

ALUMNI

MAYO CLINIC ISSUE 1 2019



MAYO CLINIC
LABORATORIES

INDEPENDENT
STEPPING

LIMB LOSS
REGISTRY

LETTER FROM THE PRESIDENT

Welcome to 2019 from the North! Both Mayo Clinic and the Mayo Clinic Alumni Association had successful years in 2018. Both organizations continue with great leadership. Read about two of our new Alumni Association Board members (p. 38) and the Mayo Clinic leadership transition (p. 2). Mayo has a tradition of those at the helm modeling servant leadership. This style of leadership places employees at the forefront, which allows us to put the needs of patients first. Our new CEO, Dr. Gianrico Farrugia, describes himself as a servant leader, and we're excited to see all he will accomplish.

In this issue of *Mayo Clinic Alumni*, you'll learn how Mayo continues to innovate, collaborate and develop solutions for complex medical issues. Mayo Clinic has been known for innovation since 1905, when the first frozen section for tissue diagnosis at the time of surgery was developed. And for developing the first not-for-profit medical practice aligned with research and education in 1919. For the discovery of cortisone in 1950 and subsequent

Nobel Prize. And for the first FDA-approved hip replacement — the result of work by Dr. Mark Coventry — in 1969. (See p. 33 for a story about a group of surgeons inspired by Dr. Coventry.)

I invite you all to Rochester in September for the Alumni Association Biennial Meeting (p. 36). The theme is "Together, **We** are Mayo Clinic." I promise the weather will be better than what we've experienced this winter.



ERIC EDELL, M.D. (THD '88)

- President, Mayo Clinic Alumni Association
- Division of Pulmonary and Critical Care Medicine
- Mayo Clinic in Rochester

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About the cover: William Morice II, M.D., Ph.D., president of Mayo Clinic Laboratories, oversees the 24 million tests performed annually for 4,500 internal and external customers around the world, representing 4.5 million patients.





Q&A

with

**GIANRICO
FARRUGIA, M.D.,**

*Mayo Clinic's
new president and CEO*

Mayo Clinic rings in a new year with a new president and CEO, Gianrico Farrugia, M.D. (I '91, GI '94). A self-described servant leader and change agent, Dr. Farrugia has had a 30-year career as a Mayo Clinic physician.

Tell us about your career.

Like every other physician, I got into medicine because I wanted to take care of patients. When I started to take care of patients as a medical student, I, like all of us, had some patients that we really couldn't help. And that drove me to get into research, to try to find answers. That led me to basic science and then to translational science and then to clinical research. Those drivers — patient care and research, together with the opportunity to educate a new generation of physician scientists — are really powerful. They'll stay with me forever. I'll find ways of incorporating them in my new role.

What are you most excited about being CEO?

I had the privilege of leading Mayo Clinic in Florida and, before that, the Mayo Clinic Center for Individualized Medicine. In both experiences I found that, at Mayo, we can build strong teams that can transform medicine. We can really scale up and accomplish things. Therefore, I'm truly excited now having this opportunity to lead the entire enterprise and work with the best staff in health care to drive change.

Building the destination practices at all sites is also very exciting for me — the fact that we can work together to really provide patients with what they need. They can come to Mayo, find their answers and live better lives. That's exciting.

I'm also excited to build a more diverse staff equipped with tools for resiliency, empowerment and decision-making. Threats and crises no longer come with advance warning. Mayo Clinic employees must be ready to respond to change and challenges and even anticipate them. We need a more resilient Mayo Clinic with a more resilient organizational culture. Resiliency in this context is very different from

resiliency to prevent burnout. It is the ability to positively, proactively respond to change.

What do you foresee as your biggest challenge?

From an external standpoint, sometime — probably soon — the organization will be faced with an economic downturn as a result of cyclical economic contraction. Health care disruption also will come faster in the next 10 years than in the last 10 years. We need to prepare to adjust for the next issues by creating new revenue opportunities to support our mission while evolving into a modern, premier health care organization that is still clearly recognized as the best place to seek care.

We need to plan now for the year 2030, when 60 percent more people will be above age 65. This future state will require us to find new ways to deliver care. We cannot rely on commercial insurance companies and employers to subsidize our Medicare losses. And we cannot rely on our practice as our overwhelming dominant source of revenue. We need new revenue-generating platforms that will also enrich our practice. We have the opportunity to create a health care-specific platform, an interactive ecosystem that allows medical knowledge to be amplified with partners, creating a virtuous cycle of innovation and value.

How would you describe your communication style?

I am direct and straightforward and want others to be the same with me. It's very hard to offend me, and I want people to tell me what they think. I like walking around in the early mornings and late evenings talking to people. I like to question assumptions and am data driven. I ask lots of questions, and I like to listen and learn from the answers.

 **I'm a very optimistic, high-energy, collaborative person who loves working with people who are smarter than I am."**

– Gianrico Farrugia, M.D.



Mayo Clinic President and CEO Gianrico Farrugia, M.D., spoke to alumni at the 2017 Biennial Meeting in Jacksonville, Florida.

What is your leadership style?

I'm a servant leader who is also a change agent. As servant leaders dedicated to patients' best interests to restore them to full life and health, Jeff Bolton (chief administrative officer) and I will create and support our teams, working closely, inclusively and tirelessly with everyone at Mayo Clinic, and externally, to ensure a stronger and more diverse Mayo Clinic for generations to come.

I'm deeply committed to our values, mission and success. In partnership with our staff across Mayo Clinic, we will affirm Mayo Clinic's position as the global health care leader.

How would you describe yourself/your personality?

I'm a very optimistic, high-energy, collaborative person who loves working with people who are smarter than I am. I'm excited about the opportunities that we have to build Mayo Clinic together. This work brings me joy.

What will you focus on that might be different because of challenges in health care today?

We will build on what we have accomplished in the last decade, and we're in an excellent position to do

so. As one of our trustees put it — evolution with purpose. To drive better care for our patients we must focus on investing in research and education — to not follow trends but create them. We need to better capture and use our data to both enrich our practice and create new value. In this environment of constrained reimbursement, we will engage with new partners and create new and even more robust revenue streams that feed our mission of excellence in patient care, education and biomedical research. That's how we will remain the destination of choice for patients with serious and complex illnesses.

Mayo's CEO is a significant media fixture. How are you preparing for that? Is that a role you look forward to?

We have an excellent Public Affairs staff, and I have had the opportunity to work with many of them while preparing for national and international media interviews. I look forward to sharing Mayo Clinic's perspective on important topics through the media. It's a critical role that the CEO of this organization must fulfill, and I have the support I need to do it as well as I possibly can.

How has Dr. Noseworthy helped to prepare you for this?

Dr. Noseworthy was incredibly supportive and encouraging when I was named CEO of Mayo Clinic in Florida. He has been gracious during this transition time and has offered lots of advice. One of the things he said is to focus on communication, to “communicate, communicate, communicate” so staff understand where they fit and how they fit into Mayo Clinic’s mission and vision. I will do that as well as “listen, listen, listen” in the days ahead.

What’s your family’s reaction to moving back to Minnesota?

We’re happy to move back to Minnesota. We lived here for 26 years and raised our kids here, so we know what we’re getting into. We still have our parkas and gloves.

What will you miss about Florida?

The people first, then the weather. It has been an incredible four years in Florida. The staff welcomed me, and we have made great strides at building the destination practice in Florida together.

How will you keep excess stress at bay in your new role?

I tend to do better when my day is full, and I thrive on solving complex problems. Having said that, I also need and will have an assistant who forces me to exercise work-life balance, makes me leave the office at a decent time and helps me say no. I don’t like to say no when people want to meet me!

What do you do on a day off?

What are your hobbies?

I like to be active and run. I love soccer, but I tore my Achilles playing it. I recovered from that and played again. I used to try and convince my kids I was still better than them, and I have now given up because the evidence was overwhelming.



Gianrico Farrugia, M.D. (center) participated in the 2017 Donna half-marathon in Jacksonville, Florida. His Mayo Clinic teammates from the Rochester campus were Thomas (Tripp) Welch, vice chair of Quality; Jeffrey Bolton, Mayo Clinic chief administrative officer; Luca Farrugia, student, Mayo Clinic Alix School of Medicine; and Joshua Murphy, chief legal officer. The event, which was founded by a Mayo Clinic patient and breast cancer survivor, raises money and awareness for breast cancer research and care.

“Thirty years ago I walked into Mayo Clinic as an intern, and here I am, both humbled and proud to succeed Dr. Noseworthy.”

– Gianrico Farrugia, M.D.

**What would you want people to know about you?
Tell us something funny about yourself.**

I laugh at my own jokes and find them funny even the 10th time around. I like to wear colorful socks.

At what point in your education or career did you struggle the most? How did you get through it?

Realizing that I had to give up my clinical practice to take on my administrative role in Florida was tough. My practice was part of my identity. I do not think I have gotten over it yet, but realizing I can contribute to the practice in other ways has helped.

If you could wave a magic wand and accomplish one thing at Mayo Clinic today, what would you choose?

We need a culture of joy. We need to deliberately re-instill joy into our everyday work and into the patient experience. Our staff thrives and overachieves when work is joyful and filled with purpose. Leadership co-creates the vision and sets direction allowing for both responsible freedom and accountability, elevating interest and inclusion in being part of organizational success. We need to deliberately re-instill joy and meaning into our work and into the patient experience.

What, if any, interesting jobs are in your past?

I grew up on a tiny island, Malta. Like many other kids, I wanted to try and have a career in sports, and I found out I just wasn't good enough. So as a second choice, I went into medicine. I joined as a physician on the Maltese national soccer team. I did that for a while, then got bored and got into academic medicine. I've been at Mayo for 30 years, and it clearly was the right decision for me.

You met Dr. Michael Camilleri in Malta after he'd been at Mayo Clinic. How did he influence your coming to Mayo Clinic?

Dr. Camilleri (GI '88, Division of Gastroenterology and Hepatology, Mayo Clinic Rochester, and the Atherton and Winifred W. Bean Professor) made it possible for me to come to Mayo 30 years ago. He and his wife, Josephine, opened their home to me and my wife, Geraldine, making us feel welcome in Rochester and at Mayo Clinic. They were our first friends here. We would never have had all these opportunities without the generous support of the Camilleris.

Thirty years ago I walked into Mayo Clinic as an intern, and here I am, both humbled and proud to succeed Dr. Noseworthy. Mayo has given me my career: a rewarding clinical practice, a translational research laboratory and opportunities to lead. I will do everything I can to give back to this remarkable organization.

What message do you have for Mayo Clinic alumni around the world?

We count on Mayo alumni to work with us to meet the needs of their patients throughout the nation and world, and those patients we see at our sites. We are partners in care.

There is a great opportunity to renew and grow the relationship between Mayo Clinic and our more than 25,000 alumni so that we can be more successful, together.

I look forward to seeing my alumni colleagues and friends at the Alumni Association Biennial Meeting in 2019! ▲





DESTINATION LABORATORY



Around 5 o'clock each morning, approximately 500 cranberry-colored boxes arrive at Rochester International Airport from the Federal Express hub in Memphis, Tennessee. The boxes, created by Mayo Clinic Laboratories to allow FedEx staff to identify high-priority patient specimens destined for Mayo Clinic Laboratories, originate at medical institutions around the world and contain 35,000 unique specimens to be tested or analyzed at one of more than 65 specialty labs at Mayo Clinic.

Mayo Clinic Laboratories is the global reference laboratory for Mayo Clinic, home to the most comprehensive diagnostic pathology and clinical laboratories and most sophisticated laboratory test catalog in the world. The laboratories provide advanced testing and pathology services to support health care organizations in more than 80 countries.

At the Mayo Clinic Laboratories facility on Superior Drive in Rochester, an automated system reads barcodes on the boxes and a mechanized box cutter opens the boxes. Specimens are labeled and grouped by category in Styrofoam containers for internal routing. These containers go to preprocessing teams in the internal operations unit, which is staffed around the clock every day of the year to ensure that each patient's specimen is processed and made available for specimen distribution staff to pick up, sort and deliver to the appropriate laboratory on the Mayo Clinic campus. Test results are transmitted back to customers sometimes within hours, and Mayo experts stand at the ready to respond to questions.

“Providers who use our labs get the same level of service whether they’re a Mayo Clinic provider across the street or across the globe.”

– William Morice II, M.D., Ph.D.

“Mayo Clinic Laboratories is an extension of the Mayo Model of Care; we share the institution’s patient-centered mission and values,” says William Morice II, M.D., Ph.D. (IMM ’94, MDPD ’94, SGPA ’99, HEMP ’00), president of Mayo Clinic Laboratories and chair of the Department of Laboratory Medicine and Pathology at Mayo Clinic in Rochester. “We serve Mayo Clinic patients as well as individuals around the world who may never physically visit a Mayo Clinic campus, partnering with local laboratories to provide support for the complex testing they cannot perform themselves.”

Expanding reach

According to Dr. Morice, Mayo Clinic Laboratories has experienced its greatest growth in the last five years. In 2013 the Mayo Clinic Board of Governors endorsed a growth strategy that involved tailoring a sales force to specific customer needs. A representative knowledgeable about Mayo Clinic Laboratories’ neurology tests, for example, visits with neurologists and explains the breadth and depth of neurology testing available. The previous approach was broader and less differentiated.

“Our reach is significant,” says Dr. Morice. “We’re a global company that serves the continuum of health care — from local and regional hospitals to major academic institutions, including all of the top 20 hospitals in the *U.S. News & World Report* ranking. We’re focused on expanding our global footprint to share Mayo Clinic innovation and expertise to serve far beyond the walls of Mayo campuses.

“We work with customers to make sure they’re sending us only the testing they can’t perform

themselves due to their organization’s size or complexity of practice. We help them to broaden their local test menu and improve their lab efficiency to better serve their patients close to home.”

When hospital labs need help for esoteric testing and pathology services, they have access to Mayo Clinic Laboratories’ test catalog.

“We offer unmatched breadth across specialties and depth within specialties,” says Dr. Morice. “We’re one of the few labs in the country that offers breadth and depth in protein and genetic testing; biochemical genetics testing for inborn errors of metabolism; toxicology testing for drugs of therapy and abuse; genetics testing for leukemia, lymphoma and solid tumors; second-opinion diagnoses for biopsies of any tissue or organ system; microbial testing for tick-borne and other parasitic diseases; autoimmune neurologic testing; and amyloidosis protein testing. We offer some unique-to-Mayo tests that only ever apply to a handful of rare cases or that involve proprietary technical innovations.”

Last fall Mayo Clinic Laboratories changed its name (formerly Mayo Medical Laboratories) to solidify its position as the only reference laboratory in the U.S. that is fully integrated with Mayo Clinic.

“Our customers want access to Mayo Clinic laboratory medicine care, and the new name more accurately depicts that,” says Dr. Morice. “We provide testing and support and help render diagnoses rather than simply run tests. Providers who use our labs get the same level of service whether they’re a Mayo Clinic provider across the street or across the globe.” ▲



A behind-the-scenes look at Mayo Clinic Laboratories: news.mayomedicallaboratories.com/beyond-the-berry-box

MAYO CLINIC LABORATORIES

Catalog of 3,000+ screening, diagnostic, theranostic and prognostic tests and pathology services

24 million tests annually for external customers (55%) and internal customers (45%)

150+ new tests annually

Assays and algorithms developed by Mayo Clinic laboratory experts, physicians and scientists

Expert review of test orders and results interpretation

4.5 million patients and 4,000 health care customers worldwide

24/7 customer service

3,500 employees

World-class logistics and fast turnaround times

Award-winning help desk with multilingual agents

Profits support research and education at Mayo Clinic

Established in 1971



FROM MICHIGAN TO MAYO FOR ESOTERIC LAB NEEDS



At 4 o'clock each afternoon, a courier picks up patient specimens from Munson Medical Center in Traverse City, Michigan, and begins the process of delivering them to Mayo Clinic Laboratories in Rochester, Minnesota.

Munson Healthcare, an eight-hospital system, has worked with Mayo Clinic Laboratories for more than 30 years. The system's community hospital labs provide basic testing, but Munson turns to Mayo Clinic Laboratories for its highly specialized clinical lab test needs.

"It's cost-prohibitive to maintain the instrumentation and quality measures for a more robust lab," says John Keep, M.D., laboratory medical director, Munson Medical Center. "For clinical lab testing, Mayo Clinic Laboratories is unique. They provide consultation with experts about specific tests as part of their service. You can tell their model is patient care-driven, and so is ours."

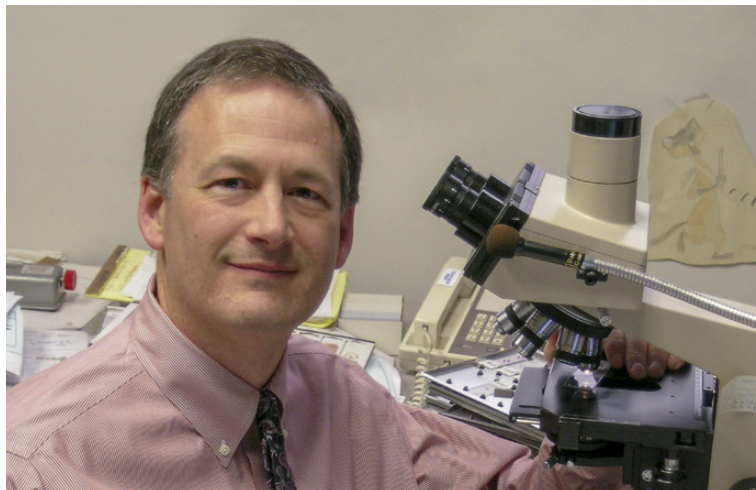
Tests that Munson outsources to Mayo Clinic Laboratories include those for rheumatologic, immunologic, metabolic and chromosomal disorders; bone marrow biopsy; flow cytometry; oncology; and drug monitoring.

"If we get a result we don't understand, we can talk to a member of the Mayo Clinic team that interpreted the test and find out what the results mean for the individual patient," says Dr. Keep. "Recently we sent tissue from a lung biopsy for molecular analysis and were

able to consult with an expert at Mayo about whether a new drug has specificity for the type of lung cancer the patient has. The Mayo Clinic expertise on the other end of the testing is valuable.”

Representatives from Mayo Clinic Laboratories visit Munson Healthcare regularly, including a quarterly meeting with the laboratory management team — another plus in Dr. Keep’s eyes.

“The representatives are very knowledgeable about the processes and educate our staff about order entry, forms and packaging samples to make sure things run smoothly,” says Dr. Keep. “They also provide staff to visit our labs and make suggestions about work-flow analysis to help us operate more efficiently. It’s evident that Mayo Clinic puts a lot of thought into its processes and is known for its operational efficiency. We value our partnership and the opportunity to learn from them. These personal interactions are one more piece of the extra value Mayo Clinic Laboratories provides.” ▲



“ If we get a result we don’t understand, we can talk to a member of the Mayo Clinic team that interpreted the test and find out what the results mean for the individual patient.” – John Keep, M.D.



David Murray, M.D., Ph.D.



ADVANCING MULTIPLE MYELOMA DIAGNOSIS



*New lab test exclusively available
from Mayo Clinic Laboratories*

The standard laboratory test to diagnose multiple myeloma dates back to the Eisenhower administration. Research at Mayo Clinic spearheaded by David Murray, M.D., Ph.D. (PATH '10), and fueled by his experience as an industrial chemist has led to a new assay to screen and diagnose the disease.

Lacking in speed and specificity

Despite gargantuan leaps in medicine in the last 60 years, serum protein electrophoresis has remained the standard for finding a monoclonal antibody — often the first step in diagnosing multiple myeloma. This test, which is performed by hand, involves putting the patient's serum on a gel, applying an electrical current to it, separating out the proteins, and looking for overexpressed immunoglobulins by immunoelectrophoresis or immunofixation. The process takes hours per patient sample, and the test isn't particularly sensitive. The test may be negative when disease is still present in the patient as evidenced by bone marrow biopsy or other findings.

"Physicians have known for quite a while that the standard test wasn't sensitive enough to detect the disease in all cases," says Angela Dispenzieri, M.D. (I '94, HEMO '98), Division of Hematology and the Serene M. and Frances C. Durling Professor. "Bone marrow biopsy is more sensitive, but it's expensive, invasive and isn't pleasant for the patient."

Introducing industry expertise

Dr. Murray joined the Mayo Clinic staff in the Division of Clinical Biochemistry and Immunology in 2010 after completing a residency in pathology at Mayo Clinic School of Graduate Medical Education. Prior to medical school, he earned a Ph.D. in polymer chemistry and was an industrial chemist at Eastman Kodak for 10 years. He worked in material science, developing new plastics and materials for packaging and paint.

As a resident, he rotated through the Mayo Clinic Protein Immunology Laboratory and saw a knowledge gap and opportunity.

"I walked into the lab and thought, 'They're still running gel electrophoresis in this day and age?'" says Dr. Murray. "That's an ancient technique. I spent a lot of time in a high-tech chemistry lab and know that mass spectrometry is much better. Most physicians don't have that industry experience. I recognized a knowledge gap and saw that my talents could be used to develop a better test to help physicians and patients.

"I also saw unbelievable opportunity. Dr. Robert Kyle (I '59, Division of Hematology's Myeloma, Amyloid and Dysproteinemia Group) has a legendary database of serum samples of multiple myeloma patients dating back to 1960. For a researcher, that's pure gold. It means we have access to unlimited samples to validate any new test on."

Finding a bounty in serum database

Dr. Murray got to work on developing a new test with David Barnidge, Ph.D., a mass spectrometrist

working in laboratory medicine at the time. They experimented with mass spectrometry, an analytical technique used to determine the molecular mass of specific molecules in a sample. The colleagues found that MALDI-TOF (matrix-assisted laser desorption/ionization time of flight) mass spectrometry, which uses a rapid fire laser to ionize proteins into the gas phase, allowed them to rapidly analyze immunoglobulins.

After six years their team had developed a mass spectrometry testing method that was adaptable to the lab and was more sensitive than the standard gel technology used to diagnose multiple myeloma. Mass spectrometry identifies and quantifies monoclonal antibodies secreted in the patients' serum. For two years the team performed clinical and analytical validation on 2,000 samples from Dr. Kyle's database.

"We could never have done this at another institution without access to that serum database," says Dr. Murray. "In the 1990s Dr. Kyle screened 77 percent of the Olmsted County population for MGUS (monoclonal gammopathy of undetermined significance), a condition in which a monoclonal or abnormal protein is present in the blood. MGUS causes no problems but can progress to multiple myeloma or related disorders. A group of those people who tested negative were diagnosed with MGUS more than a decade later. Dr. Kyle had preserved their negative-testing serum samples. Using our new testing method, we detected MGUS in the 1990s samples of half of that group. Had the more sensitive test existed then, those individuals could have been diagnosed much earlier."

“ I recognized a knowledge gap and saw that my talents could be used to develop a better test to help physicians and patients.” – David Murray, M.D., Ph.D.

Launching a new test

The new test was introduced by Mayo Clinic Laboratories in July 2018. Mayo Clinic now uses the monoclonal gammopathy screening on all patients with or suspected to have a plasma cell disorder.

Mayo Clinic licensed the test technology to The Binding Site, a company that provides specialty diagnostic products to clinicians and laboratory professionals worldwide, to assist with obtaining Food and Drug Administration approval. Dr. Barnidge became laboratory director for The Binding Site, and the company built a research laboratory in Rochester to focus on this project.

Dr. Murray has been in high demand since the hematology community learned of this significant development at Mayo Clinic. At least once a week he's invited to speak to groups about what his team has discovered about immunoglobulins.

"Long before multiple myeloma can be detected by conventional methods, mass spectrometry allows us to see the unique origins of the disease and possibly the disease mechanism," says Dr. Murray. "New methods allow you to see things with new eyes. And new eyes were definitely needed to modernize the way we detect and diagnose this disease."



David Murray, M.D., Ph.D., worked with colleagues in the Division of Hematology including Angela Dispenzieri, M.D., to develop and introduce a new test to diagnose multiple myeloma.

Dr. Murray says Dr. Kyle, widely considered to be “the godfather of multiple myeloma,” is one of his biggest supporters. “Dr. Kyle said this is the greatest advance since the death of U-tube — U-tube electrophoresis, the predecessor to gel electrophoresis.

“If I’d done this work anywhere else, I’d have published a paper and no one would have paid attention to it. It’s gotten so much traction because Mayo Clinic is universally regarded as the home of multiple myeloma. The attitude in the myeloma community was, ‘If you guys can’t do it, no one can. We’ll wait for you to do it.’ The collaborative environment at Mayo allowed me to work closely with Dr. Kyle. It was a team effort from everyone in the lab and in the Myeloma, Amyloid and Dysproteinemia Group. Shared credit goes to John Mills, Ph.D. (CLCH ’15, CMG ’17, Division of Clinical Biochemistry and Immunology), a former fellow who defined and is co-inventor of the MALDI-TOF assay; Surendra Dasari, Ph.D. (HSR ’12, Department of Health Sciences Research),

who did the bioinformatics work and designed a software interface for the assay; and development technologist Mindy Kohlhausen, who spent countless hours optimizing and validating the assay. I couldn’t have done this work without them.”

Dr. Murray is working closely with Dr. Dispenzieri and her colleague S. Vincent Rajkumar, M.D. (HEMO ’99), Division of Hematology and the Edward W. and Betty Knight Scripps Professor of Medicine in Honor of Edward C. Rosenow, III. Both serve on the International Myeloma Working Group, which develops guidelines for the diagnosis of multiple myeloma. The trio presented the new assay to the group in Stockholm, Sweden, in June 2018 for consideration in future guidelines.

The new test’s big debut was at the American Society of Hematology annual meeting in San Diego in December. Dr. Murray says the Mayo Clinic Laboratories booth had a steady stream of inquisitive clinicians and laboratorians interested in the role of the new test in detecting minimal residual disease and the possibility of eliminating gels from their labs.



David Murray, M.D., Ph.D. (right), collaborated with Robert Kyle, M.D., as he developed a new lab test to diagnose multiple myeloma. Dr. Murray describes Dr. Kyle’s legendary database of serum samples of multiple myeloma patients as pure gold.

“ New methods allow you to see things with new eyes. And new eyes were definitely needed to modernize the way we detect and diagnose this disease.” – David Murray, M.D., Ph.D.

“We’re letting the world know the test is available,” says Dr. Murray. “I’ve done grand rounds at other major cancer institutions, and there’s great excitement about it. Ultimately, the test needs to be offered by other institutions, not just Mayo Clinic Laboratories. A test can’t be the standard if you’re the only ones who offer it. We’re collaborating with The Binding Site to commercialize the assay. In the meantime, the test is available to Mayo Clinic patients and clients of Mayo Clinic Laboratories.”

Reaping another benefit from the research

An unintended consequence of Dr. Murray’s work was the discovery that some patients have glycosylation on light chain immunoglobulins, which was shown to be a risk for AL amyloidosis, a rare bone marrow disorder in which plasma cells produce an abnormal antibody protein. AL amyloidosis may be undetectable by standard gel electrophoresis.

“A Mayo physician was trying to figure out if a symptomatic patient had AL amyloidosis,” says Dr. Murray. “Our new test indicated the patient had the indicative light chains, but the patient’s tissue biopsy didn’t show amyloid. Because the light chains indicated the patient was at high risk for the disease, I urged the physician to keep looking. A subsequent biopsy showed amyloid, and the diagnosis was established.”

“AL amyloidosis is a terrible disease that can go years without diagnosis. This patient was able to be treated much sooner due to the definitive diagnosis. Without the new test for multiple myeloma, the diagnosis probably wouldn’t have been made until much later. It feels good to know I’m helping people.”

Dr. Murray and his team continue their work, looking for additional risk factors for AL amyloidosis and the light chain immunoglobulin that causes renal failure in multiple myeloma patients.

“Today multiple myeloma generally isn’t considered curable,” says Dr. Murray. “We’re getting glimpses into the mechanisms that cause the disease. And we’re strengthening the ability to know when the disease is still active. This advance could change how the disease is treated. For example, if we can tell more definitively when there’s still evidence of disease, we might keep treating it until there’s no evidence of disease.”

“I’m humbled to have lent my chemistry skills honed in industry to this major milestone in the diagnosis and treatment of myeloma. My work stands on the shoulders of Dr. Kyle and everyone else who has worked in the group at Mayo that established Rochester, Minnesota, as the home of multiple myeloma research.” ▲



Peter Grahn, Ph.D., and Megan Gill



INDEPENDENT STEPPING



Mayo Clinic has challenged its researchers to transform the practice of medicine with research that leverages multidisciplinary expertise, technology and therapeutic advances to address unmet clinical needs. This story describes how one team has risen to the challenge, elevated the level of teamwork across disciplines and achieved novel results using spinal stimulation to enable function after spinal cord injury. The story focuses on two team members — both alumni of Mayo Clinic College of Medicine and Science schools in different disciplines.

The two first authors on a recent publication in *Nature Medicine* (“Neuromodulation of Lumbrosacral Spinal Networks Enable Independent Stepping After Complete Paraplegia”) have personal connections to the groundbreaking research they reported in the manuscript. Peter Grahn, Ph.D. (NBD ’15), a senior engineer in the Department of Neurologic Surgery and alumnus of Mayo Clinic Graduate School of Biomedical Sciences; and Megan Gill, an alumna of Mayo Clinic School of Health Sciences who also has a doctorate in physical therapy, have worked on a team of researchers from Mayo Clinic, UCLA and Houston Methodist during the last four years. The team has studied an emerging research approach to restore function in people with paralysis due to spinal cord injury. From a personal perspective, Gill and Grahn have each had a health-related event that affected their mobility.

The study

In 2014 a team of 15 Mayo Clinic scientists and clinicians from neuro-engineering, neurosurgery, and physical medicine and rehabilitation acquired internal funding to collaborate with V. Reggie Edgerton, Ph.D., of UCLA, to establish his team’s spinal neuromodulation approach at Mayo Clinic. The approach was developed in conjunction with Susan Harkema, Ph.D., from the University of Louisville. Building on Dr. Edgerton’s work, the Mayo team designed the clinical trial protocol and acquired Mayo Clinic Institutional Review Board approval and an Investigational Device Exemption from the Food and Drug Administration (FDA). Mayo Clinic received FDA permission to use an electrical stimulation device for research purposes to study a condition not covered by its approved label. Co-principal investigators were Kendall Lee, M.D., Ph.D. (NS ’06), Department

of Neurologic Surgery and director of Mayo Clinic's Neural Engineering Laboratories; and Kristin Zhao, Ph.D. (PMR '16), Department of Physical Medicine and Rehabilitation and director of Mayo Clinic's Assistive and Restorative Technology Laboratory.

The Mayo Clinic team's objective was to determine whether spinal cord circuitry could be modulated with electrical stimulation and rehabilitation to restore function lost to paralysis. Two patients with complete spinal cord injury were enrolled in the trial.

"Dr. Edgerton's team showed us the ropes of how to program the epidural electrical stimulator so we could replicate what they'd achieved in their studies," says Grahn. "During our initial programming session, the subject moved his leg using his own intent. When we observed this ability, everyone in the room gasped."

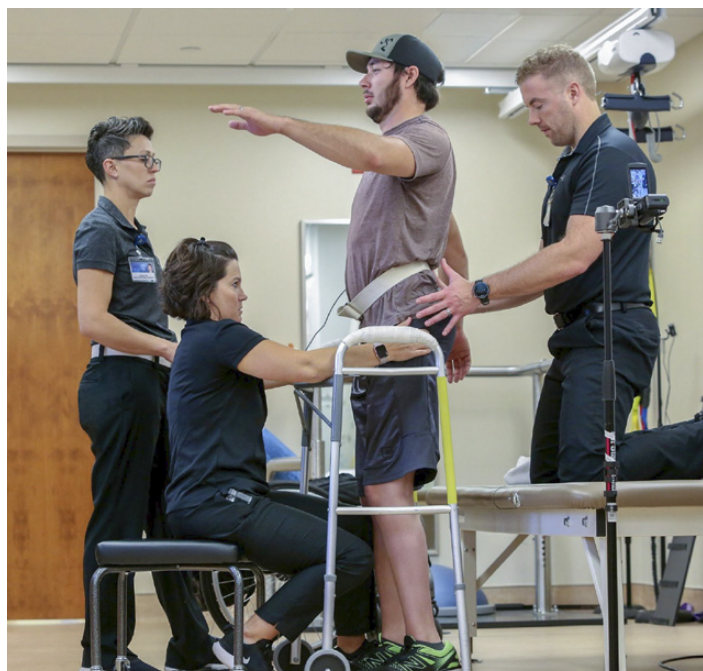
The Mayo team replicated the UCLA team's results within the first week of the study and continued to see what more they could achieve. They accomplished much more than basic leg movements.

Jered Chinnock, who injured his spinal cord at the thoracic vertebrae in the middle of his back in a

snowmobile accident in 2013, was the first participant in the Mayo Clinic study. He had complete loss of function and feeling below the middle of his torso. Dr. Lee and his neurosurgery team had implanted an electrode array in the epidural space at a specific location below Chinnock's injury. The electrodes were connected to a pulse generator that was implanted near the patient's abdomen. The generator communicates wirelessly to an external controller.

Chinnock participated in 113 rehabilitation sessions in the lab over 43 weeks in 2016 and 2017. Team members programmed the stimulator and recorded electrophysiology and biomechanical data. Gill led the physical therapy team and provided expertise about how rehabilitation with the device should occur. They provided Chinnock with physical assistance and used a body-weight harness to help him stand and step. With electrical stimulation, he was able to stand, swing his legs and shift his weight to maintain his balance. Because he didn't regain sensation in his legs, Chinnock initially used mirrors to view his leg movement while rehabilitation team members provided verbal and tactile cues to describe his leg position, movement and balance.

Physical therapist Megan Gill (seated) and kinesiologists Margaux Linde and Daniel Veith assist Jered Chinnock as part of a clinical trial to determine if spinal cord circuitry could be modulated with electrical stimulation and rehabilitation to restore function lost to paralysis.



The results

By the end of the study, Chinnock no longer needed a harness and had only occasional help from the therapists. He learned to use his body to transfer weight, maintain balance, and propel forward on a treadmill while using his arms on the support bars to help with balance. He required minimal verbal cues and periodic glances at his legs. He progressed to using a front-wheeled walker to step with minimal assistance from the team.

“I was surprised by the amount of motor activity Jered was able to do with stimulation,” says Grahn. “Looking at past studies, we thought he may be able to stand without assistance and move his legs while lying down. No studies had shown that someone with complete paralysis could stand and take steps. With the stimulator off, the subject remains completely paralyzed below the level of his injury. These findings suggest that even the most severe cases of paralysis likely have some connections intact across the injury, and that neural networks below the spinal cord injury can be facilitated by epidural stimulation to restore functions such as standing and stepping. Altogether, these results support the

concept that task-specific rehabilitation performed during spinal stimulation can enable functional reorganization of the spinal cord to recover functions lost due to spinal cord injury.”

Grahn says the results generated by the Mayo team could be attributed to factors such as the patient’s specific injury, some aspect of the rehabilitation or key changes made to stimulator settings. Certainly, their findings have sparked more questions to investigate.

The team is endeavoring to further explore the use of epidural electrical stimulation and other emerging spinal neuromodulation techniques, combined with intense physical therapy, to help paralyzed patients regain function. A subsequent trial will help answer some of the unknowns from the first — to gain a better understanding of how and why the epidural electrical stimulation enables these functional gains and which patients will respond to stimulation.

Now that Chinnock is home in Tomah, Wisconsin, he works on an exercise program the Mayo team specified. He has approval to use the device for standing with a walker and to improve his trunk strength and balance during daily activities in his wheelchair.



The personal connection

While it can't be measured as part of the data, Gill and Grahn say their personal experiences had a significant impact on their perspectives and dedication to the project.

At age 18 Gill developed a systemic infection that required a year of rehabilitation and healing to allow normal use of her left leg. That experience led her to pursue a medical career and develop personal drive to help patients achieve their goals. (Read more about her experience in an issue of Mayo Clinic School of Health Sciences Alumni Association's *Connections* magazine later this year: mshsalumni.mayo.edu/news/magazines.)

Grahn has had quadriplegia due to spinal cord injury since 2005 and uses a powered wheelchair for mobility. When he was 18, he dove off of a dock in central Minnesota and hit the shallow bottom of a lake, fracturing the fifth vertebrae in his neck. He was instantly paralyzed and spent almost a year in rehabilitation.

Grahn, whose injury has affected his motor functions more than the patient in the Mayo Clinic study, says he felt a strong sense of excitement as Chinnock's abilities progressed during the study. "In the early stages of my own recovery, I admit there was a sense of jealousy when someone in the rehab gym with a similar prognosis as mine would recover to walk again. My point of view is different now. For

the first couple of months after my accident, I thought if I worked hard enough at rehabilitation, I'd get better as I had with past sports-related injuries. Over time I realized my disability was permanent, and I experienced dark times during that period in my life. Eventually I realized that life is full of challenges, and learning to live with my disability was one of those challenges. I was also curious why the spinal cord doesn't heal.

"Fast forward 13 years, and I'm in a unique position to contribute to making discoveries and generating information to advance the research fields of neuromodulation and spinal cord injury. It was exciting to see the potential of what our patient could do when we turned on the stimulator. Our work demonstrates that spinal cord injury severity is more of a spectrum. We may be able to improve function even in severely injured patients who are diagnosed with the worst category of injury."

Gill says Grahn advocated for epidural stimulation research at Mayo Clinic. "Peter is a prime example of someone living to their greatest capacity. Never has his disability held him back. He has gained a deep understanding of the neuromodulation literature and has developed the skills to communicate this information to all team members regardless of the level of expertise in paralysis research. And, because he has a spinal cord injury, he has unique understanding of our research subjects' situation."

“ Seeing our research subjects’ accomplishments is exciting, We’re grateful for their phenomenal effort and contributions to our research.”

– Peter Grahn, Ph.D.

Peter Grahn, Ph.D. — ‘I’ve never heard no’

In 2010 Peter Grahn, Ph.D., attended an annual research symposium in Minneapolis hosted by the Morton Cure Paralysis Fund. Among the leading spinal cord injury researchers speaking was Mayo Clinic neurologist Anthony Windebank, M.D. (N ’82), the Judith and Jean Pape Adams Charitable Foundation Professor in Neuroscience, who discussed his laboratory’s research. Grahn, then a college senior, was exploring medical school, physician assistant programs and biomedical research careers.

“I was intrigued by Dr. Windebank’s research and wanted to learn more,” says Grahn. “I emailed him, which started a discussion about regenerative spinal cord tissue research. I’d never worked in biomedical research, so I asked Dr. Windebank if he thought it was an area in which I could be productive despite my physical disability. He was very positive and encouraging.” Their conversation continued over several months, resulting in Grahn moving to Rochester, Minnesota, with his wife. He met with the



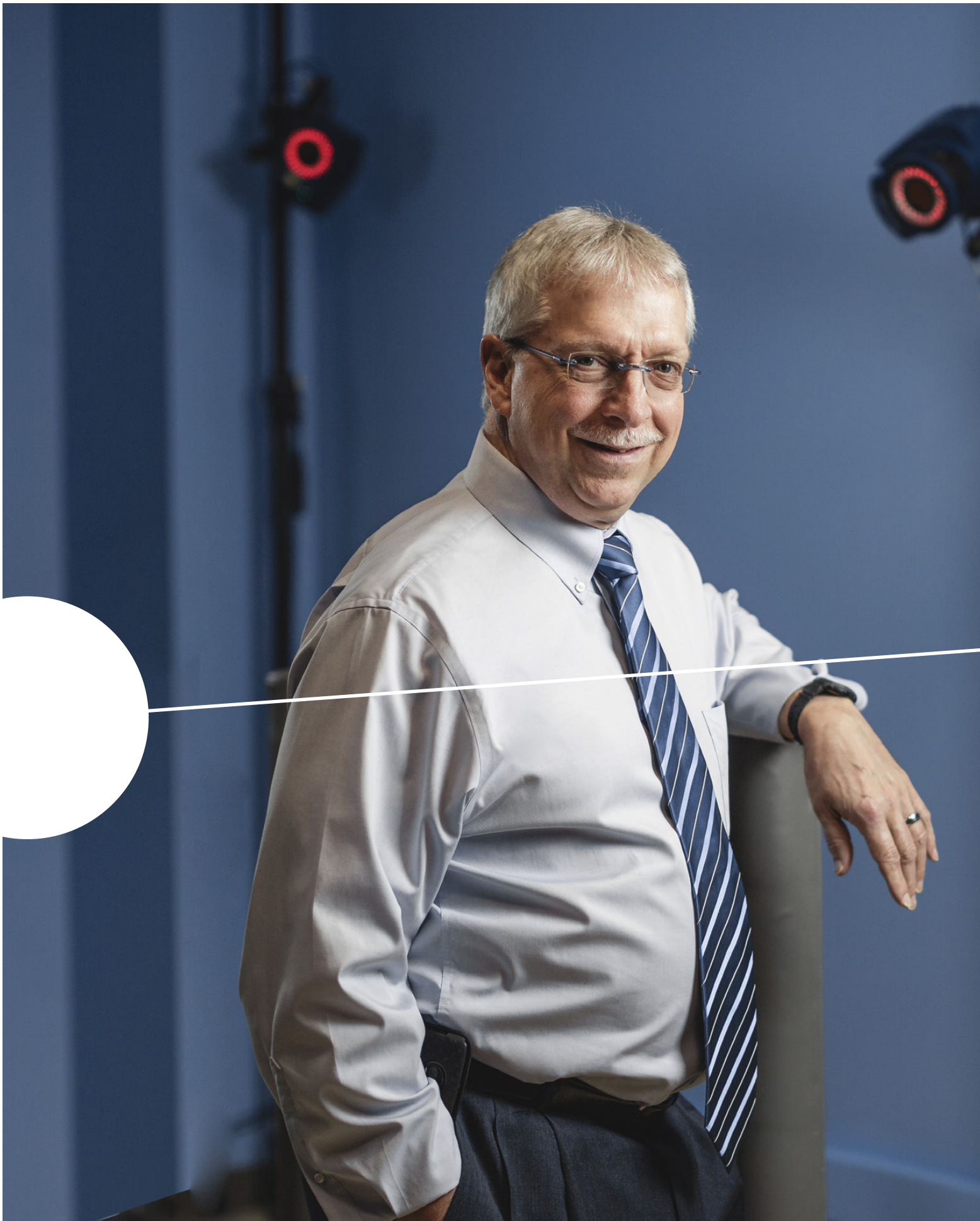
Peter Grahn, Ph.D.

Mayo Clinic Office of Diversity and Inclusion to create a plan to accommodate his disability in Mayo’s education and research environments. He spent the following year working in the laboratory via the Mayo Clinic Graduate School of Biomedical Sciences Post-Baccalaureate Research Education Program (PREP). After a year, he entered the Mayo Clinic Graduate School of Biomedical Sciences Ph.D. program with a focus on the neurobiology of disease.

“Mayo did a fantastic job of accommodating my needs from the moment I arrived — from where I would park my vehicle and how I would get to and around the lab to what type of desk and equipment I’d need to be productive,” says Grahn. “The Education Office for Diversity along with staff in ergonomics, facilities and architecture worked with me to make sure my mobility needs were met. When I initially inquired, Dennis Mays, Ph.D. (MPET ’93), in the Education Office for Diversity said they hadn’t had a learner with my disability in their program but they were open to working with me to address my needs. We approached it as an obstacle that could be overcome with thought and effort. We went to areas where I would most likely be on campus to identify barriers such as doors that required automatic openers. They adjusted the height of desks and microscope platforms. We figured out how I could travel to conferences with a companion. There was never a question regarding ‘if’ it could be achieved — only ‘how.’ We found funds to facilitate my career development. I’ve never heard ‘no’ at Mayo in relation to my disability.”

Grahn joined the Mayo Clinic staff in 2016. His research focuses on modulating spinal cord circuitry with electrical stimulation and other techniques to restore lost function.

“Seeing our research subjects’ accomplishments is exciting,” says Grahn. “We’re grateful for their phenomenal effort and contributions to our research. I’m glad to be part of changing how spinal cord injury is viewed from a research perspective and look forward to contributing to discoveries that may improve quality of life after paralysis.” ▲





NATIONAL LIMB LOSS REGISTRY

*Kenton Kaufman, Ph.D.,
leads the way*

Kenton Kaufman, Ph.D. (BIOM '89), departments of Orthopedic Surgery and Physiology and Biomedical Engineering at Mayo Clinic in Rochester, is a veteran investigator of limb amputation and prostheses with more than 25 years of experience. He's on the Medical Advisory Board of Prosthetics 2020, an initiative of the American Orthotic Prosthetic Association. His research is funded by the National Institutes of Health (NIH), Department of Veterans Affairs, Department of Defense (DOD) and National Science Foundation, among others. He has a large DOD grant to teach wounded members of the armed services how to use prostheses and reduce falls. He recently completed the largest study to date on microprocessor-controlled prosthetic knees.

Last fall Dr. Kaufman was awarded a \$5 million five-year contract by the National Center of Medical Rehabilitation Research in the National Institute of Child Health and Human Development to develop and launch the national Limb Loss and Preservation Registry. It will be the first national registry of people who have lost limbs, and will include the electronic health records of U.S. adults and children. The registry's goal is to establish the number of Americans who have limb loss and preservation procedures and then improve prevention, treatment and rehabilitation activities for this population. The research award is supported by the NIH and DOD.

"Interest in and research about limb loss and prostheses are cyclical with major conflicts or wars," says Dr. Kaufman. "The general public becomes aware of limb loss when they see a story about a wounded soldier or an amputee running in the Olympics. We'd like to help keep interest more consistent because limb loss has a huge impact on mobility and socialization. Your world can become small quickly when you have an amputation and experience a loss of mobility. The data in the registry and research as a result of it will help the NIH and DOD make the best decisions about research gaps in limb loss and areas that need funding to improve the quality of life for all people coping with limb loss."

Dr. Kaufman planted the seed for the registry when he submitted a project for funding to the



DOD in 2015. He didn't receive the funding, but his proposal prompted the DOD and NIH to discuss collaboration, which led to a federal solicitation for the registry.

Dr. Kaufman and his colleague Hilal Maradit Kremers, M.D. (HSR '02), Department of Health Sciences Research, applied for and won the grant.

"Receiving the grant is an honor and a large responsibility," says Dr. Kaufman, the W. Hall Wendel, Jr. Musculoskeletal Research Professor and director of Mayo Clinic's Motion Analysis Laboratory. "This will be a collaborative effort, drawing on the expertise of several subcontractors and Mayo Clinic alumni."

Dr. Kaufman's team will include the American Academy of Orthopedic Surgeons (AAOS); the Thought Leadership and Innovation Foundation; and FIGmd Inc., an Illinois-based company that designs, develops and deploys health care IT solutions for the management of clinical data quality parameters.

Dr. Kaufman's Mayo Clinic colleague Daniel Berry, M.D. (ADULT '91), the L.Z. Gund Professor of Orthopedics, has been in charge of registries for the AAOS; and colleague David Lewallen, M.D. (OR '83), is medical director of the American Joint Replacement Registry — part of the AAOS.

"Drs. Lewallen and Berry have been very helpful in sharing the lessons they have learned from the American Joint Replacement Registry, which started in 2010," says Dr. Kaufman. "Their advice has helped guide the design of the Limb Loss and Preservation Registry."

Dr. Kaufman's team will design and build the registry between now and 2020. That involves determining the data elements, number of potential participants, security requirements, data entry and storage, data access and permissions, reporting requirements and analytics.

"It's up to us to develop a business model that will sustain the registry," says Dr. Kaufman. "Our goal is to create a platform that can be used to standardize, measure and report patient outcomes data, support

evidence-based decision-making, enhance health care delivery, and establish and disseminate best clinical practices."

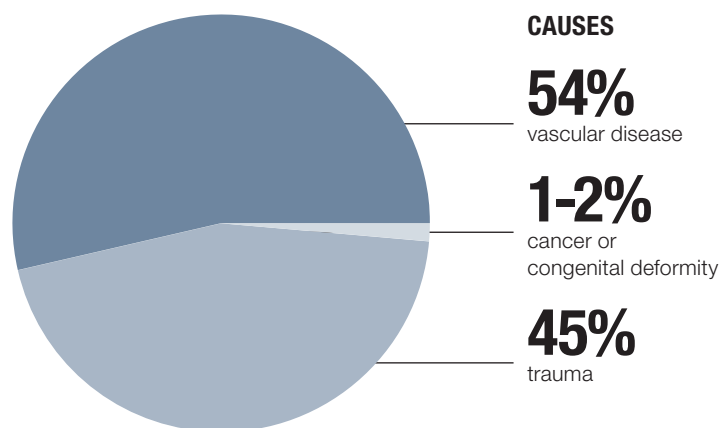
Dr. Kaufman says current data indicates that 2 million people in the U.S. have limb loss, but the data is outdated. The Amputee Coalition of America estimates there are 185,000 new lower-extremity amputations each year in the U.S. alone. Registry data will come from three sources:

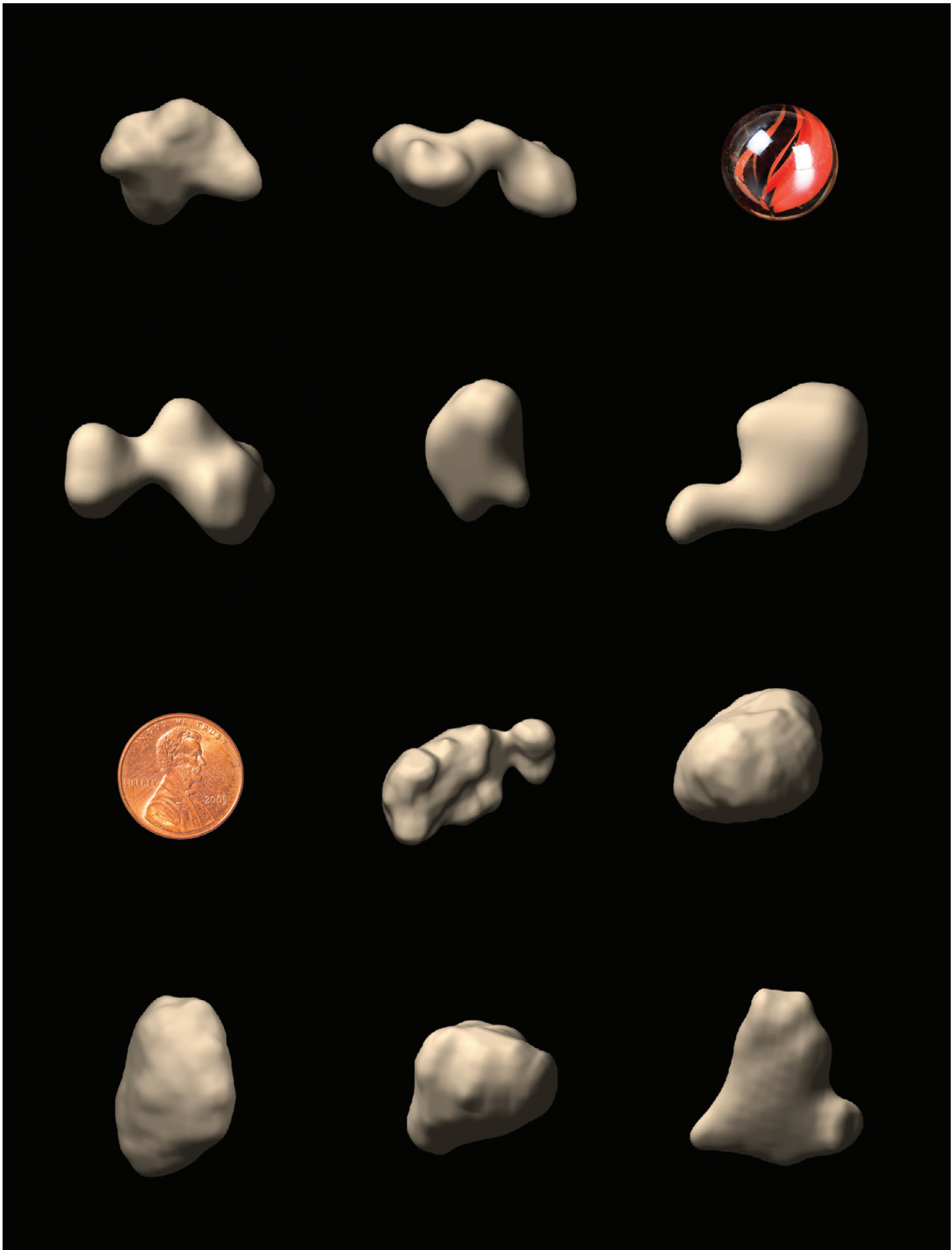
- Hospital records when amputations occur
- Providers who care for people who have lost a limb
- Self-reports by individuals who have lost a limb

Data will include cause of amputation, rehabilitative therapies, prosthesis use, mobility, barriers to care, quality of life, and other outcomes. Researchers will use data from the limb loss registry to determine regional and cultural variations in care, the best standards of care, prevention strategies, health policy changes to offer better support, and technology advances needed to provide better devices. ▲

Amputations in the U.S.

- African-Americans are 4 times more likely to have amputations and have higher morbidity than whites.
- Hispanic-Americans are 1.5 times more likely to have amputations than whites.
- Males are 70% of the amputee population.







NOT ALL STONES ARE CREATED EQUAL



Mayo Clinic introduces quantitative Stone Analysis Software

Mayo Clinic's CT Clinical Innovation Center released the first-ever quantitative Stone Analysis Software (qSAS) for characterizing renal stones from CT images. The product is available at no charge for research use through a software sharing agreement.

Cynthia McCollough, Ph.D. (RD '91), Division of Medical Physics, Department of Radiology at Mayo Clinic in Rochester, co-director of Mayo's CT Clinical Innovation Center and the Brooks-Hollern Professor, says the new software measures the entire volume, shape and size of a renal stone. "A marble and a penny might have a similar diameter at the center, but they're shaped very differently. Existing standard-of-care technology would not do a good job at describing the differences between stones like these two objects."

Dr. McCollough says accurate quantification of renal stones is rarely included in a radiology report. "The standard of care is to take a CT scan, draw a line across the stone in one image, use a measurement tool to quantify the diameter, and compare the value to past and future values for the same stone. Hand-drawn measurements aren't a good way to

measure or make decisions because a round stone and an irregularly shaped oblong stone could appear to be the same at the center, yet they represent very different stone burdens to the patient. Qualifiers such as small and big don't tell the complete picture.

"A stone that's smooth like a pebble on a beach might pass through the body relatively easily. A rough, spiky stone may be more likely to get stuck in the ureter, be too difficult to pass and require surgery. We can spare the patient the attempt to pass a stone such as that and go directly to surgery."

The qSAS characterizes every image of the stone, giving its length, width, height, volume, mineral type and roughness. With this higher standard of measurement, physicians can be confident about a stone's growth from one exam to a subsequent one, according to Dr. McCollough.

The software, which has been in development at Mayo Clinic for about a decade and has been used to support Mayo researchers, generates fully standardized stone reports in less than five minutes. The only user interaction required is a coarse delineation of the kidneys. After that, the software automatically identifies any renal stones



Andrea Ferrero, Ph.D., and Cynthia McCollough, Ph.D.

and excludes hardware in the kidneys such as stents and nephrostomy tubes. Funding for the project was provided by the National Institute of Diabetes and Digestive Diseases as part of Mayo's O'Brien Urology Research Center (John Lieske, M.D., NEPH '00, principal investigator).

Behind the scenes

Ongoing development in the lab is focused on determining how easy it will be to break up a stone based on what is measured in the CT image. Andrea Ferrero, Ph.D. (RCMP '18), a recent graduate of the Department of Radiology's Diagnostic Medical

Physicist Residency Program, has been a key driver in preparing the software for release and developing new capabilities such as measuring stone fragility.

"Without Andrea and research technologist Jayse Weaver, we would never have been able to package our various software tools into a comprehensive, user-friendly software product," says Dr. McCollough. "There is tremendous interest in this software from the renal stone research community."

Researchers interested in the software can visit the CT Clinical Innovation Center at Mayo Clinic to see how the qSAS works: <https://ctcicblog.mayo.edu/hubcap/qsas-stone-toolkit/>. ▲



COVENTRY ORTHOPEDIC SOCIETY BIDS ADIEU



In the mid-1960s a group of Mayo Clinic orthopedic fellows formed a close bond when they began meeting to study for the orthopedic boards. After they scattered across North America to practice, they met regularly as the Coventry Orthopedic Society. Their society's namesake was Mark Coventry, M.D. (S '39, OR' 42). Most members had served as his first assistants. Dr. Coventry was the chair of the Department of Orthopedic Surgery from 1965 to 1974 and past president of the American Orthopaedic Association. He received the Mayo Clinic Distinguished Alumni Award in 1985.



Coventry Society members in 1970 with the group's namesake, Mark Coventry, M.D. (back row, third from right).

The group's first official meeting was in 1970 in Hartford, Connecticut, and was followed by meetings in even-numbered years.

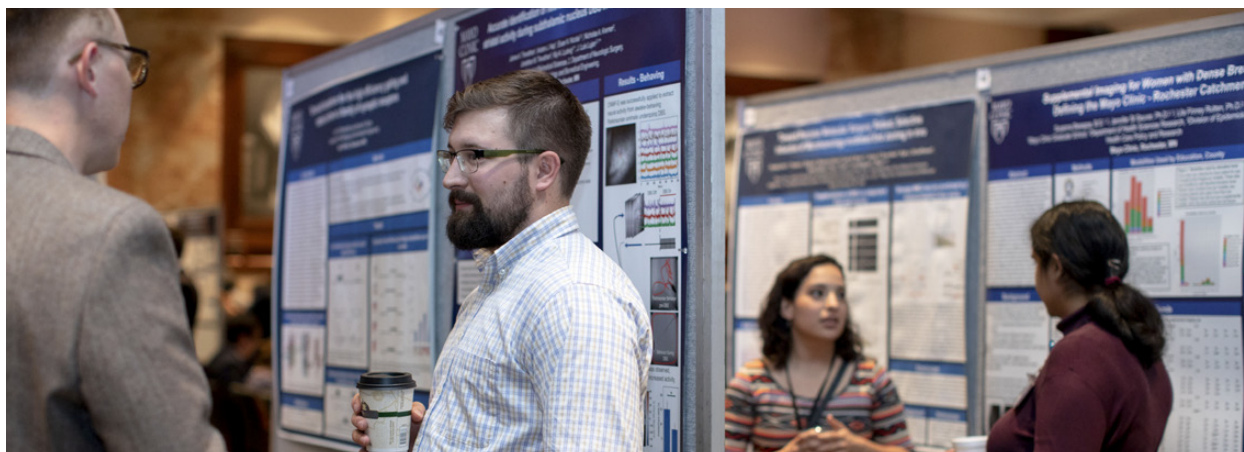
For the first several decades, the society's meetings had a strong scientific component, and members used them as a forum to try out new ideas before a critical audience. "We expanded on the rigorous training and ideals we learned at Mayo Clinic," says Frank Jones, M.D. (OR '66), an original member who lives in Nashville, Tennessee. "We were continually reminded of the high standards of medical practice exemplified by our mentor, Dr. Coventry, who attended several meetings."

The society allowed new members for a time but decided to remain a group of close friends, knowing that would mean it would cease to exist at some point. A half-century later, the group has come to an end.

"Time is taking its toll, and we are losing friends to death and disability," says Dr. Jones. "Our interactions through the decades were a constant reminder of our experience at Mayo Clinic, including the intense study of scientific subjects and the philosophical, ethical and very human aspects of our formation as physicians, surgeons and orthopedists. We had a good run." ▲



GRADUATE SCHOOL SYMPOSIUM CELEBRATES STUDENT RESEARCH



James Trevathan (BMEP '19, second from left) and Stephanie Anguiano-Zarate (CTSA '19, second from right) discuss their research.

Mayo Clinic Graduate School of Biomedical Sciences (MCGSBS) held its annual Student Research Symposium in September, with poster sessions, oral presentations, a keynote speaker, a Three-Minute Thesis (3MT) competition and Teacher of the Year awards.

“MCGSBS is made up of almost 200 Ph.D. and M.D.-Ph.D. students doing groundbreaking scientific apprenticeships across seven major disciplines at three different sites and on wildly different topics — from molecules to populations and from curiosity to the clinic,” says Louis (Jim) Maher III, Ph.D. (BIOC '95),

dean, Mayo Clinic Graduate School of Biomedical Sciences, and the Bernard Pollack Professor.

“Such a diverse and disseminated school seldom has the opportunity to come together to celebrate what is shared in common — bonds of friendship and dedication to excellence. The annual daylong MCGSBS student symposium and Alumni Association cosponsored gala reception and dinner celebrate student achievements and the sense of family that can so often be elusive in such a complex school.”

Posters and oral presentations

Posters at the symposium numbered 110, and one student from each track in the school was selected to present their research:

- Biochemistry and Molecular Biology, Kirsten Aspros (BMB '20)
- Virology and Gene Therapy, William Matchett (VGT '19)
- Neuroscience, Phillip Starski (NSC '20)
- Molecular Pharmacology and Experimental Therapeutics, Katherine Minter Dykhous (MPET '19)
- Immunology, Bryce Manso (IMM '20)
- Clinical and Translational Science, Alaa Koleilat (CTSA '20)
- Biomedical Engineering and Physiology, Alexander Weston (BMPEP '20)

Keynote speaker

Susan Band Horwitz, Ph.D., Distinguished Professor, Albert Einstein College of Medicine, was the Findling Lecturer, presenting "Taxol, Tubulin and Tumors: A Story of Drug Development." She discussed the history of the development of Taxol from the bark of a tree to the bedside.

3MT

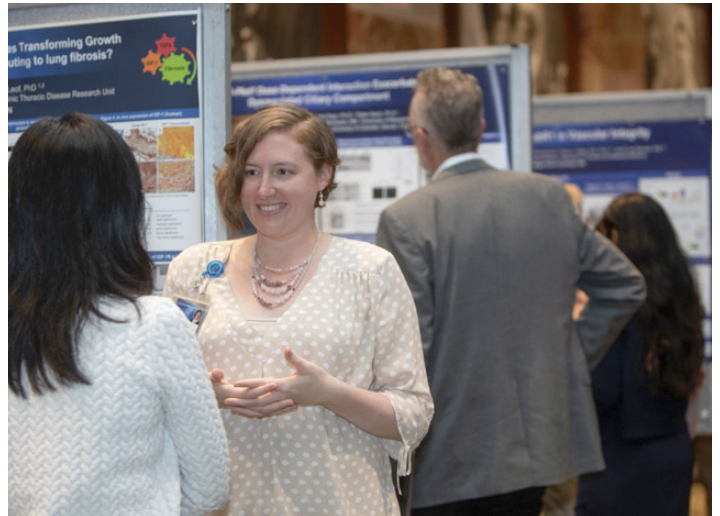
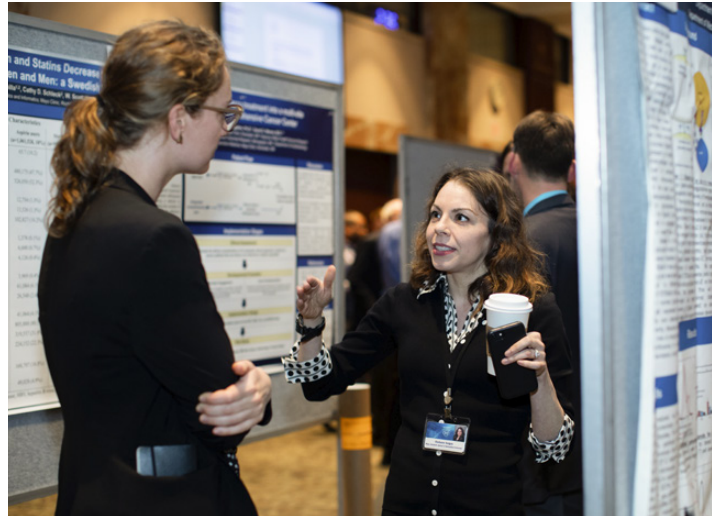
The 3MT competition challenges Ph.D. students to describe their research within three minutes to a general audience.

- Winner: Christopher Paradise (MPET '21), "Bone and Cartilage Regeneration"
- Runner-up: Brandon Nelson (BMPEP '21), "A New Look at Disease with X-ray Phase Imaging"
- People's choice: Alex Generous (VGT '19), "Ocean's Ten: Virus Edition"

Teacher of the Year awards

Teacher of the Year awards for the school were presented to:

- Aleksey Matveyenko, Ph.D. (PHYS '14), Department of Physiology and Biomedical Engineering; Division of Endocrinology, Diabetes, Metabolism, & Nutrition; associate professor of physiology
- Gina Razidlo, Ph.D. (GI '13), Division of Gastroenterology and Hepatology, Department of Medicine; Department of Biochemistry and Molecular Biology; assistant professor of biochemistry and molecular biology ▲



Mayo Clinic Graduate School of Biomedical Sciences students Stefanie Velgos (NSCI '14, CTSA '19, top), Danielle Hernandez (BMB '19, center) and Whitney Barham (MDPH '24, IMM '24, bottom).



ALUMNI ASSOCIATION BIENNIAL MEETING



September 26–28, 2019 • Rochester, Minnesota • Hilton Hotel

Scientific program co-chairs

Nathan Jacobson, D.O. (FM '05), Department of Family Medicine, Mayo Clinic in Rochester

Mary Kasten, M.D. (INFD '92), Division of Infectious Diseases, Mayo Clinic in Rochester

General chair

Gianrico Farrugia, M.D. (I '91, GI '94), president and CEO, Mayo Clinic

A SAMPLING OF LECTURES

“The Year in Outbreaks, 2019: Infectious Diseases Impacting World Population”

Prithish Tosh, M.D. (I '06, INFD '09), Division of Infectious Diseases, Mayo Clinic in Rochester

“Effective Stress Management”

Anjali Bhagra, M.D. (I1 '05, I '08), Division of General Internal Medicine, Department of Medicine Mayo Clinic in Rochester

“Vaccine Research”

Keith Knutson, Ph.D. (IMM '05), Department of Immunology and director, Discovery and Translation Labs Cancer Research Program, Mayo Clinic in Florida

“Updates from the Mayo Clinic Breast Clinic”

Lonzetta (Loni) Neal, M.D. (GIM '00), Division of General Internal Medicine, Department of Medicine Mayo Clinic in Rochester

“Watchman Device and New Management for Afib”

Sunil Mankad, M.D. (CV '06), Division of Cardiovascular Ultrasound, Department of Cardiovascular Medicine, Mayo Clinic in Rochester

“Teleneonatology”

Jennifer Fang, M.D. (MED '02, PDNE '17, PDNPM '17), Division of Neonatal Medicine, Department of Pediatric and Adolescent Medicine
Christopher Colby, M.D. (PD '03), chair, Division of Neonatal Medicine, Department of Pediatric and Adolescent Medicine Mayo Clinic in Rochester

**“Simulation Training for Care in
Unconventional and Underserved
Environments”**

Walter Franz III, M.D. (FM '82), Department
of Family Medicine

Mariela Rivera, M.D. (CCMS '11), Division
of Trauma, Critical Care & General Surgery,
Department of Surgery
Mayo Clinic in Rochester

“Healthy Living”

Stephen Kopecky, M.D. (I '84, CV '87)

Division of Preventive Cardiology,
Department of Cardiovascular Medicine
Mayo Clinic in Rochester

“Mayo Clinic’s Green Initiatives”

Alanna Rebecca, M.D. (PLSR '05)

Chair, Division of Plastic and Reconstructive
Surgery, Department of Surgery
Mayo Clinic in Arizona

CONFERENCE HEADQUARTERS

Hilton Rochester

Mayo Clinic Area

10 East Center St.

Room rate: \$259/night

Reservation deadline: Sept. 6

To reserve, call 507-258-5757. Reference “Mayo
Clinic Alumni Meeting” for conference rate.

**For complete details and information about
other hotels, visit the Biennial Meeting page,
alumniassociation.mayo.edu/events.**

**All of these hotels are connected via skyway/
subway to Mayo Clinic and each other.
Parking is available at each hotel.**



Registration information:

alumniassociation.mayo.edu/events





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Board of Directors**

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Kyle Kircher, M.D.
(MED '94, FM '97, FMSP '98)

Board member

- National medical director, TeamMD, Minneapolis, Minnesota
- Senior medical director, United Healthcare, Minneapolis
- Master of Business Administration: University of St. Thomas Opus College of Business, Minneapolis
- Fellowship: Practice management, Mayo Clinic School of Graduate Medical Education, Rochester, Minnesota
- Residency: Family medicine, Mayo Clinic School of Graduate Medical Education
- Medical degree: Mayo Clinic Alix School of Medicine, Rochester, Minnesota
- Undergraduate degree: University of South Dakota, Vermillion
- Native of: Hawarden, Iowa

Why medicine

My oldest sister was diagnosed with diabetes at age 9 and had related chronic health problems. Our family made many trips to the University of Minnesota and Mayo Clinic from our home in Northwest Iowa for her care. I saw the impact health care providers could have on individuals and families of people with chronic conditions. I started thinking about a career in medicine between the ages of 8 and 10 and told my mom I wanted to be a doctor. No one in my family was in medicine.

My sister died at 45 as a result of complications of diabetes. She had a kidney transplant at the University of Minnesota in 1977, with a kidney donated by my mom who also donated part of her pancreas during a second transplantation two years later. They were the first live pancreas donor/patient pair in the world. My sister was considered “cured” of diabetes for about four years. She ended up back on insulin in addition to her immunosuppression medications. It’s likely she died from complications from the medications as well as the underlying disease. Ultimately, my sister’s health problems sparked my interest in pursuing a career in medicine to make a difference in the lives of others.



Kyle Kircher, M.D.

Why Mayo Clinic

When I started looking at medical schools, I wanted to stay in the Upper Midwest. There were only 40 students in my class at Mayo Clinic Alix School of Medicine. It was the best of both worlds — a small class in a large graduate and academic program. I had the opportunity to learn at a world-renowned institution. I had a wonderful experience. During my residency in family medicine, our primary care clinic was in Kasson, Minnesota, and our specialty rotations were on the Rochester campus. So, again, I had the best of both worlds from a primary care training standpoint.

Mayo Clinic influence

At Mayo Clinic I saw firsthand the importance of teamwork and collaboration. When patients have highly complex problems, it takes a team working together, with the patient at the center, to develop and execute a plan of care for that individual.

Your work

I help to build home-based medical practices for individuals with complex health and social needs. I recruit and train the clinicians needed for this work and then oversee the clinical model and quality initiatives to ensure exceptional care is delivered. We focus on individuals who are homebound or home-limited to help them stay in their homes as long as possible.

There's a growing body of evidence that shows home-based care results in high patient satisfaction, improved quality of life, and lower costs through decreased utilization of hospitalization and emergency room resources.

One of my interests is in national workforce initiatives to train the clinical staff needed to do home-based care. Unfortunately current clinical training often doesn't include much time focused on how to care for patients in their home environment. There's much work to be done in this growing field.

Alumni Association

During my time at Mayo Clinic I was involved with the Alumni Association in developing the Life After Residency program — a joint effort of the Alumni Association and Mayo Clinic School of Graduate Medical Education. The program focused on helping provide residents with the skills necessary to transition from training into practice. The program wouldn't have been possible without the support and involvement of the Alumni Association. Mayo's Life After Residency program is still going strong 15 years later.

I'd like to give back to the Alumni Association by serving on the Board. I'd also like to increase awareness of the growing field of home-based medical practice and the workforce needs that accompany it.

Off duty

I like to exercise and listen to live music. I have two young granddaughters who live in Milwaukee, Wisconsin, and enjoy visiting them. My daughters are ages 22, 25 and 30. One of the greatest joys of my life has been to watch my daughters grow up and find their passion and purpose.

Fun facts

I dropped out of college during my sophomore year to be a drummer in a rock band. I thought my mom was going to have a heart attack when I called to give her this news. I returned to college about six months later and found myself back on the premed path soon thereafter. I wouldn't change a thing, and I'm blessed with a wonderful career in family medicine.

Dan Townsend, M.D. (MED '80)

Board member

- Senior surgeon in ophthalmology, Massachusetts Eye & Ear Infirmary, Harvard University, Boston
- Instructor, ophthalmology, Harvard Medical School and Tufts Medical School, Boston
- Fellowship: Oculoplastics/orbital diseases and surgery, Massachusetts Eye & Ear Infirmary
- Residency: Ophthalmology, Massachusetts Eye & Ear Infirmary
- Medical degree: Mayo Clinic Alix School of Medicine, Rochester, Minnesota
- Undergraduate degree: St. Olaf College, Northfield, Minnesota
- Native of: Mankato, Minnesota

Why medicine

I grew up in Southern Minnesota, where my father was one of the first dentists to set up shop in my hometown in the late 1940s. My two siblings went into dentistry like our father. Toward the end of college I decided to pursue medicine. During the winter of 1974-1975, I spent my college break working at Brooke Army Medical Center in San Antonio, Texas, where my uncle was chief of gastroenterology. I really enjoyed doing research there and working with Bob Philyky, M.D. (HEM '75), who later joined the Mayo staff in hematology in Rochester. I was extremely impressed with the caring attitude and knowledge base of these physicians and their genuine concern about their patients.

Why Mayo Clinic

A fellow student at St. Olaf, Steven Swanson, M.D. (MED '79), who was a year ahead of me, helped me make the decision to go to Mayo Clinic for medical school. He was very positive about his experiences at Mayo even though the school was only a few years old.

I got a job at the Kahler Hotel in Rochester as a bartender and waiter the summer before medical school started. I moved into a house of medical students who were upperclassmen, and they showed me the ropes.



Dan Townsend, M.D.

I have nothing but fond memories of my Mayo years — tremendous, engaged teachers; fun classmates; and talent show (Mixed Bag) escapades.

I ended up doing some ophthalmology research during my third year of medical school with Richard Brubaker, M.D. (OPH '70), who had the uncanny ability to explain incredibly difficult research concepts into something I could actually grasp. To this day I have the greatest respect for him as a mentor.

Mayo Clinic influence

The individual attention I received at Mayo helped transform me to become a better physician and person. The bedrock principles of treating patients with kindness and respect are with me every day as I sometimes struggle with inequality in health care, and challenging patient demands and expectations.

Mayo Clinic Alumni Association

I hope to bring a perspective of my view of the practice of medicine from a Mayo-centric education and East Coast/Harvard-based perspective, along

with drawing from my experiences of a year working in developing countries, owning and managing surgical centers, consulting for medical device companies and making difficult decisions involving physician issues for a major academic institution in Boston.

Spare time

I am still trying, at my advanced age, to stay relevant in the sporting world. I have run 25 marathons, including 10 Bostons. For a time I served as a running consultant for Reebok. After a hip replacement a couple of years ago, I now do the “senior shuffle” and am trying to focus on golf!

Fun facts

I am attempting to write the great American novel — vignettes about patients I have met over the years. Every patient has a story to tell. ▲

WOMEN'S HISTORY MONTH

March is Women's History Month — time to look at the contributions of some of the early women physicians and scientists at Mayo Clinic. Between 1889 and 1926 Mayo Clinic had appointed 11 women physicians to the staff. By 1935 only one remained. No more were added until 1948.

Today Mayo Clinic has 9,555 living female alumni (physicians and scientists) around the world.

Join us in celebrating these women who blazed trails for women at Mayo Clinic.



Gertrude Booker Granger, M.D. (I '98)

- Third physician and first woman to join Mayo brothers in practice in 1898
- Assumed full responsibility for eye exams and refractions — first Mayo physician to specialize
- In 1912 became Rochester's deputy director of public health with Charles H. Mayo, M.D. (Dr. Charlie), as director; in interest of public health, organized garbage-collection system and helped pass ordinance requiring inspection in milk production industry



Isabella Herb, M.D. (PATH '00)

- Arrived at Mayo Clinic in 1899 from Chicago to be Dr. Charlie's anesthetist and a pathologist
- Developed centralized pathology department
- Left Mayo Clinic in 1904 to practice and do bacteriology research in Chicago
- Later became 10th president of American Association of Anesthetists



Leda Stacy, M.D. (I '08)

- A Rochester native, was third woman to join Mayo practice, 1908
- Initially was anesthesiologist, then joined section of general internal medicine and studied radium treatment on East Coast at request of William J. Mayo, M.D. (Dr. Will)
- Became head of Mayo's section of radium therapy and led intrauterine use of radium
- Became international expert on radium therapy
- In 1917 became head of section focused on gynecology; section assured that women requesting women physicians would be accommodated
- Left Mayo Clinic in 1935 to join family planning clinic in New York; continued to make significant contributions to hormone research



Georgine Luden, M.D., Ph.D. (PATH '20)

- Dutch-born, German-educated; came to Mayo Clinic in 1914; received Ph.D. at University of Minnesota in 1920
- Ran a lab and incorporated epidemiology into research
- Marked a Rochester map according to coal pollution produced and number of cancer deaths in each neighborhood to investigate potential correlation between sulfur content of soft coal and cancer
- Left Mayo Clinic in 1929 and moved to British Columbia, becoming head of pathology at a hospital



Della Drips, M.D. (I '24)

- Member of first class in University of Minnesota-Mayo Clinic collaboration that allowed trainees completing clinical rotations at Mayo Clinic to pursue master's and doctoral degrees at university; received master's degree in pathology and medical degree several years later
- While training, worked in experimental laboratory at Mayo Clinic and focused on developing sound practices for blood transfusion
- Joined medical staff and saw women patients; considered an expert in gynecologic endocrinology



Winifred Ashby, M.D., Ph.D. (IMM '21)

- Came to Mayo Clinic from England in 1917 as immunology fellow
- Developed first technique to measure lifespan of red blood cells, contributing important finding — a basis for using blood transfusions to manage chronic anemia
- Received Ph.D. from University of Minnesota in 1921 and appointed to Mayo Clinic staff in department of experimental bacteriology and experimental medicine
- Left Mayo Clinic in 1924 to manage serology and microbiology laboratories in Washington, D.C.
- In 1940s her studies of carbonic anhydrase activity in central nervous system were internationally recognized

Excerpted from "Women of Mayo Clinic: the Founding Generation," by Virginia M. Wright-Peterson

MAYO CLINIC UPDATE

Mayo Clinic awards named professorships

Mayo Clinic awarded named professorships — the highest academic distinction at Mayo Clinic.

Andrew Badley, M.D. (I '94, INFD '97)

HH Sheikh Khalifa Bin Zayed Al-Nahyan
Professor of Infectious Diseases Honoring
Walter R. Wilson, M.D.
Division of Infectious Diseases,
Department of Medicine
Department of Molecular Medicine
Mayo Clinic in Rochester

Bradley Boeve, M.D. (I '92, N '95, NACF '96)

The Little Family Foundation Professor
of Lewy Body Dementia
Chair, Division of Behavioral Neurology,
Department of Neurology
Mayo Clinic in Rochester

Stephen Boorjian, M.D. (UONC '08)

Carl Rosen Professor of Urology
Department of Urology
Mayo Clinic in Rochester

Judy Boughey, M.D. (S '06)

W.H. Odell Professor of Individualized Medicine
Division of Breast, Endocrine, Metabolic, and
Gastrointestinal Surgery, Department of Surgery
Mayo Clinic in Rochester

Guojun Bu, Ph.D. (NSCI '10)

Mary Lowell Leary Professor
Department of Neuroscience
Jorge and Leslie Bacardi Associate Director
of the Center for Regenerative Medicine
Mayo Clinic in Florida

James Cerhan, M.D., Ph.D. (MSEP '98)

Ralph S. and Beverley E. Caulkins Professor
of Cancer Research
Chair, Department of Health Sciences Research
Mayo Clinic in Rochester

Amy Degnim, M.D. (S '03)

Joe M. and Ruth Roberts Professor of Surgery
Division of Breast, Endocrine, Metabolic, and
Gastrointestinal Surgery, Department of Surgery
Mayo Clinic in Rochester

Angela Dispenzieri, M.D. (I '94, HEMO '98)

Serene M. and Frances C. Durling Professor
Division of Hematology, Department of Medicine
Division of Clinical Biochemistry and Immunology,
Department of Laboratory Medicine and Pathology
Department of Molecular Medicine
Mayo Clinic in Rochester

Robert Foote, M.D. (N '79)

Hitachi Professor of Radiation Oncology Research
Chair, Department of Radiation Oncology
Mayo Clinic in Rochester

Mark Frye, M.D. (P '06)

Stephen and Shelley Jackson Family Professor
of Individualized Medicine
Chair, Department of Psychiatry and Psychology
Mayo Clinic in Rochester

Matthew Gettman, M.D. (U '00)

Erivan K. Haub Family Professor of Urologic
Cancer Honoring Horst Zincke, M.D.
Department of Urology
Mayo Clinic in Rochester

Neill Graff-Radford, M.D. (N '89)

David Eisenberg Professor
Department of Neurology
Mayo Clinic in Florida

Timothy Hewett, Ph.D. (OR '16)

John and Posy Krehbiel Professor of Orthopedics
Department of Orthopedic Surgery
Department of Physiology and Biomedical
Engineering
Mayo Clinic in Rochester

Martha Lacy, M.D. (HEMO '95)

David L. and Colleen B. Kessenich Professor
of Multiple Myeloma
Chair, Division of Hematology,
Department of Medicine
Mayo Clinic in Rochester

Amir Lerman, M.D. (I '89, CV '94)

Barbara Woodward Lips Professor
Division of Ischemic Heart Disease & Critical Care,
Department of Cardiovascular Medicine
Mayo Clinic in Rochester

Cynthia McCollough, Ph.D. (RD '91)

Brooks-Hollern Professor
Division of Medical Physics, Department
of Radiology
Mayo Clinic in Rochester

Karl Nath, M.D. (NEPH '96)

Robert Joseph Patnode Professor of Nephrology
Division of Nephrology and Hypertension,
Department of Medicine
Department of Physiology and Biomedical
Engineering
Mayo Clinic in Rochester

Robin Patel, M.D. (I '92, INFD '95, CM2 '96)

Elizabeth P. and Robert E. Allen Professor of
Individualized Medicine
Chair, Division of Clinical Microbiology, Department
of Laboratory Medicine and Pathology
Division of Infectious Diseases, Department
of Medicine
Mayo Clinic in Rochester

Patricia Pellikka, M.D. (MED '83, I '86, CV '89)

Betty Knight Scripps Professor of Cardiovascular
Diseases Clinical Research In Honor of
George M. Gura, M.D.
Chair, Division of Cardiovascular Ultrasound,
Department of Cardiovascular Medicine
Mayo Clinic in Rochester

Robert Pignolo, M.D., Ph.D. (HIM '16)

Robert and Arlene Kogod Professor
of Geriatric Medicine
Chair, Division of Geriatric Medicine
and Gerontology
Division of Endocrinology, Diabetes,
Metabolism, & Nutrition
Division of Hospital Internal Medicine
Department of Medicine
Department of Physiology and
Biomedical Engineering
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Mark Pittelkow, M.D. (MED '79, DERM '84)

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Chair, Department of Dermatology
Mayo Clinic in Arizona

Alfredo Quinones-Hinojosa, M.D. (NS '16)

William J. and Charles H. Mayo Professor
Chair, Department of Neurologic Surgery
Department of Otorhinolaryngology/Audiology
Department of Neuroscience
Mayo Clinic in Florida

Teresa Rummans, M.D. (I '84, P '87)

Donald C. and Lucy J. Dayton Professor
Department of Psychiatry and Psychology
Mayo Clinic in Rochester

Jay Ryu, M.D. (I '82, THD '85)

Dr. David E. and Bette H. Dines Professor
of Pulmonary and Critical Care Medicine
Division of Pulmonary and Critical Care Medicine,
Department of Medicine
Mayo Clinic in Rochester

Richard Sharp, Ph.D. (HSR '13)

Lloyd A. and Barbara A. Amundson Professor of
Biomedical Ethics Honoring Paul S. Mueller, M.D.
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Division of General Internal Medicine,
Department of Medicine
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Mayo Clinic in Rochester

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Division of Nephrology and Hypertension,
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Department of Physiology and Biomedical
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Geraldine Colby Zeiler Professor of Cytopathology
Chair, Department of Laboratory Medicine
and Pathology
Mayo Clinic in Arizona

Thomas Thacher, M.D. (FM '07)

Parker D. Sanders and Isabella G. Sanders
Professor of Family Medicine
Department of Family Medicine
Mayo Clinic in Rochester

**Vicente Torres, M.D., Ph.D.
(NEPH '74, I '77, NEPH '79)**

Robert M. and Billie J. Pirnie Professor of Kidney
Disease Research Honoring Michael J. Krowka, M.D.
Division of Nephrology and Hypertension,
Department of Medicine
Mayo Clinic in Rochester

Adrian Vella, M.D. (I '98, ENDO '01)

Earl and Annette R. McDonough Professor
Division of Endocrinology, Diabetes, Metabolism,
& Nutrition, Department of Medicine
Mayo Clinic in Rochester

Carole Warnes, M.D. (CV '88)

The Penske Foundation Professor of Clinical
Medicine in Honor of Drs. J. Eileen and Ian Hay
Division of Structural Heart Disease, Department
of Cardiovascular Medicine
Division of Pediatric Cardiology, Department
of Pediatric and Adolescent Medicine
Mayo Clinic in Rochester

Kenneth Warrington, M.D. (I '99, RHEU '02)

John F. Finn Minnesota Arthritis Foundation
Professor
Chair, Division of Rheumatology,
Department of Medicine
Mayo Clinic in Rochester

Anthony Windebank, M.D. (N '81)

Judith and Jean Pape Adams Charitable Foundation
Professor of Neuroscience
Department of Neurology
Mayo Clinic in Rochester

Zbigniew Wszolek, M.D. (EEMG '91)

Haworth Family Professor of
Neurodegenerative Diseases
Department of Neurology
Mayo Clinic in Florida



Kent Thielen, M.D.

Kent Thielen, M.D., named CEO of Mayo Clinic in Florida

Kent Thielen, M.D. (RD '94, RNEU '97), was named a vice president, Mayo Clinic, and CEO of Mayo Clinic in Florida. He succeeds Gianrico Farrugia, M.D. (I '91, GI '94), the new president and CEO of Mayo Clinic.

Dr. Thielen is a Minnesota native who came to Mayo Clinic as a radiology resident 28 years ago. He has been on the Mayo Clinic staff for 22 years and served in leadership roles including chair of Mayo's Midwest Department of Radiology. Since 2013 he has led integration efforts between the Rochester and Mayo Clinic Health System practices to create the Midwest Department of Radiology. He significantly expanded scholarship and research support within the department. From 2013 to 2017, the Department of Radiology in Rochester climbed from 19th to eighth in national rankings of National Institutes of Health awards to academic radiology departments.

As chair of the Enterprise Radiology Specialty Council, Dr. Thielen has led the integration of radiology practices across Mayo Clinic. He also led the planning and implementation of the new health records system throughout all Mayo radiology departments. Dr. Thielen served as chair of the Division of Neuroradiology from 2004 to 2013.

Mayo Clinic Board of Trustees names new members

The Mayo Clinic Board of Trustees announced two new public board members:

- Jay Alix, founder of AlixPartners LLP, a global advisory firm. He has led and advised on large, complex restructurings and turnaround, including leading the plan for General Motors Co.'s bankruptcy.
- George Bilicic, vice chair of Investment Banking, head of Midwest Investment Banking, and global head of Power, Energy and Infrastructure at Lazard Freres & Co. LLC.

Residency program ranking — from fourth to third nationally

Each year more than 72,000 U.S. physicians nominate, rank and review U.S. residency programs in 28 specialties through Doximity. Physician rankings are combined with objective data that determine the rankings, which are published in *U.S. News & World Report*.

In 2018 Mayo Clinic's residency programs improved from fourth to third nationally with 11 programs ranked in the top 10.

Mayo Clinic School of Medicine receives \$200 million gift, changes name

Mayo Clinic received a \$200 million gift from Jay Alix, a new public member of the Mayo Clinic Board of Trustees, founder of AlixPartners and philanthropist from Birmingham, Michigan. The endowment gift is the largest ever to Mayo Clinic and is designated to Mayo Clinic School of Medicine.

The gift recognizes the importance of educating the next generation of physicians who will carry on Mayo's tradition of solving the most serious and complex medical challenges, one patient at a time. The gift will expand scholarship opportunities, further innovation in the school's curriculum and establish a professorship.

Mayo Clinic School of Medicine will now be known as Mayo Clinic Alix School of Medicine.

"My primary philanthropic interests are medicine and education," says Alix. "Mayo Clinic Alix School of Medicine will offer an ideal opportunity to advance both fields. Genetics, artificial intelligence, virtual and augmented reality, and other technologies are transforming medical research, education and practice. This gift will further enable Mayo's medical school to recruit the best medical students and to create a curriculum that trains them to harness evolving radical advances in medical science and technology to the greatest benefit of patients."



Jay Alix, member of the Mayo Clinic Board of Trustees and founder of AlixPartners

Sundana Kane, M.D., elected president, American College of Gastroenterology

Sunanda Kane, M.D. (GI '07), Division of Gastroenterology and Hepatology, Department of Medicine at Mayo Clinic in Rochester, was elected president of the American College of Gastroenterology (ACG), which champions the evolving needs of clinicians in the delivery of high-quality, evidence-based, compassionate health care.



Sunanda Kane, M.D.

Mayo Clinic introduces new fellowship programs

Mayo Clinic's Department of Laboratory Medicine and Pathology and the Division of Transfusion Medicine have launched two new graduate medical education fellowship programs — one in cellular therapy and one in clinical informatics.

Cellular therapy

The Cellular Therapy Fellowship Program is one of the first in the country to offer a targeted curriculum exclusive to the manufacturing and clinical aspects of cellular therapy. The program provides rotations and exposures in cutting-edge cell therapy in use or under investigation in the clinic, including allogeneic cell banking, mesenchymal stem cells, dendritic cells, hematopoietic progenitor cells and chimeric antigen receptor T cells. The curriculum also emphasizes the development of the technologies and the regulatory and quality systems needed to investigate and manufacture these cells for clinical indications.

The new fellowship is the result of efforts by Eapen Jacob, M.D. (MED '98, I1 '99, ENDO '01, PATH '05, SGPA '06, TMED '09), and Allan Dietz, Ph.D. (ONCL '02), to provide enhanced training in a field that continues to evolve and grow. Drs. Jacob and Dietz serve as program director and associate program director, respectively.

Clinical informatics

The Clinical Informatics Fellowship Program is one of 35 such programs in the nation. The two-year American College of Graduate Medical Education-accredited program's curriculum provides an immersive intraprofessional experience across areas of networks, data governance, data security, data warehouse, medical informatics, practice analytics, knowledge management, clinical decision support, system evaluation, project management and architecture.

Rotations are led by physician faculty members and allied health staff in Information Technology, Office of Information Security, Biomedical Statistics and Informatics, Enterprise Analytics, and Information and Knowledge Management.

The program is the result of efforts to meet a demand to increase the pipeline of specialty-trained physicians. Informatics training is a critical asset to the practice and the institution.

The program director is Thomas Flotte, M.D. (PATH '07). Taofic Mounajjed, M.D. (SGPA '10), is associate program director. The program admitted its first fellow in July.

Mayo Clinic investigator leads steering committee of NIAAA's new Alcoholic Hepatitis Network



Vijay Shah, M.D.

The National Institute on Alcohol Abuse and Alcoholism (NIAAA) has established the Alcoholic Hepatitis Network (AlcHepNet) to study how to advance the understanding and management of alcohol-related liver disease.

Vijay Shah, M.D. (GI '98), chair of the Division of Gastroenterology and

Hepatology at Mayo Clinic in Rochester, has been asked to lead the group's national steering committee.

Mayo Clinic and several other institutions, collaborating as AlcHepNet, received five years of funding to conduct clinical and translational research on alcohol-related liver disease and alcoholic hepatitis, including identifying and evaluating new diagnostic technologies and treatments.

Mayo Clinic received funding for four projects:

- "Late Phase Clinical Trials and Observational Studies Focused on Interleukin-1 Beta Inhibition and GCSF Growth Factor," multi-principal investigator Patrick Kamath, M.D. (GI '92)
- "Randomized, Placebo-Controlled Pilot Trial to Determine the Efficacy of an IL22 Agonist (F-652) in Patients with Alcoholic Hepatitis," multi-principal investigator Douglas Simonetto, M.D. (I1 '10, CI '13, GI '15, HEPT '16)
- "Assessment of Alcoholic Hepatitis with Multiparametric Magnetic Resonance Elastography," multi-principal investigator Meng Yin, Ph.D. (BME '07, RD '09)
- "Liquid Biopsy for Alcoholic Hepatitis: Diagnosis, Prognosis and Technology Development," multi-principal investigator Harmeet Malhi, M.B.B.S. (I '04, CI '06, GI '07, HEPAT '08)

In addition to leading the steering committee, Dr. Shah is a multi-principal investigator on each of Mayo's grants and ensures coordination among collaborating institutions and the NIAAA.

Mark Warner, M.D., receives Distinguished Service Award, American Society of Anesthesiologists

Mark Warner, M.D. (ANES '82), Department of Anesthesiology and Perioperative Medicine at Mayo Clinic in Rochester, received the 2018 Distinguished Service Award from the American Society of Anesthesiologists (ASA). This is the highest tribute by the ASA to a member and is given for outstanding clinical, educational and scientific achievement; contribution to the specialty; and exemplary service to the ASA. Dr. Warner will receive the award at the ASA's annual meeting in October 2019 in Orlando, Florida. Dr. Warner is the Walter and Leonore Annenberg Professor of Anesthesiology in Honor of Daniel R. Brown, M.D., Ph.D.



Mark Warner, M.D.

Mayo Clinic physicians named Distinguished Educators



Joseph Parisi, M.D., Robert D. Brown Jr., M.D., and Bobbi Pritt, M.D.

Three staff members at Mayo Clinic in Rochester received 2018 Distinguished Educator Awards in recognition of substantial, sustained contributions to Mayo's educational mission. Recipients have demonstrated innovations in education, created new ways of teaching or applied innovation techniques, and received outstanding recognition from students and peers.

Robert D. Brown Jr., M.D. (MED '87, N '92)

Chair, Division of Stroke and
Cerebrovascular Diseases
Department of Neurology
Director, Mayo Clinic Program
in Professionalism and Values
John T. and Lillian Mathews
Professor of Neuroscience
Professor of neurology

Joseph Parisi, M.D. (LABM '90)

Emeriti Staff
Professor of laboratory medicine and pathology

Bobbi Pritt, M.D. (CM2 '07)

Division of Clinical Microbiology
Department of Laboratory Medicine and Pathology
Director, Clinical Parasitology Laboratory
Co-director, Vector-Borne Diseases
Laboratory Services
Professor of laboratory medicine and pathology

Mayo Clinic hospitals earn surgical outcomes distinction

Mayo Clinic Hospital – Rochester, Saint Marys Campus and Mayo Clinic Hospital in Arizona have been recognized by the American College of Surgeons National Surgical Quality Improvement Program for achieving meritorious outcomes for surgical patient care. The Mayo hospitals are two of 83 participating hospitals that achieved this status.

The recognition is related to surgical outcomes including mortality, unplanned intubation, ventilator greater than 48 hours, renal failure, cardiac incidents (cardiac arrest and myocardial infarction), respiratory (pneumonia), surgical site infections and urinary tract infection.

The two Mayo hospitals achieved the distinction based on outstanding composite quality scores in these eight areas.

The American College of Surgeons program, which is used in almost 800 adult and pediatric hospitals, is the only nationally validated quality improvement program that measures and enhances the care of surgical patients.



Refer-a-friend

Alumni can refer friends and family who are not their patients through a handy new referral tool. These referrals receive priority attention. alumniassociation.mayo.edu/resources/refer-a-friend

Obituaries

Selmer Berge, M.D. (I '61), died Sept. 7, 2017.

Yogesh Chand, M.D. (OR '81), died Oct. 23, 2018.

Harry Colfer, M.D. (I '47), died December 2016.

Richard Craig, M.D. (RD '56), died July 18, 2018.

Harold Evans, M.D. (I '58), died Oct. 29, 2018.

Kenneth Ghormley, M.D. (U '53), died March 29, 2013.

Charles (Dick) Gill, M.D. (I '61), died Jan. 4, 2015.

Michael Gordon, M.D. (I '65), died July 7, 2017.

Franz Hallermann, M.D., Ph.D. (RD '64), died Aug. 28, 2018.

Marjorie Heffelfinger-Juttner, M.D. (PATH '72), died April 27, 2017.

Stanley Henson Jr., M.D. (S '55), died Feb. 1, 2018.

Mark Hoepfner, M.D. (S '88), died Sept. 29, 2018.

Norman LeRoy Lapp, M.D. (I '66), died July 15, 2018.

Donald Leonard, M.D. (RHEU '77), died July 13, 2018.

Thomas Leonard, M.D. (S '64), died June 25, 2018.

George Molnar, M.D. (I '55), died May 28, 2018.

Joe Nettles, M.D. (NS '66, OR '69), died April 6, 2017.

Stanley Payne, M.D. (S '63, OR '67), died Aug. 15, 2018.

James Poston, M.D. (ANES '78), died July 30, 2018.

Thomas Ryan, M.D. (DERM '72), died Aug. 4, 2018.

George Sperry, M.D. (PDC '66), died Dec. 3, 2017.

Anton "Tony" Spraitz Jr., M.D. (OBG '63), died Sept. 16, 2018.

Lloyd Taylor, M.D. (S '54, TS '61), died Nov. 23, 2018.

Philip Utz, M.D. (RD '57), died Nov. 4, 2018.

David F. Wilson, M.D. (ENT '70), died Nov. 13, 2018.

Complete obituaries and alumni news:
alumniassociation.mayo.edu/people

Mayo Clinic Alumni magazine is published quarterly and mailed free of charge to physicians, scientists and medical educators who studied and/or trained at Mayo Clinic, and to Mayo consulting staff. The magazine reports on Mayo Clinic alumni, staff and students, and informs readers about newsworthy activities throughout Mayo Clinic.

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*Mayo Clinic is committed to
creating and sustaining an
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supports diversity in staff and
patient populations.*

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MAYO CLINIC RECEIVES SCORE AWARD TO IMPROVE WOMEN'S HEALTH

Mayo Clinic received a \$6.2 million grant to fund a Specialized Center of Research Excellence (SCORE) on sex differences from the Office of Research on Women's Health and the National Institute on Aging. The overarching theme of the project, entitled "Sex-Specific Effects of Endocrine Disruption on Aging and Alzheimer's Disease," is to investigate how abrupt loss of ovarian hormones, caused by bilateral salpingo-oophorectomy prior to natural menopause, affects overall aging, physical and cognitive function, and risk for Alzheimer's disease pathophysiology. Approximately 1 in 8 women have their ovaries removed before reaching natural menopause.

The SCORE will be led by principal investigators Michelle Mielke, Ph.D. (HSR '11), Division of Epidemiology, Department of Health Sciences Research; and Virginia Miller, Ph.D. (PHYS '86), departments of Surgery and Physiology and Biomedical Engineering.



Virginia Miller, Ph.D., and Michelle Mielke, Ph.D.



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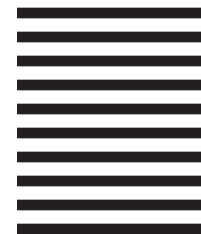
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