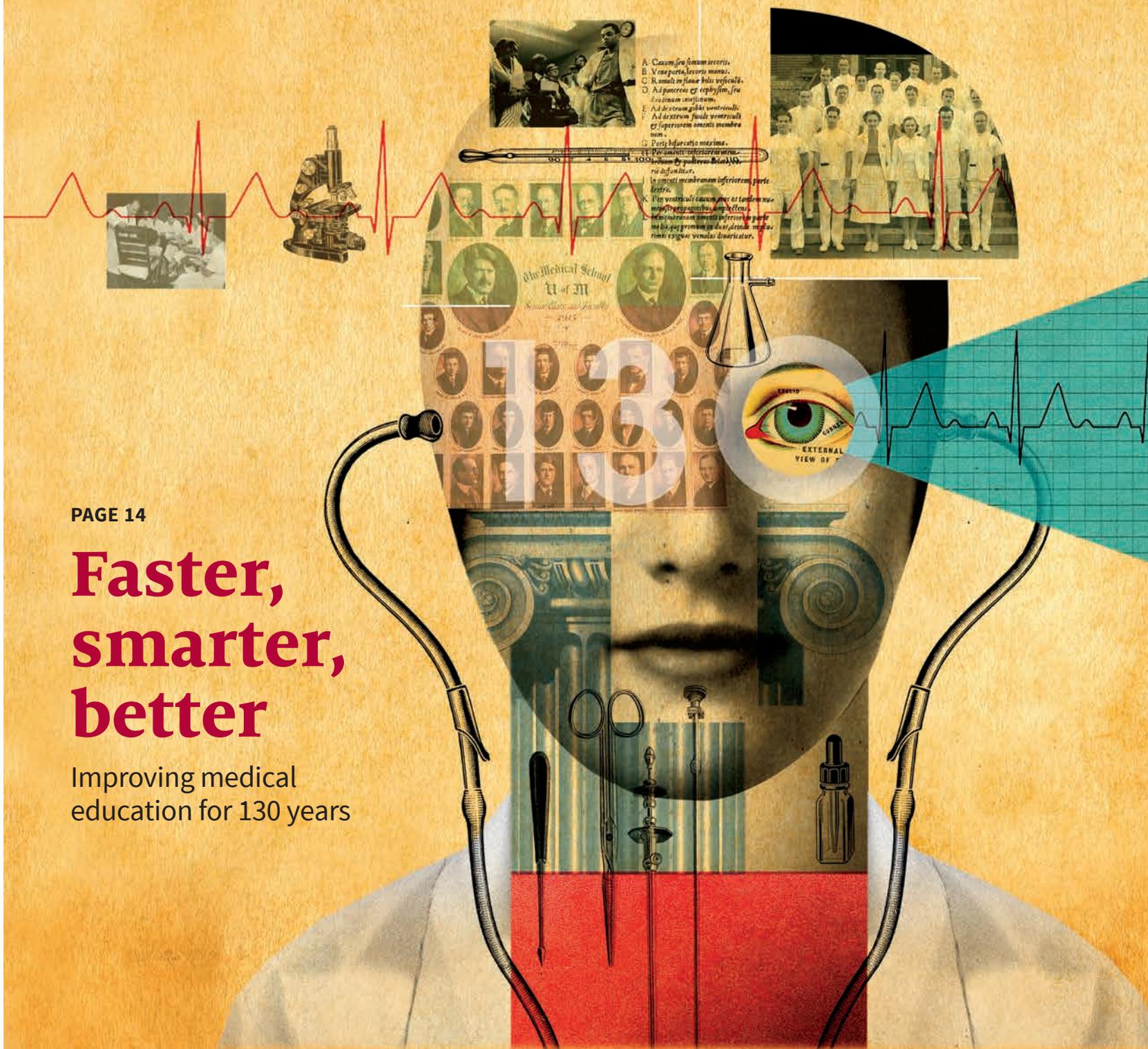


Medical Bulletin

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL

FALL 2018



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How we carry our history

On the 130th anniversary of the
Medical School, the *Bulletin* examines
the importance of the past

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Editor
Meredith McNab

Managing Editor
Nicole Endres

Editor/Writer
Justin Harris

Contributing Editor
Erik Moore

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

Meredith McNab, editor

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

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

driven.umn.edu

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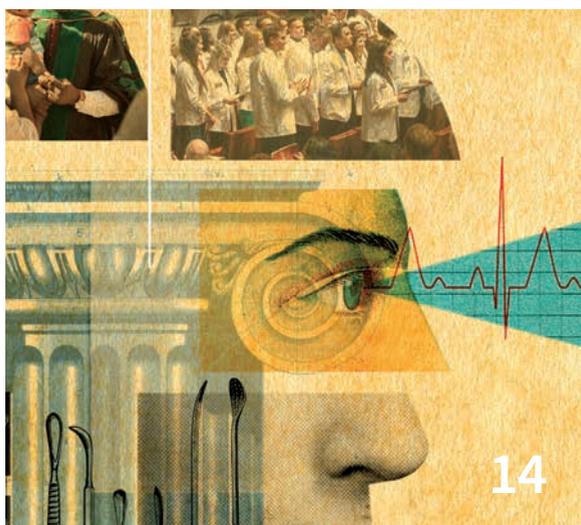
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U researchers 3-D print device for spinal cord repair

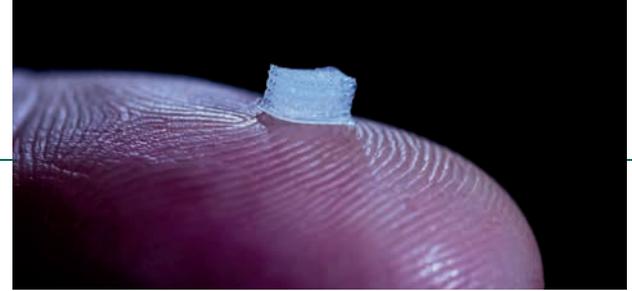
The resulting device is surgically implanted into the damaged part of the spinal cord to help connect living cells on each side of the injury.

ENGINEERS AND MEDICAL RESEARCHERS at the University of Minnesota have teamed up to create a 3-D-printed device that could help patients with long-term spinal cord injuries regain some function, such as muscle, bowel, and bladder control.

The research results were published August 9 in *Advanced Functional Materials*.

“This is the first time anyone has been able to directly 3-D print neuronal stem cells derived from adult human cells on a 3-D-printed guide and have the cells differentiate into active nerve cells in the lab,” says Michael McAlpine, Ph.D., study coauthor and holder of the Benjamin Mayhugh Associate Professorship of Mechanical Engineering in the U’s College of Science and Engineering.

In this U-developed process, researchers start with any kind of cell from an adult. Using new bioengineering techniques, they reprogram these cells, turning them into neuronal stem cells. The scientists then print these cells onto a silicone



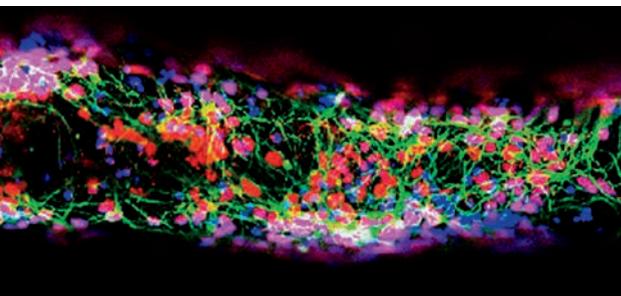
ABOVE A 3-D-printed device developed at the U could help people who have suffered spinal cord injuries regain some function.

BELOW LEFT Living cells that survived the 3-D printing process.



WEB EXTRA

Watch the 3-D printer in action at z.umn.edu/spinaldevice.



IMAGES: MCALPINE GROUP, UNIVERSITY OF MINNESOTA

guide that keeps the cells alive and allows them to change into neurons.

The resulting device is surgically implanted into the damaged part of the spinal cord to help connect living cells on each side of the injury. Currently, the team is testing the device in animal models and hopes to expand the research to human trials in the coming years. If these steps are successful, the technique could be life-changing for those who live with spinal cord injuries.

“We’ve found that relaying any signals across the injury could improve functions for the patients,” says Ann Parr, M.D., Ph.D., coauthor of the study and assistant professor of neurosurgery in the U’s Medical School and Stem Cell Institute. “There’s a perception that people with spinal cord injuries will only be happy if they can walk again. In reality, most want simple things like bladder control or to be able to stop uncontrollable movements of their legs. These simple improvements in function could greatly improve their lives.” 

Chainbreaker funds research on microorganisms’ role in cancer

A team of 13 physicians and scientists from the Masonic Cancer Center, University of Minnesota will study the role of the body’s own microorganisms in causing, preventing, and treating cancer, thanks to a \$1.2 million grant through funds raised during the 2017 inaugural Chainbreaker bike ride.

The Chainbreaker Breakthrough Cancer Research Grant will support the group’s multidisciplinary research exploring how intestinal bacteria, viruses, and fungi influence colon cancer development and blood and marrow transplantation outcomes.

Chainbreaker is a grassroots bike tour of 25, 50, 100, or 180 miles that raises money to support Masonic Cancer Center research. In August 2018, 1,024 riders participated in the second annual Chainbreaker event, raising a projected \$1.4 million – with every rider-raised dollar supporting the cause. 



WEB EXTRA

See more photos and video highlights from Chainbreaker 18 at chainbreakerride.org.



COMING SOON: M HEALTH FAIRVIEW

The University of Minnesota, University of Minnesota Physicians, and Fairview Health Services on September 28 announced approval of an agreement to create a fully integrated, nationally renowned academic health system.

The agreement expands the organizations' current University of Minnesota Health (M Health) partnership to bring together the University of Minnesota Medical Center and Fairview's other 11 hospitals, 56 primary care clinics, and additional services into a shared care delivery system driven by a single leadership structure that includes academic physicians.

Highlights of the plan include a structure that promotes care designed around patient needs that is led by academic physicians, tighter opera-

tional alignment to simplify the care experience, and increased financial support for the University of Minnesota Medical School.

The shared care delivery system will be united under a single brand: M Health Fairview. The agreement takes effect on January 1 and will continue through December 31, 2026, with an option for a 10-year extension in 2023.

"I'm pleased we have reached a point at which University physicians and researchers can bring their strengths to bear in new and meaningful ways," says University President Eric Kaler, Ph.D. "Minnesotans – from our patients to most of Minnesota's health care professionals and the communities they serve – will greatly benefit when this new approach is fully realized." [MIB](#)

Masons give targeted cancer research a timely boost

Impressed by scientific progress made over the last decade and intrigued by the potential of what's known as precision medicine, Minnesota Masonic Charities in April announced that it would accelerate payments on its \$65 million pledge to provide an influx of \$25 million for research at the Masonic Cancer Center, University of Minnesota. The funding will support precisely targeted approaches to cancer prevention and treatment.

Ten years ago, Minnesota Masonic Charities made the largest gift commitment in the University's history: \$65 million for cancer research, and the U named the Masonic Cancer Center in the organization's honor. Since making that pledge, Minnesota Masonic Charities has provided a steady stream of annual funding to the Masonic Cancer Center, allowing the center's more than 500 member-scientists to keep their leading-edge research on track.



Logan Spector, Ph.D., and his 10,000 Families Study, focused on how genetics and lifestyle contribute to health and disease, are getting a boost from Minnesota Masonic Charities' accelerated giving.

"This critical and timely funding boost will allow Masonic Cancer Center members to pursue research into a person's individual risk of cancer, develop precision therapies for cancer treatment, create new tools to study cancer, and recruit the best minds in science to get the job done," says Masonic Cancer Center director Douglas Yee, M.D. [MIB](#)

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL

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Medical School Dean and
Vice President for Clinical Affairs

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Associate Dean for Student Life
and Academic Affairs

PHOTO: JIM BOVIN

New U team turns back the clock on aging cells

WHAT DOES AGING look like on the cellular level, and how does it affect our experience of getting older? Those are the questions two of the Medical School's newest experts are trying to answer.

Hired in June as the director and associate director, respectively, of the new Institute on the Biology of Aging and Metabolism, Laura Niedernhofer, M.D., Ph.D., and Paul Robbins, Ph.D., are exploring the molecular events that lead to aging and are developing tools to influence life span, health span, and quality of life. The duo also leads one of the Medical

School's four Medical Discovery Teams, formed with funding from the Minnesota Legislature.

Their new research shows that it's possible to reverse damage caused by aging cells. Aging begins at the cellular level, and aging cells can quicken senescence, or the halt of cellular growth, which can result in health problems. But the team's research, published in *Nature Medicine* in August, shows that small molecules called senolytics can reverse the impact of aged, senescent cells.

"We've always thought of aging as a process, not a disease," Robbins says. "But what if we can influence the impacts of aging at a cellular level to promote healthy aging? That's what senolytics seeks to achieve."

Although the research is currently in animal models, scientists hope that senolytics will prove effective in alleviating physical dysfunction and the resulting loss of independence in older humans in the future.

The duo continues to pursue novel ways to slow aging at the cellular level. In October, they published additional research in *EBioMedicine* showing that treatment of aged mice with the natural product Fisetin—found in many fruits and vegetables—has positive effects on health and life span by reducing the level of damaged and aging cells in the body. [\[MB\]](#)

We've always thought of aging as a process, not a disease. But what if we can influence the impacts of aging at a cellular level to promote healthy aging? That's what senolytics seeks to achieve.

Paul Robbins, Ph.D., Institute on the Biology of Aging and Metabolism

Medical School names new faculty leaders

■ Distinguished McKnight University Professor **John Bischof, Ph.D.**, now directs the University of Minnesota's Institute for Engineering in Medicine (IEM), overseen by the Medical School and College of Science and Engineering.

A renowned researcher in thermal bioengineering, Bischof has contributed to applications in therapeutics, regenerative medicine, and diagnostics. At the IEM, Bischof will oversee fellowships, educational and research programs, visitorships, and other activities.

Bischof is a faculty member in the departments of Mechanical Engineering and Biomedical Engineering and a member of the Masonic Cancer Center, University of Minnesota. He holds the Carl and Janet Kuhrmeyer Chair in Mechanical Engineering and the Medtronic-Bakken Endowed Chair for Engineering in Medicine.

■ **Massimo Griselli, M.D.**, is the new chief of the Department of Pediatrics' Division of Pediatric Cardiac Surgery. He will also serve as codirector of the Pediatric Heart Center at University of Minnesota Masonic Children's Hospital with Julia Steinberger, M.D.

Griselli comes to the U from King Faisal Specialist Hospital and Research Centre in Saudi Arabia and has broad experience

treating complex heart conditions affecting neonates, children, and adults. He is also internationally recognized for his expertise in adult congenital heart care, heart transplantation, and mechanical circulatory support.

■ **Sayeed Ikramuddin, M.D., M.H.A.**, has been appointed head of the Medical School's Department of Surgery for the next two years.





IMAGES: UNIVERSITY OF MINNESOTA HEALTH

U of M Medical Center undergoing a \$111M remodel

A \$111 million renovation project at University of Minnesota Medical Center will expand the emergency department, add state-of-the-art operating rooms, and improve the patient experience.

Construction began in summer 2018 and will continue into late 2020. All departments remain open.

“These improvements will help us accommodate our growing patient population and better position the medical center to be a leader in health care innovation and delivery,” says University of Minnesota Health copresident John Doherty.

Among the project highlights is a 7,000-square-foot, two-story addition to the medical center’s East Bank hospital, including a larger emergency department and new neurosurgical suite featuring operating rooms equipped with a single intraoperative magnetic resonance imaging unit that can be rotated between rooms.

The West Bank hospital will see construction of a new operating room, renovation of an existing OR, and updates to the patient unit on the fifth floor of the East Building. MIB

For more on the renovation, visit z.umn.edu/med-center-renovation.

During his time as interim chair of the department, Ikramuddin bolstered research support for faculty, increased the department’s collaboration efforts, fostered the surgical residency program’s continuing success, and led effective recruitments. Ikramuddin, who will hold the Jay Phillips Chair in Surgery, has been at the U since 2001 and previously held the Robert and Catherine Goodale Chair in Minimally Invasive Surgery. MIB

FAR LEFT John Bischof, Ph.D., is a renowned researcher in thermal bioengineering.

MIDDLE Massimo Griselli, M.D., is considered one of the world’s top pediatric cardiovascular surgeons.

NEAR LEFT Sayeed Ikramuddin, M.D., M.H.A., has a prolific research profile in laparoscopic and bariatric surgery.

COMING TO A CLINIC NEAR YOU

People throughout Minnesota now have better access to leading-edge cancer clinical research trials, thanks to a partnership between the University of Minnesota and the state’s major health systems.

The Minnesota Cancer Clinical Trials Network (MNCCTN), with eight of 18 locations across the state now up and running, aims to improve cancer prevention, treatment, and survivorship for all Minnesotans. Trials originate from the Masonic Cancer Center, University of Minnesota, and Mayo Clinic Cancer Center—Minnesota’s Comprehensive Cancer Centers as designated by the National Cancer Institute—as well as from the Hormel Institute in Austin, Minnesota.

The MNCCTN is funded by the state via Minnesota’s Discovery, Research, and InnoVation Economy (MnDRIVE) initiative, with additional clinical trials support from Minnesota Masonic Charities. MIB

For more information on new clinical trial locations, visit mncancertrials.umn.edu.



How we carry our history

PHOTO: SARAH WHITTING PHOTOGRAPHIC



Donald Nolan, M.D., received this bag as a graduation gift in 1935 and used it throughout his career.

We sometimes focus on the “big” stories of discovery, but there are thousands of stories that go untold, of lives that have made immeasurable impact.

ON MY DESK, I have an old, black leather doctor’s bag. It is part biography, part time capsule, and part treasure chest. It is headed for the Wangensteen Historical Library, but first I have had a chance to look at it, to explore it, and to wonder at it. It is part of our history.

This year is the 130th anniversary of the founding of the University of Minnesota Medical School and of the first class of medical students arriving on campus. It has been a great opportunity to look back over past accomplishments, but also a chance to look deeper into the lives of physicians and students of the past. We sometimes focus on the “big” stories of discovery, but there are thousands of stories that go untold, of lives that have made immeasurable impact.

Take, for example, Dr. Donald Edwin Nolan. Like his older brother, he grew up in Cass Lake, Minnesota, and graduated from our Medical School. He received his doctor’s bag, this bag, as a graduation present in 1935. He carried it and used it throughout his career until his death in 1994.

One person, one doctor. How many lives did he touch as he carried this bag? Its contents are astonishing (and it is heavy). He carried an otoscope, a box full of small glass ampules of medicine, a blood pressure cuff in a metal box inscribed with his name. There is penicillin and tincture of merthiolate, a zipper bag of scissors and scalpels and forceps, two stethoscopes (how many heartbeats did he listen to in his decades of service?). There is a case full of different kinds of pills, catgut in a glass tube, surgical needles and “corrosion-resisting” steel hypodermic needles, a Tes-Tape to measure sugar in urine, and bandages and clamps, and ... you get the idea.

Unsurprisingly, Dr. Nolan’s family describes his black bag as his most important possession. With it, he was ready to care for the people around him. He spent much of his career working for the federal government, particularly in Veterans Affairs hospitals. He was the chief administrator of the Seattle VA Hospital until his retirement in 1968. But many doctors never really retire. Judging from this bag and his family’s stories, Dr. Nolan was one of those.

The bag, prepared for so many eventualities, represents the tremendous impact our graduates have on the world around them—like Dr. Nolan, one patient at a time, one life at a time.

Over 130 years, the thousands of physicians who have graduated from this Medical School have gone on to touch innumerable lives.

*Jakub Tolar, M.D., Ph.D.
Dean of the Medical School and
Vice President for Clinical Affairs*



PHOTO: UNIVERSITY ARCHIVES

LEFT The University of Minnesota Medical School's first class circa 1889 and (below) this year's first-year students



PHOTO: LAURA WALLACE, LIFETOUGH PHOTOGRAPHY

LOCATION: Seoul, South Korea **MISSION:** Launch the U of M Medical School into global medical education



Cultural awakening

THE UNIVERSITY OF MINNESOTA was catapulted into global medical education when it was asked to help rebuild Seoul National University (SNU) in the wake of the Korean War—“a gigantic task,” noted one U of M administrator. Many SNU staff members and students had been evacuated or abducted during the war and all the buildings stripped of everything, from sinks to scientific equipment.

Harold Stassen, a U of M alumnus, former Minnesota governor, and then-director of the U.S. Foreign Operations Administration, recruited the University to aid SNU in the fields of agriculture, engineering, and medicine. Neal L. Gault Jr., M.D., an associate professor and assistant dean, would lead the rebuilding of SNU’s medical school.

Gault—known as a gifted teacher and administrator—proved to be well suited to the task. Equally important, after taking up residence in Korea from August 1959 to June 1961, he recognized the ways cultural differences can influence health. In the decades to come, he became an internationally renowned medical education specialist and served as the U of M Medical School dean from 1972 to 1984.

Phillip K. Peterson, M.D., had his own cross-cultural awakening when he went to Korea for an international elective in 1970. “It was the best thing I did in medical school. It was life-changing,” he recalled recently. As a result of his experience, Peterson abandoned his plan to pursue cardiology through the NIH Associate Training Program and instead joined the Indian Health Service and chose a career in infectious diseases.

In 1998, Peterson became the founding codirector, along with Paul Quie, M.D., of what is now the Global Medical Education and Research (GMER) Program at the U of M. Peterson says Gault’s example inspired their efforts.



PHOTO: COURTESY OF PHILLIP PETERSON

Phillip Peterson, M.D., shown giving a tuberculosis patch test to a child in a barn, describes his experience in Korea in 1970 as “life-changing.”



Today GMER encourages every medical student to participate in a clinical or research elective in another country.

With support from a GMER endowed student travel award, Noel Phan, M.D., born and raised in Minnesota and currently an otolaryngology resident at Mount Sinai in New York, became the most recent participant in the U's still robust exchange program with SNU, in 2017.

"Korea has the top plastic surgery procedures in Asia and the world," says Phan. "I loved my experience at SNU. It made me appreciate my medical education at the University of Minnesota, where I had significantly more autonomy and patient interactions than the medical students in Korea. I also learned a lot about the hierarchy of surgery in Korea. You bow to the attendings to acknowledge them and show your respect."

By Kristine Mortensen, a writer and editor in Minneapolis

The U's Neal L. Gault Jr., M.D. (second from left), helped to rebuild Seoul National University's medical school in the wake of the Korean War. Today the two schools enjoy a robust exchange program.



Noel Phan, M.D., participated in the U's exchange program with Seoul National University in 2017-18.

BEHIND- THE-SCENES HEROES

Meet a few Medical School innovators who found success, if not fame

MOST PEOPLE who have spent time at the University of Minnesota Medical School know of Owen Wangenstein, M.D., Ph.D., the legendary surgical teacher who also invented a surgical suction apparatus. That device bears his name, as does the Phillips-Wangensteen Building on the University's East Bank campus. □ There's also C. Walton Lillehei, M.D., Ph.D., the charismatic, pioneering doctor who performed a number of surgical firsts and is widely known as the father of open-heart surgery. The U's Lillehei Heart Institute is named in his honor. □ And though there's no University building in his name, many know of Robert A. Good, M.D., the immunologist who performed the world's first successful bone marrow transplant, in 1968. □ Behind such Medical School celebrities are legions of others who have paved the way for these and other medical advances. You just might not have heard of them. Here are a few of those stories.



MOSES BARRON, M.D.

Scientists have investigated insulin as a cure for diabetes since the early 1920s. Frederick G. Banting, M.D., a medical researcher at the University of Toronto, received the Nobel Prize in Medicine in 1923 for his research in isolating and producing insulin.

Yet Banting always credited his eureka moment to an article published in the November 1920 issue of the journal *Surgery, Gynecology, and Obstetrics* by Barron, a professor in the Medical School's Department of Pathology.

A member of the Medical School Class of 1911, Barron practiced medicine and served as a clinical professor of medicine at the University until his retirement as professor emeritus in 1952. His 1920 article not only influenced Banting's work and the 90-year trajectory of insulin-based management of diabetes, but it also influenced diabetes-related pancreas transplantation research at the University several decades later.



ROBERT G. GREEN, M.D.

The use of viruses and vaccines to prevent or treat certain types of cancer is a hot topic in cancer research today, but the idea is at least a century old.

In the 1920s, Green, a bacteriologist in the Medical School, studied the evolutionary nature of viruses and how they cause disease. He also directed the Minnesota Wildlife Disease Investigation, sponsored by the state of Minnesota, the University of Minnesota, and the United States Biological Survey. During his tenure there, he created a vaccine to prevent encephalitis in foxes.

Based on this work with viruses, Green went on to investigate viral causes of cancer. In 1946, he published an article titled “Virus Aspects of Carcinoma,” and in 1947, he published “The Species Character of Cancer Cells” in *Science*. His forward-thinking approach not only considered the virus but also the environment in which the virus traveled and was transmitted—an ecological perspective that drew upon his expertise in bacteriology, zoology, and conservation.



PHOTOS: UNIVERSITY ARCHIVES

HERMINA (HERMANSEN) HARTIG, M.D.

Hartig, Medical School Class 1914, was a young mother of four small children when her husband and former classmate Hugo Hartig, M.D., was killed in an automobile accident. Two years later, and nearly 14 years after earning her degree, Hermina Hartig entered the U’s residency program in pediatrics—playing to her strengths—and later started a pediatrics practice.

In 1933, she joined the medical staff of the Department of Hygiene of the Minneapolis Board of Education, now known as the Minneapolis Public Schools Health Services, and soon became its leader.

On reaching retirement age in 1954, she was invited by several Minneapolis area suburbs to conduct regular “baby clinics,” where parents could check on their infants’ growth and development. She conducted four or five such clinics each week until she was 82 years old, touching thousands of lives.



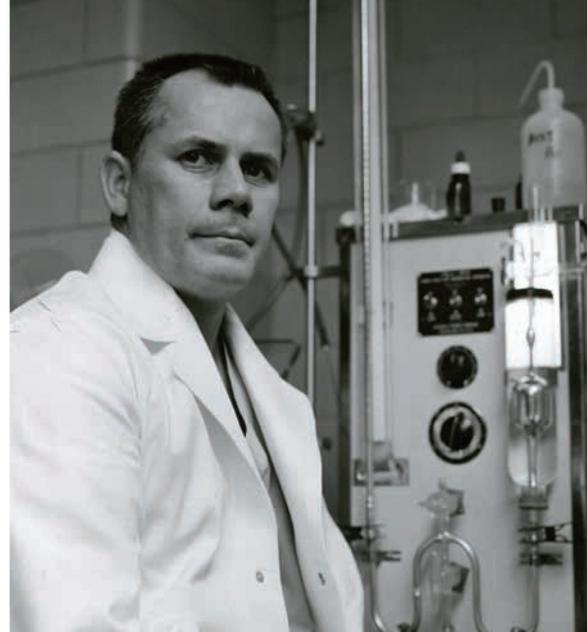
MORLEY COHEN, M.D., PH.D.

The 1950s were an exciting time to be a surgeon at the University of Minnesota. Cohen, who earned a Ph.D. in surgery at the U in 1954, found himself working with Lillehei, who was then experimenting with different ways to perform open-heart surgeries.

Following the discovery that a minimal amount of blood flow was needed to maintain circulation, Lillehei and research assistants Cohen and Herbert Warden, M.D., began to investigate ways to keep the blood oxygenated.

Cohen, whose wife was pregnant at the time, thought about the physiological relationship between a mother and fetus, in which the mother's lungs oxygenate the blood that is pumped to the fetus through the placenta. The researchers wondered whether some type of artificial placenta could create a similar relationship for use in open-heart surgery.

Cohen and Warden tested whether a donor animal could supply oxygenated blood to the recipient's organs while the heart was isolated for operation—an approach called cross-circulation. And it worked, allowing the team to move forward with a new wave of lifesaving surgeries for human patients.



FREDERICK VAN BERGEN, M.D.

Meanwhile, anesthesiologists involved in some of these pioneering surgeries in the 1950s were becoming more innovative, too.

Recognizing a need for a more sophisticated assessment of certain patients' breathing after surgery, Van Bergen and colleague Joseph J. Buckley, M.D., in 1957 established the first pulmonary function lab and respiratory ward at the University of Minnesota Hospitals—a precursor to the intensive care units of today. Before this, respirator-dependent patients were scattered throughout the hospital. Bringing them together in one ward made way for centralized equipment and more skilled nursing care—and better outcomes—for patients with breathing problems.

Van Bergen, who earned his M.D. from the Medical School in 1941 and whose research focused on the mechanics of respiration, also invented a portable respirator.

INTUITION WILL TELL THE THINKING MIND WHERE TO LOOK NEXT.

– JONAS SALK, M.D.

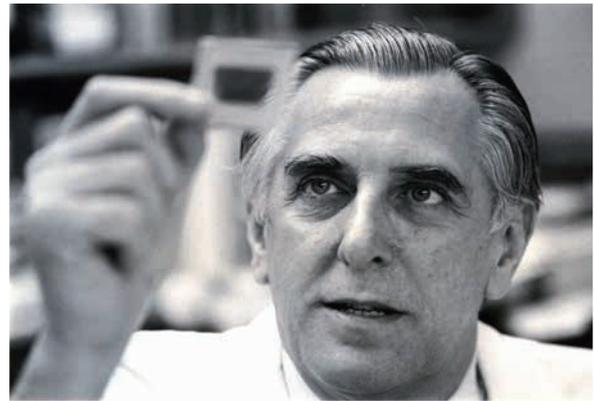


ESTHER FREIER, M.S., AND VERNA RAUSCH, M.S.

Working at a time when men significantly outnumbered women in science, Freier (left) and Rausch were quietly creating new standards for quality and consistency in laboratory medicine.

Their seminal 1958 paper, “Quality Control in Clinical Chemistry,” published in the *American Journal of Medical Technology*, established a protocol for preparing specific control samples to be used in lab testing. This work became key in efforts to minimize miscalculations in the sample analysis process that could lead to diagnostic errors.

Freier and Rausch, who both earned master’s degrees in physiological chemistry from the U, were the first to publish on this topic and set the stage for consistency in medical technology going forward. In 1977, they received the Professional Achievement Award from the American Society for Medical Technology for this landmark paper and subsequent career accomplishments.



PHOTOS: UNIVERSITY ARCHIVES

B.J. KENNEDY, M.D.

In the 1960s, cancer most often meant a dire prognosis. Cure rates for many cancers were in the single digits. But in the years that followed, a group of physicians and scientists was working to improve those numbers and prove that cancer didn’t have to be a death sentence.

Kennedy was a leader of that charge. A 1945 Medical School alumnus and decades-long Medical School faculty member, Kennedy believed that medical oncology was an essential subspecialty of internal medicine, and he tirelessly campaigned for its recognition as such, separate from hematology. He believed oncology should encompass a continuum of care — from cancer prevention to detection, treatment, and palliative care.

The outcome was greater numbers of medical students and trainees showing interest in oncology and more practicing oncologists — ultimately leading to increasingly sophisticated care, better results for patients, and a more optimistic mindset about cancer in general. [MIB](#)

Nicole Endres, managing editor of the *Medical Bulletin*; Erik Moore, head of University Archives and codirector of the University’s Digital Conservancy; and Rebecca Toov, collections archivist with University Archives, contributed to this article.

FASTER,

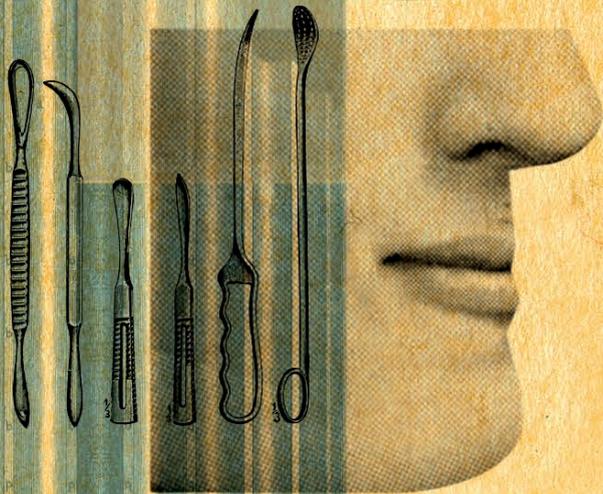
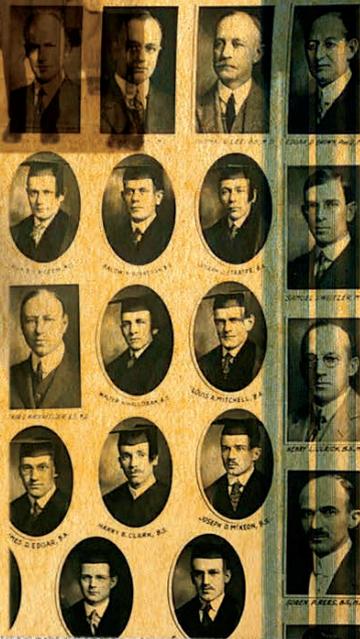
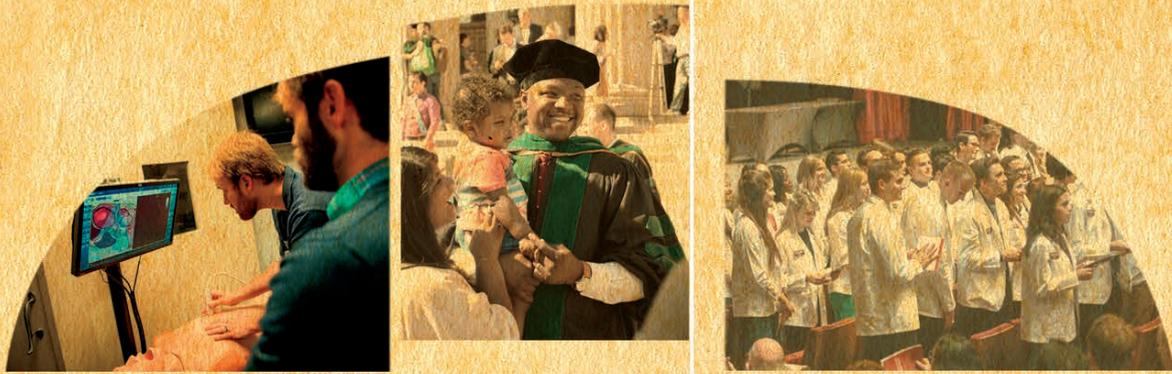


ILLUSTRATION: DAVID PLUNKERT

SMARTER, BETTER

WHEN THE FIRST 116 medical students arrived at the University of Minnesota's newly minted College of Medicine and Surgery in 1888 to spend one year in lectures, they had already passed the first hurdle: They'd demonstrated that they could write legibly and correctly in English; translate Latin; pass algebra, plane geometry, or botany; and grasp basic physics.

Fast forward 130 years: Today, admission to medical school requires an impressive performance in an undergraduate degree program; typically a high score on the MCAT exam; and, increasingly, evidence of volunteerism that demonstrates commitment to the human condition. At the University this year, the Medical School's Twin Cities and Duluth campuses welcomed a combined 240 students to begin not one, but four, rigorous years of medical training, followed by three or more years of residency. Those lectures? They're gradually being phased out.

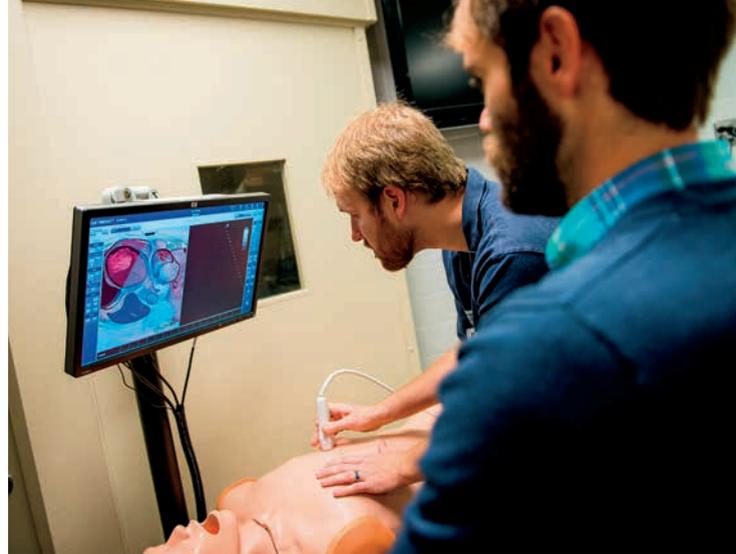
Welcome to the future, where medical education at the U is undergoing a paradigm shift, according to Mark Rosenberg, M.D., vice dean for medical education and academic affairs.

"Providing evidence-based education and standardizing outcomes and individualizing pathways are among our guiding principles as we work on our strategic plan for medical student education," says Rosenberg, "and that's bringing us to exciting new places where students can learn smarter, sometimes faster, and retain more."

MEDICAL EDUCATION GETS AN OVERHAUL

History informs the Medical School's revamped approach to teaching future doctors

BY BARBARA KNOX



How do we get students not to perform better on an exam, but perform better in the clinic?

— Mark Rosenberg, M.D., vice dean for medical education and academic affairs

Managing information

In recent decades, the rapid increase in scientific information has had medical educators scrambling to stuff more content into an already overstuffed curriculum.

“There’s no more room in the curriculum for more curriculum,” says Robert Englander, M.D., M.P.H., the Medical School’s associate dean for undergraduate medical education. “The solution for handling the explosion of scientific knowledge is not to dump more content on students but instead underscore key concepts.”

Englander—whom Rosenberg refers to as a “national thought leader on medical education”—came to the U two years ago to help spearhead the medical education transformation.

“It’s time to stop focusing on the curriculum and instead focus on the outcomes these students need in the key domains of medicine,” Englander says. “That’s the direction we’re moving in the Medical School.”

To reinforce this idea, the Medical School established the Medical Education Outcome Center, where faculty and staff are beginning to assess the quality of care physicians provide after they begin practice, in order to tie it back to the quality of the education they received.

“We want to link back performance in the clinic to education,” says Rosenberg. “It’s a culture-changing goal as we ask, ‘How do we get students not to perform better on an exam, but perform better in the clinic?’”

Active learning

Both Rosenberg and Englander believe one way to improve students’ success is to educate them in active learning environments. Days spent sitting in amphitheater lectures are giving way to interactive problem-solving sessions and upended classrooms, where homework comes first and small, in-depth discussion follows.

The University’s new Health Sciences Education Center, scheduled to open in 2020, was designed with these ideas in mind. It will include state-of-the-art clinic, operating, and procedural-training simulation spaces; small-group classrooms; and a refashioned medical library, among other features that foster hands-on, team-based learning.

The longitudinal integrated clerkship or LIC—one of the University’s greatest legacies in education—also creates active learning opportunities that enhance students’ clinical performance.

While many schools expose students to various specialties in classic block rotations—six weeks in surgery, four weeks in family practice, and so forth—a family medicine faculty member had a revolutionary idea back in 1971. John Verby, M.D., asked, “What if we allowed third-year medical students to live and train for nine months in a rural location, learning from skilled rural practitioners?” His idea launched the Rural Physician Associate Program (RPAP), the first LIC in the country, and it ushered in a new way of training doctors.

WEB EXTRA

Learn more about how the Medical School began at med.umn.edu/130.



DULUTH: MEDICAL SCHOOL ON A MISSION

In the early '70s, a forward-looking Minnesota Legislature charged the University with educating more rural and Native American physicians. To help accomplish that, it allocated funds to establish a Duluth campus of the U's Medical School, a campus that has successfully pursued that mission ever since.

Alan Johns, M.D., M.Ed., was in Duluth's first class, comprising 24 students. As a Native American, he had been recruited for the new program – two years of learning in Duluth, followed by two more in Minneapolis.

"I had never even dreamed of going to medical school," Johns says. "My sights were never set that high. But I had wonderful mentors who helped me through the application process."

Johns went on to get both M.D. and M.Ed. degrees and become associate dean for medical education, curriculum, and technology at the Medical School's Duluth campus, a position from which he just recently retired.

"The thing I love about Duluth," he says, "is the mission, which was almost revolutionary at the time, was very specific, and hasn't changed over the years."

Duluth has tracked every student who ever attended medical school there, and the statistics speak for themselves: 47 percent of its students go on to practice family medicine, 40 percent of them in rural areas. A whopping 75 percent stay in Minnesota or western Wisconsin to practice.

When Johns entered that first class in 1972, there were fewer than 10 Native American physicians practicing in the entire United States; since then, Duluth alone has trained more than 150. Today, the U's Medical School is ranked among the top five in the nation for training Native American physicians.

"Medical education has evolved into its own field," says Johns. "We have a much better understanding of how to shape a curriculum, and we're delivering it better every year."



THE FLEXNER REPORT

Throughout the 19th century, medical education in the United States was a Wild West-like assortment of programs. Looking to provide structure and standardization, the Carnegie Foundation called on educator Abraham Flexner to survey and assess existing medical schools in the U.S. and Canada, and to provide recommendations for improvement.

Flexner crisscrossed the country visiting and evaluating schools. While some received scathing assessments that resulted in their closing, Minnesota, open for just over 20 years at that time, got glowing reviews. He noted that Minnesota's science laboratories were "excellent, exceedingly attractive, and well organized" and further added that Minnesota was the "first state in the Union that may fairly be considered to have solved the most perplexing problems connected with medical education and practice."

The Flexner report, issued in 1910, called on medical schools to adopt higher standards for both admission and graduation, and to develop curricula based on two years of foundational science followed by two years of clinical training, a model that formed the basis for medical education into the present day.

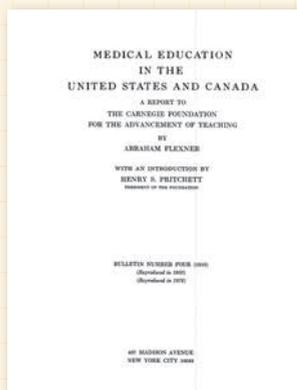


PHOTO: LAURA WALLACE, LIFETOUCH PHOTOGRAPHY



PHOTO: JOEL MOREHOUSE

“RPAP wasn’t trying to fix medical education,” says Englander. “It was trying to create more rural doctors. Its great success is that it did both.”

At the Medical School, RPAP has been followed by other successful LICs, which place students in places like the VA hospital or underserved metropolitan clinics to gain valuable hands-on knowledge under the close supervision of committed preceptors.

“When you learn in the context of your passion,” Englander says, “that learning sticks better.”

One of the Medical School’s newest LICs is also a national model for the competency-based education that Rosenberg and Englander embrace. Called EPAC (Education in Pediatrics Across the Continuum), the program is getting worldwide attention for its innovative approach to pediatric specialty training. Students are allowed to graduate and advance to residency at their own pace; once they’ve demonstrated required competencies, they move on.

“EPAC is exciting because it’s not only a model for competency-based education, it’s also a model for competency-based progression,” Rosenberg says. “We’re one of just a handful of schools doing this.”

Paradigm shift

Changes underway at the Medical School extend far beyond teaching methods, reaching into demographics, admissions policies, flexible graduation programs, and student wellness.

To help alleviate student stress—a key factor that’s contributing to a high rate of burnout and even suicide among medical students nationally—administrators have eliminated honors grading in the first two years of medical school and shortened the first semester of the upcoming year by three weeks.

New admissions policies and innovations like the B.A./M.D. program are helping to change the face of the student body to become more reflective of the patients future doctors will care for. It’s a far cry from the all-white, predominately male inaugural class of 1888: 54 percent of today’s U of M medical students are women, 12 percent were born in other countries, and 19 percent are from racial and ethnic populations currently underrepresented in medicine.

One clear takeaway from the new approach to medical education? Training doctors today requires more people and more time to get the job done, says Englander. “In 1980, it took about three nonphysician staff to train a doctor. Today, it’s 15-to-1.”

“With clear, guiding principles in place,” Rosenberg says, “we can continue to hone our medical education in a way that always puts patients first and empowers students to become the best physicians they can be.” ^{MIB}

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

When you learn in the context of your passion, that learning sticks better.

- Robert Englander, M.D., M.P.H., associate dean for undergraduate medical education



WEB EXTRA

Read more about how 20th century wars shaped specialty medical education at z.umn.edu/lessonsofwar.



A place to call home

IN 1888, THE UNIVERSITY of Minnesota established its College of Medicine and Surgery, now known as the University of Minnesota Medical School. Four years later – and with the help of a \$65,000 gift from its first dean, Perry Millard, M.D. – the Medical School had a place to call home: the aptly named Medical Hall, which opened in 1892 and became the first building on campus dedicated to the medical sciences.

Although the Medical School has changed locations several times since, its dedication to educating the next generation of health professionals hasn't wavered. The mission that started in Medical Hall has branched out to classrooms, labs, and clinics across every corner of campus, giving medical students many places to pursue their passions.



WEB EXTRA

Explore an interactive map showing how the University of Minnesota's Twin Cities campuses have changed over the years at z.umn.edu/campushistory.



PHOTOS: UNIVERSITY ARCHIVES

▲ ELLIOT MEMORIAL HOSPITAL

The University's first facility built as a hospital, Elliot Memorial Hospital opened its doors to patients in 1911. The hospital was designed with medical education in mind and was one of the first teaching hospitals to be fully integrated with a medical school. Elliot Hospital was later incorporated into the Mayo Memorial Building and remains part of the health sciences footprint today.

◀ MEDICAL HALL

Opened in 1892, Medical Hall was the Medical School's first home and the first building on campus dedicated to medicine. The building was renamed Millard Hall in 1906, following the death of the Medical School's first dean, Perry Millard, M.D.



▲ MAYO MEMORIAL BUILDING

Mayo Memorial Building opened in 1954, becoming the face of the University's hospitals and health care expertise. Although the University of Minnesota Medical Center replaced it as the U's primary hospital in 1986, Mayo still maintains important clinical, research, and administrative space for the Medical School.



▲ MILLARD and JACKSON HALLS

In 1912 the Medical School moved to a newly constructed Millard Hall, while Jackson Hall housed the Institute of Anatomy. The second Millard Hall was torn down in 1999, but Jackson Hall remains on campus today and still contains classrooms and modern labs for the Program of Mortuary Science.

The original building became known as the Old Millard Hall and Pharmacy Building when the College of Pharmacy took it over in 1912. It was renamed Wulling Hall (as it's still known today) in honor of the College of Pharmacy's then-dean, Frederick Wulling, Pharm.D., in 1942.

◀ MALCOLM MOOS HEALTH SCIENCES TOWER

The first structure of the U's ambitious health campus expansion in the 1970s, Health Science Unit A, now called the Malcolm Moos Health Sciences Tower, contains basic science, medical, and public health teaching labs as well as general classrooms. The adjacent Phillips-Wangensteen Building, or Health Science Unit B/C, includes additional research space for the Medical School and clinical space.

◀ HEALTH SCIENCES EDUCATION CENTER

Currently under construction and scheduled to open in 2020, the state-of-the-art Health Sciences Education Center will be one of the most comprehensive health education facilities in the country. The new space is designed to foster learning and will include collaborative work spaces that promote a team approach to patient care. Learn more at z.umn.edu/hsec.

Justin Harris, an editor/writer with the Medical Bulletin, and Erik Moore, head of University Archives and codirector of the University's Digital Conservancy, contributed to this article.



Fig. 1.

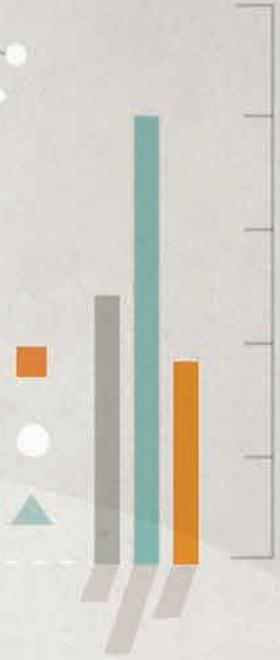
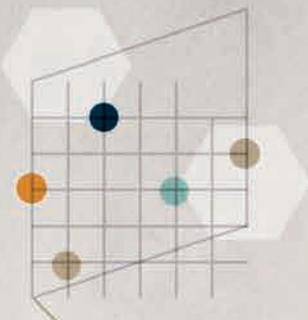


Fig. 2.



From startup to bedside

New companies help Medical School discoveries reach the patients and clinics they were designed to serve

BY KEVIN COSS

In 1957, Earl E. Bakken, electrical engineer and cofounder of the then-nascent Medtronic, famously developed the first wearable, battery-powered pacemaker. The invention dramatically changed heart patients' quality of life and established a foundation for the long list of medical technologies that would go on to make Medtronic the industry leader it is today.

This pivotal moment stemmed from a simple partnership, when Bakken agreed to develop a more reliable alternative to existing pacemakers for C. Walton Lillehei, M.D., Ph.D., a prolific University of Minnesota heart surgeon concerned with the devices' tendency to shut off during power failures and endanger patients' lives.

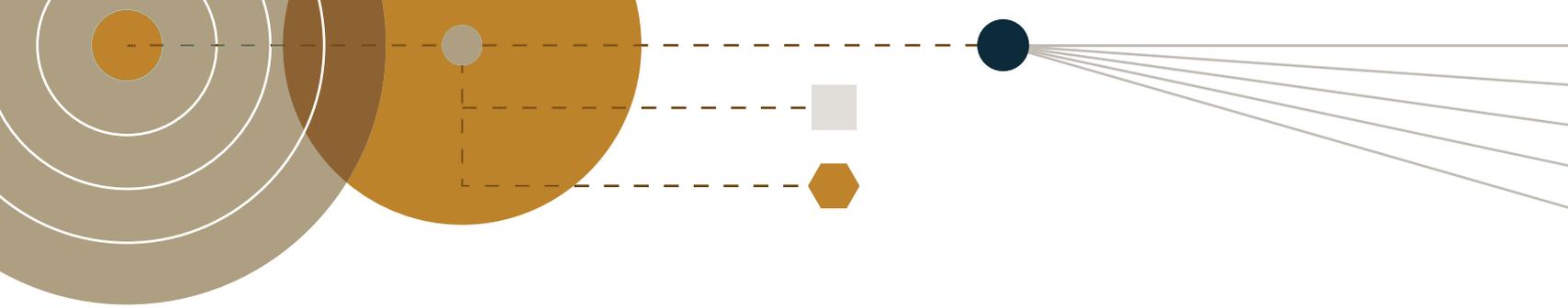
Academia and industry have long worked together to introduce new medical technologies to the world. Researchers at the U of M Medical School commonly partner with established companies to pave the way for new medical devices, diagnostics, and more. For some

medical discoveries, however, reaching patients, care providers, and clinics comes in a different form — the launch of an entirely new company.

"It's part of our mission and our responsibility as a land-grant university to help researchers at the U of M navigate the path from lab to market," says Russ Straate, associate director of the Venture Center, the startup-focused arm of the U's Office for Technology Commercialization (OTC). "In some cases, our assessment of a new technology and its market potential makes it clear that launching a startup company is the best way to do that."

After developing a new technology, Medical School researchers next report it to life science technology experts at OTC, who help determine whether the technology is more likely to succeed if it is licensed to an existing company or brought to market through the creation of a new startup. For those with startup potential, the Venture Center will work directly with researchers to develop a commercialization





plan, identify funding opportunities, and line up an experienced entrepreneur to provide business leadership for the company.

“By helping launch new companies, we’re taking the initiative to ensure new, exciting technologies have a chance to evolve into marketable products and, in doing so, achieve their full potential in benefiting human health and well-being,” Straate says.

Growing industries

While the main point of launching a startup based on Medical School research is to help patients and care providers, forming new companies can bring many other benefits as well.

Successful startups can be a boon to the state’s economic growth, bringing in outside investment, creating high-paying jobs, and spurring economic development. The Venture Center has launched about 130 companies since its founding in 2006, and those companies have raised more than \$400 million in investment capital. Three out of four are based in Minnesota.

Medical device startups stand to reinforce Minnesota’s existing strength in that industry, but technologies in less-established fields could help build new strengths for the state. For example, University gene-editing startups B-MoGen Biotechnologies and Calyxt are helping Minnesota become a center for innovative genome engineering, which can play a big role in drawing new talent and investment going forward.

“This is an example of how startups are not just bringing new technologies to market,” Straate says, “but strengthening and even shaping the industries that support our state.”

Here’s a sampling of some of the recent startups that show promise in health and medical applications.

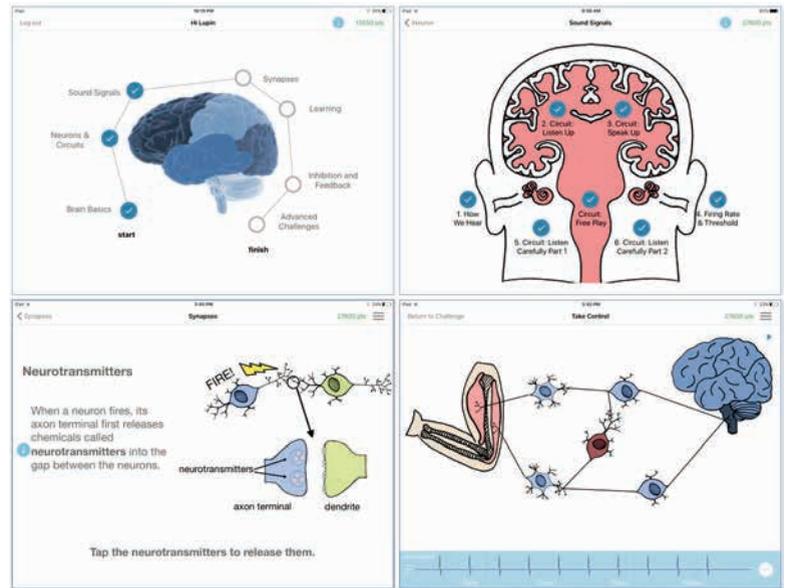


IMAGE: COURTESY OF JANET DUBINSKY

Andamio Games produces interactive mobile courses used by educators in science technology, engineering, and math.

Andamio Games

LAUNCHED: SUMMER 2015

University inventor: Janet Dubinsky, Ph.D. (Medical School Department of Neuroscience)

Andamio Games creates interactive mobile courses that help educators in the science, technology, engineering, and mathematics fields teach core concepts to students through individualized learning and collaborative problem solving. Educators with no prior programming knowledge can create game-like courses and monitor their students’ progress. Both K-12 classrooms and the public have used the company’s first game, iNeuron, to learn about nervous system functions, drug interactions, mental health, and neurological disorders.

EmboMedics

LAUNCHED: SPRING 2013

University inventor: Jafar Golzarian, M.D. (Medical School Department of Radiology)

EmboMedics is developing a technology that allows doctors to intentionally block specific arteries to cut off the blood supply feeding cancer cells in that area of the body. While previous materials used for this purpose have caused chronic inflammation, EmboMedics' microscopic beads dissolve harmlessly into the body after serving their purpose, limiting any lasting side effects. In addition to cancer, this technology could be used to treat aneurysms, bleeding, and other conditions.

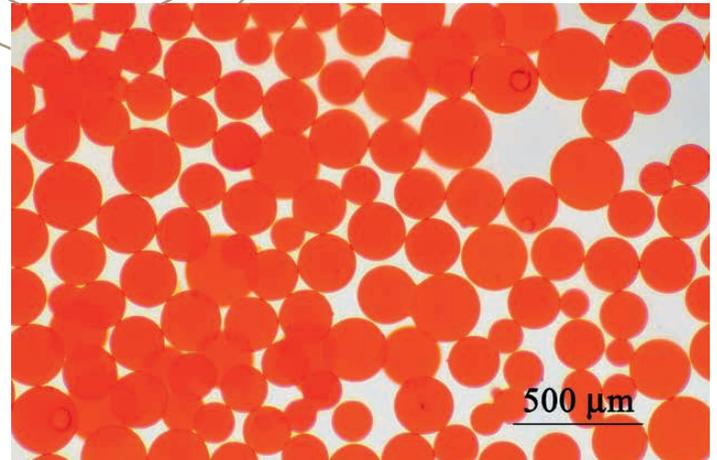


IMAGE: COURTESY OF EMBOMEDICS

Microscopic beads developed by EmboMedics are used to cut off the blood supply to cancer cells.

Prescix Medical

LAUNCHED: SPRING 2018

University inventors: Doug Devens, Ph.D. (Earl E. Bakken Medical Devices Center Innovation Fellow), Satoshi Ishii, Ph.D.

(College of Food, Agricultural, and Natural Resource Sciences Department of Soil, Water, and Climate), Michael Shaw, M.D. (Medical School Department of Medicine, gastroenterology), and Stuart Amateau, M.D. (Medical School Department of Medicine, gastroenterology)



WEB EXTRA

Find out how Prescix Medical's Doug Devens, Ph.D., got his idea to market at z.umn.edu/prescix.

As endoscopes, the fiber-optic tubes that let doctors see inside the body without surgery, have become useful in more procedures, they have also become more difficult to clean, raising the risk of potentially life-threatening infections spreading between patients. Prescix Medical is developing a fast, ultra-sensitive method for testing whether an endoscope has been successfully cleaned before its next use, helping hospitals eliminate the spread of antibiotic-resistant bacteria.



Prescix Medical is developing a method to quickly and accurately test whether endoscopes have been successfully cleaned between uses.

Surgical Information Sciences Inc.

LAUNCHED: FALL 2013

University inventors: Noam Harel, Ph.D. (Medical School departments of Radiology and Neurosurgery), and Guillermo Sapiro, Ph.D. (College of Science and Engineering Department of Electrical and Computer Engineering)

Surgical Information Sciences Inc. uses high-resolution magnetic resonance imaging (MRI), along with machine learning and data processing techniques, to create 3-D models of patients' brains. Using these models, neurologists and neurosurgeons can "see" each patient's specific anatomy, allowing them to target precisely where to insert implants for deep brain stimulation (DBS) treatments. DBS, which uses electrical currents to stimulate certain parts of the brain, has been shown to reduce symptoms of Parkinson's and other diseases.



IMAGE: COURTESY OF NOAM HAREL

Surgical Information Sciences' 3-D models allow doctors to target precisely where to implant deep brain stimulation devices.



Vascudyne

LAUNCHED: SUMMER 2017

University inventors: Robert Tranquillo, Ph.D., and Zeeshan Syedain, Ph.D. (College of Science and Engineering Department of Biomedical Engineering)

Vascudyne is developing implantable heart valves and arteries made of living tissue that match a patient’s cardiovascular structure and can “heal” themselves to last longer inside the body. The technology could mean that young patients with defective heart valves and similar heart issues would need fewer open-heart surgeries to replace these implants as their bodies grow.

Vigilant Diagnostics

LAUNCHED: SPRING 2014

University inventors: John Bischof, Ph.D. (College of Science and Engineering departments of Mechanical Engineering and Biomedical Engineering and Institute for Engineering in Medicine), and David Boulware, M.D., M.P.H. (Medical School Department of Medicine, infectious diseases and international medicine)

Vigilant Diagnostics is developing an ultra-sensitive diagnostic tool that can help detect and control the global spread of diseases like malaria, strep throat, and the infectious bacteria *Clostridium difficile*. By placing a blood or urine sample on the test strip, doctors can detect diseases in a patient in 10 minutes or less – at a fraction of the time and cost that traditional lab tests require. The technology will better equip doctors to provide individualized care to patients and prevent or minimize health crises. ^[MIB]

Kevin Coss is a writer and public relations associate with the Office of the Vice President for Research, University of Minnesota.

PHOTO: COURTESY OF TRANQUILLO LAB, UNIVERSITY OF MINNESOTA



Vascudyne’s implantable heart valve is made of living tissue, allowing it to heal itself and last longer inside a patient’s body.



IMAGE: COURTESY OF VIGILANT DIAGNOSTICS

A device developed by Vigilant Diagnostics can test for various diseases at a fraction of the time and cost that traditional lab tests require.

Alumni Celebration

Commemorating milestones, reminiscing with friends, celebrating Homecoming. Medical School alumni did all that and more on campus during the Medical School Alumni Celebration, October 4–6.

Besides reconnecting with classmates, alumni heard from Dean Jakub Tolar, M.D., Ph.D., who shared his vision for the Medical School, and they met current students and faculty during a luncheon program on health and wellness.

A pregame breakfast and Gophers' Homecoming football game topped off the festivities for the celebrating classes of 1963, 1968, 1978, 1983, 1988, 1993, and 2008. [MIB](#)

Interested in planning your 2019 reunion? Please contact Maureen Long at mlong@umn.edu or 612-626-8045.

BELOW LEFT Charles Ehlen, M.D., Class of 1963, takes a virtual reality tour of the now-under-construction Health Sciences Education Center.

BELOW RIGHT Mary Jo Connolly, M.D., Class of 1978, examines historical medical tools while Jim Boulger, Ph.D., Medical School Duluth campus professor, Janet Lindquist, M.D., Class of 1963, and Lois Hendrickson, curator of the U's Wangensteen Historical Library of Biology and Medicine, look on.

BOTTOM Medical School Class of 1983



PHOTO: LYNDSAY STEVENS



PHOTO: LYNDSAY STEVENS



PHOTO: JOEL MOREHOUSE

Healthy transformations

Concerned with health disparities, this alumna helps patients become their true selves

IN HER 25 YEARS treating transgender and gender-nonconforming patients, alumna Deb Thorp, M.D., has seen young people who were abusing substances, battling depression, and in some cases, considering suicide, metamorphose into healthy, successful adults.

Playing a role in positive transformations never gets old, says Thorp, who graduated from the Medical School in 1984.

“I saw a 21-year-old just yesterday who went from being a very dysfunctional, frequently cutting, drug-using, dysphoric 15-year-old to a young adult who’s in college, with a job, living with his girlfriend – not smoking, not drinking, not cutting, but being a completely functioning, contributing member of society,” Thorp says.

She describes another patient who was assigned female at birth and decided not only to undergo hormone therapy, but also have sex reassignment surgery in his 30s. “He went from being dramatically under-employed, given his intelligence, to running a crew of several people. He has great confidence and runs his crew with great skill,” Thorp says. “He’s in his early 40s now and doing very well.”

Much has changed since Thorp – an ob-gyn by training – began caring for transgender people. “There are a lot more health care

providers who are willing and able to provide culturally competent health care to the transgender population,” she says.

‘I LEARNED EVERYTHING I COULD’

Thorp’s first few transgender patients, a quarter century ago, came when a retiring partner started referring patients to her. “He gave me a little primer,” she says, “and I just read and learned everything I could.”

The number of patients continued to grow, along with Thorp’s reputation. Eventually, she began practicing gender medicine out of a separate clinic—the Park Nicollet Gender Services Clinic in Minneapolis – from her St. Louis Park ob-gyn practice, where she still devotes about two-thirds of her time.

“In 2010, we probably had a thousand patient visits [in the Gender Services Clinic]. In 2016–17, we saw 2,000 unique, gender-related patients.

“Our patients come from all over Minnesota and western Wisconsin, and we book out several weeks,” says Thorp, adding that many of the clinic’s patients are young adults. “That can mean that they’re healthier – but it also means they’re a little bit more subject to substance abuse disorders.

“We’re also seeing people at the other end of the age spectrum. They’re saying, ‘I never

thought I’d be doing this, but as it’s gotten to be more acceptable in the culture, I want to do it.’ So they’re coming in to start hormones in their 60s and 70s,” Thorp says. “And we’re seeing other [older] patients who’ve been on cross-gender hormones for 40 years now.”

FIGHTING HEALTH DISPARITIES

Caring for historically marginalized communities is a consistent theme with Thorp. Her ob-gyn practice has long had an outstanding reputation among Somali immigrant women. In 2012, she helped activist Fartun Weli launch the Somali women’s health nonprofit Isuroon, and in 2016, she received the Pete and Weesie Hollis Community Service Award for her outstanding work with the Somali and LGBTQ communities.

“There are some parallels,” Thorp says of these groups. “Both populations are marginalized. Both experience health disparities and have cultural challenges within their own communities.”

In the Gender Services Clinic, she hopes to hire a care coordinator to help patients with what she calls “wraparound services,” including insurance coverage, housing, and mental health care. More clinicians are joining the practice as well.

“I do training for nurse practitioners, physician assistants, and residents who want to learn how to do gender medicine.” It’s a privilege, she says, to help train newcomers to the field: “I like that. A lot.”

While gender medicine isn’t yet a board-recognized subspecialty, WPATH – the World Professional Association for Transgender Health – developed standards of care in 1979

In her 25 years treating transgender and gender-nonconforming patients, Thorp has found that playing a role in the transformations of young people into healthy, successful adults never gets old.



PHOTO: BRADY WILLETTE

and has refined them multiple times since; the document is now in its seventh iteration. WPATH also is developing a certification process, Thorp says.

“I’m kind of hoping that the need for a [subspecialty] will eventually go away,” she says. “Hopefully, we’ll realize that all primary care providers should have this knowledge and skill set.” ^{MIB}

By Susan Maas, a writer and editor in Minneapolis

SEEKING HEALTH EQUITY, FINDING DISPARITY

A University of Minnesota study in *Pediatrics*, published last February, found that, as some providers have long suspected, transgender and gender-nonconforming youth access health care at lower rates than their cisgender peers. They also tend to suffer poorer health generally.

Lead researchers Nic Rider, Ph.D., from the Department of Family Medicine and Community Health’s Program in Human Sexuality, and Marla Eisenberg, Sc.D., M.P.H., from the Division of Pediatrics and Adolescent Health, analyzed data from the 2016 Minnesota Student Survey of more than 80,000 9th- and 11th-grade students. The study shows room for improvement in screening and intervention, the authors conclude.

Eisenberg is lead author of another U study, published in the *Journal of Adolescent Health* last year, that found that 3 percent of Minnesota high school students identify as transgender or gender-nonconforming.

Starting this fall, the Medical School is offering an elective that helps future doctors learn to provide culturally competent care for LGBTQ patients and become more aware of the health disparities encountered by this group.

An unorthodox path to orthopaedics

LIKE ANY MEDICAL STUDENT, Taurean Baynard has logged an incalculable number of hours in the classroom. Perhaps less common is the number of those hours Baynard spent in elementary school classrooms.

Baynard, a fourth-year medical student, was leaning toward a career in medicine when he entered Northwestern University as a freshman in 2007. Intellectually curious with a range of interests as broad as his ever-present grin, he resisted taking a conventional path to medical school. Following a freshman year of exploration in general studies, he chose to major in communication sciences and disorders, a broad course of study in the biology of communication that includes neurobiology, normal and abnormal development, audiology, anatomy, and other fields. Part of Baynard's major was in special education, and his degree led him into Minneapolis and Chicago elementary school classrooms as a special education assistant for four years before he headed to med school.

"Working in special ed helped move me along the path toward medicine," Baynard says. "Health issues were a big problem for a lot of these kids. A big part of school at that age is just being able to interact socially with your peers, so when they're not healthy and miss school, they really miss out. I was always interested in helping them medically and caring for their health."

MAKING THE RIGHT CHOICE

The four years he devoted to working with special needs students had another benefit: at age 26, he entered medical school with peace of mind and confidence in his chosen path. "I think it was good to have some time away from school, to decompress and not be in a school setting. By the time I got into med school, I knew 100 percent that medicine was what I wanted to do," Baynard says.

The 30-year-old Minneapolis native is looking forward to a career in orthopaedic surgery. He speaks with equal verve about the promise the field holds in helping patients achieve the highest possible quality of life as well as its demanding technical aspects: the precision and skill required to repair a joint or bone and the broad range of knowledge required for mastery. He relishes the prospect of working with many different areas of the body.

"Because they deal with joints and limbs, there's a stereotype of orthopaedic surgeons being jocks who just bang stuff back into place. But a lot of science goes into what they do that contradicts the stereotypes," he says.

KEEPING IT ALL IN PERSPECTIVE

As Baynard finishes the final months of medical school and anticipates residency, his family helps him keep things in perspective. He and his wife, Erin, a former teacher, are parents to a 9-month-old son, Bryson.

"Bryson keeps us pretty busy," Baynard says. "Having a child makes it very easy to not constantly think about medicine or med school." He also spends time with his parents, who still live in the south Minneapolis house where they raised Taurean and his three brothers.

Working in special ed helped move me along the path toward medicine. Health issues were a big problem for a lot of these kids. A big part of school at that age is just being able to interact socially with your peers, so when they're not healthy and miss school, they really miss out.

– Taurean Baynard

Baynard is a recipient of many scholarships, including support from the Dean's Scholars Fund, the Harris Family Endowed Scholarship, and others.

"Receiving scholarships has been a huge help in my life and in medical school," Baynard says. "Obviously, medical school and undergrad are very expensive, so you come out with a lot of debt, which can be hard to dig yourself out of. Being fortunate to receive a scholarship relieves a lot of stress, especially now with a son. And to receive a scholarship where somebody has selected you because they saw something they wanted to reward you for, that's a good feeling." ^{MIB}

By Cynthia Scott, a Minneapolis freelance writer and editor

To make a scholarship gift or to learn more, please contact Carrie Albers with the University of Minnesota Foundation at albersc@umn.edu or 612-626-8481.



PHOTO: BRADY WILLETTE

Fourth-year medical student Taurean Baynard sits in the same Minneapolis elementary school where he used to work as a special education assistant.

DID YOU KNOW? The University of Minnesota Foundation has given 553 scholarship awards totaling \$1,385,656 to medical students for this academic year.

GIVE TO THE MAX DAY

15 NOVEMBER 2018

Join us this year as we raise money for the Medical School's annual White Coat Ceremony.

With your support, the Medical School provides all incoming students with white coats and engraved stethoscopes to equip them for their journeys through their medical education. Donors' names will be listed in next year's White Coat Ceremony program.

Thank you for funding this rite of passage on November 15, Give to the Max Day, or any time, at crowdfund.umn.edu/WhiteCoat18.

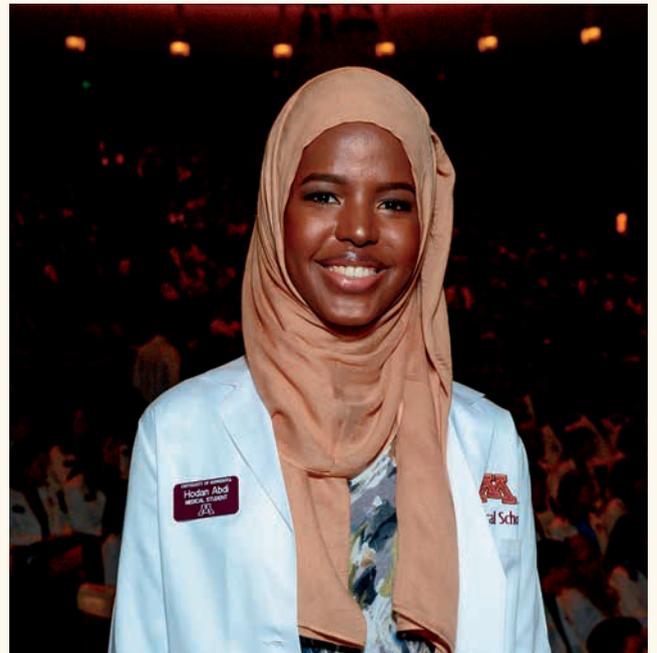


PHOTO: LAURA WALLACE, LIFETOUCH PHOTOGRAPHY

PHOTO: SCOTT STREBLE



Sarah Kemp

Catching up with the Medical Student Council president

SARAH KEMP is a fourth-year medical student and the president of the Medical Student Council at the University of Minnesota Medical School. The student council brings together representatives from across the Medical School—including from the Duluth campus—to enhance the educational experience for all students. We sat down with Kemp to talk about the council’s focus and one of the biggest issues facing medical students today.

You’re making students’ mental health and well-being a priority during your time as president. Why is that?

Encouraging medical students to take care of themselves is a big priority in medical education and at medical schools everywhere.

The stresses and demands we face tend to aggravate any underlying mental health issues that students might have, and they also make it harder for us to do the things that would alleviate some of that stress. We’re in a hard position.

What can the student council do about that?

We’re giving all students an opportunity to voice their ideas about what the best

version of medical school looks like. Then we can take those ideas to leadership and say, “Here’s what we’d like to see moving forward.”

For some people, just having a day off to do errands is a huge stress reliever, and giving them that time to themselves is important. Other people want more support from their peers, and so we’ve hosted forums where

students can come together and talk about what’s difficult. We then make sure that everyone who needs a person to talk to has a person to talk to.

How have Medical School leaders responded to your ideas?

Dean Jakub Tolar has been very supportive, and it’s clear that our well-being is one of his priorities, which means a lot to us. He and the other deans have helped us increase communication among everyone at the Medical School. For example, if there’s an event about health and wellness within the Medical School, the course directors know to let students attend, no questions asked. It’s a small thing, but it’s important.

And they want to hear our ideas. I email them directly and always get a response back, and they have open office hours, when we can just walk in and have a conversation. There are a lot of people here who are invested in making medical school a positive experience for all of us.

What do you enjoy most about being a student at the Medical School?

Some people are hesitant about applying here because it’s a bigger medical school. But I think in some ways, it’s easier to be an individual here because we have access to so many resources at the University and within the Twin Cities. It’s really easy for us to find our own path, and that leads to a lot of awesome opportunities. MIB

MEDICAL SCHOOL STUDENT COUNCIL BY THE NUMBERS

- 40+** MEMBERS
- 1,000+** STUDENTS REPRESENTED
- 10-15** REPRESENTATIVES FROM EACH CLASS
- 10** REPRESENTATIVES FROM DULUTH CAMPUS



Legislative preview: Become a UMN Advocate

*Stay informed
and make your
voice heard.*

The 2019 legislative session will kick off in January, and with the November elections, the University's government relations team will be meeting newly elected officials to ensure they understand the value this five-campus institution brings to Minnesota.

During the 2019 legislative session, a budget year, the University will be seeking \$30 million for fiscal year 2020 and \$27 million for fiscal year 2021. Consistent with systemwide strategic priorities, the funding would allow the University to address its most pressing needs: competitive compensation, classroom and equipment maintenance, compliance with federal and state regulations, research and technology infrastructure, core facilities maintenance, and targeted program enhancement.

Joining UMN Advocates is one way to stay informed and make your voice heard. UMN Advocates engages students, alumni, faculty, and community members in building a stronger U of M. You will find what you need to keep abreast of politics, higher education, and the legislative process. You will also discover easy steps to follow for telling your own U of M story to legislators so they can see alumni's tremendous statewide influence. MIB

Join now at advocates.umn.edu

HONOR AN OUTSTANDING ALUMNUS

**NOMINATIONS
MUST BE
RECEIVED BY
FEBRUARY 1.**

The Office of Alumni Relations is seeking nominations for the 2018–19 Medical School Alumni Awards. Honor a fellow alumnus with the Harold S. Diehl Award, Distinguished Alumni Award, or Early Distinguished Career Alumni Award. Recipients will be honored at the Medical School Alumni Awards Banquet (previously part of the fall Alumni Celebration) in April 2019, at the Weisman Art Museum. MIB

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

MEDICAL STUDENT RECEIVES PRESTIGIOUS NATIONAL AWARD

Fourth-year medical student Michael Rose has been named a 2018 Pisacano Scholar by the Pisacano Leadership Foundation.

Rose is one of six medical students in the country awarded the scholarship, which is valued at up to \$28,000.

These scholarships are awarded to students attending U.S. medical schools who demonstrate a strong commitment to family medicine and who show leadership, superior academic achievement, strong communication skills, identifiable character and integrity, and a noteworthy level of community service.



Michael Rose

He is the fourth University of Minnesota Medical School student selected for this honor. MIB

EDITOR'S NOTE: Beginning with this issue, the *Medical Bulletin* is changing the way it handles obituaries for Medical School alumni. In lieu of the slightly longer announcements we have run in the past, we are opting for a simple announcement in print but with a link to each individual's full, public obituary notice, when available, online. We have chosen to provide links to published obituaries because they offer readers the information families have shared to honor their loved ones. Links to full obituaries can be found in the online edition of the *Medical Bulletin* at z.umn.edu/memoriam-fall18.

PETER S. AUSTIN, M.D., Class of 1975, Duluth, Minn., died May 10 at age 69. Dr. Austin practiced ophthalmology.

RENO E. BACKUS, M.D., Class of 1955, Edina, Minn., died Nov. 24, 2017, at age 88. Dr. Backus was a pediatric neurologist.

MELVIN P. BAKEN JR., M.D., Class of 1954, Oak Park Heights, Minn., died May 3 at age 94. Dr. Baken practiced obstetrics and gynecology.

JOHN L. BONNER, M.D., Class of 1952, Grand Rapids, Minn., died Feb. 22 at age 92. Dr. Bonner was an ophthalmologist.

STEPHEN J. BRABECK, M.D., Class of 1976, Carmel Valley, Calif., died Feb. 26 at age 67. Dr. Brabek was a cardiologist.

GARFIELD W. BROWN, M.D., Class of 1964, Waunakee, Wis., died July 7 at age 80. Dr. Brown was a general surgeon.

TERRANCE D. CAPISTRANT, M.D., Class of 1963, St. Paul, Minn., died Aug. 24 at age 80. Dr. Capistrant was a neurologist.

SAMUEL E. CARLSON, M.D., Class of 1972, Loretto, Minn., died March 12 at age 71. Dr. Carlson practiced internal medicine.

JOAN E. CLOUTIER, M.D., Class of 1962, Oakland, Calif., died March 3 at age 82. Dr. Cloutier was a psychiatrist.

JAMES C. DAHL, M.D., Class of 1946, Willmar, Minn., died Feb. 15 at age 96. Dr. Dahl was a cardiologist.

VALORIE J. DOMINO, M.D., Class of 1980, Okemos, Mich., died May 14 at age 64. Dr. Domino practiced child psychiatry.

JOSEPH F. ECKERT, M.D., Class of 1960, Mankato, Minn., died July 11 at age 83. Dr. Eckert practiced radiology.

PAUL R. HARTIG, M.D., Class of 1956, Edina, Minn., died Sept. 3 at age 87. Dr. Hartig practiced urology.

GORDON N. HELLER, M.D., Class of 1969, Kremmling, Colo., died May 7 at age 74. Dr. Heller practiced emergency medicine.

ANTHONY W. HOLT, M.D., Class of 1969, Portland, Ore., died June 19 at age 74. Dr. Holt practiced family medicine.

TERRENCE P. HORRIGAN, M.D., Class of 1966, Stacy, Minn., died June 8 at age 77. Dr. Horrigan was a cardiovascular and thoracic surgeon.

JAMES E. JENSON, M.D., Class of 1944, Stillwater, Minn., died July 7 at age 99. Dr. Jenson practiced family medicine.

EDWARD H. KELLY, M.D., Class of 1949, St. Paul, Minn., died March 26 at age 94. Dr. Kelly was an orthopaedic surgeon.

THOMAS S. KEMP, M.D., Class of 1947, Poynette, Wis., died May 29 at age 93. Dr. Kemp was a dermatologist.

EMILY J. KNOBLOCH, M.D., Class of 1999, Jackson, Wyo., died May 18 at age 57. Dr. Knobloch practiced internal medicine.

JAMES T. LILLIGREN, M.D., Class of 1971, Turlock, Calif., died March 23 at age 73. Dr. Lilligren practiced obstetrics and gynecology.

DYLAN MACUK, M.D., Class of 2018, McHenry, Ill., died July 15 at age 26. Dr. Macuk was training to become a pathologist.

GEORGE R. MARTIN JR., M.D., Class of 1945, Edina, Minn., died May 13 at age 98. Dr. Martin practiced family and emergency medicine.

JAMES L. MICHIE, M.D., Class of 1957, Fort Belvoir, Va., died March 15 at age 85. Dr. Michie was an ophthalmologist.

DONALD G. MOYER, M.D., Class of 1955, Eugene, Ore., died Sept. 10 at age 87. Dr. Moyer was a dermatologist.

RONALD C. MYROM, M.D., Class of 1967, West Union, Iowa, died July 25 at age 76. Dr. Myrom practiced internal medicine and geriatrics.

STANLEY R. NORQUIST, M.D., Class of 1951, Longview, Wash., died March 18 at age 91. Dr. Norquist was a family physician and surgeon.

HENRY A. NORUM, M.D., Class of 1943, Carmel, Calif., died April 10 at age 99. Dr. Norum practiced general surgery.

JAMES P. O'REILLY, M.D., Class of 1977, Belle Plaine, Minn., died June 16 at age 66. Dr. O'Reilly practiced family medicine.

PHILIP D. PALLISTER, M.D., Class of 1944, Boulder, Mont., died March 9 at age 97. Dr. Pallister specialized in clinical genetics and genomics.

BRADLEY W. PETERSON, M.D., Class of 1992, Deerwood, Minn., died June 21 at age 54. Dr. Peterson practiced family medicine.

JOHN R. PFROMMER JR., M.D., Class of 1948, Lafayette, Ind., died Sept. 12 at age 96. Dr. Pfrommer specialized in preventive medicine and aerospace medicine.

JOHN J. PLUNKETT, M.D., Class of 1973, Welch, Minn., died April 4 at age 70. Dr. Plunkett was a forensic pathologist.

DAVID A. SISLER, M.D., Class of 1953, Petaluma, Calif., died March 1 at age 91. Dr. Sisler practiced family medicine.

WALTER C. STOLOV, M.D., Class of 1956, Seattle, Wash., died Sept. 10 at age 90. Dr. Stolov specialized in physical medicine and rehabilitation.

CLAIRE J. STROBEL, M.D., Class of 1955, Mapleton, Minn., died Aug. 21 at age 89. Dr. Strobel was a general and vascular surgeon.

WAYNE E. TATE, M.D., Class of 1964, St. Paul, Minn., died June 27 at age 94. Dr. Tate practiced family medicine.

JONATHAN S. TORGERSON, M.D., Class of 1987, Whitefish, Mont., died Feb. 17 at age 62. Dr. Torgerson practiced family medicine.

FRANK W. VAN DE WATER, M.D., Class of 1957, Denver, Colo., died July 25 at age 87. Dr. Van De Water was an otolaryngologist.

GEORGE WALCOTT, M.D., Class of 1968, Milwaukee, Wis., died March 24 at age 85. Dr. Walcott practiced internal medicine and cardiology.

ADOLF H. WALSER, M.D., Class of 1963, Rochester, Minn., died May 9 at age 82. Dr. Walser practiced internal medicine.

JOSEPH A. WEGNER, M.D., Class of 1980, St. Paul, Minn., died March 14 at age 64. Dr. Wegner practiced occupational medicine.

CORRECTION: The *Medical Bulletin* editors wish to correct an obituary published in the spring 2018 issue. We sincerely regret our errors of fact and omission.

ERIC W. BURTON, M.D., Class of 1988, Welch, Minn., died October 24, 2017, at age 58 of cardiac disease. Dr. Burton practiced and was boarded as an anatomic, clinical, and forensic pathologist. He is survived by his wife, Karen; and two children, Maddi and Zach.



Fostering alumni connections, service

MEDICAL SCHOOL ALUMNI, students, faculty, and staff found camaraderie and a sense of accomplishment on September 29, volunteering at Feed My Starving Children in Coon Rapids, Minnesota, during the University of Minnesota's Day of Service.

The annual event, which engages U of M alumni, students, and friends in serving their community, is one of many ways medical alumni can stay connected with the Medical School and the University. Here are some others:

- **Host traveling students:** The Help Our Students Travel program encourages medical alumni to provide lodging to students and trainees as they travel for residency and fellowship interviews. *Learn more or sign up at z.umn.edu/medHOST.*
- **Become an eHOST for students:** Share invaluable insights and guidance on specialties, hospitals, research, local communities, and much more – digitally. *Sign up to be an eHOST at z.umn.edu/medHOST.*
- **Help plan your 2019 class reunion:** Help us make your reunion memorable by serving on your reunion planning committee or as a reunion gift volunteer. *To learn more, contact Maureen Long at mlong@umn.edu or 612-626-8045.*
- **Participate on our all-new Alumni Board:** We are rebuilding the Medical Alumni Society Board, which serves the needs and interests of the University of Minnesota Medical School and the medical alumni community. *To apply for membership or nominate a peer, please contact the Medical School Alumni Relations team at med-alumni@umn.edu.* MJB

Stay in touch by visiting med.umn.edu/alumni or by following us on social media: @UMNMedAlumni.



Covered in the *Bulletin*



This magazine, which began in 1929 as a typewritten set of case reports, now covers a wide array of research, education, and clinical news from the Medical School and is available in print and digital formats.

JUST LIKE THE UNIVERSITY of Minnesota Medical School, the *Medical Bulletin* has evolved considerably since its early days. The now full-color magazine started in 1929 as a typewritten set of case studies—mostly grim autopsy reports—and announcements.

In the early 1930s, the publication became the more formal weekly *Staff Meeting Bulletin of the Hospitals of the University of Minnesota*, with financing provided by the Citizens Aid Society, a philanthropic organization led by Carolyn McKnight Christian.

Financial support grew during the 1940s to include donations from Medical School alumni and friends, following the establishment of the Minnesota Medical Foundation in 1939. Although the publication remained a report primarily of staff meetings, its title was changed to the *Bulletin of the University of Minnesota Hospitals and Minnesota Medical Foundation*.

In 1955, the magazine became the *Medical Bulletin*, and in the fall of 1959, the first cover illustration appeared. Ten years later, a new, wholly redesigned *Medical Bulletin* was introduced. Scientific articles were no longer included. Instead, the focus was to be on people, alumni in particular, and original stories—a clear sign that the now bimonthly magazine was aiming for a broader audience.



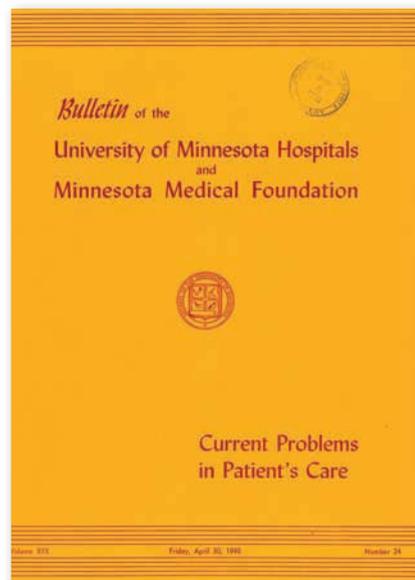
1929

The best reporting and writing, whatever the subject matter, involves compelling storytelling. “Eye Man, A look at alumnus Harold Scheie,” a riveting portrait published in 1973, is one such example from the *Medical Bulletin*. “Dr. Robert O. Fisch, A Lesson of Love from the Holocaust,” published in 1994, is another.

The magazine has commissioned original art and photography to illustrate many complex stories, from “A Bridge to the Future,” about the launch of the Fairview-University partnership in 1997 (still a current topic), to “Made in Minnesota,” about the challenge of meeting the state’s need for family physicians in 2017.

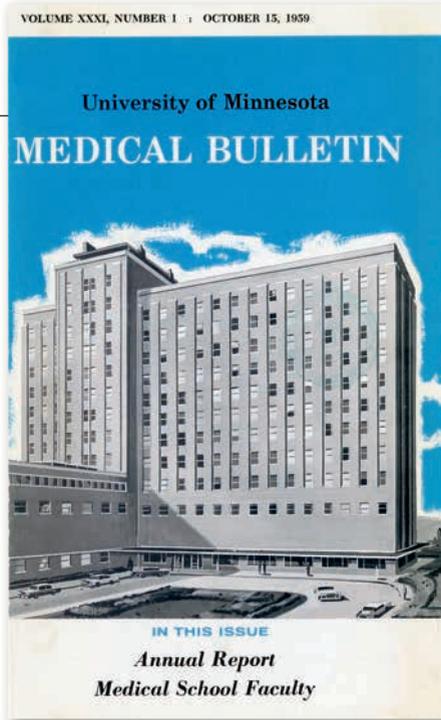
A sampling of covers reflects the breadth of topics featured over the *Bulletin’s* nearly 90-year history and shows that some topics can be both timely and timeless. [MIB](#)

By Kristine Mortensen, a Minneapolis writer and editor

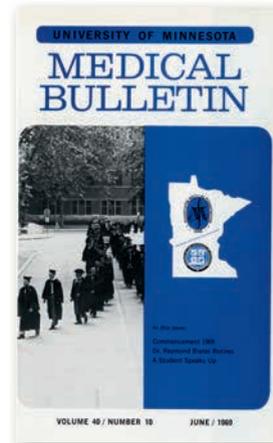


1948

IMAGES: UNIVERSITY ARCHIVES

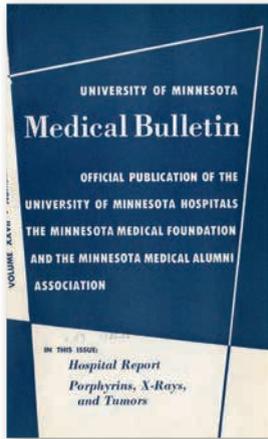


1959



1969

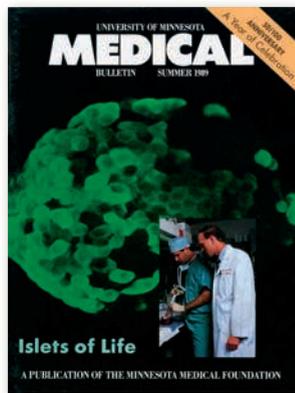
A sampling of covers reflects the breadth of topics featured over the Bulletin's nearly 90-year history and shows that some topics can be both timely and timeless.



1955



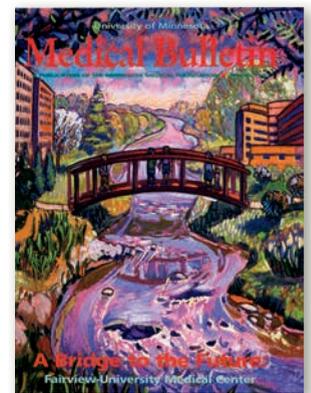
1984



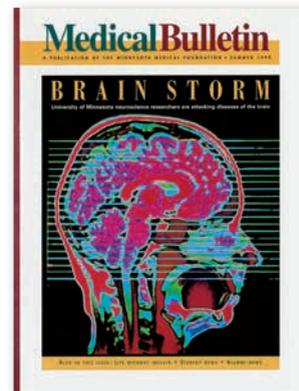
1989



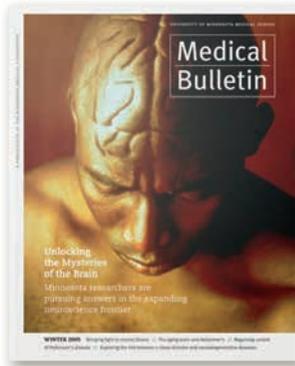
1994



1997



1999



2005



2009



2017

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The University of Minnesota Campaign

