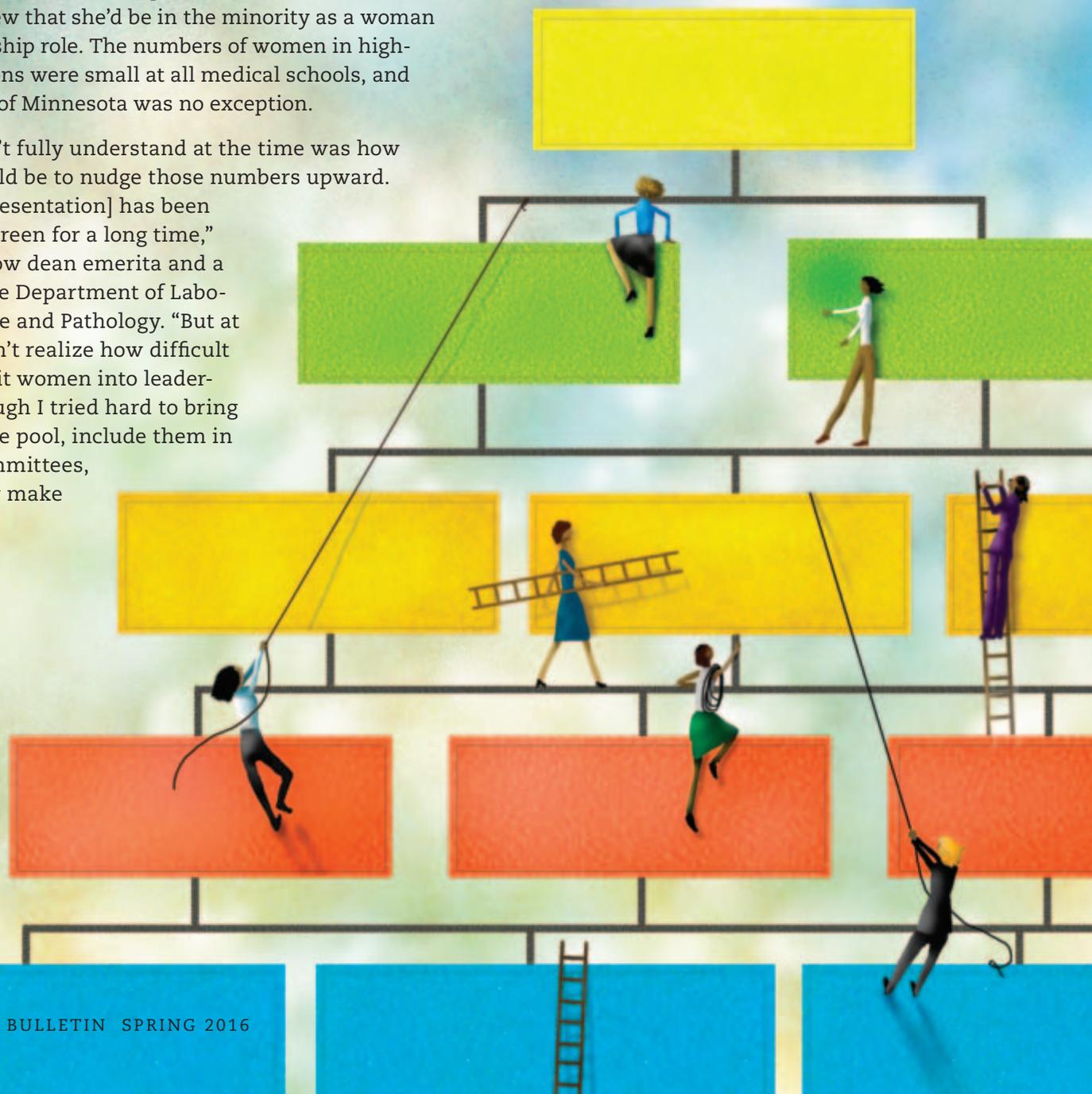
An internal report on leadership roles for women at the Medical School lays out a plan for improvement

BY ERIN PETERSON

When Deborah Powell, M.D., arrived at the University of Minnesota as dean of the Medical School in 2002—a post she held for seven years—she knew that she'd be in the minority as a woman in a top leadership role. The numbers of women in high-ranking positions were small at all medical schools, and the University of Minnesota was no exception.

What she didn't fully understand at the time was how difficult it would be to nudge those numbers upward.

"[Unequal representation] has been on my radar screen for a long time," says Powell, now dean emerita and a professor in the Department of Laboratory Medicine and Pathology. "But at the time, I didn't realize how difficult it was to recruit women into leadership, even though I tried hard to bring women into the pool, include them in our search committees, and personally make phone calls."



Her push for greater equality was about more than evening up the numbers: study after study has shown that organizations with greater diversity, including women, in their leadership roles are significantly more innovative and successful than those with a more homogeneous mix. And in a wide-ranging survey of more than 7,000 leaders published in *Harvard Business Review* in 2012, women were rated more highly than men in overall leadership effectiveness at supervisor, manager, and executive levels.

But despite the obvious benefits of having a more equal balance of men and women in leadership roles, creating that parity remains a vexing problem, both at the University's Medical School and across the nation. Even in 2016, the number of women in top positions at the U's Medical School continues to be modest. Just a quarter of all department chairs, deans, and vice deans are women, and less than 15 percent of faculty holding endowed chairs are women.

Currently, the Medical School is taking steps to improve those statistics. A just-completed internal report has helped to shine a spotlight on the problem, and commitment from Brooks Jackson, M.D., M.B.A., Medical School dean and the U's vice president for health sciences, will help turn the report's recommendations into a seven-year action plan that, among other things, seeks to double the number of women in academic and medical leadership positions.

"Equity is a high priority because it's critical to our success," says Jackson. "To be truly world class, we need faculty and leaders who reflect the population. We need to have an environment that supports promotion and leadership opportunities for all faculty

with the skills and interest. Leadership needs to be focused and insistent on this issue in order to catch up with, and surpass, our peer institutions."

The scope of the problem

In early 2015, more than a dozen people with a wide breadth of experience at the Medical School convened on a dean's committee to begin work on a report that would help pinpoint the problems and offer suggestions for improvements.

What they discovered was far more nuanced than a simple statistical breakdown could suggest. Indeed, the Medical School does quite well at some levels. For example, women make up a full 51 percent of the Medical School's 556 assistant professors (and 55 percent of the first-year Medical School class).

Beyond the assistant professor rank, however, the drop-off is steep. For example, in recent years, only 25 percent of faculty members promoted to associate professor at the Medical School were women (compared with 41 percent nationally). Just 21 percent of those promoted to full professor were women (compared with 34 percent nationally). "The problem is complex," says committee cochair Carol Lange, Ph.D., a professor of medicine and pharmacology, "but that's where we're really hurting compared to national averages."

Other areas also could benefit from significant improvements. For example, although the Medical School is in line with national averages for the percentage of women who are department heads and deans (25 percent), its leaders want to aim higher than the status quo.



Ensuring that there's one woman in the pool for a leadership position is not enough, says dean emerita Deborah Powell, M.D.

Multiple factors contribute to these disparities. In some cases, there are few or no women who make the short list for job interviews. In others, women who would be exceptional leaders opt out because they see that their predecessors worked 80-hour weeks, and they don't want that life for themselves. (The study's committee cochair, Anne Joseph, M.D., M.P.H., an internist, points out that many women reconsider leadership roles when they realize that the job could be restructured in ways that would allow them to maintain a reasonable schedule and still succeed in the role.)

Lange and Joseph point to an array of subtle but real problems that, when added together, can create a frustrating atmosphere for women faculty. For example, women who shoulder many of the child care responsibilities in their families often struggle to make the not-uncommon 7 a.m. academic meetings because they have to get their kids up, ready, and out the door to school. And while many organizations offer last-minute backup to support working parents who need someone to care for a sick child, the University is not yet among them. Women at the highest levels are willing to work hard, but they often choose the job with more flexible options.

Other times, women may not pursue a promotion because they haven't seen other women do the same. "Most of us need role models to look at and say, 'That looks like a good job,'" says Joseph. "It can be hard to think of yourself [in a high-level job] unless you see people who look like you in those roles."

More troublingly—and perhaps contributing to these other problems—both men and women are highly susceptible to unconscious bias. Such bias can lead them to value the same skills differently (more favorably or negatively) in a man as compared with a woman.

A 2014 study by social psychologists at Skidmore College, for example, found that academic scientists—both men and women—who were provided CVs of fictitious job applicants that differed only in the gender of the applicant were more likely to view the man's resume more favorably. Even those who were open to hiring the woman recommended a salary 13 percent lower than that of her fictitious male counterpart. "We all have these biases," says Powell. "But we need to understand and overcome these deep-seated stereotypes that favor men for jobs in science and medicine."

Big goals, big solutions

The goals that the committee developed are ambitious. Among the most prominent: increase the percentage of women in academic and medical leadership positions (deans, regional deans, clinical and basic science department heads, and vice deans) to 40 percent by 2023, and recruit 50 new female faculty members at the associate professor and professor level in clinical and basic sciences in the same time frame.

Such numbers would put Minnesota well above average nationally, and there are strong models to follow. When the committee looked for other schools that were excelling at attracting and retaining women at the highest levels, they

COCHAIRING THE COMMITTEE ON WOMEN IN LEADERSHIP

found success stories at several universities, including Johns Hopkins, the University of Utah, and the University of Wisconsin–Madison. They closely studied these schools' best practices.

The report's wide-ranging recommendations fall into five categories: leadership and education; faculty recruitment, mentorship, and retention; salary equity; metrics and evaluation; and infrastructure recommendations.

To get at the root of the problem, the report recommends training for all men and women on the faculty to help them spot and correct some of their own prejudices. Indeed, Jackson has already begun instituting training to combat unconscious bias for Medical School leaders.

At the same time, the report recommends providing more resources and opportunities for women to develop their leadership skills. Such options might include bringing in female role models and speakers and providing the time and training for current women leaders to nurture female colleagues who are a few steps behind them. There are already some programs in place to support women faculty, including the AHC Duluth Women's Mentoring Program on the Medical School's Duluth campus. (See sidebar, page 26.)

Paula Termuhlen, M.D., who was hired as regional campus dean for the Medical School's Duluth campus from the Medical College of Wisconsin last spring, knows that these approaches work. "I am personally a product of them," she says. "I've done leadership development and women-in-medicine programming."



CAROL LANGE, Ph.D., a professor of both medicine and pharmacology and holder of the Tickle Family Land Grant Chair in Breast Cancer Research, studies the molecular biology of breast cancer and has served as the director of multiple programs, including the Masonic Cancer Center Cell Signaling Program and the National Institutes of Health T32-supported Cancer Biology Training Program.



ANNE JOSEPH, M.D., M.P.H., Wexler Professor of Medicine and director of the Department of Medicine's Applied Clinical Research Program, has served as president of the Society for Research on Nicotine and Tobacco. She is currently cochair of the Medical School's Promotion and Tenure Committee and vice chair for faculty affairs and diversity in the Department of Medicine.

To be sure, some leaders have long been focused on this issue and are already making an impact in their own spheres. Bobbi Daniels, M.D., CEO of University of Minnesota Physicians, copresident of University of Minnesota Health, and vice dean for clinical affairs at the Medical School, says that she often uses her position to help bring more women to the table.

"The University of Minnesota Physicians management team has a greater number of women in the highest level of leadership roles than many other health care organizations," she says. "We've reached beyond traditional female roles in health care and had a woman as CFO, which is a relatively rare occurrence regardless of the industry."



PHOTO: JEFFREY

Regional campus dean Paula Termuhlen, M.D., considers herself a product of women’s leadership development programs.

Making connections at UMD

A University of Minnesota Duluth program helps women faculty in the health sciences connect and support one another in a field where they are still a minority.

Professors Jean Regal, Ph.D., Lois Heller, Ph.D., and Barbara Elliott, Ph.D., M.Div., started the group – now in its 16th year – as an informal mentoring and networking group for women working on the Medical School’s Duluth campus. When UMD’s College of Pharmacy opened in 2003, women on its faculty began participating as well.

Today, the program hosts monthly seminars featuring guest speakers from across Minnesota and the country to discuss such topics as career development and work-life balance.

“So much happens within departments these days that your department isn’t always your community anymore,” says Regal. Departments may reorganize and evolve, she says, and it’s important to maintain a community of support for women faculty.

The report recommends developing stronger processes to ensure that women have every opportunity to land top roles at the Medical School during the search and hiring process. Guidelines include having equal representation of women and men on search committees, proactively reaching out to promising female candidates, and spending extra time to ensure that women are well represented on top-candidate lists. “It’s not enough to make sure you’ve got one woman in the pool,” says Powell. “You have to make sure there are several. And we have to make sure that, if we need to, we’re prepared to recruit a family.”

The report also advocates for annual salary equity studies and corrections for disparities. Carrying out this kind of financial evening up can help make it clear that the Medical School values women leaders as much as their male peers, and it can help prevent high-achieving women from jumping to a new job for a higher salary at another school.

To ensure that the Medical School makes steady progress on each of these goals, a standing committee focused on women in leadership has already been created with the help of Clifford Steer, M.D., the Medical School’s new associate dean for faculty affairs. The committee has been charged with monitoring progress, disseminating findings annually, and developing plans to address areas where improvements lag, says Joseph. “We also want to have outside experts review our progress, because we know that external accountability makes a difference [in driving improvement],” she says.

There may be no one who knows better that the climb ahead is steep, but Powell says she’s optimistic that the Medical School is both ready and able to make the big changes that are required. “A report like this can galvanize people to action,” she says. “The recommendations are practical and lay the groundwork for a more supportive environment for women. And when that happens, it feeds on itself. More women see that they have a place here at Minnesota.” MB

Erin Peterson is a Minneapolis-based freelance writer.

PHOTO: JULIET CHEN, COURTESY OF WILLIAM CONRAD, M.D.



Tears of joy

FOR RETIRED OPHTHALMOLOGIST William Conrad, '61 M.D., it was an unforgettable moment.

He was in a Tibetan community in west China with GANSU, INC, a nonprofit organization he founded to provide free eye care to people who couldn't otherwise afford it. A woman had come to him because she had been essentially blind for the last several years. Conrad's team found that she had cataracts in both eyes, with no better than light perception or hand-motion vision in the most affected eye. "She had to be led into the exam room for a preoperative checkup," Conrad says.

The next day, the vision in her surgically repaired eye was 20/60. She walked into her postoperative checkup unaided, with a huge smile on her face, Conrad says. A translator took the photo of the woman (above) on a digital camera and showed it to her.

"She began to laugh, uncontrollably, with embarrassment at her funny appearance. But then – almost as though a light was turned on as she realized she was seeing that picture with her own eyes – she began to weep, again uncontrollably," he says. "There was not a dry eye among any of us, either."

Though Conrad operated on this particular woman in 2007, the emotions of that day come flooding back to him when he tells her story.

This was just one memorable case in the 22-year life of his GANSU, INC (which stands for "Gaining a New Sight for Unseeing, IN China"; Gansu is also the name of the province in China where his grandparents were missionaries, which inspired him to first visit the area and then, later, start his outreach medical mission). In the organization's history, Conrad's teams of 195 volunteers performed 6,543 cataract surgeries, the large majority of which took place in three pop-up camper trailers in rural west China. GANSU, INC's use of modified pop-ups was the first ever for third-world eye surgeries, Conrad says.

"GANSU, INC," he says, "without question, was the highlight of my professional career as an ophthalmologist."

Today, at age 80, Conrad is enjoying his retirement in Georgia. He says he remembers with great fondness his time at the U of M Medical School. [MIB](#)

By NICOLE ENDRES, managing editor of the *Medical Bulletin*

Voice your support for a new U health sciences building

About 6,200 health sciences students are educated at the University of Minnesota each year. And yet, the Academic Health Center's training facilities are more than 40 years old – outdated and practically obsolete.

These students, who will move on to become part of the 70 percent of Minnesota's health professionals trained at the U of M, must have access to interdisciplinary learning that prepares them to meet our state's rapidly growing and changing health care needs.

This spring, the Minnesota Legislature will consider a \$66.7 million capital request for a new health sciences education facility at the University. The U would contribute an additional \$33.3 million to the \$100 million project. The proposed building would include active-learning classrooms, simulation centers, a technology-rich health sciences library, and state-of-the-art facilities for our students.

We urge you to contact your state legislators and voice your support for the University's capital request for a new health sciences education facility. Tell them why the U matters to you and how your Medical School training has made an impact on your career and the lives of others. [MIB](#)

Find your legislator at gis.leg.mn.
Learn more at govrelations.umn.edu/capital-request.html.

Alumni Spotlight | Jennifer Macdonald, M.D.

Serving others: A capital experience

JENNIFER MACDONALD, '12 M.D., has always felt drawn to service. As an undergraduate, the St. Cloud, Minn., native helped to establish a humanitarian organization to fight poverty in rural Uganda. As a medical student at the University of Minnesota, she was a class representative and worked as a free-clinic volunteer. She spent 11 years in the Minnesota Army National Guard and was part of Operation Iraqi Freedom before she returned to the States.

Macdonald worked as a family medicine resident physician at the University of California, Los Angeles, until last spring, when she was named a White House Fellow, assigned to the U.S. Department of Homeland Security. As part of the yearlong paid experience, she works with the agency's leadership team, gaining valuable insight into how the federal government works and how national policy shapes American society.

The *Medical Bulletin* asked Macdonald via a written interview, as required by her position, about this opportunity of a lifetime.

My everyday mantra: serve, contribute something to the world, and make sure my loved ones know how much they mean to me.

— Jennifer Macdonald, M.D.

Why did you want to be a White House Fellow?

My motivation came from the stories of the patients I have served in medicine, especially those belonging to socio-economically marginalized communities, and from the struggles faced by many in the military veteran community. Ultimately, I want to make policy advances on behalf of both groups, and this opportunity allows me to observe the decision-making processes at the highest levels of government.

How do you envision applying your experience as a Fellow to your career?

The personal and professional growth that this fellowship has afforded me will be invaluable in any future endeavor—as will the connections I've made. I am not yet certain which direction my path will lead after the fellowship concludes, but I plan always to stay connected to medicine and the veteran community.

You served in the National Guard and completed a tour abroad. Why was this service important to you?

I learned the meaning of honor, professionalism, and valor from my peers in the Minnesota Army National Guard. My fellow soldiers lived each day with authenticity, commitment, and a deep sense of contribution. Through their willingness to share their life experiences, they imparted the wisdom that has allowed me to pursue increasingly lofty goals.

Your primary duties were as a musician. What kind of music did you perform?

The 34th Infantry Division "Red Devils" Rock Combo, for which I was a vocalist and keyboardist, performed a wide variety of music, from Michael Jackson to Norah Jones. We were one of six musical-support teams on deployment to Basra, Iraq, in 2009, and our overall mission was to boost morale. The rigors and danger of travel on deployment were all made worthwhile by the opportunity to give our fellow soldiers a few moments of unabated joy and remembrance of home.

Why did you ultimately choose to pursue an M.D.?

Medicine has been my chosen vocation since I can remember. I was playing with a plastic stethoscope before I was school-aged. The University of Minnesota was an excellent fit for medical school, including in ways I did not anticipate at the outset. When I arrived, the school had recently instituted the Flexible M.D. program. My plans to travel abroad and pursue a public health degree with that flexibility of time were altered by deployment, but the Flexible M.D. program still made it possible for me to transition abroad and return to school with surprising ease. Everyone, from my classmates to my mentors to Sheryl Houston in the Financial Aid Office, was exceptionally supportive and warm.



ILLUSTRATION: MELINDA JOSIE

When did you settle on family medicine, and what about it was compelling?

Prior to deployment, general surgery and family medicine topped my list of potential specialties. Both offered the opportunity to fulfill my traditional concept of a physician as a person able to care for anyone who walks in the door.

While volunteering in the Troop Medical Clinic in Basra, I encountered a soldier who had completed multiple deployments. She came to the clinic for a simple medical issue, but what she really needed was someone to listen. She was estranged from family and her prior work and was losing sight of a meaningful existence beyond deployment. Family medicine is about seeing the whole person, about discovering health instead of labeling disease, and about demonstrating your faith in your patients' ability to meet their challenges. For this soldier, the simple

reframing of her experiences—with emphasis on her strength and on her ability to connect to the community around her—was powerful. By the time I returned home, there was no doubt in my mind that family medicine was my vocation.

Where do you see your career going after you complete your Fellow experience?

My only plan is to follow my everyday mantra: serve, contribute something to the world, and make sure my loved ones know how much they mean to me. I have two little children and an incredible husband who leads adventure tours around the globe, helping participants discover their own strength and health along the way. We plan to spend our lives building a brighter future, not just for our family, but for all those we stand beside. ^{MB}

Interview by JOEL HOEKSTRA

Honor an outstanding alumnus

The Medical Alumni Society is seeking nominations for the 2016 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, September 22. Nominations are due by May 13. ^{MB}

Visit z.umn.edu/medalumniawards for award criteria, nomination requirements, and a list of past recipients.

Scholarship Winner | Matt Donoghue

Stringing it all together

MEDICAL STUDENT BY DAY, musician by night: Apart from making adequate rest doubly elusive, Matt Donoghue says the two roles complement each other beautifully.

“Medicine is an art form,” he says. “There has to be that human connection. Art is a way that people can connect on a more intangible level; hopefully, you can offer something that helps people heal on their own terms.”

Donoghue, a recipient of the Hyman Horwitz Endowed Scholarship and Thomas P. Cook Scholarship this year, says he is grateful for his “other” life as a musician, which helps enrich his study of medicine. He’s also thankful for the Fisch Art of Medicine Student Award he received last year, which he’s using to enable his acoustic folk/Americana band, the Lowland Lakers, to record its next album.

Music isn’t just a passing fancy for the Chicago-bred Donoghue. Nudged by a teacher to try the upright bass in third grade, he has played in a bluegrass trio, various jazz ensembles, a salsa band, an eight-piece Motown group, and the University Gospel Choir in Madison. (He was

even in a lounge band that got to open for then-presidential candidate Barack Obama at UW–Madison, where Donoghue studied political science as an undergraduate. “Still the best picture I’ve got,” he says, pulling out a photo of himself with the aspiring president.)

Finding the overlap

Donoghue was on the rowing team at UW, and after graduation, he worked for two years as the team’s equipment and facilities manager. Later, he worked in sales, taught sailing in Duluth—where his future wife was attending medical school, and where he took the science prerequisites he needed to apply, too—then worked as a substitute teacher in the Minneapolis Public Schools.

Through it all, even as medicine began looking like his life’s calling, Donoghue has played music.

“Music and medicine overlap really well. The medical world can be sterile, cut-and-dried. Music complements that: it’s not data-driven. The question is, does this speak to you in some way? Does it make you feel something?” Donoghue

says. “I just came off my pediatrics rotation, and music therapy provides a great break from the reality of being in the hospital. The kids love it.”

Donoghue first met his fellow Lowland Lakers, Nate Case and Haley Rydell, when all three were living in Duluth. Case and Donoghue played together in an alt-country/rock band called Silverback Colony; later, when both ended up living in the Twin Cities, Case and Rydell tried to lure Donoghue into joining their new band. It took awhile; at the time, he was a first-year medical student.

“I said I just couldn’t manage it,” Donoghue recalls. “But my second year, they asked again, and I felt like things were under enough control to try it.”

The band performs regularly at Twin Cities venues like the 331 Club, Icehouse, and the Como Pavilion, as well as at established festivals like the Stone Arch Bridge Festival of the Arts.

“Haley and Nate are both excellent musicians [and] talented songwriters,” Donoghue says. “It’s a privilege to be able to play with the level of musicians I play with while basically being a moonlighter.”

Somehow, that’s not all he’s juggled since starting medical school. In his first year, inspired by his experience substitute teaching, Donoghue cofounded a medical student group (ExPECT: Exploring Physiology Through Education and Collaborative Training) that visits under-resourced Twin Cities middle schools to discuss the human body and career possibilities in health care.

Matt Donoghue (far right) performs with his Lowland Lakers bandmates, Nate Case and Haley Rydell, at The Amsterdam Bar and Hall in downtown St. Paul.

PHOTOS: TIM RUMMELHOFF



Medicine is an art form. There has to be that human connection. Art is a way that people can connect on a more intangible level; hopefully, you can offer something that helps people heal on their own terms. — Matt Donoghue

A fair shake

Harking back to his undergraduate political science major, Donoghue also served last year on a blue ribbon committee appointed by Gov. Mark Dayton to advise him on how to enhance the U Medical School's national profile. Donoghue's role was helping Reneé Crichlow, M.D., conduct research and draft white papers for inclusion in the group's final report, which led to \$30 million in new funding to the Medical School from the Minnesota Legislature.

Public policy is an abiding interest for Donoghue. His family historically has been politically active; his father was an electrician and community leader, and his maternal grandfather served as an alderman and state senator.

"My dad very much believed in everybody getting a fair shake, everybody getting equal access to opportunities to better their lives. That has really stuck with me," says Donoghue, who is keenly aware of the social disparities plaguing the Twin Cities. "I think a lot about how we could increase the whole population's access to health care."

Plus, playing alongside full-time musicians, he sees up close how chronic conditions or health crises can spell ruin for people who lack health coverage.

When Donoghue is at home, he's hardly idle. He and his wife welcomed a daughter last fall, and they've been renovating their south Minneapolis home with the help of classmates.

"Sleep is the biggest challenge, and it's why I've had to scale back," Donoghue says. "I can't [regularly] play a show at midnight and then get up at 6 for rotations. But I'm really fortunate to be where I am." 

By SUSAN MAAS, a freelance writer who lives in Minneapolis

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.



WEB EXTRA

Hear the Lowland Lakers' music at z.umn.edu/lowlandlakers.

In Memoriam

THOMAS R. ARLANDER, M.D., Class of 1959, Falcon Heights, Minn., died Jan. 14, 2016, at age 81. Dr. Arlander was a pathologist at North Memorial Medical Center in Robbinsdale, Minn., until retirement. He is survived by 1 brother; 1 nephew and 1 niece; and long-time friend Verne.

B. NILES BATDORF, M.D., Class of 1943, Minneapolis, died Aug. 27, 2015, at age 98. Dr. Batdorf was a family physician for 35 years in Mankato, Minn. He is survived by his wife, Berit; 4 children; 12 grandchildren; and 11 great-grandchildren.

ANTHONY J. BIANCO JR., M.D., Class of 1948, Rochester, Minn., died Jan. 3, 2016, at age 89. Dr. Bianco was an orthopaedic surgeon at the Mayo Clinic for 33 years and the first doctor on staff to specialize in pediatric orthopaedics. He is survived by his wife, Josephine; 7 children; and 9 grandchildren.

FREDERIC M. BROWN, M.D., Class of 1965, Albuquerque, N.M., died Nov. 5, 2015, at age 75. Dr. Brown served in the military for 22 years as physician and flight surgeon. He is survived by his wife, Karen; 2 daughters; and 5 grandchildren.

DR. ROBERT R. COOPER, M.D., Class of 1946, Edina, Minn., died Jan. 1, 2016, at age 93. Dr. Cooper practiced ophthalmology for 40 years until his retirement in 1992. He was preceded in death by his wife, Mary Jo. He is survived by 3 children, 5 grandchildren, and 2 great-grandchildren.

ERIC C. CRABTREE, M.D., Class of 2001, Ironton, Minn., died Nov. 4, 2015, at age 41. Dr. Crabtree was an anesthesiologist. He is survived by his wife, Bridget, and 2 children.

ANTONI M. DIEHL, M.D., Class of 1947, Lenexa, Kan., died Sept. 22, 2015, at age 90. Dr. Diehl was head of pediatric cardiology at the University of Kansas Medical Center and later operated a private practice. He is survived by his wife, Sybil; 4 children; 4 grandchildren; and 3 great-grandchildren.

DAVID C. EITRHEIM, M.D., Class of 1983, Menomonie, Wis., died Jan. 1, 2016, at age 58. Dr. Eitrheim was a family physician and educator, treating patients and training students and residents throughout Minnesota and Wisconsin for nearly 30 years. He is survived by his wife, Amy Jo, and 2 children.

ROBERT N. EVERT, M.D., Class of 1944, Salt Lake City, Utah, died Sept. 11, 2015, at age 95. Dr. Evert was a practicing urologist for 35 years. He was preceded in death by his first wife, Doreen. He is survived by his wife, Jane; 3 children; 5 grandchildren; and 1 great-grandchild.

JAMES B. GAVISER, M.D., Class of 1968, Minneapolis, died Feb. 9, 2016, at age 72. Dr. Gavisser was a plastic surgeon who helped establish an exchange program between local physicians and Jewish and Arab Israeli physicians in Galilee and between Israeli and University of Minnesota medical students. He is survived by his wife, Judy; 2 children; and 6 grandchildren.

JAMES F. HAMMARSTEN, M.D., Class of 1944, Melrose, Minn., died Jan. 13, 2016, at age 95. Dr. Hammarsten was a professor of medicine at the universities of Minnesota, Oklahoma, and Washington, and the School of Health Sciences at Boise State University. A 1995 recipient of the U of M's Outstanding Achievement Award, he served as chief of medicine at hospitals in Oklahoma City, St. Paul, Minn., and Boise, Idaho. He was preceded in death by his wife, Dee, and an infant son. He is survived by 3 children, 6 grandchildren, and 11 great-grandchildren.

JOHN J. HEIMARK, M.D., Class of 1952, Mankato, Minn., died Jan. 14, 2016, at age 94. Dr. Heimark was an internist at the Mankato Clinic for 49 years and finished his career as the medical director of the Mankato Lutheran Home. He is survived by his wife, Ann; 3 children; and 7 grandchildren.

WILLIAM R. HILGEDICK, M.D., Class of 1955, St. Paul, Minn., died Aug. 14, 2015, at age 85. Dr. Hilgedick practiced family medicine with the Columbia Park Medical Group for more than 30 years. He is survived by his wife, Barbara; 3 children; and 8 grandchildren.

WILLIS L. HUBLER, M.D., Class of 1946, Caldwell, Idaho, died Oct. 16, 2015, at age 93. Dr. Hubler established an internal medicine practice in Caldwell, where he saw patients for 40 years. He was preceded in death by his son, Bruce. He is survived by his wife, Sharon; 4 children; and 7 grandchildren.

WENDELL A. JOHNSON, M.D., Class of 1957, St. Paul, Minn., died Oct. 18, 2015, at age 84. Dr. Johnson was an ophthalmic surgeon for more than 30 years at the McFarland Clinic in Ames, Iowa. He is survived by his wife, Marilyn; 3 children; and 7 grandchildren.

ROBERT J. KENEVAN SR., M.D., Class of 1975, Tacoma, Wash., died Aug. 22, 2015, at age 67. Dr. Kenevan served as a military surgeon until 1989, when he opened his own practice in Tacoma. He is survived by his wife, Flavia; 3 children; and 4 grandchildren.

AMY D. KEPPEL, M.D., Ph.D., Class of 1983, Edina, Minn., died Jan. 7, 2016, at age 63. Dr. Keppel was a family practitioner. She is survived by her husband, David, and 2 children.

LOREN J. LARSON, M.D., Class of 1947, Ely, Minn., died Nov. 30, 2015, at age 92. Dr. Larson practiced anesthesiology for 45 years. He was preceded in death by 2 children and 1 stepchild. He is survived by his wife, LouAnne; 4 children; 10 grandchildren; and 5 great-grandchildren.

ROBERT D. LETSON, M.D., Class of 1952, Wayzata, Minn., died Sept. 13, 2015, at age 88. Dr. Letson practiced family medicine before completing his ophthalmology training (in 1963) and joining the Medical School faculty as Minnesota's first pediatric ophthalmologist. He is survived by his wife, Patricia; 3 children; 4 grandchildren; and 5 great-grandchildren.

ARTHUR M. MCGUIRE, M.D., Class of 1957, Supply, N.C., died Jan. 28, 2016, at age 82. Dr. McGuire was a general surgeon and served as chief of surgery at the VA Hospital in Fayetteville, N.C. He is survived by his wife, Celia; 6 children; and 11 grandchildren.

DONN G. MOSSER, M.D., Class of 1954, Palo Alto, Calif., died Dec. 16, 2015, at age 94. Dr. Mosser was a radiologist and faculty member at the U of M Medical School. He is survived by his wife, Janis, and 3 children.

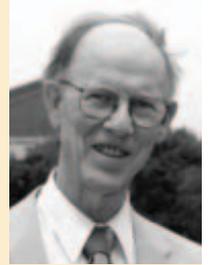
JERALD H. PIETAN, M.D., Class of 1968, Jacksonville, Fla., died Oct. 12, 2015, at age 74. Dr. Pietan was a radiologist, serving as chair of the radiology department at the Mayo Clinic in Florida from 1999 to 2006. He is survived by his wife, Mary; 4 children; and 4 grandchildren.

ROBERT P. SAYLOR, M.D., Class of 1977, Ozark, Mo., died Dec. 28, 2015, at age 63. Dr. Saylor was a practicing nephrologist until 2007, when he received his master's degree in bioethics and became director of ethics at Mercy Hospital Springfield. He is survived by his wife, Marcelene; 4 children; and 7 grandchildren.

DONALD R. SCHIMNOSKI, M.D., Class of 1946, Three Rivers, Mich., died Dec. 9, 2015, at age 94. Dr. Schimnoski served the Three Rivers community for more than 55 years as a family practitioner. He was a 2011 recipient of the University of Minnesota Medical Alumni Society's Distinguished Alumni Award. He was preceded in death by his wife, Gloria. He is survived by 5 children, 3 grandchildren, and 5 great-grandchildren.

ALAN K. SCHULTZ, M.D., Class of 1963, Tyler, Texas, died Nov. 14, 2015, at age 78. Dr. Schultz practiced family medicine in Minneapolis until 1984, when he began a career in geriatric medicine at the University of Texas Health Science Center. He was preceded in death by his daughter. He is survived by his wife, Sylvia; 2 sons; and 5 grandchildren.

WARREN J. WARWICK, M.D., Class of 1954, Minneapolis, Minn., died Feb. 15, 2016, at age 88. Dr. Warwick was best known for inventing a mechanical chest-thumping vest to help clear the lungs of children with cystic fibrosis and for using a comprehensive approach to treating the disease. He was a University of Minnesota professor of pediatric pulmonology, holder of the Annalisa Marzotto Chair in Cystic Fibrosis, and director of the Cystic Fibrosis Center from 1962 to 1999. He received the Medical Alumni Society's Harold S. Diehl Award in 2006 and the U of M President's Award for Outstanding Service in 2008. He is survived by his wife, Henrietta, and 2 children.



HAROLD C. SEIM, M.D., Class of 1969, Sun City, Ariz., died Sept. 12, 2015, at age 75. Dr. Seim earned degrees in hospital pharmacy, medicine, and public health from the University of Minnesota and was a faculty member at the Medical School for nearly 20 years. He is survived by his wife, Phyllis; 1 daughter and 3 stepchildren; and 3 grandchildren.

ARTHUR E. SETHRE, M.D., Class of 1954, St. Paul, Minn., died Aug. 30, 2015, at age 89. Dr. Sethre practiced family medicine in Fergus Falls until 1970, when he joined the medical department at 3M. He was preceded in death by his wife, Fran. He is survived by 3 children and 1 grandchild.

WILLIAM N. SPELLACY, M.D., Class of 1959, Tampa, Fla., died Oct. 8, 2015, at age 81. After serving on the Medical School's obstetrics and gynecology faculty, Dr. Spellacy moved to the University of Miami. He later became chairman of obstetrics and gynecology in medical colleges of the University of Florida, Illinois, and South Florida. He is survived by his wife, Lynn; 3 children; and 6 grandchildren.

SYDNEY C. SPERLING, M.D., Class of 1946, Lake Forest, Calif., died Sept. 17, 2015, at age 93. Dr. Sperling was an orthopaedic surgeon. He is survived by 3 children, 6 grandchildren, and 3 great-grandchildren.

GEORGE V. SQUIRE, M.D., Class of 1951, Salem, Ore., died Nov. 12, 2015, at age 96. Dr. Squire was a general practitioner before

becoming an allergy specialist. He was preceded in death by his first wife, Edie, and his son, Douglas. He is survived by 3 daughters, 4 stepchildren, and several grandchildren and great-grandchildren.

MARTIN J. STRANDNESS, M.D., Class of 1971, North Oaks, Minn., died Sept. 18, 2015, at age 70. Dr. Strandness worked as a radiologist for more than 35 years. He is survived by his wife, Karel, and 2 sons.

RALPH P. THARP II, M.D., Class of 1966, Houston, Texas, died Nov. 4, 2015, at age 79. Dr. Tharp was a family practitioner and president and medical director of the Texas Gulf Coast Medical Group. He is survived by his wife, Phyllis; 4 children; and 2 grandchildren.

EDWARD S. TRUPPMAN, M.D., Class of 1955, Aventura, Fla., died Sept. 15, 2015, at age 84. Dr. Truppman taught plastic surgery at the University of Miami School of Medicine, was a founding member of Palmetto General Hospital, and was chair of plastic surgery at Parkway Regional Medical Center. He is survived by his wife, Patricia; 4 children; and 7 grandchildren.

CHARLES W. ZINN, M.D., Class of 1955, Naples, Fla., died Aug. 3, 2015, at age 88. Dr. Zinn practiced family and emergency medicine in both Minnesota and Florida. He was preceded in death by his wife, Marilyn. He is survived by 3 children and 6 grandchildren.

Teaming up against cancer for 25 years

When it comes to cancer research, hundreds of heads are better than one. That was the belief of the late physician-scientist John Kersey, M.D., who in 1991 founded the University of Minnesota Cancer Center, as it was originally named. His vision: break down academic silos and bring scientists together to collaborate and advance research faster—and get cancer breakthroughs to patients as quickly as possible.

Twenty-five years later, the Masonic Cancer Center, University of Minnesota, has become one of the elite cancer centers in the country. It's one of 45 National Cancer Institute (NCI)-designated Comprehensive Cancer Centers, a designation that has been renewed (after an intensive, extremely thorough review process) three times. Among its 565 members representing dozens of academic disciplines are some of the world's leaders in research on blood and marrow transplantation, childhood cancers, cancers of the breast and

bone, cancer genetics, tobacco control, immunology, therapeutics development, and epidemiology.

As the Masonic Cancer Center marks its silver anniversary, U researchers continue to build on that legacy—having performed the world's first successful bone marrow transplant in 1968—by finding cancer causes, identifying better therapies, and improving outcomes to create and provide the gold standard in cancer care. Here are some highlights of the Masonic Cancer Center's first quarter-century. [\[MB\]](#)



WEB EXTRA

See more Masonic Cancer Center milestones from the last 25 years at z.umn.edu/mccmilestones.

MILESTONES

1991

The University's Board of Regents approves the establishment of a cancer center as part of the Academic Health Center. John Kersey, M.D., is named director.

1997

U researchers find and modify an ancient inactivated fish gene to move segments of DNA in mammalian cells. This "Sleeping Beauty" gene allows scientists to modify genetic defects and identify new cancer-causing genes.



2007

Douglas Yee, M.D., is named the Cancer Center's second director, succeeding Kersey.

2013

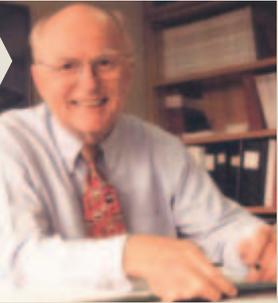
Masonic Cancer Center members discover that the enzyme APOBEC3B fuels cancer formation and growth.

2013

The University celebrates the opening of the "gateway" to the Biomedical Discovery District, the Cancer and Cardiovascular Research Building.



A Look Back



1994

The U takes a leading role in the NCI-funded Childhood Cancer Survivor Study, designed to track and minimize harmful long-term health effects of cancer and its treatment.

1996

With a lead gift of \$5 million from Minnesota Masonic Charities and contributions from many other community supporters, the Masonic Cancer Research Building opens to provide a collaborative research environment focused on the causes, prevention, detection, and treatment of cancer.



1998

University of Minnesota Cancer Center receives NCI designation as a Comprehensive Cancer Center.



2000

U physicians perform the first successful double cord blood transplant.

2007

The Minnesota Legislature enacts the Freedom to Breathe Act, which bans smoking in public places, backed by hard facts from U cancer researchers showing that tobacco-specific carcinogens are detectable in nonsmokers exposed to smoke in public settings.



2008

Minnesota Masonic Charities donates a record-breaking \$65 million to the University for cancer research, resulting in a new name for the U's Cancer Center: Masonic Cancer Center, University of Minnesota.



2013

The Phase I clinical trial to test Minnelide, a University-made drug that has successfully disrupted pancreatic cancer growth in laboratory tests, begins.

2013

Masonic Cancer Center members manufacture and test a novel new drug to treat lymphoma.

2015

Masonic Cancer Center researchers publish results of a national clinical trial showing that low-nicotine cigarettes may help smokers quit.

2014

With compelling evidence on the link between tanning bed use and melanoma from Masonic Cancer Center researchers, the Minnesota Legislature makes a law that prohibits minors from using indoor tanning beds.



2016

With \$10 million in support from Minnesota Masonic Charities' Partners for Life campaign, the Masonic Cancer Clinic moves to the new, state-of-the-art University of Minnesota Health Clinics and Surgery Center.



Alumni Celebration September 21–24

All Medical School alumni, including the reunion classes of 1956, 1961, 1966, 1976, 1986, 1991, 1996, 2006, and 2011, 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, forums, and presentations to find out what's new in medical education and research
- Meet current medical students and faculty
- Celebrate scholarship donors and student recipients at the Scholarship Reception
- Pay tribute to our distinguished alumni at the Alumni Awards Banquet
- Cheer on the Gophers as they take on Colorado State at TCF Bank Stadium
- Connect with old friends at the reunion class lunches, receptions, and dinners

Invitations and registration materials will be mailed in July. Until then, please visit z.umn.edu/alumnicelebration to find a schedule of events, lodging information, and more. MIB

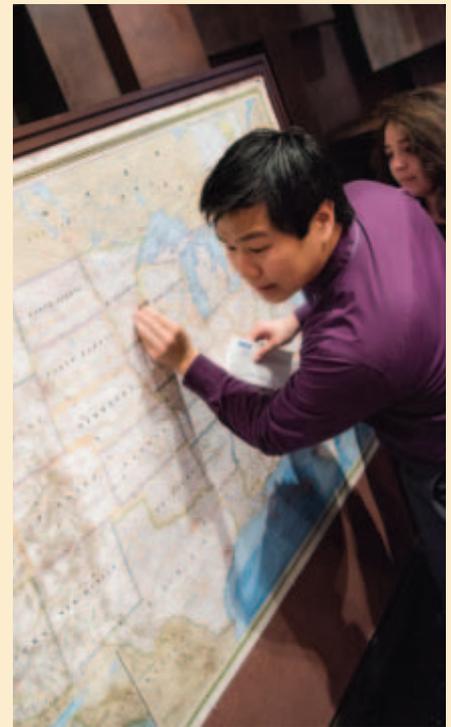
How you can get involved

Alumni are needed to contact classmates, join the reunion planning committee, and serve as reunion giving volunteers. To learn more, contact Katrina Roth at rotho103@umn.edu or 612-625-0336.

Matchmaking

FRIENDS, FAMILY, AND FACULTY MENTORS cheered on the Medical School's graduating class March 18 during Match Day at the University of Minnesota's McNamara Alumni Center. Of the 230 students who were matched to a residency, 95 will stay in Minnesota, and 53 will remain at the University. Nearly half of the group will pursue primary care residencies in internal medicine, family medicine, pediatrics, or medicine-pediatrics. MIB

CLOCKWISE (from top right) Dianna Cheney-Peters and Trinh To celebrate their matches. Matthew Matsunaga puts a pin in the Twin Cities on the residency map; he will remain at the U of M in internal medicine. Tom Raisanen lets his son open his match letter. Nathaniel Guimont and fiancée Nastacia Nicole Foster celebrate his internal medicine match at Swedish Medical Center in Seattle.



WEB EXTRA

See more photos from Match Day at z.umn.edu/matchday2016.

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ELECTRONIC SERVICE REQUESTED

WHAT DRIVES JAKUB TOLAR TO THINK A HUMAN CELL CAN BE SMART ENOUGH TO CURE ITSELF?



One day your doctor may be able to program your DNA to cure a wide range of chronic diseases or even to rebuild your immune system. That day can't come soon enough for Dr. Jakub Tolar and other researchers at the University of Minnesota who are on the leading edge of regenerative medicine. "Regenerative medicine is the next great leap forward in health," Tolar says. "Instead of prescribing drugs with side effects or limitations, we will be able tell your cells how to heal your body. And they will."

umn.edu/tolar



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