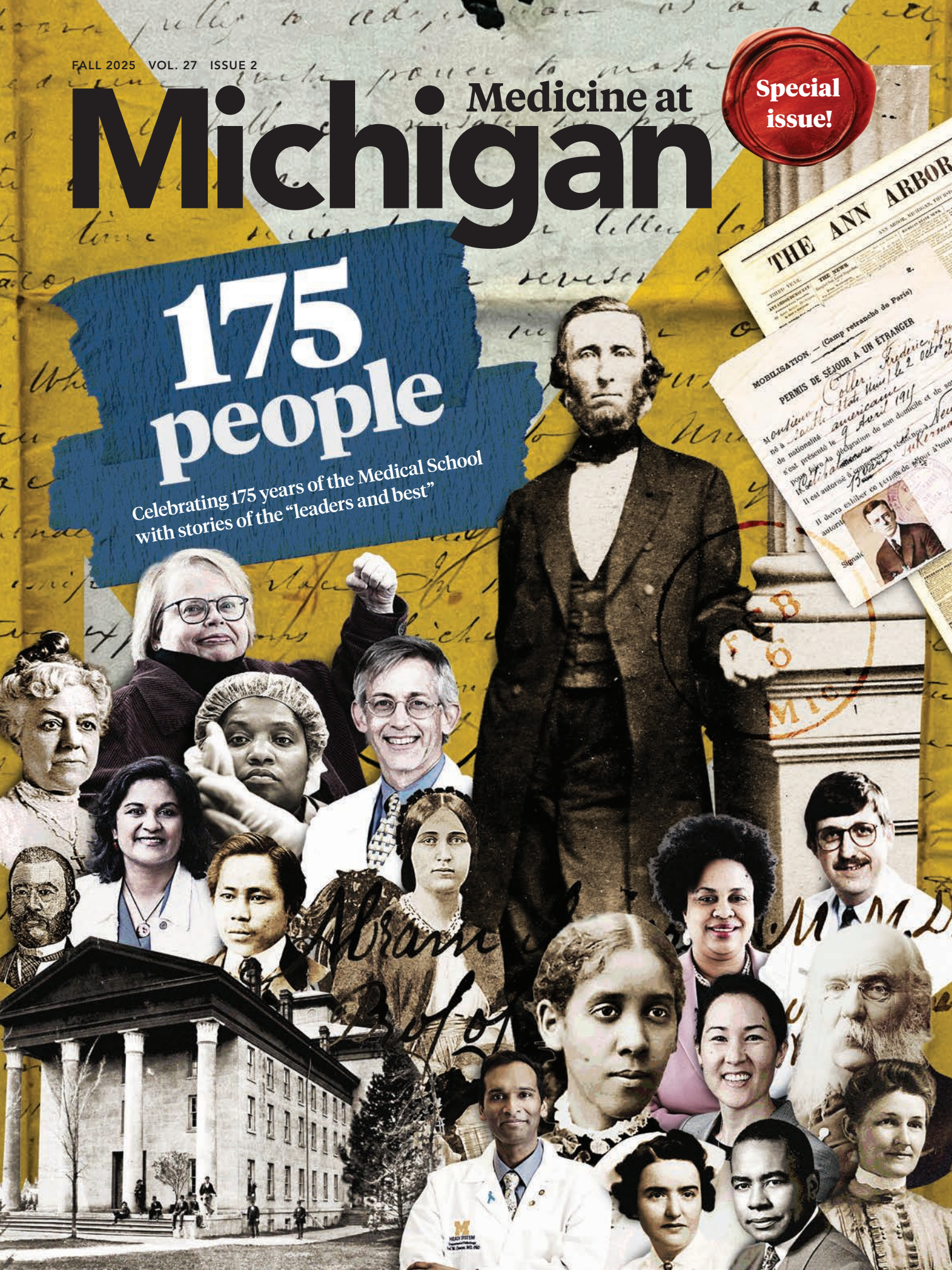
FALL 2025 VOL. 27 ISSUE 2

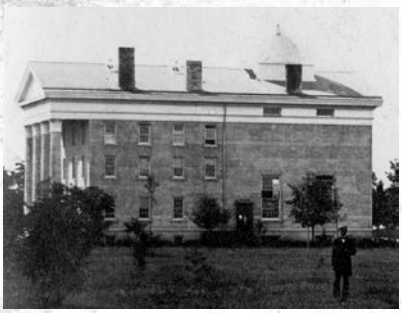
# Medicine at Michigan

Special issue!

# 175 people

Celebrating 175 years of the Medical School with stories of the "leaders and best"

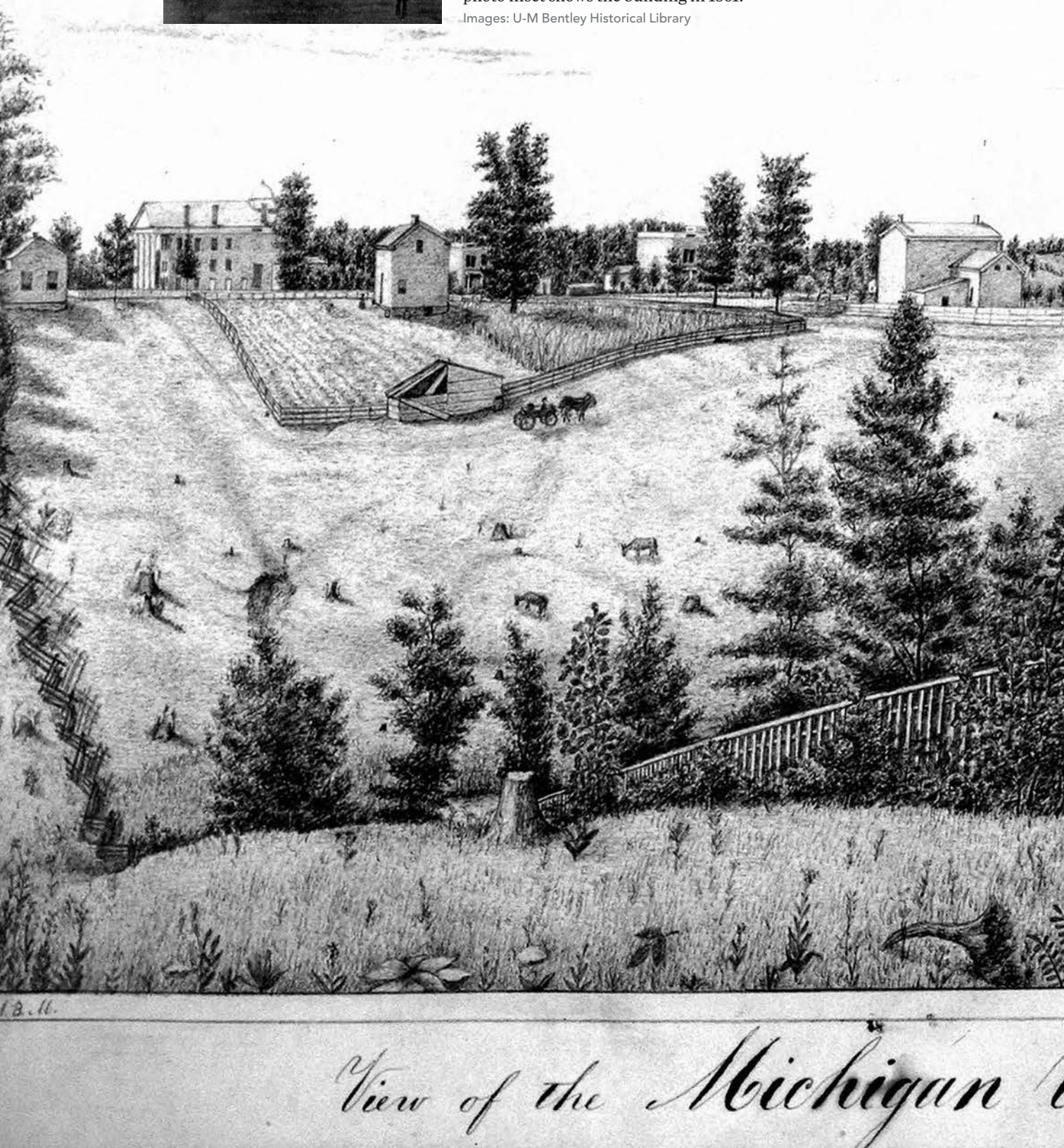


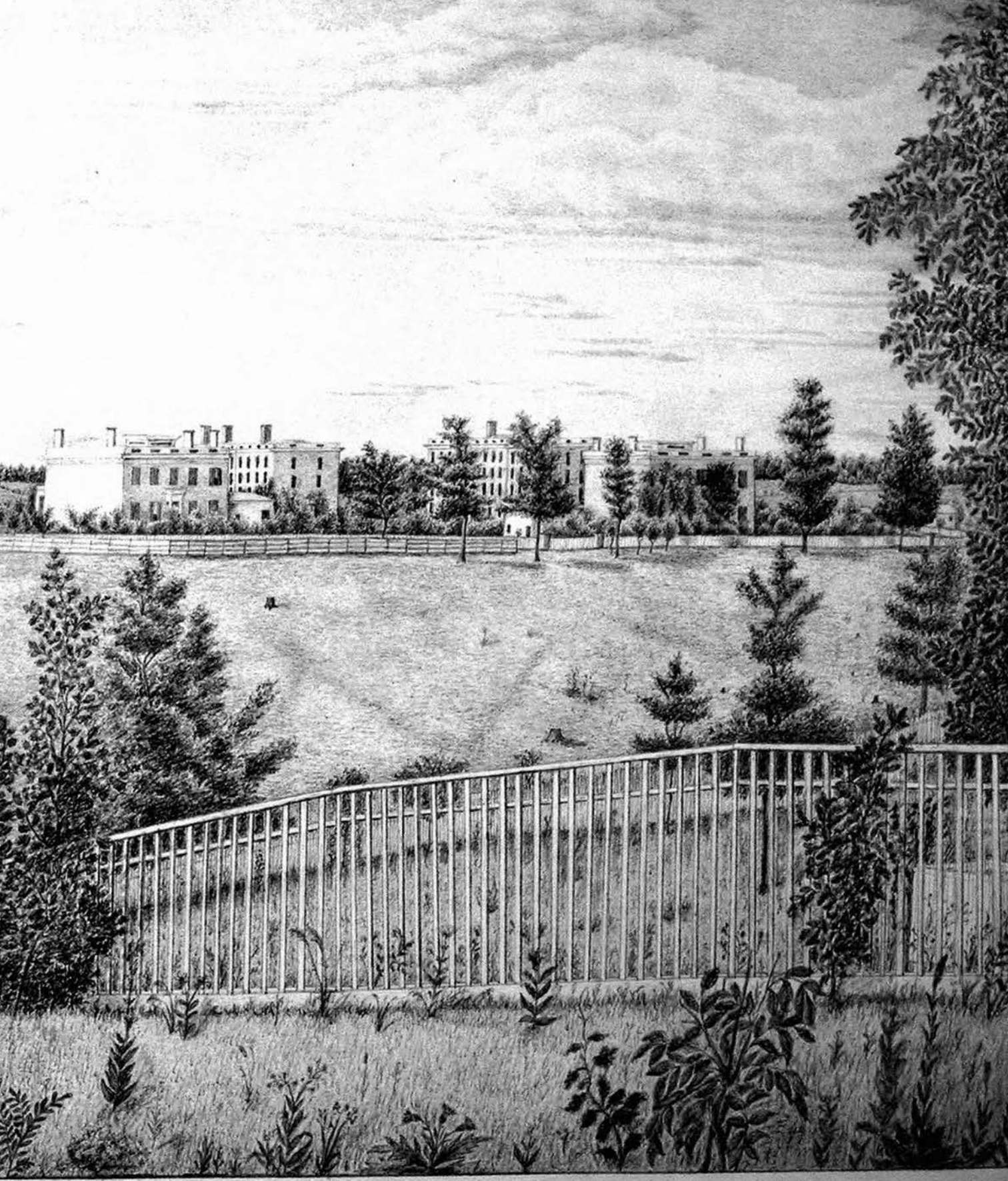


# First Medical School building

Adeline B. Mead created this image of the U-M campus circa 1854. On the far left, you can see the first Medical School building, a.k.a the "laboratory," built on the Diag in 1850, with a design modeled on a Greek temple. A photo inset shows the building in 1861.

Images: U-M Bentley Historical Library

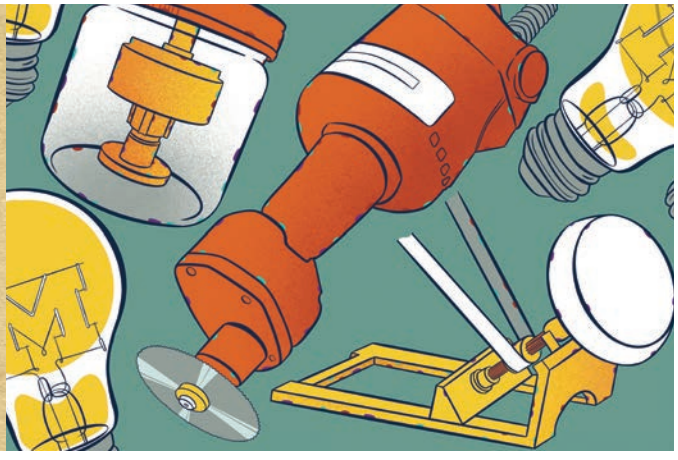




University from the North East

# In This Issue

FALL 2025 | SPECIAL 175TH ANNIVERSARY ISSUE





## Letter from the Editors

# Celebrating 175 years of excellence in medicine

Welcome to this special issue of *Medicine at Michigan* celebrating the demisemiseptcentennial of the University of Michigan Medical School. This issue is devoted entirely to our history and doesn't include our regular departments. That means big news — like our new dean, Thomas J. Wang, M.D., and the opening of the new University of Michigan Health D. Dan and Betty Kahn Health Care Pavilion — will be covered in our next issue. Our Class Notes and In Memoriam sections will also be postponed until the first issue of 2026.

When we began to plan this special issue more than a year ago, we knew we wanted the focus to be on people. Our alumni and faculty have made this institution one of the premiere academic medical centers in the country. You are part of that story, too, and we hope as you peruse this issue, you feel a profound sense of pride in the remarkable contributions U-M has made to medicine.

How did we decide whom to feature? Our criteria were broad: we looked for clinicians and researchers who made positive contributions to U-M, to medicine in general, to their chosen field, or to their communities. We researched the history of the Medical School and sought input from historians, longtime Michigan Medicine staff, the Michigan Medicine Alumni Society, our colleagues in the Office of Development, professors at the Medical School, and others. Coming up with 175 people was easy — in fact, we found many more.

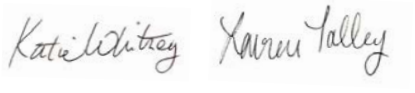
The hard part was deciding on the final list, which is, admittedly, imperfect. We cheated a bit and put all 16 past deans under one number. Still, there were people we wanted to include who didn't make it into the issue. If you notice someone missing who is important to you, we invite you to answer our back cover question ("Who did we miss?").

Any celebration of our history would not be complete without acknowledging the less savory aspects of it. We've addressed some of those in "The wrong side of history," p. 70. We felt it was important to acknowledge these issues, but we haven't spent much space on them. This is a celebration, after all.

Most of the people in our history have done their best, not only for medicine but also for their communities and the patients of the future. What they've managed to accomplish — the life-changing and lifesaving impacts they've had on our world — is nothing short of extraordinary. We hope you enjoy learning about the small subset of this venerable group celebrated in these pages.

Here's to another 175 years of transforming medicine!

Sincerely,



Katie Whitney and Lauren Talley
Editors

Medicine at Michigan

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# 1
# Dean of the Medical School

### **Abram Sager**, M.D., 1850–1851, 1859–1861, 1868–1875

Sager was instrumental in the formation of the Medical Department and became its first elected dean. As a teacher, he is said to have come to class with a frog in his pocket, insects fastened to his hat, and a snake that escaped into the classroom. He performed what was probably the first C-section in Michigan in 1869. He was a modest man and was said to have a kindly manner with patients. He retired after 33 years of service at the university, due in part to the formation of the Homeopathic Department, which he strongly opposed.

### **Samuel Denton**, M.D., 1851–1853, 1857–1858

Denton — a dignified gentleman who favored the wearing of a high hat — had a large general practice and had an excellent reputation for sound judgment and skill in diagnosis and treatment. He was also an inaugural member of the Board of Regents and later a state senator.

### **Silas Douglas**, M.D., 1853–57, 1862–68

Douglas persuaded the Regents to allocate money for a chemical laboratory, the first university building in the country built solely for chemistry. Douglas' service at the university ended in 1877 due to a discrepancy in accounts — though the state Supreme Court ruled in his favor.

### **Moses Gunn**, M.D., 1858–1859

Gunn brought a cadaver with him to Ann Arbor and performed a dissection in front of guests — possibly the first such demonstration in Michigan. He was the third faculty member hired in the Medical Department. He also served as a surgeon for 11 months in the Civil War and saw active duty during General McClellan's peninsular campaign.

### **Corydon Ford**, M.D., 1861, 1879–1880, 1887–1891

Paralysis in one leg as a child led Ford away from the family vocation of farming and toward medicine. He was one of the most tolerant professors when women were admitted to the Medical School in 1870. After his last lecture in 1894, he turned wearily to an assistant and said, "My work is done." He collapsed on his way home and died the next morning.

### **Alonzo Palmer**, M.D., 1875–1879, 1880–1887

Palmer, who oversaw the start of the three-year curriculum at the Medical School in 1877, advocated for the blend of basic science with clinical practice in medical education. He served for six months as a regimental surgeon in the Civil War and as president of the American Medical Association during the war.

## **Victor Vaughan**, M.D., PH.D., 1891–1921

Vaughan, the first dean of the Medical School appointed by the president and Board of Regents (previous deans were elected), served for 30 years. An expert in toxicology and infectious disease, he was called upon by the U.S. Army to investigate the 1918 influenza pandemic. His study of poisons led to his role as an expert witness in many criminal and civil trials. Vaughan recognized that "poisoned" milk was caused by bacteria and, in 1885, discovered tyrotoxicon, a poison that forms in dairy products. A student organization removed his name from their group in 2019 because of his support for eugenics (see p. 71).

## **Hugh Cabot**, M.D., 1921–1930

Cabot envisioned a health care system with full-time, hospital-based group practices where patients would pay according to their means. His insistence that faculty should be full-time and should not work in private practice on the side led to a rift and ultimately a request for his resignation by the Board of Regents.

## **Frederick Novy**, M.D., SC.D., 1933–1935

Novy studied in Europe in the laboratories of Louis Pasteur and Robert Koch. At U-M, his bacteriology class was so successful that it became a requirement for students in the Medical School. Along with Vaughan, he helped educate the public about germ theory, food poisoning, disinfection, and controlling diphtheria and typhoid fever.

## **Albert Carl Furstenberg**, M.D., 1935–1959

During his 24-year tenure at U-M — second in duration only to Vaughan — Furstenberg helped the Medical School become the largest in the country. His leadership, described as "stable yet enthusiastic," launched the Medical School into the ranks of fully modern institutions. His friendships with philanthropists Sebastian Kresge and Charles Stewart Mott helped facilitate their financial contributions, with impacts still being felt today in the Kresge Hearing Research Institute, C.S. Mott Children's Hospital, and more. Furstenberg was the last dean to divide his time between departmental administration, private practice, and direction of the Medical School.

## **William Hubbard**, M.D., 1959–1970

Just 39 when he became dean, Hubbard was the Medical School's first full-time dean — without private practice and departmental administration responsibilities — and helped redefine the role in part through a focus on the importance of translating medical research advances into educational programs for students and practicing physicians.

## **John Gronvall**, M.D., 1970–1982

Gronvall led the Medical School through a period of growth that included record enrollment and big increases in the number of women enrollees. The Inteflex program, in which 50 select incoming freshmen could complete undergraduate and medical studies in a total of six years, started during his tenure.

## **Joseph Johnson III**, M.D., 1985–1990

Johnson was dean during several significant building openings: the new University Hospital and A. Alfred Taubman Center in 1986, as well as MSRB I and II. Cancer and geriatrics Centers of Excellence were designated by the Board of Regents while he was dean as well.

## **Giles Bole**, M.D., 1990–1996

The Medical School began a new curriculum during Bole's tenure and reduced class size from 207 to 170 to better serve students. The school also moved up the *U.S. News* rankings from 16th to 9th and was redesignated one of the top members of the NIH Medical Science Training Program.

## **Allen Lichter**, M.D., 1999–2006

Lichter's term saw the introduction of a new curriculum, one of the first in the nation to put students in patient care settings earlier in medical school. He made significant gains in the recruitment and retention of top faculty and oversaw more scholarship funding than any public medical school in the nation.

## **James O. Woolliscroft**, M.D., 2007–2015

Woolliscroft devoted his career to improving physician education. Nationally, Woolliscroft was among the first to advocate for reform in the teaching and assessment of students' clinical skills. In 2008, he led U-M's effort to purchase the former Pfizer property, now the interdisciplinary research hub known as the North Campus Research Complex.

## **Marschall S. Runge**, M.D., PH.D., 2015–2025

Runge was CEO of the U-M health care system, which he worked to expand statewide, championing a name change to Michigan Medicine. The network of health care centers grew to include UM Health-West in Grand Rapids and UM Health-Sparrow in Lansing. At the main medical campus, Runge oversaw construction of the University of Michigan Health D. Dan and Betty Kahn Health Care Pavilion.

Sources: "Michigan Medicine History: The Future of Possibility" and "175th Anniversary: University of Michigan Medical School," Michigan Medicine; *The University of Michigan, An Encyclopedic Survey*; *History of the University of Michigan* (U-M Press, 1906); *Not Just Any Medical School: The Science, Practice, and Teaching Of Medicine at the University of Michigan, 1850-1941* (U-M Press, 1999); *Medicine at Michigan: A History of the University of Michigan Medical School at the Bicentennial* (U-M Regional, 2017)

FIRSTS

## 2

### Researcher, civil rights leader, and mayor

In 1944, **Albert Wheeler** earned a Ph.D. from the University of Michigan School of Public Health. Wheeler went on to become the first Black tenured professor at the Medical School in the newly formed field of microbiology. His research focused on developing tests to detect syphilis and a vaccine to prevent it. Outside of the lab, Wheeler and his wife, Emma, advocated for civil rights at U-M and in Ann Arbor. They helped found the Ann Arbor chapter of the NAACP, and their activism resulted in the city adopting the state's first fair housing ordinance. In 1975, Wheeler was elected as Ann Arbor's first and only Black mayor.

Sources: *University Record*, Michigan Public, MLive, U-M Bentley Historical Library

## 3

### ZEBRAFISH FOR CANCER RESEARCH

**A. Thomas Look** (M.D. 1975, Fellowships 1976 and 1977, Residency 1977) is professor of pediatrics at Harvard Medical School and vice chair for research in the pediatric oncology department at the Dana-Farber Cancer Institute. Look's research focuses on cancer genetics, using the zebrafish genetic system to clarify developmental pathways subverted in human leukemias and solid tumors. He and his colleagues hope to discover mutations or drugs that delay or suppress the onset of tumors in transgenic zebrafish lines, providing candidate targets for the development of new therapies.

Source: *Medicine at Michigan*, Fall 2020

## 4

### POLIO SURVIVOR AND RHEUMATOLOGIST

Early on in her life, **Donita B. Sullivan**, M.D. (Residency 1959), wanted to be a nurse, but one of her legs had been paralyzed by polio, and the profession seemed too physically challenging. Instead, she went to medical school and became one of the first pediatric rheumatologists in the U.S. "The fact that I got in on the ground floor of pediatric rheumatology was a bonus, but I was not a basic science researcher. I was a clinical investigator. Taking care of my patients, I could learn things I could share," she said. During her career at U-M, she helped thousands of children and trained many physicians who went on to head departments at other institutions. In 2009, the U-M Department of Pediatrics established the Donita B. Sullivan, M.D., Research Professorship in Pediatrics and Communicable Diseases.

Source: U-M Department of Pediatrics and Michigan Medicine Office of Development



Photo of Wheeler: U-M Bentley Historical Library

Natacha Chough (right) assists Expedition 59 crew member Anne McClain of NASA outside the Soyuz MS-11 spacecraft after its landing on June 25, 2019.

> **We walk into Mission Control … knowing that our performance can have ultimate consequences. [That] challenges me daily to keep my skills and knowledge polished.**

## 5

**Natacha Chough** (M.D. 2010), a flight surgeon at NASA, excelled at U-M in emergency medicine. She helped resurrect the Wilderness Medicine Student Interest Group, where she practiced what she calls "MacGyver medicine," giving her a chance to work in unpredictable environments.

Source: *Medicine at Michigan*, Winter 2017

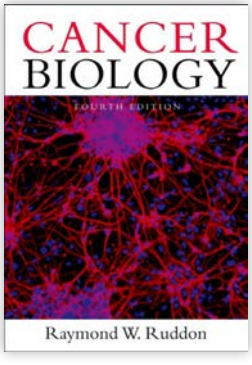
FIRSTS

## 6

### Father of aviation medicine

Brigadier General **Theodore C. Lyster** (M.D. 1899) established a U.S. Army lab in 1918 for aviation medicine, insisting that military aviation physicians become members of the flying squadrons. He created the first position of flight surgeon, a role dedicated to preventing and treating ailments that flight crews are susceptible to, and he planned and directed the U.S. Army Air Medical Service.

Source: "World War I and the Beginnings of Aviation Medicine," Air Force Medical Service History Office, September 2017




## 7

### PROTEIN FOLDING DISCOVERY

**Raymond W. Ruddon**'s (Ph.D. 1964, M.D. 1967) research focused on the biosynthesis, assembly, folding, and secretion of glycoprotein hormones. His laboratory was the first to demonstrate the folding pathway of a human protein inside an intact cell. He authored more than 100 scientific papers and five books, including the widely used oncology textbook *Cancer Biology*.

Source: *Medicine at Michigan*, Summer 2019

Photo of Chough: NASA/Bill Ingalls

TRANSFORMATIVE PHILANTHROPY

## U-M treatment of women inspires major gift

**8**

"Her gift was a complete surprise to the university and as far as anyone knows, she had never visited the university or even Ann Arbor," said Tim Johnson, M.D., the late Arthur F. Thurnau Professor and professor of obstetrics and gynecology (see p. 48). "It seems that the only connection was that Dr. Bates wanted to make it easier for women to study medicine and respected the University of Michigan as the first institution whose medical school treated women equally to men."

In 1898, **Elizabeth Bates**, M.D., bequeathed a large portion of her estate to the medical department of what was then Michigan University. Her gift was valued at over $200,000, a huge sum at that time and the largest bequest the university had received. Her gift created the university's first endowed professorship, the Bates Professorship of Diseases of Women and Children, which has supported leaders in obstetrics and gynecology for more than a century. Today, the Medical School has 479 professorships created through philanthropy.

Source: "125 Years of Impact," Michigan Medicine Philanthropy News.

### HOW MUCH IS THAT IN TODAY'S DOLLARS?

By various estimates, Elizabeth Bates' $200,000 gift in 1898 would be the equivalent of anywhere from $7.9 million to $69.1 million in 2025.

Source: measuringworth.com

### ADVANCES IN MEDICAL EDUCATION

**In 1889, a new Anatomical Laboratory building opened at U-M, the first in the country to be used exclusively for instruction in human anatomy. It had a separate area for female medical students to dissect donated cadavers apart from their male peers. The expanded space for training allowed the school to extend the curriculum to four years in 1890 and to add courses on the nervous system and "insanity" for the first time.**

Lab photo: U-M Bentley Historical Library

# 9

## THE POWER OF KINDNESS

At age 14, **Claire Pomeroy** (M.D. 1979) escaped her abusive home. She ended up in the foster care system, where she says she first got a glimpse of the social determinants of health. She recounted her story in 2012 as part of a TEDx talk at University of California–Davis. "Being a foster child taught me a lot," she told the audience. "It taught me how life traumas have long-lasting impacts. It taught me about race and equality and social justice. And it taught me that reaching out in kindness can literally save a life." She finished her training in infectious disease just as the HIV/AIDS epidemic was beginning, and she started an HIV/AIDS clinic at the VA. At the time, there were no treatments for these patients, and many of them were being rejected by friends and family for being gay. "By caring for others who experienced cruelty and adversity, I was given the opportunity to repay the kindness that had been shown to me." Since then, Pomeroy has been an advocate for strengthening public health infrastructure in the U.S. and globally. She is now president and CEO of the Lasker Foundation, which promotes medical research.

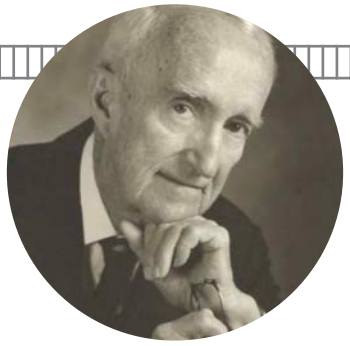
Sources: "Social Determinants of Health: Claire Pomeroy at TEDxUCDavis;" Lasker Foundation

# 10

## CYTOCHROME P450

**Minor Jesser "Jud" Coon**, Ph.D., the Victor C. Vaughan Distinguished University Professor Emeritus of Biological Chemistry, began his career at U-M in 1955. He served as chair of the Department of Biological Chemistry for 20 years. Coon is best known for his pioneering work with the cytochrome P450 system. He initially isolated this compound, which has become known as the metabolism system for medications, hormones, toxins, and other substances.

Source: *Medicine at Michigan*, Winter 2019



# 11

## NUCLEAR MEDICINE INNOVATOR

As a faculty member at the Medical School, **William H. Beierwaltes** (M.D. 1941) established one of the first university programs in nuclear medicine in the world. Following the publication of a book he co-authored in 1957, radioiodine (I-131) was widely adopted as a treatment for thyroid cancer, and it is still used today. Beierwaltes also was the driving force behind the development of two radiopharmaceuticals for adrenal imaging, which were among the first molecular imaging agents to visualize biologic processes at the cellular and subcellular levels.

Sources: U-M Nuclear Medicine

## Swinging pediatric radiologist

# 12

Starting in high school, **John F. "Jack" Holt**, M.D. (Residency 1941), played the saxophone and sang in swing bands. The gigs helped him pay for school, and he considered a career in music, until the day he saw a Pennsylvania orchestra. "They had the local barber as vocalist; his name was Perry Como," Holt recalled. He decided he couldn't compete with talent like that and went on to become a leader in pediatric radiology, helping to establish the field. He trained hundreds of radiologists during his 40-year career at U-M and was beloved by his colleagues, who, after his death in 1996, began contributing toward a professorship in his name. The John F. Holt Collegiate Professorship in Radiology was inaugurated in 2004.

Source: U-M Department of Radiology

**"Radiologists are part of the care team — and in many cases a very pivotal part … but patients have very little opportunity to actually meet a radiologist. … I think radiology increasingly recognizes it needs to be a patient- and family-centered discipline.**

# 13

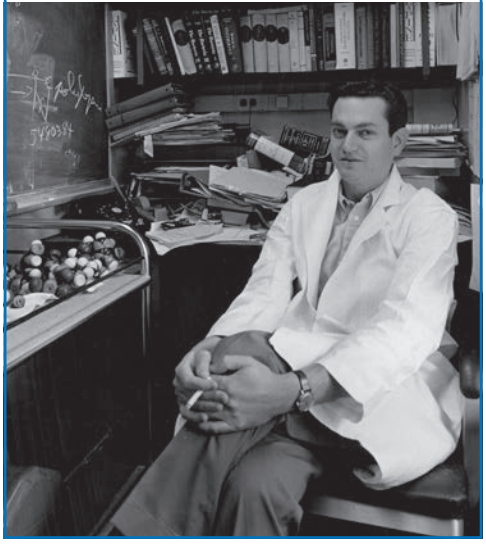
**Ella Kazerooni** (M.D. 1988, Residency 1992), the Terry M. Silver, M.D., Collegiate Professor of Radiology and professor of internal medicine.

Source: "Why Radiologists Should Make Their Practice More Personal," Michigan Medicine Health Lab blog, November 2016

## Nobel winner 15

Two years after **Marshall Nirenberg** (Ph.D. 1957) finished his doctorate in biological chemistry, he began to study the relationships between DNA, RNA, and protein. Nirenberg replicated the cellular mechanism that translated the information contained in DNA into a protein, a process mediated by RNA. By 1966, Nirenberg had deciphered the 64 RNA three-letter code words (codons) for all 20 amino acids. The language of DNA and the code could now be expressed in a chart. In 1968, he shared the Nobel Prize with two competing scientists "for their interpretation of the genetic code and its function in protein synthesis."

Source: "Taking Home the Prize," *Michigan Alum.*



**"The AZT collaboration stimulated a lot of science, and laid the foundation for better drugs in the future. And it also provided patients with a measure of hope, at a time when there was none.**

## 14

**Samuel Broder** (M.D. 1970), who co-developed AZT, the first antiretroviral medication used to prevent and treat HIV/AIDS. Broder later served as director of the National Cancer Institute.

Source: Oral history interview with Samuel Broder, NIH

## 16

### PETITIONING THE SUPREME COURT FOR REPRODUCTIVE RIGHTS

Born in Coldwater, Michigan, **Allen Campbell Barnes**, M.D., completed his residency at the Medical School in the late 1930s. During his career at Johns Hopkins University, he became a well-known obstetrics and gynecology expert, seeking improvements in prenatal care and arguing that preventive medicine could lessen the risk of infant mortality. He was part of a group of academic leaders who petitioned the U.S. Supreme Court in 1965 to strike down the Connecticut law that prohibited the use of contraceptive devices by anyone, including married couples.

Source: Johns Hopkins Portrait Collection

## 17

### THE WOMEN'S RESEARCH CLUB

In the late 1800s, women had been refused entry into the Junior Research Club for younger teaching and research staff at the Medical School. **Lydia Maria DeWitt** (M.D. 1898), who had joined the faculty as a histology researcher and teacher after graduation, founded the Women's Research Club in 1902 and was elected the first president. The club provided an environment for women who conducted scientific research or were pursuing scientific studies to present and discuss their work.

Source: "Leaders and Best: Milestones in the history of women in medicine at U-M," Michigan Medicine

## 18

### NURSING GREAT

**Jo Anne Horsley,** Ph.D., was best known for the innovative Conduct and Utilization of Research in Nursing project. CURN, which Horsley co-led, may have been the first funded initiative aimed at bridging the gap between nursing research and clinical practice. The project is still cited today. She was proud to have graduated three times from U-M (B.S.N. 1962, M.S. 1968, Ph.D. 1971).

Source: Dignity Memorial obituary



Photo of Nirenberg: National Institutes of Health, 1962

# Building a future for families

# 19

"To be with your child all day and night, have your own bathroom, be in the room, was overwhelming to parents who need every little reinforcement you can give. In the old facility, they were packed three or four in a room, so they couldn't have privacy and couldn't sleep there with their baby. The new hospital was so well planned for the families," says **Edward Bove**, M.D. (Residency 1977 and 1979), reflecting on the completion of the University of Michigan Health C.S. Mott Children's Hospital and VonVoigtlander Women's Hospital building. Bove was named the inaugural chair of the Department of Cardiac Surgery in 2011, the year the building was completed, and he performed his 10,000th cardiac procedure there in 2012.

A renowned pediatric cardiology surgeon, Bove was instrumental in helping to improve the survival rates of children born with hypoplastic left heart syndrome. About 40 years ago, there were no surgical options. The early days of refining surgical procedures for this condition were heartbreaking for Bove, as very few children survived. One child made it a year but died a month after a second surgery. "I was ready to quit," Bove says. "But I got a letter from that child's mom and dad thanking me for the nearly one year they had with their child, and [they] told me to keep trying, to not give up. It was very emotional, and I never forgot that." In 2021, C.S. Mott Children's Hospital reported a 97% survival rate. "You don't operate on a baby. You operate on a family. I can't ever tell you what that feeling is like."

Bove with a patient at Michigan Medicine.

Sources: *Medicine at Michigan*, Winter 2022; "A reflection on congenital heart disease care," Michigan Medicine Health Lab blog, December 2021.

Photo of Mott/Von Voigtlander building: Chris Hedly, Michigan Medicine, Regents of the University of Michigan

**“There’s a lot of positive tech for kids out there, but algorithms are amplifying the garbage. Platforms elevate the most ‘engaging’ media, amplifying the apps and videos engineered to keep kids’ attention for longer.**

## 20

**Jenny Radesky**, M.D., the David G. Dickinson Collegiate Professor of Pediatrics, was quoted in CNN in 2021, when the pandemic was making it harder for parents to manage their children’s screen time. Radesky has been a major voice in the national conversation on the ways tech companies have manipulated children, and she has advocated for child-centered media and laws that put the onus on tech companies to protect kids.

Source: CNN

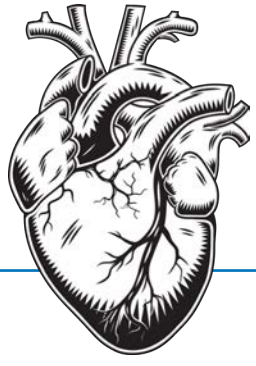
## 99

## 21

### X-RAY VISION

**James Gerrit Van Zwaluwenburg** (M.D. 1908) worked as a metallurgical chemist for five years to afford medical school. He went on to become U-M’s first radiologist. Van Zwaluwenburg was an early adopter of X-ray technology, and he made imaging an integral element of clinical diagnoses and patient care at U-M.

Source: *Medicine at Michigan*, Winter 2019



FIRSTS

### Open-heart surgery

## 22

**Herbert Sloan**, M.D. (Residency 1949), was a major leader in thoracic and cardiovascular surgery. While on faculty at the Medical School, he performed the first successful open-heart surgery in the state of Michigan in 1956, and he was first to perform the challenging procedure on an infant in 1960.

Source: *Ann Arbor News* obituary

## 23

### THE BEAUTY OF BIOLOGY

**Deborah L. Gumucio** (Ph.D. 1986) is professor emerita of cell and developmental biology and of internal medicine. Her lab helped identify MEFV, the gene for familial Mediterranean fever, the first autoinflammatory disease gene to be cloned. Gumucio also co-founded BioArtography, a program now housed at the University of Notre Dame in which vividly colored images of cells and tissues are sold to benefit trainee travel and educate the public about scientific discovery.

Source: *Medicine at Michigan*, Fall 2020

## 24

### UROLOGY LEGACY

In 1930, **Reed M. Nesbit**, M.D., became head of urology at the Medical School, a position he held for 37 years. During his tenure, he achieved national and international recognition for his work in endoscopic surgery to treat prostatic disease. In 1957 he established a hemodialysis unit at University Hospital, which was unusual for being run by surgeons and not internists. Nesbit became president of the American College of Surgeons in 1967, the first urologist to hold that position. He trained more than 80 residents, at least 18 of whom became chiefs of urology at medical schools in the U.S. and abroad. In 1972, faculty and residents who worked with Nesbit founded the Reed M. Nesbit Urologic Society. In 2007, the Reed M. Nesbit Professorship in Urology was established at U-M in his honor.

Source: U-M Department of Urology

Neurons created by reprogramming the skin cells of a patient with bipolar disorder. The green sections are neuron cell bodies, and the red and purple sections are neurites, which form a network to relay chemical signals between neurons. Image by Cynthia DeLong, Ph.D., a research lab specialist in the Department of Cell and Developmental Biology.

**“Most of the time, certainly in the physician population, depression is due to the toxic system and working excessive, and sometimes inhumane, hours. [Interns are] not more vulnerable people, but they’ve gone from living a normal life to working 80 hours a week and not sleeping enough.**

## 25

**Srijan Sen** (M.D. and Ph.D. 2005) is director of the Frances and Kenneth Eisenberg and Family Depression Center and director of the Intern Health Study, which is investigating the interplay of genes and stress in the development of depression.

Source: *Medicine at Michigan*, Summer 2024

**99**

## 26

### POETIC ADVOCACY

**Sarah Gertrude “Gertie” Banks** (M.D. 1873) was part of the second group of women to graduate from the Medical School. Only the second female physician in Detroit, Banks cared for many prominent families and citizens, including Clara Ford, a businesswoman and the wife of Henry Ford. Her patients also included the poorest of Detroit’s women and children. She founded the Free Dispensary for Women and Children at the Women’s Hospital and Foundling’s Home and was a patron of Detroit’s first free playground for children. Banks also fought for women’s suffrage alongside her friend, Susan B. Anthony. For Anthony’s 85th birthday in 1905, Banks wrote her a poem, which included this stanza:

> *Thou has sacrificed for women*
> *saintly, borne the taunts of man,*
> *thus, to free thy sisters, Susan —*
> *from tradition’s bitter brand.*

Source: *Medicine at Michigan*, Summer 2019

## Cardiology legend 27

**Albion Walter Hewlett**, a founding father of cardiology, was the Medical School’s chief of medicine from 1908–1916. He made important contributions to our understanding of cardiac arrhythmias and their pharmacological treatment. At the time of his arrival at Michigan, Hewlett was considered the best young clinician in the country. He also was a major proponent of making medical practice more scientific, believing that a good medical school could only be great with a strong integrated research program. He is credited with bringing the first electrocardiogram machine to U-M in 1913.

Sources: U-M Department of Internal Medicine; *Clinical Cardiology*, Volume 16, Issue 1



Photos: U-M Bentley Historical Library; Illustration: Petra Eriksson

# 28

## WAS THE MEDICINE ON "M*A*S*H" REALISTIC?

Though TV medical dramas have gotten more graphic since the 1970s, they haven't necessarily gotten more true to life. **Walter Dishell** (M.D. 1964) can vouch for that. For 11 years and more than 250 shows, Dishell served as medical advisor for "M*A*S*H," the immensely popular comedy-drama starring Alan Alda as Hawkeye.

As military and medicine aficionados know, "M*A*S*H" stands for mobile army surgical hospital, and producers of the show wanted to depict the medical reality of those battlefield situations. The show was set during the Korean War in the 1950s, which presented a challenge for Dishell to make sure the medicine was not too advanced. "I remember they wanted to do a story on cortisone, but I had to tell them that it hadn't been invented yet," Dishell recalls. He did a lot of research on 1950s medicine and even co-wrote an episode with Alda in 1979 about a patient in need of an aortic graft.

Source: *Medicine at Michigan*, Fall 1999

# 29

## A GOOD MOVE FOR OBSTETRICS AND GYNECOLOGY

When **Warren H. Pearse**, M.D. (Residency 1956), died, the American College of Obstetricians and Gynecologists (ACOG) mourned his passing with this statement: "As the Executive Director of ACOG for 18 years his contributions to our organization, the profession of obgyn, and the women we serve were countless. He engineered and executed ACOG's move to the Capitol in 1981 after determining that the organization needed to be closer to health care policy makers in Washington, D.C. Dr. Pearse was instrumental in procuring the land and oversaw the building of the headquarters. When he retired in 1993, the ACOG headquarters building was named the Warren H. Pearse Building in his honor."

Source: American College of Obstetrics and Gynecology

Dishell and Alda on the set of "M*A*S*H." Courtesy of Dishell.

# 30

## LEADER IN PHARMACOGENETICS

**Bert La Du** (M.D. 1945) was chair of pharmacology from 1974–1980. He was internationally recognized for his work in pharmacogenetics, the study of how genes affect a patient's response to medication. His research contributed to our understanding of the genetic variants of the serum cholinesterase enzymes in people who are unusually susceptible to the anesthetic succinylcholine. This genetic variant can cause prolonged paralysis and apnea.

Source: *Ann Arbor News* obituary

## HOMEOPATHIC SCHOOL

**The state legislature tried to pressure the Medical School to hire a professor of homeopathy in the 1860s, but they refused. The Regents were compelled to open a homeopathic school when the legislature made an appropriation contingent upon it in 1973. The school existed from 1875–1922. This photo is of the Homeopathic School Nose & Throat Clinic.**

Photo: U-M Bentley Historical Library

# 31 Pandemic voice of reason

At the beginning of the COVID-19 pandemic, "people wanted information," says **Preeti Malani**, M.D., M.S.J. (Residency 1998, Fellowship 2000). But that was hard to come by. "What you knew in the morning was different in the afternoon. And that was different in the evening."

As chief health officer of the University of Michigan at the time, Malani had the daunting task of keeping the campus safe and communicating the latest information.

"As a Michigan grad, in some ways I was made for that moment. You learned resilience at every stage of your education and training," says Malani, who is now professor of internal medicine and special advisor to the president of U-M. As an undergrad at U-M, she created a major for herself in medical journalism and also majored in communications. Add to that a master's in journalism and her expertise in infectious disease, and you've got a person uniquely well suited to meet the needs of 2020.

Malani had to communicate important health information quickly, clearly, and without creating any undue anxiety. She also reminded people that COVID-19 was not the only risk to consider — for example, the risk of loneliness experienced by an elderly relative if no one visits.

She was the voice of reason — and reassurance — for many people at that turbulent time, appearing frequently on Michigan Radio (now Michigan Public), being quoted in most of the major national news sources, and even writing an article for the *New York Times* on managing pandemic health risks on college campuses. (The journalist in her is particularly proud of the latter.)

To keep herself grounded, she took nature walks with friends and colleagues — and her family's pandemic puppy, Sully — meeting neighbors and discovering beauty she hadn't noticed before.

"There was this shared trauma of that time for people," she says. "But, especially early on, there was also understanding, forgiveness, and kindness." And there were many losses, from lost lives to lost ways of living. "It's emotional to think about it, even five years later. We're still grieving those losses."

*—Katie Whitney*



Photo: Leisa Thompson, Michigan Photography

# 32

## A VISIONARY IN MEDICAL GENETICS

After graduating from the Medical School, **Harold Falls** (M.D. 1936, Residency 1942) spent his entire career at U-M where, in 1941, he helped found the U-M Heredity Clinic — the first of its kind in the country. He began investigating the links between heredity and eye diseases such as retinitis pigmentosa and retinoblastoma, which laid the foundation for modern ophthalmic genetics.

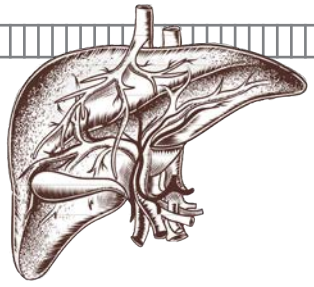
Source: *University Record*, History of Vision Research at the University of Michigan

# 33

## COOLEY'S ANEMIA

**Thomas B. Cooley** (M.D. 1895) was a pediatrician and hematologist who began serving as the city of Detroit's first pediatrician in 1905. As the medical director of the Babies' Milk Fund, Cooley helped to reduce Detroit's high infant mortality rate. During World War I, Cooley led several projects in France to help children orphaned by war as part of his work as the assistant chief of the Children's Bureau of the American Red Cross. He is perhaps best known for discovering a form of childhood anemia that once carried his name. Cooley's anemia — now known as beta thalassemia — is a rare inherited blood disorder that he first identified in 1925 while working at the Children's Hospital of Michigan.

Source: Cooley's Anemia Foundation



# 34

## RENOWNED HEPATOLOGIST

In his youth, **Carroll Moton Leevy** (M.D. 1944) worked at his parents' mortuary business, where he noticed many deaths of Black people were due to inadequate health care. In 1942, President Franklin D. Roosevelt appointed him to the National Youth Administration's advisory committee, created to document inadequacies in education and health care due to racial prejudice. Leevy was barred from attending medical school in his home state of South Carolina because he was Black, so he came to U-M. He spent much of his renowned career in hepatology at the New Jersey Medical School (which has since been dissolved), and his work contributed significantly to our understanding of the basic functions of the liver.

Source: South Carolina Encyclopedia

# 35

## IDENTIFYING GENETIC MARKERS OF DISEASE

**Karen L. Mohlke** (Ph.D. 1996, postdoctoral training 1998) is professor and associate chair for research in the Department of Genetics at the University of North Carolina at Chapel Hill. Mohlke's research focuses on the human genetic basis of common metabolic diseases, including type 2 diabetes, obesity, dyslipidemia, and cardiovascular disease, as well as their related quantitative traits. Her research identifies and characterizes the effects of genetic variants on genes and disease-relevant cell functions. She has published more than 250 papers that have been cited more than 100,000 times, and her research has been continuously funded by the National Institutes of Health for 20 years.

Source: Michigan Medicine Alumni Society Distinguished Alumni Awardees

**"Clinically, this is its own virus. It's not the flu. It's not SARS. It's something different … It's more serious than the flu.**

# 36

**H. Clifford Lane** (M.D. 1976, Residency 1979) spoke to *Science* magazine in March 2020. At the time, he was Anthony Fauci's deputy at the National Institute of Allergy and Infectious Diseases and had just returned from a trip to China to see how they were handling the COVID-19 outbreak.

Source: "Quarantined at home now, U.S. scientist describes his visit to China's hot zone," *Science*, March 6, 2020.

“I liked science and I liked helping people. The only career I could think of that combined the two was medicine.

## 37

**George Zuidema**, M.D., told an interviewer in 1994. Early in his career, Zuidema worked for the U.S. Air Force, where his work on gravitational stress was later used in NASA’s Apollo program. He was director of the section of surgical sciences at Johns Hopkins for 20 years before becoming the executive vice provost for medical affairs at U-M, where he helped combine the Medical School and clinical enterprise into an integrated health system. During his 10-year tenure at U-M, he oversaw the establishment of cancer and geriatric centers, many outpatient clinics, and a marked expansion of research facilities.

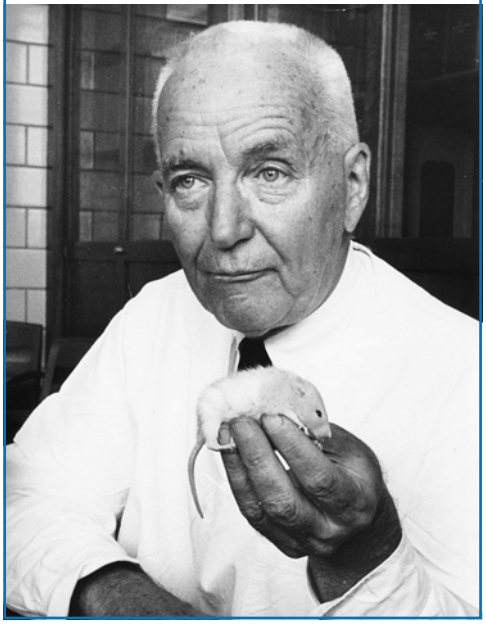
Sources: Obituaries from Johns Hopkins Medicine and *Medicine at Michigan*, Fall 2020

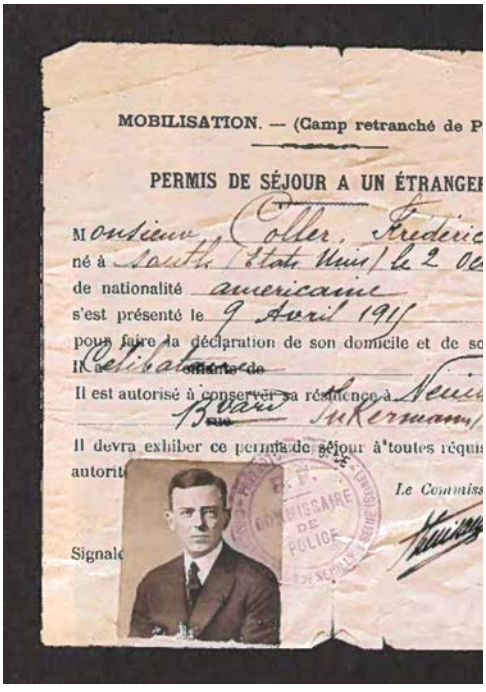
”

## Nobel winner 38

Born in Halifax, Nova Scotia, in 1901, **Charles Brenton Huggins** came to the U.S. for medical school, earning an M.D. at Harvard University in 1924. He then did a residency in surgery at U-M with Frederick Coller (see “A surgeon at war,” right). During his research career at the University of Chicago Medical School, he investigated how sex hormones influence prostate function, eventually discovering hormone therapies to treat prostate cancer. For this discovery, he received the 1966 Nobel Prize for Physiology or Medicine.

Source: University of Chicago obituary






## 39

### A SURGEON AT WAR

Before the U.S. entered World War I, American physicians volunteered to care for soldiers in French and English hospitals. **Frederick A. Coller**, M.D., first volunteered as a member of the Harvard Medical Unit. He served in France and England, and later as a member of the U.S. Army during the last stages of the war. Coller documented his service in albums filled with the photographs and mementos he collected.

In 1920, Coller became a professor of surgery at U-M. His work achieved such prominence in the world of surgery that his students created the Frederick A. Coller Surgical Society, which now has about 200 members from across the U.S. and internationally.

Sources: *Medicine at Michigan*, Fall 2016; Frederick A. Coller Society



Images: photo of Huggins, Getty Images; Coller’s travel document, U-M Bentley Historical Society

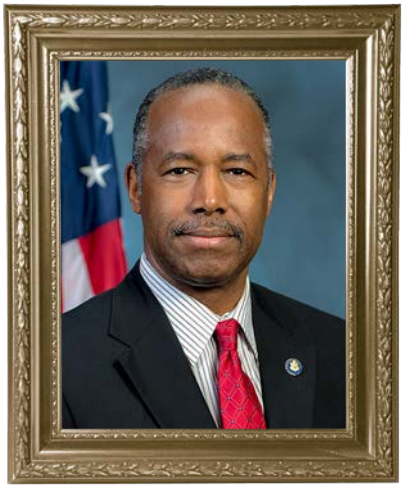
FIRSTS

## Pioneering pediatric neurosurgeon

# 40

In 1987, **Ben Carson** (M.D. 1977) led a team of surgeons in the first-known successful separation of conjoined twins. In 2008, he received the nation's highest civilian award, the Presidential Medal of Freedom. He served as the 17th U.S. Secretary of Housing and Urban Development from 2017–2021.

Source: *JHU Gazette*, June 23, 2008



# 41

## NITRIC OXIDE: TOXIC OR ESSENTIAL?

Once upon a time, the toxic gas nitric oxide was not believed to be produced by mammals; it was better known as an ingredient of cigarette smoke and smog. But **Michael Marletta**, Ph.D., who was the John G. Searle Professor of Medicinal Chemistry at the Medical School from 1987–2001, discovered that it plays an important role in the human immune system. Thanks in part to Marletta's research, nitric oxide is now known to be involved in a wide range of physiological processes in humans and animals. It helps regulate blood pressure, mediates the ability of nitroglycerine to alleviate the effects of angina, and influences the immune defense system. Marletta's findings have influenced the treatment of toxic shock syndrome, inflammation, and carcinogenesis — and earned him a MacArthur "genius grant."

Sources: MacArthur Foundation; *Michigan Today*, Summer 1997

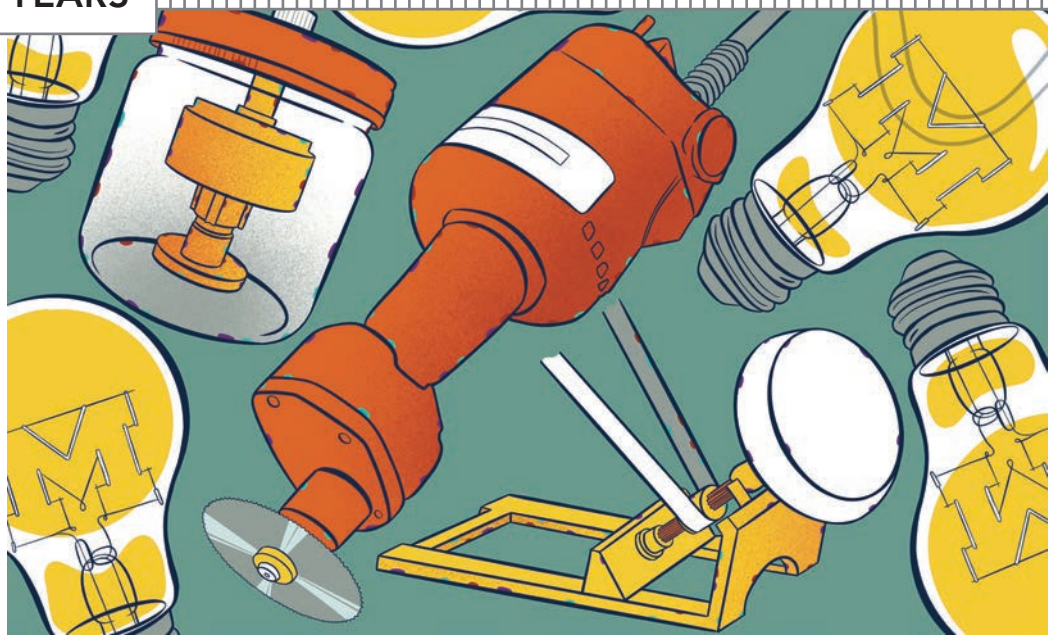
# 42

## DOCTOR, NEWSPAPER PUBLISHER, SCHOOL BOARD PRESIDENT

After graduating from the Medical School, **Emma E. Bower** (M.D. 1883) moved to Detroit to practice medicine. An illness in the family led to her return to Ann Arbor and to U-M hospital. In addition to her work as a physician, Bower became one of the state's first female newspaper editors as the editor and publisher of the *Ann Arbor Democrat*. Bower was a prominent suffragist and served on the Ann Arbor School Board decades before women could vote. She also held leadership roles in the Ladies of the Maccabees, the first fraternal organization operated exclusively by women.

Source: "Emma E. Bower: A Woman of Her Own Ideas," Ann Arbor District Library

Photo of Carson: U.S. Department of Housing and Urban Development;
Photo of Bower: *Past and Present of Washtenaw County* by Samuel Willard Beakes



# Big ideas drive big changes in medicine

Inventions and innovations have a long history at Michigan Medicine, including the first hygienic laboratory (1887), the first department of bacteriology in the United States (1901), and, of course, the revolutionary ECMO system. Here are some of the noteworthy inventions by Medical School faculty and alumni.

## 43

### Dissolvable pills

**William Upjohn** (M.D. 1875) founded the Upjohn Pharmaceutical Company in Kalamazoo, Michigan, to manufacture friable pills — a type of dissolvable pill that he invented. He was president of the company for four decades.

Source: National Inventors Hall of Fame

## 44

### Oscillating electric saw

**Homer Stryker** (M.D. 1925) founded Stryker Corporation, whose medical technologies are ubiquitous throughout Michigan Medicine and other hospitals and health centers around the world. The oscillating electric saw, used for the removal of casts, is considered by many to be his most important invention.

Source: "The history of cutting blades," Stryker Corporation

## 45

### Vacuum-assisted closure

**Louis C. Argenta** (M.D. 1969, Residencies 1977 and 1979) and colleagues at Wake Forest Baptist Medical Center designed a suction device in 1990 that would become known as vacuum-assisted closure, a common wound closure that minimizes hospitalization. Since it was first used in 1991, the negative-pressure wound closure technique has been used on millions of patients for diabetic ulcers, C-section wounds, burns, traumatic wounds, and more. While it is best known for its usage in adults, VAC has also been used in animals, including an injured Komodo dragon in Singapore.

Source: Wake Forest Baptist Medical Center

## 46

### Low-tech respirator

**Stephen John** (M.D. 2020) and Joseph Barnett, M.D., Ph.D., teamed up as undergrads at Western Michigan University after John asked one of the founders of Respiratory Therapists Without Borders if he knew of a problem that needed an engineering solution. He learned that inexpensive ventilators for premature babies could prevent countless deaths in the developing world. This led to their invention of NeoVent, a low-tech respirator for low-resource areas, which has since been validated in preclinical and clinical trials and is currently on the market treating infants in Africa and Asia. John is now a cardiology fellow at UTHealth Houston.

Source: "NeoVent: Global Low Cost, Low-Tech Respiratory Support for Infants," *Michigan Journal of Medicine*, April 2018

Illustration: Ananda Walden

# 47

## 3D printed airway splint

**Glenn Green** (M.D. 1991) still marvels that something as small as a thimble, something "made of dust," has saved and improved so many children's lives. Green, professor of otolaryngology-head and neck surgery, and then-colleague Scott Hollister, Ph.D., a biomechanical engineer now on the faculty of Georgia Tech, teamed up to create a bioresorbable human airway splint using a 3D printer. The first splint implantation was performed in 2012 on a patient with severe tracheobronchomalacia, a rare condition that caused his airway to collapse routinely. In March of this year, the 3D printing manufacturing company Materialise and Michigan Medicine announced they had entered a U.S. Food and Drug Administration pivotal clinical trial for the splint device.

Source: *Medicine at Michigan*, Fall 2018

# 48 & 49

## The spherocentric knee

Orthopaedic surgery professors **Herbert Kaufer** (M.D. 1959) and **Larry S. Matthews**, M.D. (Residency 1970) joined forces with engineering professor David Sonstegard, Ph.D., to develop and patent the "spherocentric" knee, one of the original total knee replacements. The knee was featured on the cover of *Scientific American* in 1978.

Source: "The Surgical Replacement of the Human Knee Joint," *Scientific American*, January 1978

# 50

## Military and COVID-19 inventions

**Kevin Ward**, M.D., professor of emergency medicine and biomedical engineering, has collaborated with the military on numerous inventions, including the military's major hemostatic bandage and a commonly used product to endoscopically control life-threatening gastrointestinal bleeding, saving thousands of lives. Early in the COVID-19 pandemic, Ward — director of the Weil Institute for Critical Care Research and Innovation — helped develop several personal-protective-equipment solutions at Michigan Medicine that used negative-pressure technology.

Source: "Kevin Ward named Distinguished University Innovator of the Year," *University Record*

# 51

## Extracorporeal membrane oxygenation (ECMO)

As a surgery resident in the 1960s, **Robert Bartlett** (M.D. 1965) had an idea to improve pediatric heart surgery. The heart-lung machine, a new device at the time, made the surgery possible, but if it was used for more than an hour it caused lethal blood damage. Bartlett, now professor emeritus of surgery, hypothesized that a membrane oxygenator would make it possible to circulate blood outside the body for days and could be applied to heart failure, lung failure, and chronic kidney failure. He was right — it's now standard practice to put patients with severe heart and lung failure who are not responding to conventional treatment on ECMO. It has also been used to treat thousands of the most severe cases of COVID-19.

Source: *Medicine at Michigan*, Fall 2024

# 52

## Histotripsy

In 2002, **Zhen Xu**, Ph.D., first began researching how to kill tumor cells non-invasively. The Li Ka Shing Professor of Biomedical Engineering spent two decades developing what is now known as histotripsy, a completely noninvasive way to destroy target tissue. Instead of traditional methods, histotripsy functions mechanically. Ultrasound waves are pinpointed inside the target tissue or a tumor to generate a cluster of microbubbles, which expand and contract repeatedly to adjacent cells. Eventually, the cell walls get destroyed. Because it's mechanical, the cell death is irreversible. In 2023, the FDA approved histotripsy to treat liver tumors.

Source: "Making the Impossible Possible," *Illuminate*, 2024

# 53

## Gastroduodenal fiberscope

**Basil Hirschowitz**, M.D. (Fellowship 1956) earned a medical degree in his home country of South Africa before spending some time in England and eventually moving to the U.S. He was briefly part of the faculty at the Medical School, where he developed an improved optical fiber that made it possible to create a useful flexible endoscope. The Hirschowitz gastroduodenal fiberscope revolutionized the field of gastroenterology, and his optical fiber technology has been used in multiple industries. A Hirschowitz gastroduodenal fiberscope is even part of the Smithsonian collection.

Source: Smithsonian American History Museum

**“Academic medicine involves teaching, research, and clinical care, each with its own joys and rewards. For me, infectious diseases was the most joyful and rewarding, especially at the VA, where I was able to teach students, residents, and fellows, work in my research lab, and care for truly wonderful patients.”**

# 54

**Carol Kauffman** (M.D. 1969, Residency 1971), professor emerita of internal medicine at U-M, who spent more than four decades as chief of infectious diseases at the Ann Arbor VA. Kauffman was presented with the Veterans Affairs Society of Practitioners of Infectious Diseases Lifetime Achievement Award in 2015.

Source: Michigan Medicine Office of Development

# 55

## Discovery opens new field of cancer research

How prostate cancer develops was a mystery that puzzled scientists for many years. But in 2005, **Arul Chinnaiyan** (M.D. and Ph.D. 1999) published an enlightening discovery. In the 2000s, he helped build a database that allows scientists to share their knowledge about genes and cancer. At the same time, he was studying prostate tumors. Comparing his data to that of the database, Chinnaiyan discovered that in about half of the patients with prostate cancer, there was a fusion gene, which forms when chromosomes break apart and two genes join together. This particular fusion resulted in male sex hormones causing extra cell growth, which can lead to prostate cancer.

Chinnaiyan’s discovery opened a new field of research where scientists are now looking for fusion genes in other cancers. This has already led to a new treatment for lung cancer. For prostate cancer, the discovery has been a game-changer in early diagnosis, which can now be done with a urine sample.

In 2022, Chinnaiyan (below, center), who is the S.P. Hicks Professor of Pathology, and professor of urology, received the prestigious Sjöberg Prize for this work.

Source: “Sjöberg Prize 2022” YouTube video, Royal Swedish Academy of Sciences

# 56

## DEAN OF WOMEN

**Eliza Mosher** (M.D. 1875) graduated from the U-M Medical School only five years after the school opened its enrollment to women. In the 1890s, she was working as a physician in New York when then U-M president James Burrill Angell appointed her to be a professor of hygiene and the first dean of women. In her role, she acted as liaison to the 600 women at the university at a time when they were far outnumbered by male students. Mosher was the first female faculty member at the Medical School.

Source: “A Dangerous Experiment: Women at the University of Michigan,” U-M College of Literature, Science, and the Arts



Photo of Chinnaiyan Lab: Michigan Photography; photo of Mosher in 1925: U-M Bentley Historical Library

FIRSTS

## Hockey and neurosurgery pioneer

**57**

In January 1923, **Edgar "Eddie" Kahn** (M.D. 1924) scored the first goal in the U-M hockey program's 102-year history. He also was a pioneer in neurosurgery and served as chief of the neurosurgery department at U-M for 22 years.

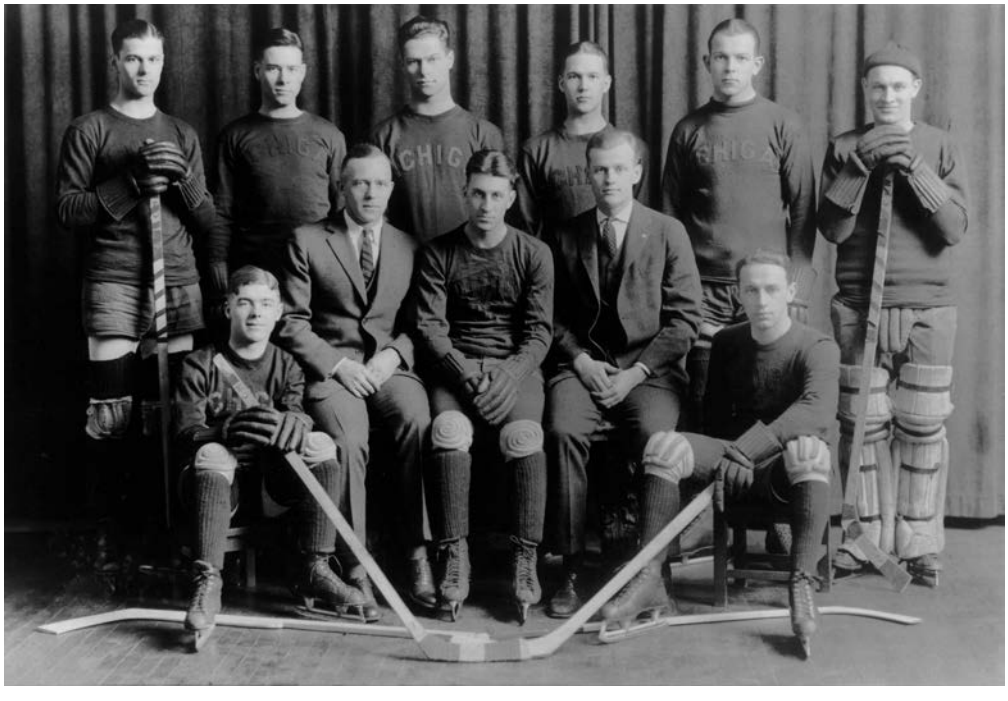
Source: "He shoots, he scores!," *Michigan Today*, February 18, 2013

# 58

## SPORTS NEUROLOGIST

**Jeffrey Kutcher**, M.D. (Residency 2002), is an internationally recognized neurologist who specializes in diagnosing and managing concussions, post-concussion syndrome, and other neurological conditions in athletes. Prior to starting the Kutcher Clinic for Sports Neurology, Kutcher was the team neurologist for Michigan Athletics. He founded and directed the U-M NeuroSport Program, and established a sports neurology fellowship at U-M in 2012. He is the team physician for U.S. Ski and Snowboard, traveling with the team to the Olympic Games in 2014, 2018, and 2022. He is director of the NBA concussion program and has helped develop concussion policies for the NCAA.

Source: kutcherclinic.com



**Team captain Eddie Kahn sits front and center in this 1924 photo of the U-M hockey team.**

Photo of U-M Hockey team: U-M Bentley Historical Library

"**The inaugural Inteflex class of 1972 was propelled from high school to residency via a unique and accelerated transformative process that forever changed our lives and careers by focusing on patient-centered care in a collaborative way without the distractions of a competitive environment to successfully reach the next milestone. I will be forever thankful for Inteflex. Go Blue!**

# 59

**Richard Paul Bonfiglio** (M.D. 1978) is a physical medicine and rehabilitation specialist who was part of Inteflex, an alternative six-year curriculum that blended undergraduate and medical classes with clinical clerkship. Students earned both a bachelor's degree and an M.D. The program was intended to train more humane doctors. Inteflex officially ended in 2002, but Bonfiglio still feels the positive effects of his education. "The greatest joy in medicine is a lifetime of sharing miracles with those that we serve," he said in 2022.

Sources: *Medicine at Michigan*, Winter 2022 and Winter 2023

"

Surgery and anatomy class, circa 1890s. On the far right is James Fleming Breakey (M.D. 1894), the second of five Breakeys to graduate from the Medical School.

# 60 A dynasty of doctors, all at one university

From an early age, **Robert Breakey** (M.D. 1981) remembers hearing captivating stories about the exploits of his illustrious ancestors, the "Breakey Boys." Four successive generations of Breakeys had earned degrees from the Medical School before Robert, starting with his great great grandfather, **William Fleming Breakey** (M.D. 1859). In wartime, Breakey doctors risked injury and death to care for the sick and wounded on the battlefields and front lines of the Civil War, Spanish-American War, and World War I. They also served their country in the military during World War II and the Korean War. In peacetime, the Breakey Boys ushered the practice and pedagogy of medicine into contemporary times by pioneering new medical specialties and modernizing the curriculum and teaching methods at U-M. The other Breakey Boys include **James Fleming Breakey** (M.D. 1894), **Robert Stevens Breakey** (M.D. 1924), and **Barry Austin Breakey** (M.D. 1953).

Source: "The Breakey Boys," *Michigan Today*



Photo: U-M Bentley Historical Library

Karin Muraszko, M.D.

# 61

## PATHOLOGY LEADER

After graduating cum laude from the Medical School, **Gerald Abrams** (M.D. 1955) continued at U-M, completing his internship and residency in pathology before being appointed to the faculty in 1959. Abrams left for two years of military service before returning to spend his entire career in the Department of Pathology. He became an expert in both gastrointestinal and cardiovascular pathology. A devoted teacher and mentor, Abrams contributed to the education of nearly 10,000 graduates of the Medical School. In 2014, the Department of Pathology established the Gerald D. Abrams Collegiate Professorship through donations made by former medical students and residents in honor of his teaching career.

Source: Obituary from the Department of Pathology

# 62

## BIOCHEMIST, ROSE GROWER, AND … SLEUTH?

During his 42-year career at the Medical School, **Adam Christman**, Ph.D., conducted pioneering medical research that helped solve multiple criminal cases. One of Christman's major achievements was developing a carbon monoxide detection method. In 1936, a young woman named Bernice Blank died after a fire in her home. Forensic pathologists, using Christman's method, discovered that Blank was dead before the fire ever started — a clear indication that she had been murdered. Her husband was convicted of the crime. Outside the lab, Christman was an award-winning gardener who was known to many simply as "the man who grows roses."

Source: Ann Arbor District Library

**"Empowering women, for me, is about opening up doors and providing opportunities for women to succeed. Talent comes in many shapes, sizes, and colors. It is not defined by gender or race but rather by mind and soul. I seek to empower all people to create dreams and then to be able to reach for their dreams.**

# 63

**Karin Muraszko**, M.D., professor of neurosurgery and former chair of the department, was the first woman to head a neurosurgery department at any medical school in the U.S. She has spina bifida and has also been an advocate for accessibility, especially in the design of the new University of Michigan Health D. Dan and Betty Kahn Health Care Pavilion. "You won't get to the front desk in a wheelchair and find yourself incapable of seeing someone easily," Muraszko says.

Sources: Michigan Medicine social media; The Society of Neurological Surgeons; *Medicine at Michigan*, Winter 2023

Photo of Muraszko: Erica Bass, Michigan Photography

**In 1978, the Board of Regents approved a plan to build a new general adult hospital with an adjoining outpatient facility on the bluff overlooking the Huron River. The massive facility won funding from the state of Michigan as well as donors led by A. Alfred Taubman. The outpatient building was named in his honor. On Valentine's Day 1986, staff and students rolled patients in their beds from Old Main into the new University Hospital.**

Source: "From the Diag to the world: 175 years of U-M medical history," Michigan Medicine

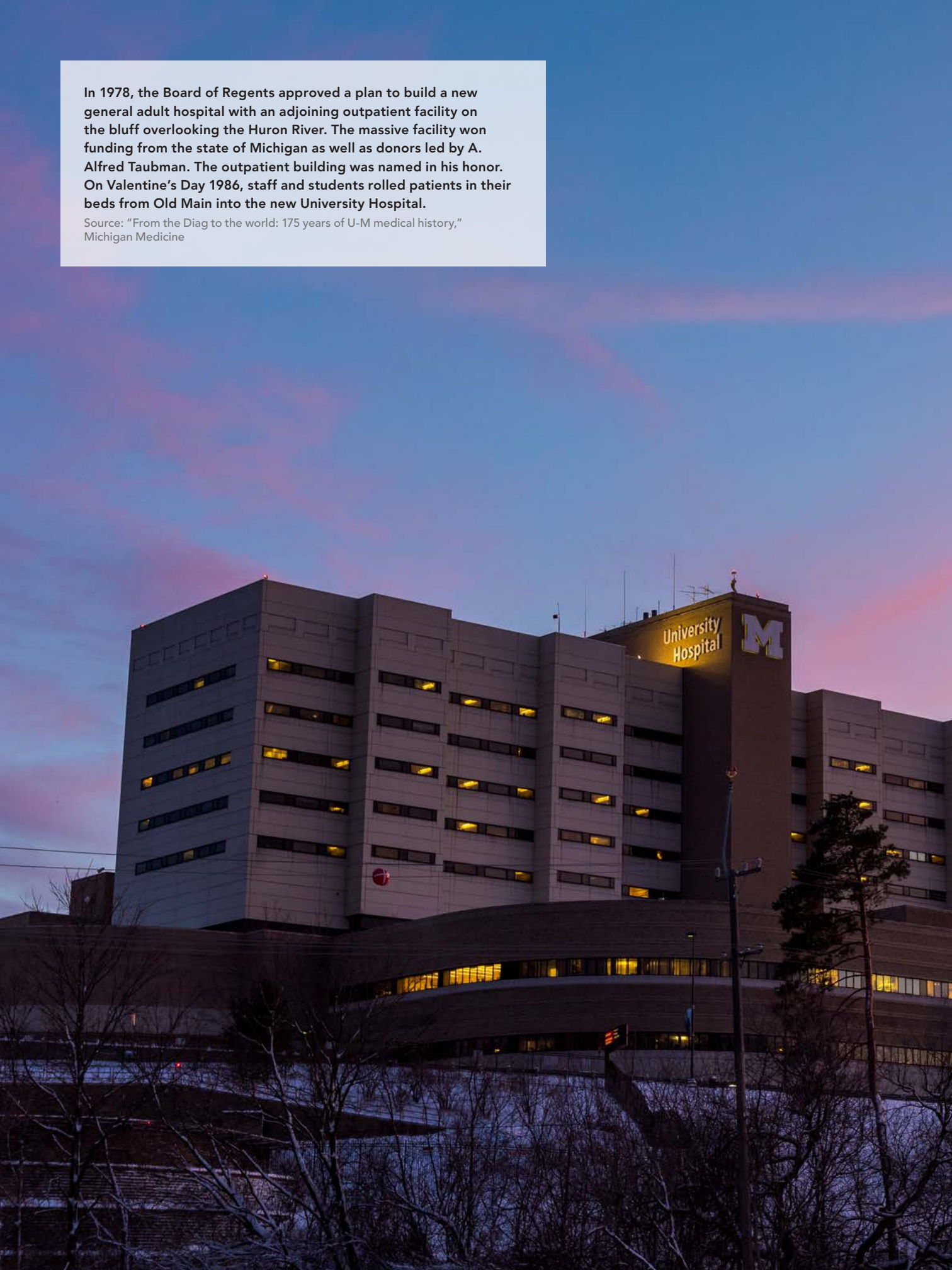


Photo: Daryl Marshke, Michigan Photography, 2016

**Every human deserves an advocate. But women — and particularly women during their reproductive journeys — most certainly deserve advocates and voices of support. Many pregnancies are profoundly complicated, and those women and families deserve providers who walk that walk with them, hold their hands, and have the medical knowledge and skills to help them through whatever they may need. And that is who and what I wanted to be.**

# 64

**Deborah Berman** (M.D. 1999, Residency 2003, Fellowship 2010), is professor of obstetrics and gynecology in the division of maternal fetal medicine. She leads the Perinatal Wellbeing Program at University of Michigan Health Von Voigtlander Women's Hospital. The program is the first of its kind in the nation to offer evidence-based music therapy in addition to other services tailored to the needs of pregnant people.

Sources: *Medicine at Michigan*, Summer 2019; *Medicine at Michigan*, Fall 2024

# 99

# 65

## National Medal of Science winner

Former President Joe Biden awarded **Huda Akil**, Ph.D., the National Medal of Science in 2023. Akil is the Gardner C. Quarton Distinguished University Professor of Neurosciences at U-M, and she received the nation's highest scientific honor for her groundbreaking research investigating the genetic, environmental, and developmental factors that shape the risk of mental health disorders.

Source: *Medicine at Michigan*, Spring 2025

# 66

## ATOMIC ENERGY LEADER

**John C. Bugher** (M.D. 1929, M.S. 1931) worked for the U.S. Atomic Energy Commission from 1951–1955. He helped test fission and thermonuclear devices, leading to improved weapons, and his work contributed to developments in uses of atomic energy in the medical field. Bugher attended the First International Conference on the Peaceful Uses of Atomic Energy in Geneva, Switzerland, in 1955 as an official advisor to the U.S. delegation.

Source: Rockefeller Archive Center

# 67

## TYPE 2 DIABETES DISCOVERY

In 1958, **Stefan S. Fajans** (M.D. 1942), then a professor of internal medicine in the division of metabolism, endocrinology, and diabetes, began studying a Michigan family with more than 360 members spanning seven generations. That family, which became known as the "R-W pedigree," included 74 members with a form of non-insulin–dependent diabetes. However, the disease appeared unusually early in this family — it was diagnosed in children and adolescents, unlike the usual onset of type 2 diabetes after age 40. Fajans' study of this family, as well as others, led him to name this subtype of type 2 diabetes as Maturity Onset Diabetes of the Young (MODY) in 1964. This form of diabetes appears in approximately 50% of each successive generation and is due to a mutation of a single gene. Fajans co-published the first paper to describe a genetic marker of MODY and the gene itself.

Source: *University Record* obituary; U-M Medical School biography

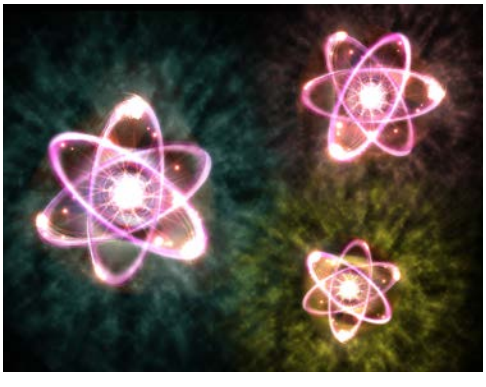


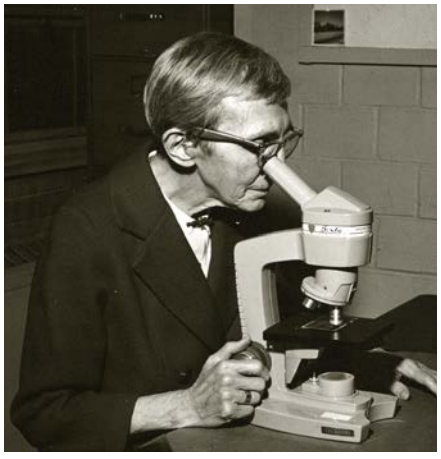


Photo of Fajans: U-M Bentley Historical Library

FIRSTS

# 68

## Comparative neuroanatomy genius



**Elizabeth Crosby** attended the University of Chicago, where she earned her Ph.D. in neuroanatomy in 1915. For her thesis, titled "The forebrain of Alligator mississippiensis," she meticulously dissected the brain of an alligator and drew what she saw. The work remains important today.

In 1918, Crosby became the first woman to become a full professor at the Medical School. She also was the first woman to give the Henry Russel Lecture, the highest honor given to U-M senior faculty. Crosby was a renowned scientist who researched comparative neuroanatomy, which compared vertebrates to discover how the human brain evolved and functions. President Jimmy Carter awarded her the National Medal of Science in 1980 for her groundbreaking research in this field. At U-M, the Elizabeth Crosby Award has honored students and faculty for their excellence in the basic sciences since 1957.

Source: U-M College of Literature, Science, and the Arts; *Medicine at Michigan*, Winter 2022

# 69

## NEUROSURGERY COLLABORATIONS

During World War II, **Richard Schneider**, M.D. (Residency 1948) served in North Africa, Italy, and France on the neurosurgical service of the 36th General Hospital. After the war, Schneider finished his training at U-M and joined the faculty in 1950. He became internationally recognized for his work with brain and spinal cord trauma and was the first to describe a number of clinical syndromes of partial spinal cord injury. Collaborating with Elizabeth Crosby, Ph.D. (see above), he was able to describe in detail the anatomic alterations in these clinical syndromes. Together they authored numerous landmark papers and the classic textbook *Correlative Neurosurgery*. Schneider made major contributions to the field of head protection, and many of his concepts translated into better helmets for various sports.

Source: History of the U-M Department of Neurosurgery

# 70

## A SCHOLARLY NEUROLOGIST

While he was chair of the U-M Department of Neurology from 1950 to 1977, **Russell Nelson DeJong** (M.D. 1932) expanded the department and helped make neurology a major specialty. He authored more than 200 publications, including *The Neurologic Examination*, based on lectures he had given to medical students. He was one of the founders of the American Academy of Neurology and served as the first editor-in-chief of its journal, *Neurology*.

Source: U-M Department of Neurology; *Journal of the History of Neuroscience*

**"I never touch the brain. It's sacred. … The whole goal is to extract the tumor without disturbing the normal brain. It's as if the brain is asleep and you want to sneak in and remove the tumor and never wake the brain up.**

# 71

**Keith Black** (M.D. 1981, Residency 1987), a renowned neurosurgeon at Cedars-Sinai Medical Center, was quoted in *TIME* magazine in 1997. He appeared on the cover of that issue, which was devoted to "Heroes of Medicine." In addition to performing about 250 brain surgeries a year, Black is also known for his discovery that the peptide bradykinin can be effective in opening the blood-brain barrier.

Sources: *TIME*, October 1997; *Discover*, April 2004

Photos of Crosby and Schneider: U-M Bentley Historical Library; photo of Black: courtesy of Cedars-Sinai

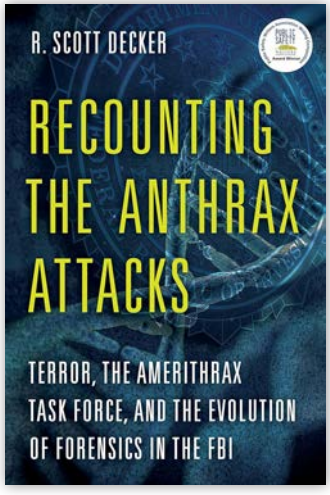
# 74

**Mother of industrial health**

"When I talked to my medical friends about the strange silence on [industrial medicine] in American medical magazines and textbooks, I gained the impression that here was a subject tainted with Socialism or with feminine sentimentality for the poor," said **Alice Hamilton** (M.D. 1893). "The American Medical Association had never had a meeting devoted to this subject, and except for a few surgeons attached to large companies operating steel mills, or railways, or coal mines, there were no medical men in Illinois who specialized in the field of industrial medicine."

Hamilton was a leading expert in the field of occupational health who laid the foundation for industrial safety standards. While working as a professor at Northwestern University, she volunteered to help people in poverty access medical care at Hull House in Chicago. There, she noticed a pattern in the illnesses of the people she helped: their workplaces. Hamilton began investigating the health impacts of lead, carbon monoxide, phosphorous, and other hazardous chemicals that were being used in factories. Her research led to laws protecting the health of workers in the U.S. In 1919, Hamilton became the first woman to join the faculty at Harvard University.

Source: U-M Bentley Historical Library; *Exploring the Dangerous Trades: The Autobiography of Alice Hamilton, M.D.* (Northeastern University Press, 1985).




# 73

## THE HUNT FOR A BIOTERRORIST

A Senate intern opened the letter on October 15, 2001, and white powder slipped out of the envelope, cascading over her dark skirt and shoes. She stood very still and said quietly, "I have a problem."

This and other anthrax-laden letters confirmed what the whole country had been fearing: After the 9/11 attacks, there was now another threat looming in the form of bioterrorism. The FBI created the Anthrax Task Force, and FBI supervisory special agent **R. Scott Decker** (Ph.D. 1982), fresh from leading a team of hazmat specialists at Ground Zero, was assigned to it.

Decker and his team requested anthrax samples from labs across the country, painstakingly working to match the DNA of the attack spores. They discovered a match to a flask of liquid anthrax in a lab in Fort Detrick, Maryland. But who had access to the liquid, and who had the expertise to dry it into a powder and mail it, were still unknowns. The team eventually identified a strong suspect, but he died by suicide in 2008, preventing the case from going to trial. Still, the work Decker and his team did created a robust process for investigating future bioterrorism threats and earned them the FBI Director's Award for Outstanding Scientific Advancement in 2009.

Source: *Medicine at Michigan*, Fall 2018

**"Without my instruction at U-M it would have been impossible for me to do my bit in serving my fellow beings. The uplifting and broadening influence [was] greater than would be possible in other schools for women.**

# 72

**Susan Anderson** (M.D. 1897), a.k.a. **"Doc Susie,"** was a physician who practiced in a Colorado gold rush town. She helped pay for medical school by working at the Catherine Street Hospital (an old U-M hospital building), where she may have contracted tuberculosis.

Source: *Medicine at Michigan*, Spring/Summer 2014



Photo of Hamilton: U-M Bentley Historical Library

FIRSTS

# 75 & 76

## First Asian female graduates

In 1892, two young Chinese women arrived at U-M to begin their medical studies. They used English names and wore Western clothing during their time in medical school: **Shi Meiyu** became Mary Stone (above) and **Kang Cheng** became Ida Kahn (right). But at their graduation ceremony in 1896, they wore traditional Chinese attire to symbolize their commitment to return to China and blend the medical cultures of the two nations. They were among the first women physicians in China, and both went on to direct hospitals in major cities.

Source: *Medicine at Michigan*, Fall 2010

# 77

## A GIANT IN NEUROSCIENCE

**Bernard William Agranoff**, M.D., directed the Mental Health Research Institute (now the Michigan Neuroscience Institute) at U-M from 1983–1995. He studied the biochemistry of the brain and was the first to show that memory requires protein synthesis. He made numerous other seminal discoveries and foresaw the importance of neuroimaging in understanding brain disorders, helping to establish a PET facility at U-M.

Source: Michigan Neuroscience Institute

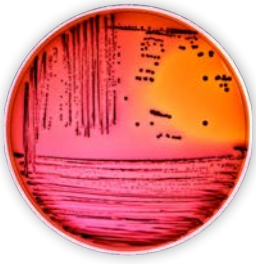
# 78

## ELECTROCARDIOGRAPHY PIONEER

Our modern understanding of the electrocardiogram is thanks, in large part, to the work of **Frank N. Wilson** (M.D. 1913), who spent his career in cardiology at U-M. He is responsible for developing nine of the 12 leads that are still used in ECGs today. He also created Wilson's central terminal, which is still part of the standard ECG apparatus. In addition to his research on the ECG, Wilson trained many cardiologists, including a good number from Latin American countries. In 1942, he traveled to Brazil on a trip sponsored by the U.S. State Department to help establish the specialty of cardiology in that country.

Sources: "A brief review: history to understand fundamentals of electrocardiography," *Journal of Community Hospital Internal Medicine Perspectives*; "War, Medicine, and Cultural Diplomacy," U-M College of Literature, Science, and the Arts.

**"Intrigued by growth as the unique property of living systems, I was captivated upon first observing, early on in graduate school, the speed, efficiency, and adaptability of the growth of bacterial cells such as *Escherichia coli*. I resolved to learn all I could about how cells grow, and to do so by exploring the physiology of bacteria.**



# 79

**Frederick Neidhardt**, Ph.D., joined the U-M faculty in 1970 as professor and chair of the Department of Microbiology. He later served as vice president for research. Neidhardt's research focused on the molecular physiology of *E. coli* growth.

Source: Obituary in *Small Things Considered*

"

Photos of Stone and Kahn: U-M Bentley Historical Library

# 81

## BRAIN TUMOR MOTIVATES AMA PRESIDENT

Speaking at an American Medical Association meeting in Florida in 2024, **Bobby Mukkamala** (M.D. 1995), who was then AMA president-elect, had "a total brain fart moment," he says. Audience members thought he might be having a stroke, but it turned out to be an 8-centimeter temporal lobe tumor. Shortly after diagnosis, he had virtual consults with five leading experts in his condition. Surgery happened not long after, and he healed quickly. That experience gave him even more insight into the work he hopes to accomplish as AMA president.

Mukkamala is a leader in the Flint community, where he maintains a private otolaryngology practice and has spearheaded efforts to mitigate lead exposure following the Flint water crisis. He says a typical resident of his hometown wouldn't have received the same level of care that he had gotten for his tumor. "We need to close that gap between being in Flint and having the world's best access to care and being two blocks from this guy in Flint and having the worst access to care."

Sources: "AMA president-elect's surgery to remove brain tumor a success," ama-assn.org; *Medicine at Michigan*, Summer 2024

# 82

## GASTROENTEROLOGY LEADER

**H. Marvin Pollard** (M.D. 1931, Residency 1933), whose career at U-M lasted nearly four decades, made significant contributions to the field of gastroenterology and to pancreatic cancer. He served as head of the section of gastroenterology from 1940–1972. Pollard led a research team that invented the world's first fiberoptic gastroscope in 1956. It became the prototype of the instrument that is now universally used in gastrointestinal diagnostic procedures.

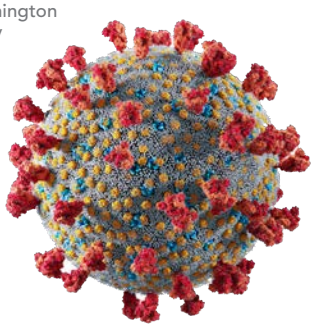
Sources: "Medical School professorships honor Pollard, Rosenthal," *University Record*; *New York Times* obituary

# 83

## RENOWNED VIROLOGIST

**Lawrence Corey** (M.D. 1971, Residency 1973), professor of laboratory medicine at the University of Washington, pioneered the development of antiviral therapy for human chronic viral infections. As a world-renowned virologist, he's worked in a variety of areas, including diagnostic virology, antiviral therapy, viral immunology, and vaccine development. He helped lead the national trials for COVID-19 vaccines in 2020, and he has led an HSV research program that has been continuously funded by the NIH since 1978.

Source: University of Washington Department of Laboratory Medicine and Pathology



**"I was proud to have played a role in the success that my team had at Michigan; however, I was pretty sure that I wasn't going to have the long-term success in professional hockey that players like Mike Knuble had experienced. So, I hung up the skates and focused on academics. … I felt very proud and relieved that I was able to walk into Coach [Red] Berenson's office each year after I had returned to Ann Arbor and let him know that I was achieving success in a challenging academic program [at the Medical School].**

# 80

**Justin Clark** (B.S. 2002, M.D. 2007) was a member of the U-M ice hockey team for four seasons, winning two national championships in 1996 and 1998. He's now a neurosurgeon at Great Lakes Neurosurgical Associates in Grand Rapids.

Source: MGoBlue Ice Hockey Alumni Spotlight



Photo of Clark: U-M Bentley Historical Library

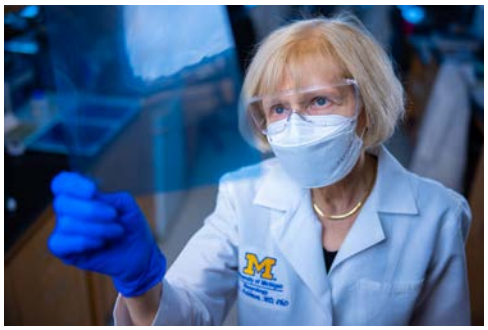
FIRSTS

## 84

### Desegregating hospitals

"Segregation and discrimination are environmental factors and are just as damaging to health as water pollution, unpasteurized milk, or smog," **Paul B. Cornely** (M.D. 1931, Ph.D. 1934), said on more than one occasion. A leading public health practitioner, he was the first Black man in the U.S. with a doctorate in public health. Even though he graduated from the Medical School, he was not allowed to do residency at U-M because of his race. The unnecessary death of an African American woman, hastened by discrimination at segregated hospitals like the one where Cornely worked, became a driving force of his life's work. For the next 40 years, he would be a fierce champion of equal health care for all, leading to the desegregation of America's hospitals.

Source: "The Dignity of Man," U-M Heritage Project



## 85

### TRAILBLAZING NEUROLOGIST

**Eva L. Feldman** (Ph.D. 1979, M.D. 1983, Fellowship 1998) is one of the world's leading authorities on neurodegenerative disease. Her groundbreaking biomedical research and clinical care contributions span numerous critical areas of neurodegenerative disease, particularly amyotrophic lateral sclerosis, Alzheimer's, cognitive decline, neurologic complications of diabetes, and environmental toxins' impact on the nervous system. Her pioneering research is also focused on developing stem cell therapies to treat these diseases. Feldman is the W. Albers Distinguished University Professor and Russell N. DeJong Professor of Neurology, and she serves as director of both the NeuroNetwork for Emerging Therapies and the ALS Center of Excellence at Michigan Medicine.

Source: U-M Medical School

## 86

### MOOD DISORDER QUESTIONNAIRE

**Robert M. A. Hirschfeld** (M.D. 1968) was internationally recognized for his research on the diagnosis and treatment of depression and bipolar disorder. He is known for developing the Mood Disorders Questionnaire (MDQ), one of the most widely used screening tools for bipolar disorder that has been translated into 19 languages.

Source: "In Memoriam: Robert M. A. Hirschfeld, MD, 1943–2023," *Journal of Clinical Psychiatry*

**“Epidemiology must constantly seek imaginative and ingenious teachers and scholars to create a new genre of medical ecologists who, with both the fine sensitivity of the scientific artist, and the broad perception of the community sculptor, can interpret the interplay of forces which result in disease.**

# 87

**Thomas Francis, Jr.**, M.D., was recruited to start the Department of Epidemiology at U-M’s School of Public Health. The same year, Francis was appointed director of the Commission on Influenza of the U.S. Army Epidemiological Board. Francis isolated the influenza B virus and helped develop flu vaccines. When Jonas Salk, M.D., (see “Safe, effective, and potent,” at right) came to U-M in 1941 to pursue postgraduate work in virology, it was Francis who taught him the methodology of vaccine development. Salk’s work at U-M ultimately led to the polio vaccine.

Sources: “The Legacy of Thomas Francis Jr.,” U-M Office of the President; “The First Flu Shot,” U-M Heritage Project

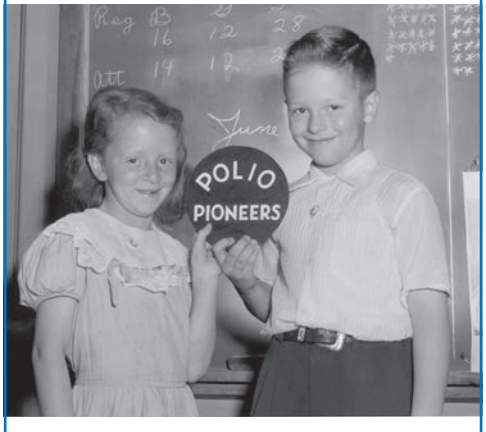
**”**

# 88

## “Safe, effective, and potent”

**Jonas Salk**, M.D., came to U-M for a research fellowship and faculty appointment in virology, and went on to develop the first successful polio vaccine. The vaccine was tested in a clinical trial led by his U-M mentor, Thomas Francis Jr., M.D. (see quote at left), who announced in 1955 that it was up to 90% effective in preventing paralytic polio.

Sources: “Who was that? The people behind the names of Michigan Medicine places and more,” michiganmedicine.org; U-M School of Public Health 1955 Polio Vaccine Trial Announcement




**Kids who were part of the 1954 vaccine trial were dubbed “polio pioneers.”**

# 89

## MEMORIES OF THE 1950s

“The medical atmosphere in the ’50s contributed to my decision to do a [Physical Medicine and Rehabilitation] residency,” said **Carol Goodman Matheson** (M.D. 1953, Residency 1957). “Wounded war veterans were still being treated in hospitals. The poliomyelitis epidemic was at its height, and treatment personnel were greatly needed. The simplest description of our training was ‘hands-on.’ We were taught to evaluate and diagnose not only using our book knowledge, but also by observation, palpitation, motion, measurement, and intuition.”

After working as a nurse’s aide during WWII, Matheson went to the Medical School and became one of the first residents in the Department of Physical Medicine and Rehabilitation.

“Some snippets of memory come to mind in recalling those experiences of more than 50 years ago:

- The respirator center on the top floor of the hospital with rows of ‘iron lungs’ and other respirators, in the morning was abuzz with therapists and doctors on rounds; in the evening, quiet except for the sound of [“The Mickey Mouse Club”] on the one television (a program not to be missed by patients or staff); at night in the dim light, the sighing of the machines in a regular cadence keeping life flowing.
- The memorable hands-on experience of donning masks and gowns and actually treating polio patients in the acute stage of their disease. Their tolerance and courage through that early painful phase of treatment with Kenny packs and gentle exercise was inspiring to us all.
- The exciting announcement of the successful results of the Salk vaccine trials, which I witnessed on April 12, 1955.
- The strength, both physically and emotionally, of the physical therapists in handling challenges, such as gait-training sessions for paraplegics in cumbersome braces.”

Source: Obituary in *Medicine at Michigan*, Summer 2021



Polio photo: U-M Bentley Historical Library

# When neurosurgery became her world

# 90

"I made it to Minnesota for residency, and before I knew it, I was a neurosurgeon. I had achieved my dream. And that's all it was to me, because being the 'first' anything was never my goal. It wasn't until I started talking to people in the community that I understood that milestone and why it was more important than I realized," says **Alexa Canady** (M.D. 1975), who was the first Black woman to become a neurosurgeon in the U.S. During her career, she specialized in pediatric neurosurgery.

"Its importance was twofold. One, it was important for the children who would no longer see neurosurgery as yet another world that they couldn't belong to. That's the side everybody appreciates.

"But there's another side to it. For the white residents who trained under me, especially the white male residents, neurosurgery was no longer their world. It became our world.

"And that was equally important in changing society's expectations. So while being first wasn't important to me, it was important for many others. I think that kind of impact is a big part of being 'leaders and best.'

"I'm still grateful for the start I got at Michigan. For me, it was a wonderful place. Like a thousand other little steps along the way, pursuing that scholarship changed the course of my life. I've been happy to give back where I can because I know Michigan is a good place, and I know that money matters. I don't have big money, but I give what I can to support things like debate, the *[Michigan] Daily*, and minority scholarship programs.

"Much of who we are depends on who we believe we are. But much also depends on how the world sees us. Places like Michigan help us see our own potential and then fulfill it.

"They also help us show the world what we're capable of, and they help us reshape the restraints that society places on us. Before I came through Michigan, neurosurgery was a white man's world. A scholarship helped me find my passion and set me on the path to changing that, not just for myself, but for the people who followed in my footsteps."

Source: "What it meant to me," *Leaders & Best*, February 2020

FIRSTS

# 92

## Materia medica and therapeutics

Before pharmacology, instruction in the use of medicine was taught in a class called Materia Medica and Therapeutics. It was a part-time gig, usually undertaken by a clinician in another field. But that all changed in 1891, when **John Jacob Abel**, M.D., who was trained in scientific pharmacology, was appointed to replace the ophthalmologist who held the position previously. Abel only served until 1893, but in that short time, he instituted the instructional change from materia medica to pharmacology, essentially creating the first Department of Pharmacology in the U.S. The concept quickly spread to other medical schools across the country.

Source: *100 Years of Michigan Pharmacology* (U-M, 1991)


The Museum of Materia Medica, c. 1893

**“Although great breakthroughs can be done alone in a laboratory, in general you need partnerships with community organizations, the populations most affected, and industry.**

# 91

**James W. Curran** (M.D. 1970, Residency 1971), is the former dean of Emory University’s Rollins School of Public Health. Starting in 1981, Curran led the task force on HIV/AIDS at the Centers for Disease Control and Prevention. He was one of the first scientists to recognize the infectiousness of HIV/AIDS. In the first year of the task force, Curran made dozens of trips to New York City — then the epicenter of the crisis.

Source: *Rollins Magazine*, Fall 2021; oral history interview with James W. Curran, NIH

**”**

# 93

## REMARKABLE OTOLARYNGOLOGIST

**John Kemink** (M.D. 1975, Residency 1981) was a nationally prominent ear specialist. Under his leadership, the neurotology program at U-M became widely known as the premier academic program of its type in the world. In 1992, he was shot to death by an angry patient he was examining in the outpatient clinic.

Sources: *New York Times*, June 26, 1992; obituary in *Ear and Hearing*, Vol. 13, No. 5, 1992

# 94

## MEDICAL SCHOOL FOUNDER

**Zina Pitcher**, M.D., was a two-time mayor of Detroit who helped found the U-M Medical School. According to an undated letter written by Pitcher’s wife, Emily Backus Pitcher, to then U-M president, James Burrill Angell, Pitcher was responsible for selecting Ann Arbor as the site of the U-M campus.

Source: U-M Bentley Historical Library



Photos: U-M Bentley Historical Library

FIRSTS

# 95

## National nursing leadership

Before she came to U-M in 1981, **Rhetaugh Graves Dumas**, Ph.D., was deputy director of the National Institute of Mental Health. She was the first woman, the first African American, and the first nurse to hold that position. She also was the first African American woman dean at the University of Michigan, leading the School of Nursing until 1994 when she became vice provost for health affairs and the Lucille Cole Professor of Nursing. She was known as an advocate for nursing research and rigorous scholarship and for her commitment to underserved populations. "From infancy, I was told that when I grew up, I was going to be a nurse. Not just an ordinary nurse, mind you, but one who would be admired by people all around the country ... for her contributions toward improving the welfare of others," she told Columbia University health sciences graduates at a 2003 commencement address.

Sources: U-M Staff Memoirs and Memories, *Washington Post* obituary

# 96

## CHILD PSYCHIATRY EXPERT

**Elissa Benedek** (M.D. 1960, Residency 1964, Fellowship 1965) is adjunct professor of psychiatry at U-M. She specializes in child and adolescent psychiatry and forensic psychiatry and has published several books and articles on those subjects. In 1990, Benedek became the second woman to serve as the president of the American Psychiatric Association. Benedek continues to mentor medical students, residents, and fellows at Michigan Medicine.

Source: Forensic Psychiatric Associates

# 97

## KETAMINE FOR PAIN

In 1965, **Edward F. Domino**, M.D., professor of pharmacology (along with his colleague Guenter Corssen, M.D., professor of anesthesiology), published results of the first human trial using ketamine as an anesthetic. The 20 subjects had good blood pressure, respiration rate, and other vital signs. And the risk of death was significantly lower compared to other general anesthetics available at the time. The subjects of the study were people incarcerated at Jackson State Prison. The study was overseen by an ethics committee, and in 2017 Domino said, "To this day, NIH guidelines for prison research are based on what happened here." Domino and Corssen also collaborated on the first clinical trial of ketamine. They published results in 1966 showing ketamine was a safe anesthetic in the 130 subjects undergoing surgery. Because of its short-acting pain-relieving properties, ketamine became a widely used battlefield anesthetic in the Vietnam War.

Source: *Medicine at Michigan*, Summer 2023


**"While medical students see patients, examine them, take histories and so on, they don't really have much responsibility for them. That's what the intern year is about; learning to take responsibility for others. My internship seemed to me the most demanding year of my life, and was complicated by the Vietnam War, a Sword of Damocles dangling over every recently graduated physician at that moment.**

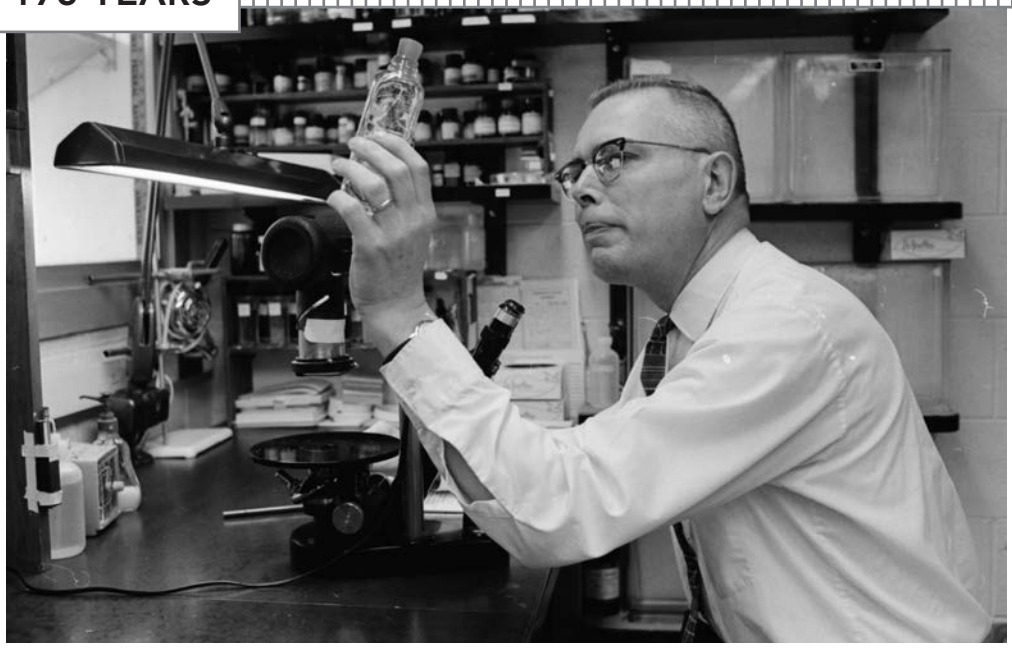
# 98

**Richard Rapport** (M.D. 1969) is professor emeritus of neurology at the University of Washington School of Medicine. He's written three non-fiction books on medical topics and more than 50 essays on death and dying, ethics, and more.

Source: UW Medicine Alumni Association

Photo of Dumas: U-M Bentley Historical Library; Ketamine photo: Leisa Thompson

The southeast corner of the Medical Campus overlooks the Peony Garden at U-M Nichols Arboretum. Photo: Connor Titsworth, courtesy VP Communications, Regents of the University of Michigan



**“It was clear that as the only [historically Black medical] school west of the Rockies, it is Drew’s responsibility to take the lead in initiating meaningful legislation to improve the quality of life for the underserved on the West Coast as well as … forging a national agenda regarding medical education for the underserved.**

# 99

**Gus Gill** (M.D. 1969) wrote about his meeting with the Congressional Black Caucus in 1978 to discuss health care problems of underserved communities. Gill chaired the Department of Otolaryngology at Charles R. Drew University of Medicine and Science for 27 years. It is one of four historically Black medical schools in the U.S.

Source: Charles R. Drew University of Medicine and Science

”

# 100

## CONNECTIVE TISSUE DISCOVERY

**C. William Castor** (M.D. 1951) was a Michigan man his entire professional life. His training was interrupted by World War II where he served with the Army as an X-ray technician on a hospital ship. Castor joined the U-M faculty in 1954 and was known for arthritis care. In granting Castor emeritus status in 1996, the U-M Regents said, “His early research was some of the first to use cell culture methods to study the human synovium [connective tissues]. The application of cell culture techniques to examine the mechanisms of inflammatory activation responsible for joint destruction in arthritis was ground-breaking and has subsequently become central to almost all investigation of cellular mechanisms underlying arthritis inflammation.”

Sources: *University Record, Ann Arbor News* obituary

# 101

## PARALYMPIC HIGH JUMPER

On Christmas Eve, 2011, **Sam Grewe** (M.D. 2025) at age 13, learned that the fist-size growth attacking his femur was osteosarcoma. His fight hospitalized him for two years. He elected to have his leg amputated using a rare procedure called rotationplasty, which would help him keep doing sports.

When Grewe left the hospital for the final time, he realized he wanted to become a physician. “I really got a good glimpse into what it means to be a good doctor,” he says. He wanted to help someone else through the experience. Before he came to the Medical School to make that dream a reality, he became a Paralympian, earning a gold medal in Tokyo in 2021 and making it to the 2024 Paralympic Games in Paris as well.

Source: *Medicine at Michigan*, Summer 2023

FIRSTS

# 102 & 103

## Petticoat junction

In a part of St. Louis known as Scab Row, **Mary Hancock McLean** (M.D. 1883) and **Bertha Van Hoosen** (M.D. 1888) rented a room in a home where the landlady's children used the front entrance as a toilet. This was their last resort. They'd been banished everywhere else, deemed unfit by 46 other landlords across the city who worried they'd adversely affect property values or ruin a home's reputation. They were, after all, women in the medical field. Van Hoosen (right) was working to pay for her medical education, and McLean (above) was a doctor trying to set up private practice.

"In my initiation into medicine, Dr. McLean opened my eyes to the prejudice, the discrimination, the lack of confidence, and paucity of opportunities that had to be reckoned with before success could be secured," Van Hoosen wrote years later in her memoir, *Petticoat Surgeon*.

McLean and Van Hoosen had met at U-M when McLean was a medical student and Van Hoosen was an undergraduate. At a time when women doctors were largely relegated to "practical help" for other women, children, and the poor, McLean became one of the first practicing female surgeons in the country. By 1893, McLean and a colleague had opened the Evening Dispensary for Women to help working women get treatment after their shifts had ended.

Van Hoosen spent most of her career as a gynecological surgeon in Chicago, including being the first woman in the world to chair an obstetrics department at a co-educational medical school when she joined Loyola University. Several years earlier, the U-M Medical School had rejected her as a professor of obstetrics and gynecology because she was a woman. She performed her last surgery at age 88 and died a year later, in 1952.

Sources: *Medicine at Michigan*, Spring 2018; "LSA Women in History: Bertha Van Hoosen," U-M College of Literature, Science, and the Arts

# 104

## KAISER PERMANENTE LEADER

**Clifford H. Keene** (M.D. 1934, Residency 1936 and 1939) became a journeyman ironworker after high school and was a dues-paying union member until he finished medical school at U-M. After serving as an Army surgeon in World War II, he was medical director for the Kaiser-Frazer automobile company in Willow Run, Michigan. Keene moved on to more leadership roles in the Kaiser health care system in California, building Kaiser Permanente into the largest nonprofit health care provider in the U.S. His work helped shift the country from the fee-for-service model to prepaid care in managed health plans.

Source: *New York Times* obituary

# 105

## VASCULAR RESEARCH EXPERT

**William W. Coon**, M.D. (Residency 1956) joined the U-M Department of Surgery as an intern in 1949. His residency was interrupted while he served as chief of surgery at the U.S. Army Hospital in Germany from 1953 to 1955. Coon completed his postgraduate training in 1956 and joined the faculty as professor of surgery. His early clinical practice and research on venous thrombosis, pulmonary embolism, and anticoagulation resulted in more than 100 publications on those topics. Towards the end of his career, he had been involved primarily in caring for patients with cancer, especially those with breast cancer and melanoma.

Source: *University Record* obituary

Photo of Van Hoosen: U-M Bentley Historical Library

“My training in the Department of Pharmacology at the University of Michigan Medical School provided a robust foundation for my tenure as FDA chief scientist and subsequently principal deputy commissioner, the no. 2 role at FDA. It empowered me with scientific expertise and problem-solving acumen to tackle critical public health challenges and advance regulatory science.”

# 106

**Namandje Bumpus** (Ph.D. 2008) is a pharmacologist who served as principal deputy commissioner of the Food and Drug Administration in 2024. In 2016, she won the Presidential Early Career Award for Scientists and Engineers.

Source: Michigan Medicine Office of Development

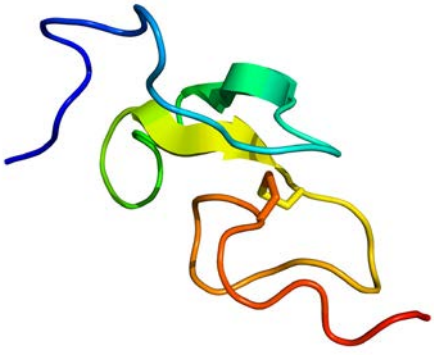
”

## Nobel winner

# 107

Decades before he received the Nobel Prize, **Stanley Cohen** (Ph.D. 1948) spent his evenings collecting worms on the campus green at U-M. His thesis concerned the metabolism of earthworms, and he recalled collecting over 5,000 of them. But it was at Washington University in St. Louis where his work with Rita Levi-Montalcini earned them the 1986 Nobel Prize in Physiology or Medicine for the isolation of nerve growth factor (NGF) and the discovery of epidermal growth factor (EGF). Their work has helped researchers better understand tumor progression as well as developmental malformations, degenerative changes in senile dementia, and delayed wound healing. NGF and EGF were the first growth-regulating signal substances discovered, and they led to further research into cancer cures.

Sources: *Michigan Alum* magazine; Nobel Prize committee



**Representation of the epidermal growth factor protein of a mouse**

# 108

## WOMEN’S MEDICAL EDUCATION PIONEER

**Mary “Minnie” A. G. Dight** (M.D. 1884) was born in Portsmouth, Ohio, in 1860. She was an accomplished musician who graduated from the New England Conservatory of Music in Boston before attending medical school. After graduation, she practiced medicine for a year before getting married, but, unhappy in her marriage, she decided to continue her medical education in Paris and Vienna. In 1892, she married Charles Dight, who had been a professor at the Medical School when she was a student. After seven years, she and Dight divorced. Throughout her career, she was a proponent of social reforms. She was in charge of the Woman’s Hospital of Philadelphia and pioneered the establishment of a women’s medical college in New Orleans.

*Note:* During her marriage to Charles Dight, Mary Dight was a supporter of eugenics (see “The wrong side of history,” p. 70 for more on eugenics).

Source: *A Woman of the Century* (Charles Wells Moulton, 1893)

FIRSTS

# 109

## First Black graduate

Born in Virginia to a father who was enslaved, **William Henry Fitzbutler** (M.D. 1872) escaped to Canada with his family via the Underground Railroad. After graduating from the Medical School, Fitzbutler practiced medicine for many years in Kentucky. He helped found the Louisville National Medical College and published the African American newspaper *Ohio Falls Express*. He and Sophia B. Jones (see p. 57) are the namesakes for the Fitzbutler Jones Alumni Society, an organization that Black alumni established in 1997 to provide financial support to students and faculty at the Medical School.

Source: Michigan Medicine

# 110

## PATHOLOGY LEADER

**A. James French**, M.D. (Residency 1941), chaired the Department of Pathology from 1956 to 1980. Under his leadership, the diagnostic services of the department grew rapidly and included the consolidation of U-M's clinical laboratories. The A. James French Society of Pathologists (now U-M Pathology Alumni Society) was established in 1987 to honor French's lifelong commitment to teaching and guidance of residents and his leadership in the field of pathology. In 1995 the French Society helped establish the A. James French Endowed Professorship.

Sources: U-M Pathology Department; U-M Pathology Alumni Society

# 111

## EMERGENCY MEDICINE PIONEER

When **John G. Wiegenstein** (M.D. 1960) began practicing medicine, emergency departments were not staffed by emergency medicine specialists. In fact, when Wiegenstein was hired as the nighttime emergency physician at Beyer Hospital in Ypsilanti, he was still a medical student, shocked that he'd been given so much responsibility. He also witnessed what he called a "terrible situation," where doctors without emergency medicine training who had been assigned to staff the ED overnight would sequester themselves in the call room, afraid of not being able to meet the needs of patients. In the late 1960s, Wiegenstein advocated for an emergency medicine specialty and helped found the American College of Emergency Physicians. He was the first chair of the ACEP. The work Wiegenstein did helped emergency medicine become an officially recognized specialty in 1979.

Source: *Annals of Emergency Medicine*, Volume 45, Issue 3


> **"I want to emphasize that it's the people in the lab, most of whom are outstanding graduate students, who are so important. The research environment here [at U-M] is very good. I have outstanding colleagues and the department is very supportive.**

# 112

**Kun-Liang Guan**, Ph.D., won the MacArthur "genius grant" in 1998 while he was a professor in the U-M Department of Biological Chemistry. His research has helped explain how cells regulate internal processes, such as division, and how they respond to external conditions, such as infection. He's now a professor at Westlake University in China.

Source: "Biochemist Kun-Liang Guan named a MacArthur Fellow," *University Record*

Photos of Fitzbutler and French: U-M Bentley Historical Library

# 114

## FATHER OF CANCER GENETICS

During his lifetime, **Aldred Scott Warthin** (M.D. 1891, Ph.D. 1893) achieved renown as the world's leading authority on the pathology of syphilis. He also made significant contributions to the pathology department at U-M: after taking charge of the pathology laboratory in 1896, he requested all specimens from clinics be sent to him for diagnosis, establishing a close relationship between pathology and clinical medicine. But it was a chance encounter in 1895 that set in motion the work he is best known for today. A seamstress acquaintance told him about the cancer deaths in her family, and he was so intrigued that he researched her family's medical history and followed the family for many years. The paper he published on "family G" in 1913 was one of the first to assert that cancer in humans could be inherited. It would be decades before the scientific community accepted that fact, but the finding earned Warthin the title "father of cancer genetics."

*Note:* Warthin was a proponent of eugenics. (See "The wrong side of history," p. 70, for more on eugenics.)

Sources: *CA*, November/December 1985; Aldred Scott Warthin Papers, U-M Bentley Historical Library

FIRSTS

# 115

## Elevating nursing education

In 1955, **Rhoda Reddig Russell** became the University of Michigan's first female academic dean when she was named to lead the School of Nursing. She was instrumental in raising the professional standards of nursing education, and under her leadership, the School of Nursing began its first master's programs, including a Master of Science in medical-surgical nursing, the first of its kind in the U.S.

Source: U-M School of Nursing, *University Record*

**"If we only heard loud sounds, we would not have to take the trouble to listen carefully. You can't expect your patients to go around with sirens on them.**

# 113

**George Dock**, M.D., professor of internal medicine from 1891–1908, on the proper use of a stethoscope. Dock was the first full-time professor of medicine in the U.S.

Source: "Doctor Dock," U-M Heritage Project

# 116

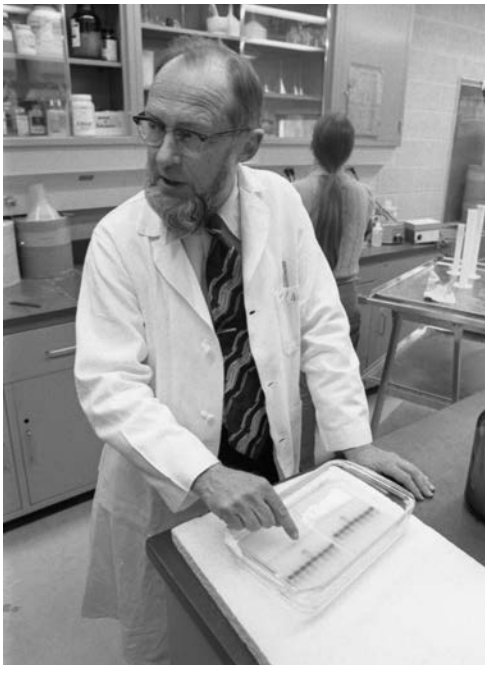
## WHEN NATURE MEETS MEDICINE

While out on walks with his young sons in the 1970s, **Irwin J. Goldstein**, Ph.D., would collect seeds or flowers that he thought might be possible sources of lectins, the carbohydrate-binding proteins that were the focus of his groundbreaking research as a biochemistry professor at U-M. His laboratory isolated scores of these proteins and fostered their biochemical and biomedical application. Goldstein's group isolated and characterized concanavalin A — a plant lectin originally extracted from the jack bean — which led to its adoption in labs around the world. It is widely used to study immune regulation and to characterize glycoproteins and other sugar-containing entities on the surface of cells. Goldstein's half-century at U-M included 12 years as associate dean of research and graduate studies at the Medical School. The U-M Department of Biological Chemistry holds an annual glycobiology lectureship in his name.

Sources: *University Record* obituary; Department of Biological Chemistry



Photos of Warthin and Russell: U-M Bentley Historical Library



# Giants of human genetics

# 117 & 118

During his 39-year career in the Medical School, **James V. Neel**, Ph.D. (above right) established one of the first clinics to evaluate and counsel people with hereditary diseases, as well as the first academic department of human genetics in the country. He discovered the gene that causes sickle cell anemia and examined the genetic consequences of the atomic bombings in Hiroshima and Nagasaki. Neel also studied the genetic characteristics of isolated tribes in the Amazon rainforest. In 1974, he was awarded the National Medal of Science "for pioneering achievements in creating the science of human genetics and discovering the genetic basis of several human diseases."

"Dr. Neel was the father of the field of human genetics. He was the first to introduce a long list of bedrock principles, which we now take for granted," says **Francis S. Collins**, M.D., Ph.D. (above left), former director of the National Human Genome Research Institute and of the National Institutes of Health. Collins was in the East Room with President Bill Clinton and British Prime Minister Tony Blair on June 26, 2000, when they announced the completion of the mapping of the entire human genome.

During his time at U-M, Collins and his research team, in collaboration with researchers at the Hospital for Sick Children in Toronto, isolated the gene for cystic fibrosis. They had identified a faulty protein the gene produced that they believed was responsible for the development of the disease. This discovery paved the way for the research field known today as gene therapy.

Sources: *University Record*, "Long line of genetics" (October 21, 2024) and "A disease's gene is discovered" (February 3, 2025); the National Science & Technology Medals Foundation; Remarks by President Clinton and members of the Human Genome Project, June 26, 2000

> **What more powerful form of study of mankind could there be than to read our own instruction book?**
>
> **Francis S. Collins**, M.D., Ph.D., on the Human Genome Project

Photos: Collins (left) and Neel (right) in their labs at U-M, U-M Bentley Historical Library

Philip Zazove, M.D., is pictured with Ellie Barron, a patient of his who is now a recent graduate of Michigan State University.

**"In pediatric orthopaedic surgery you establish relationships that are long term. After surgery is done, it's only really the beginning. And I was in practice for about 20 years in Boston and still hear from some of our patients. I got a graduation announcement from a boy who graduated from the Merchant Marine Academy who had a club foot. I got a call from a grandfather whose grandson we treated in the neonatal ICU for a club foot who won a medal in skiing. So this kind of thing keeps you going."**

# 119

**Clifford Craig** (M.D. 1969) is associate professor emeritus of orthopaedic surgery in the U-M Department of Orthopaedic Surgery.

Source: University of Michigan Health

# 99

# 120 & 121

## KNOWING THE PATIENT'S LANGUAGE

Making sure a patient understands what you're telling them is a key priority for doctors. But for patients who use American Sign Language, sometimes the message is lost in translation. At the U-M Deaf Health Clinic, two physicians have improved patient experiences by using ASL. **Philip Zazove**, M.D., professor emeritus of family medicine, worked at the clinic before his retirement in 2022, and **Michael McKee**, M.D., professor of family medicine, is director of the clinic. Both physicians are deaf and understand the importance of being able to communicate directly with a health care provider. They also understand the barriers that many patients who are deaf or hard of hearing face in accessing good care. "I think Mike and I are the only two physicians in Michigan who sign," Zazove said in 2019. "People come to us from all over the state."

Source: *Medicine at Michigan*, Winter 2019

TRANSFORMATIVE PHILANTHROPY

# 122

## Champion of continuing medical education

**Harry A. Towsley** (M.D. 1931, Residency 1934) was professor of pediatrics and communicable diseases and of postgraduate medicine at the Medical School. He led the effort to help practicing physicians across Michigan update their knowledge and skills throughout their careers. He and his wife, Margaret, contributed much of the funding for the Towsley Center for Continuing Medical Education, which opened in 1969. The Harry A. and Margaret D. Towsley Foundation continues to support areas within the Medical School and across the University of Michigan.

Source: "Harry Towsley had enormous impact on U, leaves many legacies," *University Record*

**Towsley with a patient in 1971.**



Photo of Zazove: courtesy of the *Detroit Jewish News*; photo of Towsley: U-M Bentley Historical Library

FIRSTS

# 123

## First woman graduate

**Amanda Sanford Hickey** (M.D. 1871) was the first woman to graduate from the Medical School. When she walked forward to receive her diploma with honors, she was heckled by men in the balcony. Her doctoral thesis on puerperal eclampsia was based on studying more than 800 cases in New England, and she likely knew more about the condition than any other scholar of the time. She was a very successful obstetrician and gynecologist in her own private practice as well as in hospitals in the U.S. and Europe.

Source: "A Dangerous Experiment": Women at the University of Michigan, U-M College of Literature, Science, and the Arts

**Amanda Sanford Hickey (center left) sits with Eliza Mosher (center right) and members of Hickey's family in 1894. See p. 22 for more about Mosher, who also graduated from the Medical School.**

# 124

## RADIOLOGY RESEARCHER AND TEACHER

**Fred Jenner Hodges**, M.D. (Residency 1954), chaired the U-M Department of Radiology for more than three decades. He researched radiological measurements of the heart in normal and diseased states, and he envisioned a treatment for cancer with radioactive material produced by a cyclotron. During his career at U-M, he taught the intricacies of radiology to 34 successive classes of medical students. After his death in 1977, a group of friends, colleagues, and former students created the Fred Jenner Hodges Professorship in Radiology.

Source: U-M Department of Radiology

# 125

## BLACK REPRESENTATION IN MEDICINE

**James Curtis** (M.D. 1946) entered the Medical School in 1943 as the only Black student in his class. He went on to pursue specialty training in psychiatry at a time when less than 100 African American physicians in the U.S. had trained for a specialty. Later, he wrote several books on the experiences of Black Americans in medical training and efforts to increase the training of physicians of color. In one, he wrote that his was the last class in which U-M's Black medical students had to travel out of state to do their clinical clerkships in obstetrics and gynecology because they could not practice at the whites-only hospital in Detroit where U-M's clerkship was held at the time.

Source: "Pioneers and pathbreakers: Black History milestones at Michigan Medicine"

Photos of Sanford Hickey: U-M Bentley Historical Library

# Making a difference internationally

The Medical School has a long history of global impact, with a reputation for inspiring bidirectional programs that influence patient care, research, and education abroad and at home. Here are just a few of the individuals who have helped us serve the world.

## 126

### MEDICAL MISSIONARY

**Christine Iverson Bennett** (M.D. 1907) was a Danish immigrant. During medical school, she was assistant demonstrator of anatomy and secretary of her class. She moved to Bahrain in 1909 to do medical missionary work. After marrying, she and her husband relocated to Basra, Iraq (then Arabia), where Bennett treated wounded World War I soldiers. She contracted typhoid fever while treating patients during a 1916 outbreak, which led to her death at age 35.

Source: *Ministers of Mercy* (Methodist Book Concern, c. 1919)

## 127

### SAVING WOMEN'S LIVES IN GHANA

When **Timothy R.B. Johnson**, M.D., traveled to Ghana in 1986 as part of a group of Americans striving to build relationships in medicine, he learned that women were dying in childbirth from diseases and conditions that were manageable in the United States. Those conditions included bleeding, hemorrhages, high blood pressure, and strokes. Ghana needed partners who could train health workers to save women's lives, and he took on that charge. Over three decades, Johnson mentored undergraduate students, medical students, residents, and fellows in Ghana. More than 50 publications documented his unique program development. Johnson, who served as chair of the Department of Obstetrics and Gynecology for 24 years, received the University of Michigan President's Award for Distinguished Service in International Education in 2022.

Source: U-M Center for Global Health Equity

## 128

### EYE CARE ACCESS IN EAST AFRICA

Since finishing residency in 2009, **John Cropsey** (M.D. 2005) has been leading ophthalmology programs in East Africa, first in Kenya and then in Burundi, where he was one of only a handful of ophthalmic surgeons in a country of more than 12 million people. Cropsey developed and implemented the first retinoblastoma treatment program in Burundi. In 2022, he became part of the faculty at the Rwanda International Institute of Ophthalmology. He received the Michigan Medicine Alumni Society Humanitarian Award in 2018, and in 2024, he was awarded the Outstanding Humanitarian Service Award from the American Academy of Ophthalmology.

Source: American Academy of Ophthalmology



Illustration: Ananda Walden

# 129

## LIFE-SAVING REHYDRATION THERAPY

In 2002, **Nathaniel F. Pierce** (M.D. 1958) was named one of four recipients of the first-ever Pollin Prize in Pediatric Research. In Kolkata, India (formerly Calcutta), in the 1960s and '70s, Pierce and the other recipients had studied water and electrolyte balance in patients with cholera. Their work made it possible to create an optimal oral rehydration solution that could maintain hydration in patients who had severe diarrhea without the need for an IV. It is estimated that this work has saved the lives of 40 million children.

Source: Johns Hopkins Bloomberg School of Public Health

# 130 & 131

## WOMEN'S HEALTH AND KIDNEY TRANSPLANTS IN AFRICA

**Senait Fisseha**, M.D., J.D. (Residency 2003, Fellowship 2006), joined the Medical School faculty after her training in obstetrics and gynecology with Timothy R.B. Johnson, M.D. (see "Saving women's lives in Ghana" p. 48). She began work to replicate Johnson's success in her home country of Ethiopia in 2012. She founded the Center for International Reproductive Health Training, which helped to establish OB-GYN residency programs nationally.

While in Ethiopia, she learned the prime minister wanted to start a kidney transplant program to tackle a growing and expensive chronic kidney disease problem — a paradox of the expanded Ethiopian life expectancy.

She reached out to **Jeffrey Punch** (M.D. 1986, Residency 1992), who had begun volunteering in Kenya with his church and loved his time in Africa. Punch worked with the Ethiopian Ministry of Health to establish the first kidney transplant program in Ethiopia. With the help of an international team of volunteers, this program began performing live donor kidney transplants in 2015 and has since become self-sustaining.

Fisseha's work later took her to Rwanda, where the same problem existed. Having essentially finished his work in Ethiopia, Punch followed, this time partnering with more health care providers to start a program there.

"In order to meet the standard of a high-quality transplant program, you can't just bring it in and drop it into place. It has to be developed in place," he says.

Fisseha is vice president of global programs at the Susan Thompson Buffett Foundation. Punch is a professor of surgery at the Medical School.

Sources: "Expanding women's health care in Ethiopia," *Michigan Alumnus*, Summer 1999; U-M Department of Surgery

TRANSFORMATIVE PHILANTHROPY

# 132

## Global health leader

A scientist and scholar in gastroenterology, **Tadataka "Tachi" Yamada**, M.D., became the chief of gastroenterology at the U-M Medical School in 1983. In 1990, he rose to chair of the Department of Internal Medicine, leading hundreds of U-M physicians and the care of hundreds of thousands of patients. He was a pioneer in drug and vaccine development who helped forge numerous biotech companies and spent five years at the Bill and Melinda Gates Foundation as head of global health. Yamada and his wife, Leslie, donated $10 million to establish the University of Michigan Center for Global Health Equity. The program was launched in early 2020 and aims to accelerate work by U-M faculty, staff, and students to address inequities in health in the poorest nations and in disadvantaged populations in middle-income countries. Tadataka died in 2021, and Leslie and her family gave another $10 million to advance the work of the center in 2024.

Source: *Medicine at Michigan*, Winter 2022; "Global health equity center receives additional $10M donation," *University Record*

# 133

## HIGH STANDARDS FOR EMERGENCY MEDICINE IN GHANA

In 2008, **Rockefeller Oteng**, M.D. (Residency 2009), began working with the U-M Ghana Emergency Medicine Collaborative to build emergency care systems in Ghana. For the first few years, he spent eight months out of the year in Africa, helping to train physicians and nurses to the same standard he uses at U-M, where he's an associate professor of emergency medicine. "I expect the same from my residents here as I do from my residents in Ghana," he says. "There's no difference other than GPS location." Those emergency systems now have their own attending physicians and nurses, and in 2015, thanks in part to Oteng's work, Ghana established its first training program in emergency medicine.

Source: *Medicine at Michigan*, Fall 2020

**“With the population aging so rapidly, it is important that we find ways of treating skin conditions of elderly people — not just for purposes of vanity, but also for the healing of wounds and the reduction of ulcers.**

# 134

**Sewon Kang**, (M.D. 1987) co-authored a study in 2007, while he was professor of dermatology at the Medical School, on the effects of retinoids. It was previously thought that retinol lotions could only improve skin aged by the sun, but this study demonstrated that they also worked to reduce fine wrinkles from naturally aging skin.

Source: Michigan Medicine news release

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TRANSFORMATIVE PHILANTHROPY

## A prolific scientist and humanitarian

# 135

**Gil Omenn**, M.D., Ph.D., has worked for decades to advance critical interdisciplinary research and translate those findings into real-world clinical applications. Omenn is the Harold T. Shapiro Distinguished University Professor of Medicine as well as professor of computational medicine and bioinformatics, of internal medicine, and of human genetics at the Medical School. His work has not only delved deeply into the complexities of disease but also has inspired and educated scientists across continents. Recognizing the expanding impact on health and health care of computational medicine, artificial intelligence, and bioinformatics, Omenn and his wife, Martha Darling, made a $25 million gift to the Department of Computational Medicine and Bioinformatics in 2024, making it one of the

first named medical school basic science departments in the nation.

Source: *Medicine at Michigan*, Spring 2025

# 136

## MATCH DAY MEMORY LANE

“I distinctly recall entering the Dean’s office on the seventh level of the Medical Science building around 8:15 a.m., picking up my envelope, and immediately walking down the hall into my classmate’s empty laboratory,” recalls **James C. Stanley** (M.D. 1964, Residency 1970). “I opened my envelope with no one around and felt a rush of happiness. Philadelphia General Hospital was where I’d be next year. I was euphoric. As I left the laboratory and walked over to the hospital to catch up with rounds, I didn’t encounter one classmate! Absolutely amazing, and I wondered if they had all disappeared into an empty classroom, bathroom, or closet to open their envelopes.” Stanley went on to become professor emeritus of surgery and one of the founding directors of the Samuel and Jean Frankel Cardiovascular Center.

Source: U-M Department of Surgery


**Match Day 2025**



Photo of Match Day and Omenn: Michigan Photography

FIRSTS

# 137

## First Asian graduate

**Myatt Kyau** (M.D. 1882) came to Michigan from Myanmar to study at Kalamazoo College before coming to the Medical School. A member of the Karen ethnic group, he was the first person of Asian heritage to graduate from the Medical School. He also was a member of the local Baptist congregation. He returned to practice in Myanmar and died in 1914.

Source: Michigan Medicine

# 138

## PROPER CATHETERIZATION DEVELOPMENT

**Jack Lapides** (M.D. 1941) served as the chief of the section of urology at U-M from 1968–1984. His research focused on bladder physiology and the neuropathic bladder, a condition where the bladder doesn't function properly due to nerve damage or dysfunction. Lapides is best known for the simple, but revolutionary promotion of proper catheterization. His contribution to the development of intermittent catheterization has saved the kidneys and lives of innumerable patients and enabled the success of many urinary tract reconstructive procedures.

Source: U-M Department of Urology

# 139

## PEDIATRIC CARDIOLOGY PIONEER

**Amnon "Ami" Rosenthal**, M.D., joined the U-M faculty as professor of pediatrics and director of pediatric cardiology in 1977. His groundbreaking research in congenital heart disease, including over 300 published articles and abstracts, resulted in lifesaving techniques that have helped tens of thousands of children with heart problems lead normal lives.

Source: Obituary by the Ira Kaufman Chapel

**Items from Rosenthal's large tin toy collection, which he and his wife, Prudence, began in 1974. Many are on display at the University of Michigan Health Rogel Cancer Center through December 2025 as part of the U-M Gifts of Art program.**

# 140

## AWARD-WINNING MEDICAL EDUCATOR

**Frances Bull** (M.D. 1952) was head of the cancer chemotherapy unit at University Hospital from 1958–1971 and was head of the section of medical oncology in the Department of Internal Medicine from 1971–1978. She was a noted educator, receiving the H. Marvin Pollard Award for Outstanding Teaching of Residents, the Kaiser-Permanente Award for Excellence in Teaching of Preclinical Sciences, and the Elizabeth Crosby Award for Outstanding Teaching of Medical Students in a Basic Science Area.

Source: *Ann Arbor News* obituary

Photo of Kyau: U-M William L. Clements Library; photos of tin toys: courtesy of Gifts of Art

# Leading the way in scientific medical education

In the early nineteenth century, medical education was taught exclusively in classrooms — students sat and professors lectured. There was no clinical instruction or hands-on learning experience.

Starting in the mid-1800s, that began to change at U-M. The Chemical Laboratory, built in 1856, was the first building constructed in North America solely for the purpose of chemistry research. By 1869, U-M had the nation's first university-owned hospital. The commitment to a rigorous, science-based curriculum transformed students from passive listeners to active participants through laboratory experiences and the first clerkships.

In the 1870s, the Medical School's curriculum was transformed, going from two ungraded years and minimal entrance requirements to four intense years and an expectation of serious college-level preparatory work. A top-tier library was established to keep up with the rapidly expanding scientific literature. Medical school education became based on science, and the educational process became one of learning by doing.

U-M was one of a handful of medical schools that led this transformation. As the curriculum was expanding, leaders were advocating for the purchase of more microscopes at a time when the use of microscopes was all but unknown. In the 1880s, they beefed up laboratory spaces and added more lab time to the required curriculum. The purely didactic method of instruction at the Medical School had fully given way to demonstrations and to the experimental approach.

Sources: U-M College of Literature, Science, and the Arts; Michigan Medicine; *The University of Michigan: an encyclopedic survey* (U-M Press, 1941); Michigan Medicine Office of Development


Photo: J. Jefferson Gibson, 1893, U-M Bentley Historical Library


ical Chemistry--Microscopic Work.

Kevorkian answers news media questions in a courtroom press conference in March 1996, in Pontiac, Michigan, following his acquittal on two counts of assisting in a suicide.

# 141 "Dr. Death" changed the national conversation on physician-assisted suicide

"Dear Dr. Kevorkian, HELP! I am a 41-year-old victim of MS. I can no longer take care of myself. Being of sound mind, I wish to end my life peacefully ..."

This letter from 1990 is typical of the correspondence received by **Jack Kevorkian**, who was the best-known advocate for physician-assisted suicide in the United States.

Kevorkian earned a medical degree from U-M in 1952. After service in the Korean War, he returned to U-M for residency, during which he became fascinated by death and dying. He made regular visits to terminally ill patients, photographing their eyes in an attempt to pinpoint the exact moment of death and to help physicians understand when resuscitation was useless. His proposal that death-row prison inmates be used as the subjects of medical experiments while they were still alive earned him the nickname of "Dr. Death" and an ejection from the U-M residency program.

Years later, his interest in euthanasia was piqued after a visit to the Netherlands, where Dutch physicians were assisting in the suicides of terminally ill patients. In 1990, Kevorkian assisted Janet Adkins, a 54-year-old woman with Alzheimer's, in ending her life on a bed inside his 1968 Volkswagen van. He then called the police, who arrested and briefly detained him. Like so many families that would follow, Adkins' family publicly thanked Kevorkian for helping to end her suffering.

Kevorkian was convicted of second-degree murder in 1999. He served eight years of a 10-to-25-year prison sentence before he was released. In 2011, he died at age 83.

Since then, physician-assisted suicide, also called "medical aid in dying," has become more accepted. It is now legal in 10 states and Washington, D.C., and, according to a 2024 Gallup poll, 71% of Americans believe doctors should be "allowed by law to end the patient's life by some painless means if the patient and his or her family request it."

Source: *Collections*, Fall 2015



Photo: MATT CAMPBELL/AFP via Getty Images

FIRSTS

## 142

### The father of Puerto Rican statehood

"Black! Black! Black! I am proud of being a Negro. Nor have I ever tried to beg tolerance from anyone. Superiority is not proved by color, but by the brain, by education, by willpower, by moral courage." That quote, often reprinted, was a rallying cry for **José Celso Barbosa** (M.D. 1880), the first Puerto Rican graduate of the Medical School. Before coming to U-M, Barbosa was rejected by another school because of his race.

He would later advocate for the statehood of Puerto Rico, where José Celso Barbosa Day is still celebrated each year.

Source: *Medicine at Michigan*, Summer 2024

## 143

### SEX EDUCATION

**Marguerite "Peg" Shearer** (M.D. 1960) put herself through medical school at U-M, where she was one of eight women in her class. As a physician at the U-M Student Health Service, she was the first to prescribe contraceptives to students. Alarmed by some of the stories related to her by students who had undergone illegal abortions, she and her husband, Marshall Shearer, M.D. (Residency 1964), volunteered to give sex education lectures, which became incredibly popular at U-M. The Shearers also wrote a weekly article on sex for the *Detroit Free Press* that became nationally syndicated, and they published three books on sex and relationships.

Shearer was a leader in family medicine at U-M. She helped select and recruit the department's first chair in 1978 and established the AEI Sorority Endowed Medical Student Scholarship Fund in the Department of Family Medicine to support students who choose family medicine as their specialty.

Source: *Ann Arbor News* obituary

## 144

### A TEACHER'S TEACHER

In kindergarten, **Douglas Paauw** (M.D. 1985), read a book about snakes, and he was so fascinated by the subject that he started giving presentations to his classmates.

"I remember the feeling that if I knew something, I wanted to share it," he recalled in 1997 when he received the distinction of Teacher Superior in Perpetuity from the University of Washington, where he is professor of internal medicine.

His goal as a teacher is to create lifelong learners, he says. "The part I enjoy the most is seeing the students take what they are learning and then teach it to someone else."

Paauw has received many other awards, including numerous teaching awards and the Michigan Medicine Alumni Society Early Career Achievement Award in 2002. When he received the American College of Physicians Washington Chapter's Laureate Award in 2007, *University of Washington News* said he was cited for the award as a "consummate educator, a teacher's teacher" with a "legendary commitment to medical students."

Source: *University of Washington News*

**Paauw at the Medical School Reunion Tailgate Party in October 2023.**

**"The glory of medicine is that it is constantly moving forward, that there is always more to learn. The ills of today do not cloud the horizon of tomorrow, but act as a spur to greater effort.**

## 145

**William J. Mayo** (M.D. 1883), co-founder of the Mayo Clinic, speaking to the National Education Association in 1928

Source: Proceedings of the Annual Meeting, NEA, volume 66

Photo of Barbosa: U-M Bentley Historical Library; photo of Paauw: Marc-Grégor Campredon

**“[Artificial Intelligence] will serve as our future personalized digital assistant. AI won’t replace clinicians and researchers; if used responsibly, it will enhance our work as well as our ability to teach and learn. We are currently working collaboratively to develop a future strategy to do so safely, securely, ethically, and inclusively.**

# 146

**Brian D. Athey**, Ph.D., is the Michael Savageau Collegiate Professor and Chair of the Department of Computational Medicine and Bioinformatics. He is a member of the U-M Generative AI Committee, which released a report in 2023 establishing guidelines for the safe, transparent, and ethical use of AI at U-M.

Source: *Medicine at Michigan*, Winter 2024

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# 147

## WILD WEST RENAISSANCE MAN

**Michael Beshoar** (M.D. 1853) was a remarkable and complicated figure — and probably one of the most unrecognized success stories in late nineteenth century American medicine. Beshoar graduated from the Medical School in 1853. He joined the Confederate Army, but after being captured by the Union Army, he signed an Oath of Amnesty and became a surgeon for the Union until the end of the Civil War. He set up a medical practice in Pueblo, Colorado, opening the first drug store between Denver and Santa Fe. He advocated for public health measures, such as school lunches and food safety inspections, and was one of the only physicians who provided medical care for the local Native American population at the time. He served as a county court judge, county coroner, county clerk, and state legislator. He also had mining interests in several states and founded a monthly medical journal and the *Pueblo Chieftain*, the oldest daily newspaper still in operation after 157 years. Beshoar had his fair share of Wild West encounters, too. One source claims Billy the Kid threatened Beshoar with a scalping for refusing to remove a bullet from the leg of Billy’s buddy.

Source: *Medicine at Michigan*, Summer 2022

# 148

## Cardiovascular powerhouse

For more than 40 years, **Kim A. Eagle**, M.D., has shaped the careers of countless cardiovascular leaders. Recruited to U-M in 1994, Eagle made an immediate impact through his clinical and research expertise and the comprehensive outcomes research program he developed. Founder of Project My Heart Your Heart and Project Healthy Schools at Michigan Medicine, his national leadership in the American Heart Association, the National Heart, Lung and Blood Institute, and other top organizations has greatly influenced the field. He is the Albion Walter Hewlett Professor of Internal Medicine and co-director of the Frankel Cardiovascular Center.

Source: Michigan Medicine Office of Development


**“Morning Advertiser,” Trinidad, Colorado, 1892. Beshoar is wearing a top hat, center right.**



Illustration: Andrea Levy; Beshour photo: courtesy of Denver Public Library Special Collections

FIRSTS

## First Black woman graduate

**Sophia B. Jones** (M.D. 1885) was born in 1857 in Chatham, Ontario, a northern terminus of the Underground Railroad. In 1879, she was admitted as an undergraduate at the University of Toronto, but she couldn't attend medical school there due to her race and gender. In 1885, she became the first Black woman to graduate from the U-M Medical School and the first

# 149

Canadian Black woman to receive a medical degree. She founded the nursing program at what would become Spelman College, where she was the first Black woman faculty member.

Source: "Sophia B. Jones: Canada's First Black Woman to Earn a Medical Degree," *Journal of Blacks in Higher Education*

# 150

## PIONEER IN BURN MEDICINE

In the 1950s, there was no specialized program for managing burn injuries. Burn patients were scattered throughout the U-M hospital. If a patient survived, there was no formal aftercare follow-up. At that time, most patients with burns greater than 25% total body surface area did not live. In the summer of 1957, two children died from burns involving only a small area of their bodies. This case inspired third-year U-M surgical resident **Irving Feller** (M.D. 1955) to investigate how to improve the care of burn patients. He discovered that severe burn injuries could produce life-threatening complications, including systemic infections and organ systems failure. These accounted for most in-hospital deaths of burn victims. Feller also determined that a formalized protocol for the treatment of burn injuries and a dedicated "burn team" could drastically improve patient outcomes. In 1959, Feller, a professor of surgery at that point, founded the U-M Burn Center — one of the first dedicated burn units in the country and the first of its kind in Michigan.

Source: 50th Anniversary of the Burn Center

**Physicians treat the leg of a patient at the U-M Burn Center in 1973.**

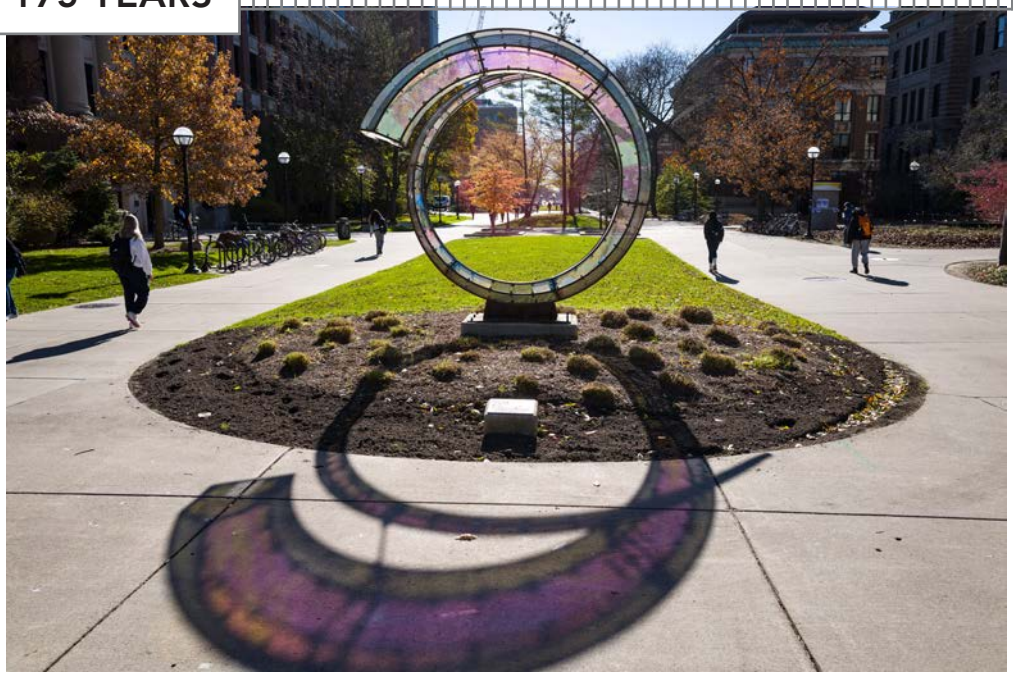
**"The experience of working with veterans is very meaningful. You feel your small part adds up to have a large impact to the benefit of the nation."**

# 151

**Michael Kelley** (M.D. 1985), national program director for oncology with the Department of Veterans Affairs. He's also a professor of medicine at Duke University and chief of hematology and oncology at the Durham VA Medical Center.

Source: *Medicine at Michigan*, Summer 2022

Burn Center photo: U-M Bentley Historical Library



"Arriving Home" sculpture on Ingalls Mall, U-M Central Campus.

**"Sacred moments are short spans of time in which people experience personal connection, powerful emotions, or spiritual qualities of transcendence and boundlessness. Sometimes referred to as 'sudden intimacies,' sacred moments can occur at times of crisis or grief and can connect people in unexpected and meaningful ways. These highly memorable moments, where time is described to 'stand still,' leave participants with a sense of joy, peace, and empathy for the others involved."**

# 152

**Sanjay Saint**, M.D., M.P.H., executive director of the Sacred Moments Initiative, a program designed in part to improve communication between patients and providers. He is also chief of medicine at the VA Ann Arbor Healthcare System and the George Dock Professor of Internal Medicine at U-M.

Source: Sacred Moments Initiative

FIRSTS

# 153

## Depression Center founder

**John F. Greden**, M.D., is the founder of the Frances and Kenneth Eisenberg and Family Depression Center, the country's first center dedicated to research and treatment of depression and bipolar illnesses. Greden served as its executive director from 2001–2021. He led efforts to establish similar programs across the country and integrated them into the National Network of Depression Centers. Most recently, he has led national, multisite efforts to find genetic markers that can help doctors choose the best antidepressant medications for patients, leading to better treatment results. Greden is the Rachel Upjohn Professor Emeritus of Psychiatry and Clinical Neurosciences.

Source: U-M Department of Psychiatry

# 154

## MENTAL ILLNESS EXPERT

**Raymond W. Waggoner** (M.D. 1924) chaired the U-M Department of Psychiatry from 1937–1970. In that time, he set up one of the country's first psychiatric units in a general hospital. He was one of the first psychiatrists to see mental illness as both an emotional and physical problem. In the 1940s, Waggoner helped to standardize the mental fitness criteria used in screening potential soldiers in the Selective Service. After the war, he helped design the selection process for the Peace Corps. Waggoner maintained a strong interest in medical ethics and values throughout his career. The Raymond W. Waggoner Lectureship on Ethics and Values in Medicine was established in 1995 in his honor.

Source: U-M Department of Psychiatry



Photo of "Arriving Home:" Christopher Billick/VP Communications/University of Michigan; photo of Greden: E. Bronson, Michigan Photography

# 155

## THERAPY FOR ADRENAL GLAND DISORDER

In the 1950s, endocrinologist and professor of internal medicine **Jerome W. Conn** (M.D. 1932, Residency 1934) discovered the disease now known as primary aldosteronism, or Conn's Syndrome. Conn's research demonstrated that the disease, caused by an adrenal tumor secreting excessive amounts of the adrenal hormone aldosterone, was a major cause of hypertension. He determined primary aldosteronism could be cured through the surgical removal of the adrenal tumor.

Source: U-M Bentley Historical Library

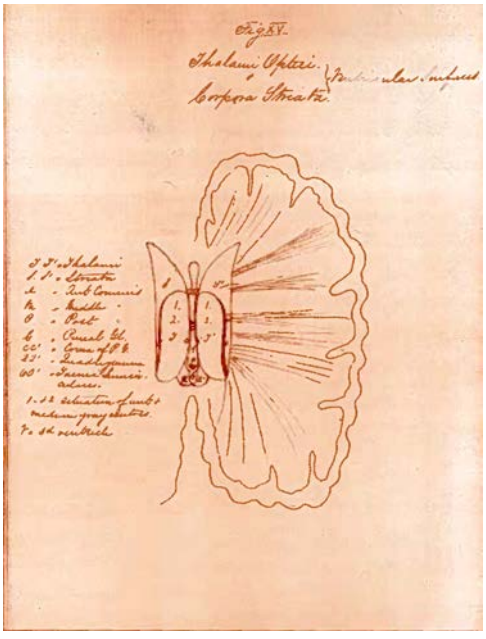


Illustration from Emma Call's thesis, "Arrangement of Neurine in the Cerebro-Spinal Axis"

**"I entered the Medical Department of the University the first year that women were admitted. The first class of women ... were naturally the objects of much attention critical or otherwise (especially critical) so that ... it was quite an ordeal. I believe that only one of the medical faculty was even moderately in favor of the admission of women, so that it speaks well for their conscientiousness when I say we felt that we had [a] square deal from them.**

# 157

**Emma Louise Call** (M.D. 1873) was one of the first women admitted to the Medical School. According to one source, "The professor of chemistry, Silas Douglas, did not intervene when the men students stamped their feet and shouted as the women entered the lecture room." After medical school, Call's research in Vienna with Sigmund Exner led to the discovery of eosinophilic follicles in ovarian tumors, later named Call-Exner bodies.

Source: *Medicine at Michigan*, Fall 2000

TRANSFORMATIVE PHILANTHROPY

# 156

## BUILDING A HOME FOR DISCOVERY

**William N. Kelley**, M.D., was chair of the Department of Internal Medicine from 1975–1989, transforming it into one of the top recognized research engines in the country. He had a reputation for creating an environment of possibility and progress. During his tenure, U-M was awarded the first NIH grant, proposed by Kelley and his colleagues, to advance investigations for in vivo gene therapy. Moreover, he launched a research institute fundraising initiative that resulted in the three Medical Science Research Buildings that today are home to the work of proven and burgeoning leaders in scientific discovery.

Source: Michigan Medicine Office of Development

# 158 Medicine and media

Gupta met his wife, Rebecca, while he was at U-M. They are both committed to U-M and Michigan Medicine. Rebecca is a member of the Michigan Medicine Advisory Group. "It is so incredible to see the powerful impact of philanthropy," she says. "For example, many people end up in the hallways outside of the emergency room waiting for a bed. Because of the incredible donations Michigan receives, not only is groundbreaking research happening, but also new hospitals are being built creating more beds for people in need."

Typically, **Sanjay Gupta** (B.S. 1990, M.D. 1993, Residency 2000) begins his week at Grady Memorial Hospital in Atlanta, where he's been a neurosurgeon for almost 25 years. He usually operates on Mondays and sees patients on Thursdays. On the other days, he's doing what he's perhaps best known for — working as the chief medical correspondent for CNN.

Growing up the son of engineers, Gupta thought he might follow in their footsteps. But he was drawn to the medical field in his early teens after his maternal grandfather became ill. "I was spending long chunks of time in hospitals, going there almost every day after school and so that's when I kind of fell in love with medicine."

In 1986, Gupta enrolled in U-M's Inteflex Program, an accelerated program that accepted medical students directly from high school and allowed them to earn undergraduate and medical degrees in six years.

"It was a fantastic program for me," he says. "We got to go through college and med school fast. We didn't have to take the MCATs. It was pretty heavy stuff for a 16- or 17-year-old kid. It's a big decision to make at a really young age."

That big decision paid off. Gupta considers his years at the Medical School to be the most formative experiences of his life. What set U-M apart, he says, was the university's openness to new ideas and its interdisciplinary nature. His interest in journalism began at U-M, too. As a student, he wrote about health policy in op/eds for the *Michigan Daily*. "That was the amazing thing about Michigan. If you woke up with an idea, not only could you pursue it, you could talk to someone about it."

After completing his residency at U-M, Gupta joined Emory University's College of Medicine as an associate professor of neurosurgery. For Gupta, splitting his time between the hospital, medical school, and CNN is a natural fit. "As a doctor, I take care of patients one at a time," he told *LSA Magazine* in a 2008 profile. "As a journalist who is a doctor, I have the opportunity to educate masses of people every day on CNN." —*Lauren Talley*



Photo of Gupta, above: Jeff Hutchens/Reportage for CNN. Planet in Peril, Democratic Republic of Congo, Africa. TBS, Inc.


Davenport in the lab, 1972.

# 159

## GASTRIC MUCOSAL BARRIER

**Horace W. Davenport**, Ph.D., was a physiologist best known for defining the gastric mucosal barrier. His research into how gastric acid works in digestion without damaging the stomach laid the foundation for more effective ulcer treatments. He chaired the physiology department from 1956–1978. Inspired by his early years of teaching, Davenport wrote the textbook *ABC of Acid-Base Chemistry* based on his lecture notes. After his retirement, he devoted his time to the history of medicine, publishing two books about the foundation and evolution of the U-M Medical School.

Source: *The Lancet*

# 160

## PERNICIOUS ANEMIA TREATMENT

In the 1920s, the disease pernicious anemia was mysterious and deadly. After it killed Thomas Henry Simpson in 1923, his wife, Catherine MacDonald Simpson, created an institute devoted to its study and a cure. In 1927, **Cyrus Sturgis**, M.D., came to U-M as professor of internal medicine and director of the newly founded Simpson Memorial Institute. In 1929, Sturgis and his colleagues developed the therapeutic compound ventriculin as a treatment. A noted hematologist and past president of the American College of Physicians, Sturgis also served as chair of the U-M Department of Internal Medicine for three decades.

Sources: U-M Faculty History Project; "Fighting pernicious anemia," *University Record*

# 161

## OPHTHALMOLOGY LEADER

**Paul Lichter** (M.D. 1964, Residency 1968) professor of ophthalmology and visual sciences, has been a vital force during his more than 40 years with the department. He was chair when the W.K. Kellogg Eye Center opened and served as its founding director. He has shared his leadership expertise in many other roles on campus and beyond, including as the 100th president of the American Academy of Ophthalmology. He currently chairs U-M Medical School's Clinical and Educational Conflict of Interest Committee. Lichter received his undergraduate and medical degrees and conducted his ophthalmology residency at U-M, making him a triple Wolverine.

Source: U-M Kellogg Eye Center

**"The Department of Pediatrics was originally named the Department of Pediatrics and Communicable Diseases. The children's hospital was built on servicing children with polio and TB. That's a very rich part of our history.**

# 162

**Valerie P. Opipari**, M.D. (Fellowship 1990), chaired the U-M Department of Pediatrics from 2003–2018. Opipari was also instrumental in securing the financial support needed to build the University of Michigan Health C.S. Mott Children's Hospital and Von Voigtlander Women's Hospital, which opened in 2011. She advocated for including a negative pressure unit in the new hospital that could be used to isolate patients with highly communicable diseases. This became an important resource during the COVID-19 pandemic.

Source: *Medicine at Michigan*, Winter 2022

# 99

Photo of Davenport: U-M Bentley Historical Library

**“There’s an important tension between respecting patients’ informed consent and also supporting generalizable research. The ideal resolution is a structure that doesn’t put those two in tension to begin with.**

# 163

**Kayte Spector-Bagdady**, J.D., M.B.E., is associate professor of obstetrics and gynecology at the Medical School. An expert on health law and bioethics, she is the first person to make tenure at the Medical School with J.D. as a terminal degree. In 2023, she was invited to the White House to discuss bioethics related to AI in health care.

Source: Michigan Medicine Health Lab blog

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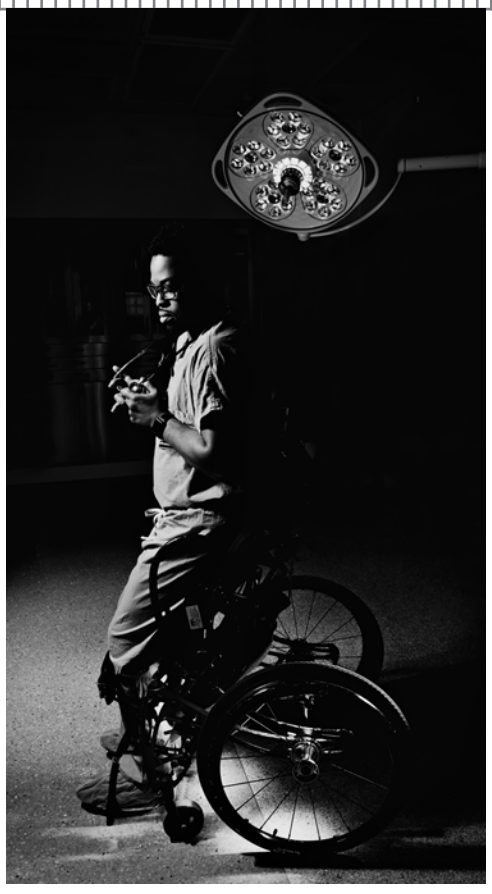
# 164

## DISABILITIES CHAMPION

In 2013, **Oluwaferanmi Okanlami** (M.D. 2011) suffered a spinal cord injury at a pool party, an experience that has fueled his efforts to create access for and change the way the world views people with disabilities. Okanlami is assistant professor of family medicine, of physical medicine and rehabilitation, of urology, and of orthopaedic surgery at the Medical School. He is also head of disability services and a champion for adaptive sports. In 2022, he was honored on “Good Morning America” and given $1 million from the Craig H. Neilsen Foundation, which is committed to changing the world for those living with spinal cord injuries. Throughout his career, Okanlami has exemplified one of his main tenets: that disability doesn’t mean inability. “We all have our unique contributions we can make,” he says. “Instead of being limited based on what we cannot do, we need to be given the access to show what we can.”

Sources: ABC News; *Medicine at Michigan*, Winter 2019



# 165

## A LEGACY OF RADIOLOGY

During his 40 years at U-M, **William Martel**, M.D., led the Department of Radiology to national prominence, recruiting many faculty members and mentoring future radiologists. He oversaw the construction of the department in the new University Hospital and the acquisition of the first MRI system in the state. Martel was a strong advocate for the role of radiology in medical student education and his elective course in radiology was one of the most popular at the Medical School. Martel was considered a pioneer in the radiology of joint diseases and was referred to as the “father of the radiology of rheumatic diseases.”

Source: Obituary from Ira Kaufman Funeral Home

# 166

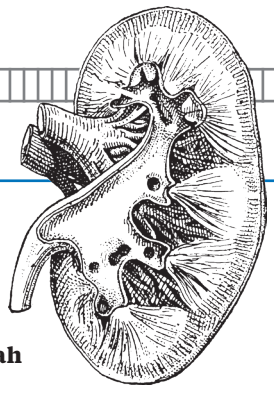
## ENDOCRINE SURGERY PIONEER

When **Norman Thompson** (M.D. 1957, Residency 1960) began his career, endocrine surgery did not exist as a specialty. At the time, a number of seminal discoveries about hormonal activity as well as functional imaging of tumors began to define the need for a surgical field devoted to endocrine patients. In 1979, Thompson established the first division of endocrine surgery in the nation at the Medical School. He went on to gain international renown for his expertise in thyroid cancer, hyperparathyroidism, adrenal tumors, and multiple endocrine neoplasia type 1.

Source: American Surgical Association obituary



Photo of Okanlami: Leisa Thompson



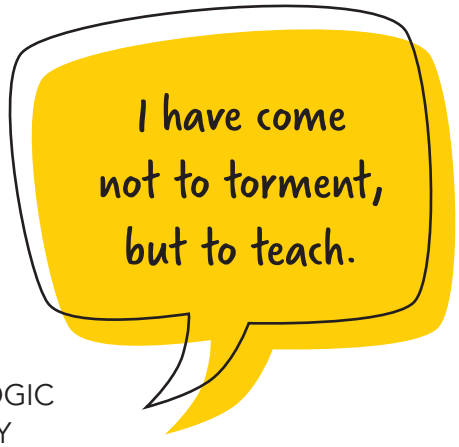
FIRSTS

## Transplant firsts

# 167 & 168

In 1964 at University Hospital, **Jeremiah Turcotte** (M.D. 1957, Residency 1963) and **C. Gardner Child**, M.D., performed the first kidney transplant in Michigan. Child and Turcotte also developed a scoring system to predict operative mortality associated with portocaval shunt procedures. The system was modified by R.N.H. Pugh and co-workers in 1973 and became the Child-Turcotte-Pugh (CTP) score, which has been used for decades as a prognostic tool for patients with cirrhosis.

Source: *Medicine at Michigan*, Fall 2020




# 169

LEADER IN GYNECOLOGIC ONCOLOGY

**George W. Morley** (M.D. 1949, Residency 1954) was one of the founding members of the gynecologic oncology subspeciality. Morley was best known for his work as a surgeon for benign and malignant gynecologic disease. His career at U-M spanned more than 50 years. As a teacher and colleague, he taught kindness and humanity in addition to medicine. Colleagues fondly recall his book of "Morleyisms" — sayings he adopted or created. The fall 2003 issue of *Medicine at Michigan* quoted several "Morleyisms," including "I have come not to torment, but to teach" and "I don't care how much you swear at me during your training, as long as you swear by me afterwards."

Source: *University Record* obituary

# 170

FROM "HOUSEWIFE" TO PHYSICIAN

A 1971 profile on **Jane Bloom** (M.D. 1974) in the *Parke-Davis Review* describes her as a "diminutive housewife" on a quest to receive her medical degree by age 50. After raising 10 children, Bloom decided to pursue her dream of becoming a doctor. She graduated from the Medical School and had a 30-year career in internal and emergency medicine, retiring in 2005 at age 80.

Source: *Medicine at Michigan*, Fall-Winter 2015

**"I think you get real satisfaction from your work when you're able … to think about how we can use health care innovation and discovery to affect communities and society at large. Being involved in research that has helped advance policies has been very meaningful to me.**

# 171

**Okeoma Mmeje** (M.D. and M.P.H. 2006), associate professor of obstetrics and gynecology at the Medical School. Her research on sexually transmitted infections (STIs) includes studying expedited partner therapy (EPT). It allows patients who test positive for an STI to receive medication for themselves and their partner, even if the partner was not seen by a doctor. Mmeje found that in states that allow EPT, the incidence of certain STIs was lower. The therapy was approved for use in Michigan in 2015.

Source: *Medicine at Michigan*, Fall 2017

# 173

## A SECOND OPINION ON GEORGE FLOYD'S DEATH

When **Allecia Wilson** (M.D. 2004, Residency 2007) saw the video of Minneapolis police officer Derek Chauvin with his knee on George Floyd's neck, she knew what she was witnessing. Wilson is an associate professor of pathology at the Medical School and director of autopsy and forensic services. "I had faith in our medical system [but] when the preliminary findings were released, I was sure it was a mistake," she said in June 2020. The Hennepin County Medical Examiner's office classified Floyd's death as a homicide, but listed "cardiopulmonary arrest while being restrained by law enforcement officer(s)" as the cause of death, rather than traumatic asphyxia. In other words, there was room for doubt as to whether Chauvin was entirely responsible for Floyd's death.

When Floyd's family requested a second autopsy, Wilson was one of two pathologists who took on the work. Wilson worked alongside high-profile forensic pathologist Michael Baden, M.D., to complete a second autopsy. Wilson and Baden concluded that Floyd had died as the direct result of the pressure placed on his body by all three of the police officers at the scene.

Source: *Medicine at Michigan*, Summer 2020

**"As soon as it was out of my mouth, I knew that it would work, that you can map any gene. I still don't understand why nobody thought of it before."**

# 172

**David Botstein** (Ph.D. 1967) was quoted in the *Daily Princetonian* in 2006, referring to his landmark 1980 paper suggesting the human genome could be mapped. He earned his undergraduate degree from Harvard before earning a Ph.D. in human genetics at the U-M Medical School. A giant in the field of genetics, Botstein also helped develop a statistical method and graphic interface that is widely used to interpret genomic data and has been refined for molecular classification of tumors.

Sources: "Cluster analysis and display of genome-wide expression patterns," *PNAS*, December 1998; "Mapping the path of genetics," *Daily Princetonian*

# 174

## 14th U.S. surgeon general

Born and raised in Puerto Rico, **Antonia Novello**, M.D. (Residency 1974), came to the Medical School for a residency in pediatrics. Novello later served as the first woman and first Hispanic U.S. Surgeon General from 1990–1993. While in that position, she focused on the health of women, children, and minorities; underage drinking; smoking; pediatric AIDS; and immunization.

Source: U-M Alumni Association

Photo of Antonia Novello: U.S. Public Health Service

# Make way for ducklings

In 1956, *LIFE* magazine ran a photo essay titled "Animals Make a Hospital Happy." The article detailed the array of creatures that could be found on the U-M hospital campus: "University Hospital's menagerie has at various times included rabbits, ducks, a pair of coati mundis, an alligator, an ostrich and a deodorized skunk. Ever since the program started over 30 years ago, sponsored by a Kiwanis donation, the young patients have been getting such a beneficial kick out of their pets that the hospital staff now refers to the animals as 'the therapeutic faculty.'" The original caption for this photo says, "Dinner for ducklings was eagerly handed out by children crowding around a pool set up on the hospital sun deck. The ducklings were lent by an Ann Arbor farmer."

Photo: Francis Miller The LIFE Picture Collection/Shutterstock

TRANSFORMATIVE PHILANTHROPY

## "For generations to come"

**175**

In 175 years of momentum and growth, **our supporters** have made progress possible. Alumni, entrepreneurs and business owners, farmers and teachers, auto workers, and many others across the state of Michigan and beyond have advocated and supported every hospital, every comprehensive institute and center, and every innovation incubator. They have lobbied in Lansing and made transformational gifts for new hospital buildings, had the foresight to provide seed money for new research projects that went on to change health care, and believed in and supported thousands of faculty members and medical and graduate students. Last year alone, more than 20,000 people committed $391 million to help us achieve our mission. Today, we have a $3 billion endowment, with 373 medical school scholarships supporting our students. We also have more than 480 professorships fueling leadership activities across patient care, research, and education.

In the early 1990s, George Amendt, his wife Anne Heller Amendt, and their family visited to see what the Amendt-Heller Newborn Research Fund was achieving. They met "a very intellectual group of people who obviously love their work," George recalled. He echoed the feelings of many donors when he said, "We are happy to know that our endowment will support such work for generations to come."

Sources: Michigan Medicine Office of Development; U-M Health System

# You can make a difference

Celebrate the proud history of the Medical School while helping to shape a brigher future. Your gift will support initiatives and programs that enable all learners — M.D. and Ph.D. students, residents, fellows, and faculty — to pursue bold, innovative ideas and activities that will change medicine. Use the QR code to make a donation.

# Back Cover Answers


## What is your favorite bit of med school lore?

Hinerman's Law: "You give a medical student a choice between two things and he'll pick the wrong one every single time."

Background: Dorin Hinerman, M.D., was a full professor in the Department of Pathology in 1957, and as a full professor he didn't have to teach the sophomore microscopic pathology lab. But he loved to teach, and he loved medical students, and he loved to harass medical students. In addition to being an excellent teacher, he had a great sense of humor. We were laughing every day. So the scenario was that he would call on one student to get up in front of the class and talk about a microscopic slide being projected up on a screen. I was fortunate enough to be in his half of the class.

Hinerman: "Mr. Van Krimpen, describe what you see!"

Van Krimpen: "Well, the entire field is covered with white blood cells."

Hinerman: "White blood cells! Well, Mr. Van Krimpen, are those lymphocytes or granulocytes?"

Van Krimpen: (Pause). "Lymphocytes."

Hinerman: "Wrong! There, you see? You give a medical student a choice … "

**Carl Van Krimpen** (M.D. 1960)

In November 1964, the game day in Columbus was cold, around 10 degrees or so, and Dave Hershey (M.D. 1966) and I had spent the game kneeling on the OSU sideline trying to keep warm. The *Michiganensian* photographer Jerry Aronheim had drafted us as "caption writers," but it was just a ruse to get us a free sideline view.

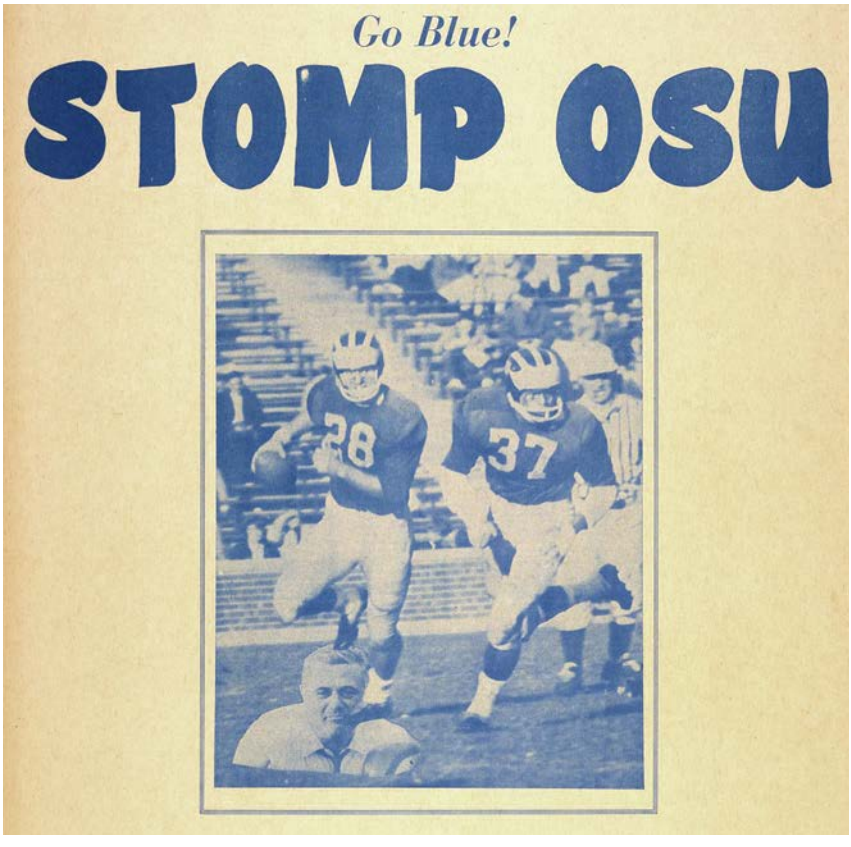
OSU coach Woody Hayes stood nearby in his customary shirtsleeves and cap, trying to demonstrate his toughness, and he remained so with less than 45 seconds to go and Michigan about to win 10 to nil.

We had lost track of Jerry, and of course had written no captions, when he suddenly reappeared creeping up behind Hayes and holding a rolled up copy of that morning's *Michigan Daily*. The paper had printed a full-page ad — a composite photo of Hayes' head being pushed into the turf under a Michigan player's very large cleat. Jerry proceeded to insert it under Woody's right arm, which was no doubt frozen beyond full proprioception. Then he disappeared down the sideline leaving Dave and myself gaping in disbelief.

Hayes did not react, but someone who may have been an assistant coach quietly came up behind Hayes and withdrew the document and pocketed it. Given Hayes' later semi-violent sideline tantrums, I believe anyone might agree that we were quite fortunate. And given current security protocols, these days that stunt might have landed us in a Columbus jail for a short stay. (In later years, Jerry has denied doing any of this, but we were nonplussed witnesses to the deed.)

We beat it back to old P-Bell that evening to celebrate the victory and an upcoming Rose Bowl trip.

**Paul Helman** (M.D. 1966)




*Michigan Daily*, November 21, 1964. Courtesy of the U-M Bentley Historical Library.

# Back Cover Answers

**"When I saw that students of the class of 1881 were posing with a skeleton wearing a top hat, I knew I would be in for a wild ride."**

Brian Ito (M.D. 1981)


It has been over 50 years, but I still remember my first walk up the "Hall of History," between the Medical School and University Hospital with pictures of graduates from every University of Michigan Medical School class stretching back into the 1880s hanging on the walls. I was filled with a sense of awe of being on hallowed ground and being about to enter into a momentous endeavor that would be larger than me alone.

Then, when I saw that students of the class of 1881 were posing with a skeleton wearing a top hat, I knew I would be in for a wild ride.

**Brian Ito** (M.D. 1981)

A two-week ENT class was a requirement in our first two years of med school. The class, although partly didactic, primarily involved lab to learn various forms of intubation. Each student was paired with another student, each in turn being the guinea pig. Coincidentally, my assigned partner was one of my closest med school friends.

During hands-on practice, I was easily able to accomplish the required procedures. Sadly, my friend could not master essentially any of the techniques. Why? Because I was a terrible guinea pig, one with a terrible gag reflex. Gagging, sometimes throwing up, I sealed my friend's fate. He failed the class. I felt tenable.

During a short summer break from classes, my friend repeated the ENT class. This time he passed.

When we were seniors, looking for internships, I was incredibly amused to find out that my friend was applying for an internship which would lead to a career in ENT.

Not only did he become an otorhinolaryngologist but, in time, the chairman of an ENT department at a major university medical center. And yet he accomplished even more. With further training, he became a world-renowned neuro-otologist, doing very highly specialized intricate surgery for pathology of the cranial nerve necessary for hearing and balance.

As is asserted by horse riders and others; "You're not a rider unless you've fallen off seven times."

**Cary Stegman** (M.D. 1970)



Photo: U-M Bentley Historical Library

Dr. Paul Gikas was, by far, the very best teacher/professor I had in all of college and medical school. In clinical medicine lectures, he showed photos of automobile accident victims with radio knobs inside their skulls as well as photos of numerous other, often fatal, injuries. Dr. Gikas was instrumental in both improving automobile safety and in convincing a reluctant me to wear a seatbelt. In his renal lectures he would show, side by side, a normal renal cortex and a diseased one so we could better understand both the disease and the pathology.

We were divided into small groups for pathology. By the luck of the draw, I was assigned to Dr. Gikas' class. Here he excelled. He might call you Jack even if you were Karen or Jim. He would tell us, "You can get anything you want in Fairbanks, Alaska." But mostly he taught exceedingly well. I'm sure I disappointed him on an exam when we were to identify a renal pathology slide of hydronephrosis. For the life of me I could not recall the proper name and eventually wrote down 'hyperhydrosis.'

I think everyone in that class loved Dr. Gikas. We planned a surprise birthday party for him. One of the medical students made a cake and others of us came up with gag gifts. We knew he was a runner so one gift was a pair of beat up, worn out running shoes. He ate his piece of cake and laughed heartily at the gifts. He then asked with some alarm if the frosting was made with butter. "Jack" confessed it was. Apparently, he did not eat butter, except for that special day.

In medical school I knew for certain I did not want to be a pediatrician (sick kids and anxious parents), a neurologist (incomprehensible) or a nephrologist (also incomprehensible). I became a nephrologist, at least in part, because of Dr. Gikas.

**Paul G. Smith** (M.D. 1977)

During my first week of neurosurgery rotation, I found myself in the OR with Edgar Kahn (M.D. 1924) and a surgical intern in his first week of internship. Eddie Kahn did a brief craniotomy with a new saw he was trying out. The sales rep from the company that made the saw was in the OR. As soon as he was done, he walked out with the sales rep saying to the intern and me, "You two can close." Of course neither one of us had a clue what to do. The nursing staff identified the problem immediately, called a neurosurgery resident, and all ended well.

"The green light is on" was announced when an autopsy was starting. The line of colored bulbs around the hospital only had a green bulb illuminated. We all ran to the autopsy room because we had to attend a requisite number of autopsies and assist on one or two.

"Grades are up" meant a paper had been posted on the bulletin board with our exam grades. They were coded for privacy; I was #1011.

During my internal medicine rotation, there was a refrigerator full of stool samples that were to be tested for occult blood with a "stool guaiac." It seemed like they were there forever and never tested. At the same time, Frank Mowry, M.D., was the chief resident of internal medicine. Apparently his primary job was to check the medical students' sections of the chart, and when he saw no guaiac recorded he wrote "F.M. guaiac." We referred to him as F.M. Guaiac.

During a neurosurgery lecture by Richard Schneider, M.D., I fell asleep — the only time in my life I ever did so in class. I was awakened by him saying, "You in the blue shirt, wake up and learn these three signs of increased intracranial pressure: headache, vomiting, and papilledema, and then you can go back to sleep." I couldn't have been more embarrassed.

I was sitting in the front row of a neurosurgery lecture being given by Eddie Kahn, M.D. He was putting up films from a pneumoencephalogram, and he described them as post-op showing no residual tumor. Glenn Kindt, M.D., was the resident assisting him in the presentation, and he whispered to Dr. Kahn, "Those are the pre-op films." Dr. Kahn responded, "They'll never know the difference," and continued without hesitation.

**Robert S. Sweet** (M.D. 1965)

# The wrong side of history

## Acknowledging difficult aspects of our past

BY KATIE VLOET

While we've shone our spotlight on the proud history of Michigan Medicine, we would be remiss if we did not mention a few of the less savory elements. This is not a comprehensive list of past misdeeds, but the three people highlighted here represent three groups: people who were wrongfully excluded from the Medical School because of their identity, people who subscribed to popular ideas that we now acknowledge are wrong, and people who committed heinous crimes. Remembering these moments reminds us that we are fallible and the success of our mission relies on each of us striving daily to do our best for our communities.



Photo: First Medical School building, U-M Bentley Historical Library

## A victim of racism

It was October 1863 — around halfway through the Civil War — when Alpheus W. Tucker came to the Medical Department at U-M and submitted his enrollment fee. He had come to Michigan in part because another mixed-race student — John H. Rapier, Jr. — had already been admitted to the department.

But some students and faculty quickly made it known that he was not welcome. When Tucker entered a lecture hall, according to the U-M William L. Clements Library's *Quarto* publication, "he was greeted by jeers from students already seated for the lecture. As a dark-skinned, mixed-race man, Tucker suffered shouts of 'take him out!'" and a variety of slurs, leaving him "visibly alarmed." The professor arrived and asked Tucker to leave; Tucker did so but attended other classes until about a week later, when a faculty member told him "that objections of the students compelled him to ask Tucker to leave the University entirely."

Not only was Tucker asked to leave, but his presence at the school was literally erased when a secretary wiped his name off the student register.

Detroit-native Tucker explained his departure in a letter to the editor in an anti-slavery publication. "I question very much whether a dozen students out of the 300 in attendance ever said a word to the Professors in regard to my being there, and I have good reasons for believing that the objection originated with one of the Professors and not the students," he wrote.

Tucker earned his medical degree in Iowa and practiced in Washington, D.C.; he died in Detroit in 1880. "Had Tucker graduated from U-M," the Clements Library publication pointed out, "we would now be celebrating his presence here."

## A prominent proponent of eugenics

"Victor C. Vaughan (1851–1929) was a noted medical educator, microbiologist, and active proponent for the idea of eugenics." That tidy summary of the longtime Medical School dean is found in an article authored by Medical School professors Joel D. Howell, M.D., Ph.D., Laura Hirshbein (M.D. 1997), Ph.D., and Alexandra Minna Stern, Ph.D., who examined the entanglements of eugenics, public health, and academic medicine in Vaughan's life story.

To be sure, Vaughan's legacy is a complicated one; he was a widely respected educator and leader, the first dean of the Medical School appointed by the president and Board of Regents, and the longest-serving dean in the school's history. He pushed for science-based curriculum changes at the Medical School and was an early believer in germ theory. His early-career work on separating arsenic from other metals was considered groundbreaking, and he helped lead investigations into the typhoid fever epidemic during the 1898 Spanish-American War and the influenza epidemic in 1918.

Yet Vaughan lectured about "race betterment" and enthusiastically supported forced-sterilization legislation in Michigan. In one talk, Vaughan warned of the "alarmingly large class of morons" who "constitute a menace to the betterment of the race." In another, he said, "There must be laws preventing the marriage and reproduction of the unfit."

**"Had Tucker graduated from U-M, we would now be celebrating his presence here."**

In 2019, a group of medical students chose to remove his name from a medical society, and an endowed professorship removed his name. The building at 1111 E. Catherine Street continues to be named for him.

In their article, Howell, Hirshbein, and Stern wrote: "We conclude that the use of any name from the past carries meanings about what our values are in the present and that, if there was ever a moment to celebrate the life of Victor Vaughan, that moment has passed."

## The devil

He was Herman Webster Mudgett or Dr. Henry Howard Holmes or H. H. Holmes. He was nicknamed the Beast of Chicago, the Devil in the White City, and the Torture Doctor. And he was a U-M Medical School alumnus.

In 1882 and then known as Mudgett, Holmes enrolled at Michigan, which was "noted for its emphasis on the controversial art of dissection," the author Erik Larson wrote in the 2004 book *The Devil in the White City*. Mudgett graduated in 1884 and would go on to become one of the first documented serial killers in the United States.

By many accounts, he did not distinguish himself as a student. The *Ann Arbor Argus* reported that he "did get into trouble" with a Mrs. Fitch, a widowed hairdresser, who demanded that he marry her — which he couldn't do because he was already married. He "narrowly escaped expulsion" when the matter was brought before the medical faculty. Victor Vaughan, the *Argus* reported, voted for him not to graduate.

Several accounts say that he began to procure cadavers to study, dissect, and use in his own research during medical school. He is said to have robbed graves and morgues to sell cadavers to medical schools and swindle insurance companies.

In a house in Chicago that became known as his "murder castle," as well as in other locations, Mudgett/Holmes seduced many young women and then killed them in the house that he built himself, complete with trap doors and a kiln for cremation. The exact number of his victims is unknown, though estimates are as high as 200 people. He killed many of them during the World's Fair in Chicago in 1893.

In his confession in 1896, Holmes said: "I was born with the devil in me. I could not help the fact that I was a murderer, no more than the poet can help the inspiration to sing."

The dome of the Judy and Stanley Frankel Detroit Observatory, built in 1854, sits against the backdrop of the University of Michigan Health D. Dan and Betty Kahn Health Care Pavilion. The Detroit Observatory is the second oldest building still standing on the U-M campus (the President's Residence is the oldest). The Kahn Pavilion is one of the newest and is scheduled to open its doors to patients this year. Photo: Scott Soderberg, Michigan Photography

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# Hey Alums!

# "Who did we miss?"

This issue celebrates 175 people who have helped shape the 175-year history of the Medical School, but it isn't comprehensive. If we missed someone important to you, email us at medicineatmichigan@umich.edu. We'll publish responses in our next issue.