A golden age for pediatric cardiology

Rochester Epidemiology Project at 50

Live Ink readability-enhancing software

Distinguished Alumni Awards
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Letter from the secretary-treasurer

This issue of *Mayo Clinic Alumni* features our exciting Division of Pediatric Cardiology, led by Dr. Frank Cetta. I think you’ll be impressed by the great things this group is doing, building on a history of success that goes back to the 1970s. The work they’re doing — complex transplantations, reparative surgeries, minimally invasive procedures and regenerative medicine — is fascinating. I hope you’ll keep them in mind for your patients’ needs.

As we come to the end of the calendar year, I want to encourage you to nominate fellow alumni for the various awards Mayo bestows on our alumni. This includes the Humanitarian Award, Professional Achievement Award and Distinguished Alumni Award.

The **Humanitarian Award** recognizes volunteer service. Among those who have received this recognition are Dr. William Fryda (I ’78, HEM ’80) and Dr. John Woods (S ’66, PLS ’68) — colleagues who are well known for their generous spirits.

The **Professional Achievement Award** recognizes leadership and achievement in practice, research and administration. Dr. Bernard Harris Jr. (I ’85) and Dr. Shigeaki Kobayashi (S ’61, NS ’71) are among the recipients of this prestigious award.

Those two awards from the Alumni Association are given every other year at our Biennial Meeting, which will be held in Florida in 2017 (page 29).

The **Distinguished Alumni Award** is given by the institution annually in Rochester to alumni who have achieved the highest levels of their careers. It is the most prominent recognition Mayo Clinic offers. The list of individuals who have received this award reads like the who’s who of medicine.

Take a look at the lists of recipients of all of these awards. Is your specialty well represented? Who among your colleagues, mentors and trainees should be nominated for these 2017 awards?

You can find nomination criteria, deadlines and lists of past recipients at [https://alumniassociation.mayo.edu/people/awards/](https://alumniassociation.mayo.edu/people/awards/).

My brilliant mentor, research partner and friend Dr. Kai-Nan An (BIOM ’75) is a 2016 Distinguished Alumni Award recipient (page 30), and I could not be more proud of him. Make sure your mentors receive their due recognition. Your action is important, and we value your thoughtful nominations.
Mayo Clinic’s Division of Pediatric Cardiology is on a roll, according to Division Chair Frank Cetta, M.D. (PDC ’95).

“In the last two decades, we’ve really burst onto the scene,” he says. “We’re engaged in exciting research not found elsewhere, and we offer the full spectrum of cardiac care — from fetal diagnosis through specialized treatment for children and adults with highly complex congenital conditions.”

Dr. Cetta points out several accomplishments:

• The division has published more than 1,000 original manuscripts in the last 10 years, and several division members are editors of important textbooks in this field.

• Mayo has performed more operations for Ebstein’s anomaly and more transcatheter tricuspid valve implantations for patients with Ebstein’s anomaly than anywhere else in the world (page 11).

• The Long QT Syndrome/Genetic Heart Rhythm Clinic for patients with channelopathies and the pediatric heart transplant program have been busier than ever in the last five years (page 5).

• The Todd and Karen Wanek Program in Regenerative Medicine has three first-in-child clinical trials underway for cell-based therapy in congenital heart disease (page 7).

• The division’s state-of-the-art review course for congenital heart disease and the annual congenital echocardiography course are considered among the best in the nation.

Frank Cetta, M.D.

“Mayo’s pediatric cardiology had a heyday in the 1970s when surgical treatment for complex cardiac lesions such as atrioventricular septal defect, truncus arteriosus and single ventricles (Fontan operation) were developed. Many of the major modifications to these operations were first performed or described at Mayo. But we’re undeniably experiencing a golden age now,” he says. “I’m excited about what is yet to come from this group.”

The division is well balanced, with senior consultants who have decades of experience working alongside younger consultants — five of whom have joined the practice in the last four years. The newcomers bring vibrant energy to the program, according to Dr. Cetta.

Pediatric cardiology is a jewel in the Mayo Clinic Children’s Center crown.”

– Richard Bram, M.D., Ph.D.
“If you search for papers published in pediatric cardiology by city name, anywhere in the world, Rochester is in the top 10,” he says. “The academic prowess of the division is evidence that we’re advancing knowledge in this constantly changing field. The research coming out of this group is invigorating and shows that we are committed to being at the forefront of pediatric cardiology.”

Richard Bram, M.D., Ph.D. (PD ’98), chair, Mayo Clinic Children’s Center, couldn’t agree more. “Pediatric Cardiology is one of our most academically accomplished divisions, which means most consultants are full professors in a relatively short time,” he says. “Pediatric Cardiology is a jewel in the Mayo Clinic Children’s Center crown.”

Just a hallway away

Dr. Cetta explains the advantage of a pediatric program ensconced within an adult program — a pediatric hospital within an adult hospital; a pediatric cath lab within an adult cath lab; pediatric cardiologists, cardiac surgeons, transplant surgeons and interventional cardiologists working alongside world-renowned adult counterparts.

“Mayo’s adult cardiologists and surgeons are familiar with equipment and clinical situations not often encountered in pediatric practice,” he says. “Not only do pediatric patients have access to the expertise of pediatric specialists, but they also have access to every expert who cares for adult patients. Our colleagues in adult cardiology are always available — just a hallway away — and our close collaboration is a great benefit to patients.”

As patients transition from pediatric to adult care, they can work with the same nurse coordinators in the same clinic in the same practice for their lifelong care. “They can see physicians in a familiar environment who work side-by-side with the physicians they’ve seen their whole lives,” says Dr. Cetta. “The continuity of care available to our pediatric patients is unparalleled.”
Pediatric Heart Transplant Program

Working toward a future without transplants

Madison and Sydney Rippy had heart transplants at Mayo Clinic in Rochester in 2009 and 2012, respectively, at age 3. The sisters from Blaine, Minnesota — now ages 10 and 7 — had dilated cardiomyopathy. Both were in heart failure, were on life support and would have died without a transplant.

In the years since those transplants, Mayo’s Pediatric Heart Transplant Program has flourished, in part due to the interest, enthusiasm and commitment of Jonathan Johnson, M.D. (PD ’08, PDC ’11), the program’s medical director since 2012.

“I fell in love with Mayo Clinic when I interviewed during medical school,” he says. Early in his residency in pediatrics at Mayo, he was leaning toward specializing in pediatric hematology/oncology.

“A week rotating with Dr. David Driscoll (PDC ’81) in the pediatric cardiology clinic changed that,” says Dr. Johnson, who subsequently completed a fellowship in pediatric cardiology and was asked to stay on in the transplant program. “During the last year of my fellowship I saw every pediatric transplant patient that came to the clinic, including the Rippy sisters, and as many adult transplant patients as possible. Dr. Cetta has given the Pediatric Heart Transplant Program every resource we’ve needed. This is my dream job.”

Dr. Johnson has contributed to 65 peer-reviewed publications and eight book chapters in his short time on staff at Mayo Clinic. He’s eager to get the word out about Mayo’s expertise in pediatric heart transplantation.

“We can take on complex transplants that some places don’t want to take on, including transplanting patients from as young as 28 days old to adult congenital heart disease patients with multi-organ failure,” he says. “Part of our mission is to understand what can be done, stretch our capabilities and expand the indications for transplant. Despite taking on complicated patients, our outcomes are equal to if not better than anywhere else in the country.”

Other differentiators of the Pediatric Heart Transplant Program include:

• Unique approach to posttransplant care. Instead of repeated invasive biopsies in the first year after transplant, Mayo Clinic uses echocardiograms and blood tests. “Our evidence shows this approach is just as effective in patients 16 years old and younger in our hands,” says Dr. Johnson. “We don’t think snipping off pieces of the heart muscle is necessary. The Rippy...
sisters had heart transplants when they were 3 years old. We do not want to put vulnerable young patients like them through repeated biopsies and anesthesia in the year after transplant if there’s an equally effective, less invasive way.”

- **Involvement in a clinical trial of a heart failure medication (Entresto) to improve ventricular function and outcomes in children with heart failure.** The medication has recently been approved for adults but not for children.
- **A new clinical trial to look at heart longevity using stress perfusion echocardiography in pediatric and adult transplant patients.** The trial is in collaboration with the University of Calgary, Canada, and principal investigator Nowell Fine, M.D. (CV-EC '11, CV-AD '12, CV-HF '13). “Dr. Fine originated this idea when he was a fellow at Mayo Clinic,” says Dr. Johnson. “We’ve worked together to gain approval for the trial at both institutions and plan to pool our data for the benefit of patients everywhere.”

**Regenerative medicine for young hearts**  
Despite the success of Madison and Sydney Rippy’s heart transplants, they will need to take immunosuppression medication for the rest of their lives, which is particularly hard on the kidneys. The sisters could need kidney transplants in the future. But that’s not the worst of it. Heart transplants in children usually only last 15 to 20 years, which means the girls will likely need new hearts in early adulthood.

“Organ transplantation is a miracle for families like the Rippys but has very severe consequences for young children due to immunosuppression therapy and other lifelong side effects,” says Timothy Nelson, M.D., Ph.D. (I ’08, CI ’10, CV ’10), director of the Regenerative Medicine Consult Service for the Transplant Center.

In the future, children like Madison and Sydney may have better options. Mayo Clinic is actively studying regenerative medicine therapies that could delay or eliminate the need for transplant. This includes the only FDA-monitored clinical trials for regenerative medicine therapies in pediatric heart patients. Mayo Clinic has three of these phase I trials underway.

“There’s nothing we can offer today in terms of these therapies, but we hope our clinical trials will lead to treatment options,” says Dr. Nelson. “Our long-term vision is to make young hearts strong enough to eliminate the need for transplant. We’ll achieve that vision when we determine the right cells and when to give them to effectively rebuild the heart.”
About the trials

The three clinical trials center on congenital heart defects and aim to improve right ventricular function.

**Principal investigator:** Muhammad (Yasir) Qureshi, M.B.B.S. (PDCI ’14)

**Imaging:** Patrick O’Leary, M.D. (PDC ’92)

**Genetic analysis:** Timothy M. Olson, M.D. (PDC ’93, LABM ’94)

1. **HLHS infants using umbilical cord blood**
   - **Patients:** Babies approximately 3 to 6 months old with hypoplastic left heart syndrome (HLHS) having the Glenn operation (the second in a series of three surgeries to treat the condition).
   - **Trial:** Collect cells from patient’s umbilical cord at birth and deliver to the heart muscle at the time of the Glenn operation.
   - **Goal:** Improve heart muscle health and function to better meet challenges of life with HLHS. “This trial is a first, so we’ve rolled it out very slowly and carefully, but we hope to accelerate enrollment soon,” says Timothy Nelson, M.D., Ph.D. “Our preliminary observations indicate we’re going in the right direction although it’s too early to draw scientific conclusions.”

2. **Patients after Fontan operation using bone marrow-derived cells**
   - **Patients:** HLHS patients and others 5 to 30 years old with single right ventricles who have undergone the Fontan operation and have a weakening heart.
   - **Trial:** Collect cells from patient’s bone marrow and deliver by catheter to the heart muscle.
   - **Goal:** Improve heart muscle health and function to better meet the challenges of life with single-ventricle physiology after the Fontan operation.

3. **Ebstein’s anomaly patients using bone marrow-derived cells**
   - **Patients:** Ebstein’s anomaly patients 2 to 21 years old at time of tricuspid valve surgery.
   - **Trial:** Collect cells from patient’s bone marrow at time of surgery and deliver to the heart muscle.
   - **Goal:** Demonstrate efficacy of cell-based therapy in heart muscle with reduced function to improve performance and longevity.

A team of 60 at Mayo Clinic has collaborated for six years to bring these regenerative medicine clinical trials to fruition, with benefactor support from the Todd and Karen Wanek Family Program for Hypoplastic Left Heart Syndrome.

“Current medical science can’t meet all of the clinical needs of these patients, so we’re exploring innovative therapies,” says Dr. Nelson. “It’s a fallacy that the heart you’re born with is the heart you die with. We know that the heart muscle has the ability to grow and regenerate. We’re working toward being able to apply a regenerative strategy when we identify a young patient who will have a heart problem. This is relatively new knowledge that will help us make the heart strong enough to delay or prevent transplant.”

Dr. Nelson says Mayo Clinic’s goal is to have regenerative medicine therapies for pediatric heart patients within 10 years. “Families of children with heart failure have little hope. Being involved in our clinical trials helps them feel like they’re making meaningful contributions to science and giving others new hope — not only children with heart failure but all children with cardiac diseases. We’re focused on pinpointing the best ways to encourage the heart to regrow rather than just patching over defects.”

Jonathan Johnson, M.D., is eager for the new therapies to be available. “Yes, transplantation can give life in cases of otherwise fatal diseases, but there’s no question that transplantation, especially at a very young age, can limit quality of life,” he says. “Not to mention there’s a limited donor supply, with 50 infants and children dying every year in the U.S. waiting for a heart transplant. New strategies are critical to improve the quality of life for children with heart problems, including therapies to prolong the life of transplanted hearts and — even better — strengthen patients’ original hearts and eliminate or delay the need for transplant.”

It’s a fallacy that the heart you’re born with is the heart you die with. We know that the heart muscle has the ability to grow and regenerate.”

– Timothy Nelson, M.D., Ph.D.
‘Team-based care like nowhere else,’ says transplant mom

Madison (Madi) Rippy was 2 years old when she had a stroke and was taken to Children’s Hospital in Minneapolis. An X-ray showed a severely enlarged heart, and the cardiologist recommended the family go to Mayo Clinic for transplant medicine expertise. Madi received a heart transplant a year later, and the family met Jonathan Johnson, M.D., who was completing his fellowship.

“He’s been through this journey with us and is our go-to guy — our rock,” says Linsey Rippy about her daughters’ cardiologist. “He’s an incredible doctor and incredible person.”

Three years later the Rippy’s younger daughter, Sydney, also needed a heart transplant. Both girls had dilated cardiomyopathy. Mayo had monitored Sydney since birth due to her sister’s condition. Sydney didn’t show any evidence of a heart problem until she was 2.

“Mayo’s diligence and tenacity saved Sydney’s life,” says Rippy. “Even though her echocardiograms were normal at birth and age 1, Mayo kept a close eye on her. We believe that attention saved her from having a drastic event.”

Recently Madi, now 10, was taken to Mayo Clinic by ambulance with a serious blood clot. When her parents arrived at the hospital, Dr. Johnson was waiting for them.

“I was crying and freaking out, afraid Madi would die,” says Rippy. “There was Dr. Johnson, in his street clothes, wanting to see her for himself and reassure us. It shows me how invested he is in my daughters’ success. When I saw him, I felt like I could breathe for the first time. He hugged me and gave me more hope.”

Rippy says her daughters are invested in Dr. Johnson, too. During a Make-A-Wish trip to Disneyworld, they attended a Muppets show, and Madi said, “I can’t wait to tell Dr. Johnson about this. He loves the Muppets — this show would be his favorite.”

“For them, the transplant center is a place of comfort,” says Rippy. “We’ve gotten so spoiled at Mayo. We know other transplant families who wait days for test results and weeks between appointments. Mayo does team-based care like nowhere else. We’re never rushed through appointments. They treat us with the utmost care for as long as we need it. Dr. Johnson wrote letters on our behalf when our school district tried to change our daughters’ school because the special education classroom population was too large.

**Pediatric heart transplantation**

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“Sometimes when we groan about the 95-mile drive, my husband and I remind each other that Mayo is a car ride away, not a plane ride away. People come to Mayo from all over the world. We can get there in two hours.”

Sydney Rippy needs orthopedic surgery to lengthen a calf muscle and could have the procedure closer to home. The Rippys have chosen to have the surgery at Mayo Clinic.

“We feel more secure knowing her whole team will be available to address all aspects of her needs,” says Linsey Rippy. “And it’s more relaxing for me. I won’t have to be the nurse and tell everyone about her transplant medications because everyone at Mayo is so good. I can focus on just being mom.”

The Rippys are hopeful about the future for their daughters and other transplant families. “The regenerative medicine therapies Mayo is pursuing may mean other families won’t have to go through what we’ve gone through,” says Rippy. “We’ll never get to hear the word ‘cured’ with our children, but who knows where medical science will be in 10 years? Our kids and others may be able to have a more normal or typical future.

“Often people don’t associate Mayo with kids. Our kids are alive because of Mayo. We trust them so much. They treat our kids like their own. We’re at the absolute best place.”

Linsey and Noel Rippy of Blaine, Minnesota, are grateful to Mayo Clinic for their daughters’ care. Madison (left) and Sydney (right) had heart transplants and have ongoing care in Rochester.
Adult expertise benefits pediatric patients

Percutaneous valve replacement

“This is an example of the crossover between our adult and pediatric practices,” says Nathaniel Taggart, M.D. (PD ’07, PDCMR ’08, PDC ‘11). “It’s generally good to postpone open-heart surgery if we can keep the child healthy by another means. Our adult cardiology colleagues have generously shared their expertise in the collaborative spirit for which Mayo is known, and our young patients have decidedly benefited.”

Another treatment now available to pediatric heart patients as a result of the innovation of the adult practice is implantation of covered stents for coarctation (congenital narrowing) of the aorta. Dr. Cabalka participated in a clinical trial of this technology, and she and Dr. Taggart were key authors on a paper describing the initial experience of this new technology.

“Previously no covered stents were approved for congenital heart defects, so this is an exciting development for those of us in the cath lab and, more importantly, for our pediatric patients,” says Dr. Taggart.

Mayo Clinic is one of the leading centers in the U.S. for transcatheter valve replacement and has performed more tricuspid valve implantations in this way than any other medical center. In an international registry of transcatheter valve replacement patients, 30 percent of the patients are Mayo’s. Allison Cabalka, M.D. (PD ’99), heads the Pediatric and Adult Congenital Cardiac Catheterization Program and, along with former program head Donald Hagler, M.D. (PDC ’74), has pushed the cutting edge of invasive therapeutics for children and adults with congenital heart disease.

Avoiding or delaying open-heart surgeries is especially important for pediatric patients. Each surgical procedure creates scar tissue, and that makes future procedures more difficult. When a surgically replaced tricuspid valve begins to fail in a child, transcatheter replacement is now an off-label option, per the Food and Drug Administration. Mayo has provided this procedure to more than 40 patients.

Catheter-based interventions for congenital heart defect patients at Mayo Clinic in Rochester include:

• Balloon valvuloplasty for aortic and pulmonary valve stenosis
• Covered stent placement for treatment of coarctation of the aorta
• Placement of closure device for atrial septal defects, ventricular septal defects and patent ductus arteriosus
• Stent implantation for pulmonary artery stenosis
• Transcatheter valve replacement (pulmonary and tricuspid)
Mayo Clinic’s pediatric cardiac surgeon Joseph Dearani, M.D. (TS ’96), performs more operations for Ebstein’s anomaly than anyone else in the world (page 12).

Typically, a pediatric heart surgeon might perform one to three of these procedures per year. Mayo Clinic performs 25 to 50 each year and has done a total of 1,200 — more than 700 of them by Dr. Dearani, the Sheikh Zayed Professor of Cardiovascular Diseases Honoring George M. Gura, M.D.

“We have a comprehensive multidisciplinary congenital heart team that is experienced in every problem or patient of any age,” he says. “We’re well positioned to determine if the best course is a conventional operation, minimally invasive or robotic procedure, catheter-based procedure or transplant. Procedures that formerly were considered prohibitive risk are now accepted as a bridge to transplant. Ebstein’s and hypertrophic cardiomyopathy are good examples of this. We offer every option available for these complex, uncommon conditions that may lead to heart failure.”

Dr. Dearani says Mayo epitomizes comprehensive care, interdisciplinary practice and a natural culture of collegiality. “Nowhere is this more evident than in the pediatric cardiac practice. We all work together — including with our adult cardiology colleagues — and we decide together what’s best for each patient.”

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**Electrophysiology**

- The division’s surge in patient visits in the last five years is largely due to the efforts of the pediatric electrophysiology (EP) team. Bryan Cannon, M.D. (PD ’10), and Philip Wackel, M.D. (PDC ’14), perform invasive EP and catheter ablation procedures, and implant devices (pacemakers and defibrillators). Pediatric EP services also are offered at outreach clinics in North Dakota.
- In the Long QT Syndrome/Genetic Heart Rhythm Clinic, Michael Ackerman, M.D., Ph.D. (MDPD ’95, PHAR ’95, PD ’98, PDC ’00), focuses on the molecular basis of rhythm abnormalities. “Dr. Ackerman’s practice is the epitome of bench-to-bedside medicine,” says Dr. Cetta. “Novel gene discoveries from his basic research lab impact the patients his team sees on a daily basis.”

**Echocardiography**

The Congenital Echocardiography Laboratory has been world-renowned since the days of James Seward, M.D. (I ’73, CV ’76), and A. Jamil Tajik, M.D. (I ’70, CV ’73). Carrying the torch in recent years is Benjamin Eidem, M.D. (PDC ’97), with state-of-the-art echocardiographic imaging for all stages of congenital heart defects. This group has contributed to the education of two generations of physicians and sonographers by editing textbooks and hosting international and national CME meetings for 32 years.
Throughout his residency and for five years on staff afterward, Joseph Dearani, M.D. (TS ’96), learned alongside cardiac surgeon Gordon Danielson, M.D. (CS ’67).

“It was a proactive, coordinated mentorship,” says Dr. Dearani.

“Until Dr. Danielson retired in 2002, I worked on every Ebstein’s anomaly case with him. The understanding was that I would inherit the Ebstein’s practice because of my interest in congenital heart disease and Ebstein’s anomaly in particular.”

Ebstein’s anomaly was first described in the 1960s. In the early 1970s some patients with Ebstein’s anomaly came to Mayo Clinic, prompting Dr. Danielson’s interest in this congenital heart defect in the tricuspid valve. The valve doesn’t function properly, causing blood to leak back into it. Dr. Danielson performed his first operation in 1972 and pioneered a surgical approach for the rare defect. As he and his colleagues published papers detailing the anatomy, physiology, repair techniques and surgical outcomes, patients from around the country and world came to Mayo Clinic for care.

“By the early 1980s, Mayo was viewed as the Ebstein’s capital of the world,” says Dr. Dearani. “Dr. Danielson led the way, and I’ve worked with my colleagues to expand on what he did.”

After training for almost a decade, Dr. Dearani says he was ready to take over. “The challenge with Ebstein’s is that the anatomic abnormalities are infinitely variable, which makes each patient different. That, combined with the rarity of the defect, results in very few physicians and surgeons getting comfortable with the management. We do so many here at Mayo that I felt well prepared and confident when Dr. Danielson did his last operation.

“We had a wonderful relationship — he was a surgical father to me. He watched out for me and provided advice and guidance during the early years of my professional career. Even after he retired, I periodically called him about difficult cases. He told me to always keep an open mind and bring back new and innovative things to Mayo’s practice.”

Dr. Danielson’s advice to Dr. Dearani led him to seek knowledge beyond Mayo. He visited China, France and Brazil to learn about Ebstein’s innovations and approaches. “During the first few years after Dr. Danielson retired, I traveled and incorporated those new ideas into our practice,” he says.

The next innovator

Now Dr. Dearani is mentoring the next surgeon to carry the Ebstein’s torch.

Sameh Said, M.D. (CS ’08, S ’11, S-TS ’14), has been a co-author on every paper Dr. Dearani has written about Ebstein’s anomaly in the last 10 years, presented at major cardiology meetings with him and worked alongside him in the operating room.

“I’d read in textbooks about Dr. Danielson and his pioneering role in congenital heart disease before I came to Mayo Clinic,” says Dr. Said. “It’s a great honor to be among these famous surgeons. After working closely with Dr. Dearani in training, we now work on cases together at the staff level, not as staff and fellow anymore.”

Dr. Dearani says his protégé is already one of the most experienced Ebstein’s surgeons in the country and has much to offer. “He’s an innovative surgeon and has had new ideas that we’ve implemented. He’s also trained in other aspects of the congenital practice, including pulmonary atresia and other complex congenital heart defects. He’s the natural one to carry the torch and continue the surgical innovation and surgical care we’ve created for this anomaly and other congenital defects.”

Dr. Said says he’s up for the challenge: “I can see the progress by great surgeons over the years in how Ebstein’s anomaly is treated. I have a lot of thoughts about how to continue to improve care and add to the Ebstein’s world. I’m confident in carrying on the legacy one day.”

Legacy succession

EBSTEIN’S ANOMALY
Joseph Dearani, M.D. (above, left and at right in inset photo), learned from Gordon Danielson, M.D. (inset photo, left), and now mentors Sameh Said, M.D. (above, right).
ROCHESTER EPIDEMIOLOGY PROJECT

National health research treasure marks 50 years
In 2002, Giancarlo Logroscino, M.D., Ph.D., then a research scientist at the Sergievsky Center at Columbia University in New York City, published the only paper on the long-term prognosis of status epilepticus (SE) along with research collaborators from Columbia and Mayo Clinic. They established for the first time, in a rigorous investigation of SE in a population-based setting, the framework for data on frequency, classification and prognosis of the condition. SE is defined as continuous seizure of 30 minutes or more, or two or more seizures without full recovery of consciousness between them. Their work is published in journals including *Neurology*, *European Journal of Neurology*, *Annals of Neurology* and *Archives of Neurology*.

The Rochester Epidemiology Project (REP), which marks its 50th anniversary this year, was the basis for this research.

**Understanding an infrequent neurologic condition**

Dr. Logroscino spent three months at Mayo Clinic in 1996 mining the REP for population-based data on SE, which was considered an infrequently occurring condition 20 years ago.

“I was getting my Ph.D. in epidemiology from Columbia and needed data from the REP for my thesis,” says Dr. Logroscino, professor of neurology, Neurodegenerative Diseases Unit, Department of Basic Medicine Neuroscience and Sense Organs, Department of Clinical Research in Neurology at the University of Bari in Puglia, Italy. “My mentor at Columbia, Dr. W. Allen Hauser (EPID ’69), had used the REP for years for epilepsy research.

“At Mayo, I enjoyed the support of many people, especially the REP staff, who had an exceptional sense of organization. Without their help, I could not have collected the data in such a short time. I also enjoyed advice from many outstanding scientists at the REP and in the Department of Neurology at Mayo Clinic.”

Dr. Logroscino received his Ph.D. with distinction as a result of his thesis work and since then has used the data he collected as the basis for other research papers.

“Being able to go to the complete patient files is terribly important,” he says. “The REP is an incredible data source that was conceived many years before the majority of investigators recognized the importance of the population-based setting as different from the clinical-based setting. The REP has added a huge amount of information in chronic diseases and, particularly, neurologic diseases such as epilepsy.”

**Shedding light on drug prescribing patterns**

Wenjun Zhong, Ph.D. (HSR ’13), used the REP in 2012 when she was a postdoctoral research fellow in the Division of Epidemiology at Mayo Clinic. She conducted a study aimed at health care utilization and prescribing patterns in the Olmsted County population. She found that the most prescribed medications were antibiotics, antidepressants and opioids. A subsequent study of prescribing trends for antidepressants over seven years indicated an increase in prescriptions during that period — mostly to women age 50 to 64 and older than 65. >>
Changing knowledge about health and health care

Since the REP was officially established in 1966, hundreds of researchers from around the world have used this unique national research resource and the one-of-a-kind data it includes to find the root causes of disease, identify health trends and determine best practices. Research from the REP has supported more than 2,600 publications in every field of medicine and has contributed to key findings in health and health care delivery including dementia, epilepsy, heart failure, multiple myeloma, osteoporosis, Parkinson’s disease, rheumatoid arthritis and stroke.

“The Rochester Epidemiology Project is an integral part of Mayo Clinic’s medical research history,” says Walter Rocca, M.D. (MSEP ’93), co-director of the REP, Division of Epidemiology, and the Ralph S. and Beverley E. Caulkins Professor of Neurodegenerative Diseases Research. “Most everyone who trained at Mayo Clinic is familiar with the half-century of data from 95 percent of Olmsted County residents. But they may not know about the important enhancements we’ve made in the last decade.

“We’ve extended the REP to 27 counties in southeastern Minnesota and west-central Wisconsin — more than 1 million individuals. We’ve added more providers and different types of providers as well as drug prescriptions, lab test results and immunizations.”

Dr. Rocca says that at any given time, about 300 projects are underway using the REP — 15 to 20 of which are major federally funded grants. Current studies involve 21 states and the District of Columbia and 10 other countries — Canada, the Czech Republic, Ethiopia, France, Ireland, Israel, Japan, Norway, Peru and Scotland.

Goals for the next half-century include increasing the coverage and timeframes of people living in the 27 counties, improving the infrastructure to make studies easier, and developing an open data-sharing portal so that medical researchers, public health agencies and even laypeople from anywhere in the world can explore REP databases to answer medical questions. >>

“Most U.S. studies on prescription drugs included only the Medicare-eligible elderly population or individuals with particular health insurance coverage due to the lack of a national health system,” says Dr. Zhong, a biostatistician at the Center for Health Incentives and Behavioral Economics at the University of Pennsylvania in Philadelphia. “Although it’s recognized that the overall use of antidepressants has generally increased over time, there is little published literature on recent trends in antidepressant prescriptions in a geographic region. I wouldn’t have been able to conduct this research without the REP — a great resource for population-based studies.”
REP research at a glance

Notable research discoveries based on REP data have shown that:

• Women who have their ovaries removed before menopause are at higher risk of dementia and other neurologic diseases.
• Head trauma can lead to dementia, Parkinson’s and epilepsy — sometimes decades after the trauma; Congress used this information when determining how to compensate military personnel who experienced head trauma.
• Guillain-Barré syndrome occurred more frequently among people who had the swine flu vaccine in the mid-1970s. As a result of REP findings, public health immunizations for this strain of influenza were discontinued across the country in 1976.
• School-based vision screening was important, and school-based scoliosis screening was not effective, especially for adolescent boys who often received unnecessary spine X-rays. This work changed school-based screening practices throughout the U.S. and several European countries.
• A standard postpartum-depression screening test for new mothers could help health care providers identify and treat this commonly overlooked condition. This research led to national standards for screening, which also are used internationally.
• No link exists between silicone breast implants and several autoimmune diseases. This helped prevent the removal of the implants in tens of thousands of women, saving money, and avoiding unnecessary surgeries and worry.
• No connection exists between immunizations and the development of autism, debunking information in a 1998 publication that led many to believe in a relationship between the two.

Recent studies that published results using the REP include:

• The risk of Parkinson’s disease has increased in recent decades.
• A standard algorithm for identifying patients at risk for an adverse cardiac event — the Framingham — may fall short in newly diagnosed psoriatic arthritis.
• Patients with ankylosing spondylitis have high rates of cardiovascular disease, and the risk is significantly underestimated by the Framingham risk score.
• ADHD drugs don’t curb the ultimate height of children who take them.
• More patients with rheumatoid arthritis are starting treatment with glucocorticoids earlier in the course of disease than 20 years ago.
• The diagnosis of chronic obstructive pulmonary disease (COPD) in older adults was associated with increased risk for mild cognitive impairment (MCI), especially MCI involving skills other than memory. The greatest risk was among patients who had COPD for more than five years.
• The rate of completion of the three-shot series of the HPV vaccine is better if children begin at age 9 or 10 rather than age 11 or 12.
“The additions to the REP present exciting research opportunities for understanding and improving population health across the U.S. and beyond — both today and in the decades to come,” says Dr. Rocca. “The data we’re collecting today — and have collected over the last 50 years — are like seeds being planted for fruits of national guidance, better health for populations, and increased general medical knowledge and understanding.”

**What it is**

- Comprehensive health, health care and disease information for an entire population, spanning a half-century or longer
- A medical records linkage system with about 500,000 subjects, including Olmsted County, Minnesota, residents from the last 50 years, and in the last decade expanding to more than 1 million people throughout 27 counties (southeastern Minnesota and west-central Wisconsin)
- Linked, archived and retrievable data — more than 200 million medical diagnoses, surgeries, medical services and procedures, prescriptions, laboratory tests, dental procedures, immunizations, life habits, costs and more; comprised of historical paper medical records and current electronic records stored in computer servers
- One of the few repositories in the world that:
  - Covers a well-defined geographic region to minimize biases such as income and insurance coverage
  - Spans a timeframe that provides generational depth
  - Covers enough patients so that inferences can be made for even relatively rare connections
  - Includes as many electronically searchable variables as possible
- A collaboration between health care providers in southeastern Minnesota and west-central Wisconsin:
  - Olmsted Medical Center
  - Olmsted County Public Health Services
  - Mayo Clinic
  - Mayo Clinic Health System
  - Several area dental clinics
  - Private practitioners
- Funded by the National Institutes of Health (NIH) for 50 years; funded also by Mayo Clinic
- Safe and private; information from any particular patient is combined with information from many other patients
- Accessible only to researchers with studies approved by Mayo Clinic and Olmsted Medical Center Institutional Review Boards
- Co-administered by the Mayo Clinic Robert D. and Patricia E. Kern Center for the Science of Health Care Delivery and the Division of Epidemiology, Department of Health Sciences Research

Jennifer St. Sauver, Ph.D.  
Walter Rocca, M.D.
What it does

- Allows population-based medical research, which is a major source of evidence to support medical and public health practices
- Uses big data to improve health and transform practice
- Facilitates research in these areas:
  - Incidence and prevalence — How many people are affected among 100 people in a specific age group?
  - Trends over time — Is the risk for a condition stable, increasing or decreasing?
  - Risk and protective factors — Which life habits, occupations, drugs or medical events increase or decrease the risk of the disease?
  - Effectiveness of treatments — Is this treatment a useful prophylactic intervention?
  - Natural history and outcomes — Do people with this condition have reduced survival?
  - Genetic factors — Does carrying a certain genetic variant increase the risk of the disease?
  - Quality and cost of care — Does a patient’s condition or comorbidities sizably increase the cost of care?

Who runs it

- Co-directors: Walter Rocca, M.D. (MSEP ’93), Division of Epidemiology, Mayo Clinic in Rochester and the Ralph S. and Beverley E. Caulkins Professor of Neurodegenerative Diseases Research; and Jennifer St. Sauver, Ph.D. (HSR ’99), Associate Professor of Epidemiology, Associate Scientific Director of the Population Health Sciences Program in the Mayo Clinic Robert D. and Patricia E. Kern Center for the Science of Health Care Delivery
- Scientific Steering Committee including the two co-directors and a biostatistician; representatives of Olmsted Medical Center, Olmsted County Public Health Services and Mayo Clinic Kern Center for the Science of Health Care Delivery; and an epidemiologist who is scientific manager and coordinator of day-to-day activities
- Mayo Clinic IT support, funded through the REP, to maintain the flow and linkage of data and develop the tools to mine the data
- Community Advisory Board comprised of informed representatives of the local community who share personal perceptions, expectations and concerns with the community and REP leadership

How it works

- For patients: People who live in one of the 19 Minnesota counties in the REP and become patients at an Olmsted Medical Center or Mayo Clinic location in those counties are automatically asked if they are willing to participate. Most agree, and their medical records become part of the REP. Patients at Mayo Clinic locations in Wisconsin are automatically included in the medical records database. Individual research projects may include elements that require additional contact and consent to participate.
- For intramural researchers: If you work at Mayo Clinic or Olmsted Medical Center, you write a project, get IRB approval and secure funding before using the REP.
- For extramural researchers: You can contact the REP to set up a project. Whenever possible, extramural investigators are encouraged to collaborate with an intramural investigator who is familiar with REP infrastructure.
- New users of the REP receive training in person and via online training modules.
- Currently there is no charge to use the REP due to funding from the NIH and Mayo Clinic. Free access has allowed investigators to complete many low-budget projects.

REP’s uniqueness

- The REP includes complete data across multiple care providers over long spans of time for a complete population. For some people, the REP has the full life story. For many others, it has 20 to 30 years of history. The data includes any medical or health event across all levels of severity, regardless of insurance status. This level of linkage is normally not possible in the U.S. due to the lack of a national health system.
- In the U.S.: Some health care systems in the U.S. have large databases, but they are defined by participants in a plan rather than by residency in a geographic region. Medicare data can be used for research but is limited to persons 65 and older.
- In the world: Countries including Denmark, Iceland, Sweden, the United Kingdom, Australia and Canada have more or less developed medical records linkage systems. However, the level of clinical details available in the REP is not matched by any of these systems.
Thanks to Randall Walker, M.D. (MED ’79, I ’82, INFD ’85), electronic health records (EHRs) might become easier for medical professionals to read and remember.

Through his company Live Ink, Dr. Walker, a consultant in the Division of Infectious Diseases at Mayo Clinic in Rochester since 1985, developed patented algorithms to help upper-elementary, secondary and college students digest online textbooks. Now the company aims to parlay its success with student populations to other screen readers — physicians.

**Origins**

Due to an inherited condition, Dr. Walker was born with 20/50 vision that’s not correctable with eyeglasses. “I've read books 4 or 5 inches from my face my whole life,” he says. “I sat in the front row in school and became a very good listener to compensate for my vision deficit. I've always been fascinated by invisible things and tools that level the playing field — I got my first microscope in third grade.

“As a language major in college before switching to premed, I had a good ear for sound patterns and phrasing structures. I spent a lot of time during my formative years diagramming sentences at the chalkboard.”

Dr. Walker says his vision didn’t affect his work until the ubiquity of computers and introduction of electronic health records. “My coping skill of holding things a few inches from my face was no longer effective, so I manipulated on-screen text with magnification.

“Late one night I kept rereading the same paragraph — just glossing over it. I wondered what it would be like if the words could rearrange themselves on the page in phrase groups, and realized that was what my brain was trying to do. I had a eureka moment — ‘A computer could do that!’”
Support structure

Dr. Walker spent the next year researching the concept. “I was sure someone had already run with this idea,” he says. To his surprise, they hadn’t. His idea was new.

He consulted with Mayo Clinic ophthalmologist Richard Brubaker, M.D. (OPH ’70), then-director of Mayo Clinic Ventures, the business unit responsible for commercializing Mayo Clinic technologies. In 1998 Dr. Brubaker encouraged him to seek outside funding, which led Dr. Walker to Bill Norris, former CEO of Control Data, who had a philanthropic program to encourage new ideas in education.

Dr. Walker collaborated with his brother, Stan Walker, M.D. (MED ’81, OPH ’85), a Minneapolis ophthalmologist, to design the method to help the reader see words within their phrase contexts and enhance sentence comprehension with syntactic cues. Phil Schloss, an expert in natural language software and former advisory software architect at IBM, helped develop and encode the formatting.

With Norris’ funding, Schloss’ help and involvement by the Center for Cognitive Sciences at the University of Minnesota, Dr. Walker developed pilot projects that showed empirical results including a 40 percent increase in retention among college students reading biology textbooks electronically. A lengthy phase of research and tweaking the concept followed.

“A big part of our challenge was developing the codes to help the computer parse English well,” he says. “We needed a natural language-processing form of artificial intelligence — one that could extract the rich structure of language and rearrange text with a scaffolding effect.”

Information from a sample patient’s electronic health record before (above) and after (right) formatting with Live Ink.
Mayo Clinic funded a study involving its residents in 2013. In a mocked-up exam room in the Mayo Clinic Multidisciplinary Simulation Center, residents read passages — both unchanged and converted with Dr. Walker’s method — from an EHR on a computer screen. Residents were tested for efficiency and retention with specialty-neutral questions. The study showed wide differences in physicians’ baseline performance using regular formatting, with the top quartile retaining information at 88 percent, and the bottom quartile retaining at only 38 percent.

Dr. Walker says the converted text tends to help with efficiency and comprehension when a person is reading 500 or more words that take five or more minutes to read on a screen.

“It’s a productivity tool that helps some people,” he says. “Others, especially those whose brains are highly trained reading machines, don’t like it. It’s simply an option for screen-based reading.”

Overall, more than half of the physicians increased their retention with the converted text, with a 38 percent increase on average over their retention with standard-format text. Efficiency of reading also improved in three-fourths of the physicians, with a 25 percent increase on average over their efficiency in standard format.

### Education environment

By 2005 the Live Ink team had perfected the coding and begun marketing the product to educational publishers. The company received the 2005 Distinguished Achievement Award from the Association of Educational Publishers. Since then several million students every year have used the product in their online textbooks.

Live Ink has been validated by cognitive and education scientists at two universities and received phase I and II Innovation Research awards from the U.S. Department of Education. Recently the Department of Education awarded the University of California, Irvine a three-year $4 million grant to study whether eighth- and ninth-grade students’ reading, writing and grammar improve when information is converted using Live Ink’s technology.

### Health care environment

Around 2010 Dr. Walker began to wonder if the same tools that help students would translate to physicians. “Reviewing an electronic medical record is often done in a pressure-filled environment, requiring you to take in a lot of information and interpret it accurately in a short period.”

He was surprised to learn through studies he conducted that there’s widespread difference in how well physicians read. “We know there’s widespread difference among general populations, and it’s true as well among physicians. Reading isn’t natural. Rather, it’s an unnatural adaptation of the ways in which our brains usually process natural visual scenes and spoken language. We’ve learned a lot about the biology of reading.”

### Safer reading

Dr. Walker worked with Mayo Clinic to incorporate the Live Ink software into the EHR in a pilot project in 2015. In real time, the software converts highly technical text without changing a single word, making it easier to comprehend and retain.

Eighty percent of physicians in the pilot project said the converted EHR text was easier to read. The text conversion was particularly beneficial to those physicians in the lower-performing reading group.

“In this study we defined safe reading as a 70 percent retention rate,” says Dr. Walker. “By converting text in the EHR with Live Ink, we increased the proportion who could read at this level from 60 percent to 80 percent of the physician readers. That could have a significant impact on patient care.”

### 80%
of physicians in the pilot project said the converted EHR text was easier to read.
Daniel L. Johnson, M.D., is a member of Mayo’s Clinical Viewer’s Oversight Group, the team that evaluates and plans improvements to Mayo’s EHR, and an internal medicine physician at Mayo Clinic Health System - Red Cedar in Menomonie. He says he welcomes technology that aids comprehension and decision-making. “The most important clinical work we perform is cognitive analytics on the clinical notes and data, which must be done properly to understand the physiological disturbances underlying any patient’s symptoms and diseases. Without this understanding, our actions can’t be of very good quality.

“Very little has been implemented in medical records to facilitate this. It’s been exciting to discover professionals who appear to understand this cognitive work and ways to develop tools to enhance it. Dr. Walker’s Live Ink is an example of this.”

Future research will include testing the software-converted text in the emergency care environment, where reading time is most limited. Dr. Walker says he’s hoping to have a commercially available plug-in product for EHRs within a couple of years.

Dr. Walker also is collaborating with colleagues at Mayo Clinic in Arizona, using eye-tracking equipment to further refine Live Ink’s visual structure and make the data the eyes receive even more efficient.

“Mayo has a very generous spirit with new ideas and approaches, including those that help people who have limitations or disabilities,” says Dr. Walker. “Mayo is in a position to bring a biological perspective to fields such as learning, reading and communication. We’re a dynamic institution that is very open to new processes and information in addition to new medications, surgeries and scans.

“The knowledge and insights we gain about the biology of reading and comprehension can benefit patients by helping their physicians read more easily and accurately, as well as learners around the world whose horizons are broadened with a new way to read on the screen.”

Dr. Randall Walker recently read War and Peace on his iPad, with the text converted by his software. “It was identical in every way except the format, which basically turns paragraphs into ‘poems,’” he says. “It read very smoothly.”
On the shoulders of giants

‘What do you want to do when you grow up?’

Julie Wei, M.D. (ENT ’01), was a resident when her attending physician, Dana Thompson, M.D. (ENT ’96), challenged her.

“One day in the pediatric clinic, she said, ‘What do you want to do when you grow up? You should do a pediatric otolaryngology fellowship,’” says Dr. Wei.

“I was in the fourth year of a five-year residency in otolaryngology surgery. Pursuing a pediatric otolaryngology subspecialty would involve a two-year fellowship. Although I’d leaned toward pediatrics during medical school, I was conflicted about which path to take. Dr. Thompson was Mayo’s first fellowship-trained pediatric otolaryngologist and helped to start Mayo’s pediatric otolaryngology program, so her opinion meant a lot.”

Dr. Thompson says she’s good at identifying talent: “Julie had so much energy and needed a bit of guidance to focus it. I watched her with patients, many of whom had multiple comorbidities. Their parents typically have a lot of anxiety about their complex conditions. Julie has an aptitude for detail and follow-through and a way of engaging with parents that makes them trust her with their children. Whether she remained at Mayo or went somewhere else, I knew she’d be a great asset to patients and our field.”

She reignited the passion I felt in medical school to be a physician who cares for children.”

– Julie Wei, M.D.

Dr. Wei says Dr. Thompson helped her find the right fellowship — with Ann & Robert H. Lurie Children’s Hospital of Chicago (formerly Children’s Memorial Hospital) at Northwestern University Feinberg School of Medicine in Chicago, Illinois. “She reignited the passion I felt in medical school to be a physician who cares for children.”

From mentee-mentor to supportive colleagues

Twelve years later, it was Dr. Wei’s turn to help her mentor. Dr. Thompson left Mayo Clinic for a position as division head of otolaryngology–head and neck surgery at Lurie Children’s Hospital.

“I’d spent two years there, so I provided insights and reassurance,” says Dr. Wei, who completed her fellowship at Lurie Children’s Hospital in 2003 and has been division head of otolaryngology and audiology at Nemours Children’s Hospital in Orlando, Florida, since 2013. She was recently named surgeon-in-chief and medical director of the OR.

Dr. Thompson describes their 15-year relationship as supportive colleagues: “As two of only four women division heads of major pediatric otolaryngology programs at children’s hospitals in the U.S, we share many of the same challenges and opportunities. We use each other as a sounding board.

“The way we approach patient care is very much what we were taught at Mayo Clinic. As administrators in organizations that are learning the physician-led model, we understand the benefits and how it can improve overall quality. When we talk, we often joke, ‘If we were at Mayo, it would be done this way.’ Or we say, ‘How can we infuse some of the Mayo culture into this circumstance?’”

Dr. Wei says she’ll always be grateful to Dr. Thompson: “We encourage each other and have been there for each other throughout challenges, including making major career decisions. Without her interest in me and her guidance, I probably wouldn’t have pursued pediatrics.”
Dana Thompson, M.D. (left), and Julie Wei, M.D., formerly mentor and mentee, are now “supportive colleagues.”
Opportunities and support
Dr. Geiger, an associate professor in the Department of Molecular and Integrative Physiology at the University of Kansas Medical Center (KUMC), wants to help make sure other young women in science have similar opportunities and support. She’s active in the university’s Women in Medicine and Science (WIMS) program as a member of the executive council and past-president.

“We’re trying hard to keep the pipeline of women faculty going and have programs to support them so they continue to advance,” says Dr. Geiger, who became involved in WIMS through fellow Mayo Clinic alumna and former KUMC colleague Julie Wei, M.D. (ENT ’01) (page 24), now division head of otolaryngology at Nemours Children’s Hospital in Orlando, Florida. “With encouragement from our administration, Julie helped to reinivate the group in 2010 and recruited me to participate. It’s grown by leaps and bounds. We’ve made great strides in recruiting, retaining and supporting women throughout their career and life milestones.”

Since 2010 the number of women faculty at each rank has increased — assistant professors by 35 percent, associate professors by 40 percent and full professors by 25 percent.

Inadequate representation
Dr. Geiger points out that very few departments at the university’s medical center have women in charge — a familiar state in STEM (science, technology, engineering and mathematics) fields. While women represent about 50 percent of the student population in medical school, they make up only about 20 percent of senior faculty and 16 percent of medical school deans.

“Future physicians and scientists should have faculty that are diverse and can provide broad perspective,” says Dr. Geiger. “We have to
continue to make sure women are able to have careers with an upward trajectory. That involves making sure students and trainees are supported so they stay and help make us better. Supporting women at all levels — having family-friendly policies and culture to help them care for themselves and their families — helps them achieve the careers they want.”

**Dramatic change**

WIMS is available to women faculty and students from all three schools on the KUMC campus — the schools of medicine, nursing and health professions. The group sponsors programs and events, has awards and leadership training programs, pairs members with mentors, and has a subcommittee — Moms in Medicine and Science (MIMS) — for faculty balancing career and family. WIMS leaders meet quarterly with KUMC’s top leadership and, in recent years, helped establish lactation support rooms throughout the medical center campus.

“WIMS is a safe environment in which to talk about issues and get advice — how to ask for a raise and get the

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Paige Geiger, Ph.D., with her husband, Ryan Manies, and children, Charlie and Helen.

“Supporting women at all levels — having family-friendly policies and culture to help them care for themselves and their families — helps them achieve the careers they want.”

— Paige Geiger, Ph.D.
didn’t recognize the long-term opportunities it presented.”

Dr. Geiger credits Gary Sieck, Ph.D. (ANES ’90), a consultant in Physiology and Biomedical Engineering and the Vernon F. and Earline D. Dale Professor, with teaching her respiratory physiology, which she now teaches to first-year medical students. She also teaches graduate students the physiology of exercise in a class modeled after one she took at Mayo Clinic from Dr. Sieck and Michael Joyner, M.D. (ANES ’92), Department of Anesthesiology and Perioperative Medicine and the Frank R. and Sheri Caywood Professor.

“Dr. Sieck was an amazing mentor, and I appreciate his guidance more and more the further I get from it,” says Dr. Geiger. “He gave me a strong base in science and made sure I met the right people. His research lab is my foundation and where I go for support and advice. I hope I will be able to offer that support to my trainees one day.”

In March Dr. Geiger spoke at Mayo Clinic’s biennial Young Investigators Research Symposium. “I want to give back to Mayo and encourage young scientists,” she says. “Considering how difficult it is to obtain external funding and the increasing pressure to publish in top-tier journals, many young people are discouraged about a future in science.

“I have been successful not because I was the smartest student but because I had excellent training and mentoring, incredible support systems and the determination to keep reaching for my goals. It’s really important to make the most of your training environment, establish a mentoring team, and create a support system at work and at home.”

Dr. Geiger says establishing a mentoring team is an organic process that can take time. “Think about your short- and long-term needs. No single mentor can fill all of your needs. Start with a small request of a more senior faculty member, based on your immediate needs. Over time you can build a team of trusted advisors, mentors and sponsors to help advance your career. Don’t underestimate the power of peer mentors. You can learn a lot from those going through similar career stages, and you might be able to offer advice to others on situations you’ve navigated successfully.”

Open doors
Dr. Geiger says WIMS involvement helped her develop leadership skills, including how to run effective meetings and raise money. She says training at Mayo Clinic and the relationships she developed there opened doors for her.

“I started on my Ph.D. right out of college and knew very little about how the research world works,” she says. “I knew Mayo was an excellent school, and I recognized the phenomenal research opportunities, but I
SAVE THE DATE

Mayo Clinic Alumni Association
70th Biennial Meeting
Oct. 5–7, 2017

CME program: Mayo Clinic, Jacksonville, Florida
Conference hotel: Ponte Vedra Inn and Club, Ponte Vedra Beach, Florida
The Mayo Clinic Board of Trustees established the Mayo Clinic Distinguished Alumni Award in 1981 to acknowledge and show appreciation for the exceptional contributions of Mayo alumni to the field of medicine including practice, research, education and administration. Individuals who have received the award have been recognized nationally and often internationally in their fields.

The 2016 Mayo Clinic Distinguished Alumni Awards were presented on Nov. 15, 2016.
Kai-Nan An, Ph.D.  
Professor Emeritus of Orthopedics and Biomedical Engineering  
Mayo Clinic, Rochester

Kai-Nan An, Ph.D. (BIOM ’75), is internationally recognized for his accomplishments in orthopedic biomechanics and best known for his work in the biomechanics of upper extremities, sports and rehabilitation medicine, and orthopedic surgery. When Dr. An began his research career at Mayo Clinic, biomechanics was in its infancy. He performed the pioneering work that defined the normal function of the hand, wrist, elbow and shoulder joints, and his work has contributed to the fundamental knowledge that guided joint arthroplasty and tendon repair. The Biomechanics Laboratory at Mayo Clinic, under his leadership, became one of the best orthopedic research centers in the world. Today Dr. An is the world’s most prominent expert in upper extremity biomechanics, the pioneer of magnetic resonance elastography in the musculoskeletal system and a specialist in wheelchair biomechanics. He has made sustained interdisciplinary and translational research contributions to the published literature that have advanced, expanded and strengthened orthopedic biomechanics, and has been awarded numerous grants from the National Institutes of Health, private foundations and industry. He also has made noteworthy contributions to education, including a robust education program for hundreds of research fellows from six continents.

Albert Czaja, M.D.  
Professor Emeritus of Medicine  
Emeritus Consultant, Gastroenterology and Hepatology  
Mayo Clinic, Rochester

Albert Czaja, M.D. (GI ’77), is a leading authority on autoimmune liver disease and has made seminal contributions to the understanding of autoimmune hepatitis. Dr. Czaja has written almost every clinical guideline on the treatment of autoimmune hepatitis. Beginning in the late 1970s, he accrued perhaps the largest number of patients with this disorder seen at a single institution, allowing him to study all aspects of the disease. He and his colleagues at Mayo Clinic defined what remains the current standard of treatment for the disorder. Through the years he became the ultimate authority in the management of patients with autoimmune hepatitis and the expert of choice for physicians from around the world seeking consultation. In research supported by grants from the National Institutes of Health, Dr. Czaja performed influential studies contributing to the subclassification of autoimmune hepatitis on the basis of autoantibody profiles. His leadership in the International Autoimmune Hepatitis Group was crucial for the development of a comprehensive scoring system to ensure uniformity of patient populations for enrollment in clinical trials. Dr. Czaja has trained prominent leaders in liver disease.

Mayo Clinic, Consultant, Division of Gastroenterology, 1977–2007; Professor of Medicine, 1986–2007

Fellowship: Gastroenterology Research, Mayo Clinic School of Graduate Medical Education, Rochester, Minnesota (1975–1977)
Internship: Medicine, University of Pennsylvania (1968–1969)
Medical School: Harvard Medical School, Boston, Massachusetts (1966–1968)
Undergraduate: Dartmouth College, Hanover, New Hampshire (1961–1965)
Native of: Philadelphia
James Eisenach, M.D.

FM James III Professor of Anesthesiology
Vice Chair for Research, Department of Anesthesiology
Wake Forest School of Medicine
Winston-Salem, North Carolina
President/CEO, Foundation for Anesthesia Education and Research

James Eisenach, M.D. (ANES ’85), has substantially advanced the understanding of spinal analgesics and had a profound effect on clinical practice, particularly in obstetrics and oncology. His research has influenced the thinking of a generation of anesthesiology researchers and has facilitated changes in the practice of anesthesia and analgesia. He pioneered the development of obstetric and regional anesthesia and combined basic and clinical research to introduce innovative and novel strategies in obstetric and chronic pain management and regional anesthesia. His discoveries have made a direct and immediate impact on patient care. His scientific excellence has been recognized with continuous funding from the National Institutes of Health. Dr. Eisenach served as editor-in-chief for the journal Anesthesiology — the premier journal for anesthetic science in the world — from 2007 to 2016, making him the spokesman for academic anesthesiology. He is now president and CEO of the Foundation for Anesthesia Education and Research, the leading funder for new investigators in the specialty. Many of Dr. Eisenach’s trainees have developed outstanding careers that have contributed significantly to their fields.

David Feliciano, M.D.

J. Stanley Battersby Professor of Surgery
Chief Emeritus, Division of General Surgery
Indiana University Medical Center
Indianapolis, Indiana

David Feliciano, M.D. (S ’71), is a general surgeon with strong interests in endocrine surgery, surgical oncology and trauma. While the breadth of his influence crosses borders of specialties, he is widely regarded as a leading authority in trauma care whose contributions have impacted American surgery. Dr. Feliciano has built impressive trauma units in hospitals at Baylor (Houston, Texas), the University of Rochester (New York), Emory (Atlanta, Georgia) and Indiana University (Indianapolis). He is arguably the world’s expert on trauma of the duodenum and has several maneuvers named for him. He spent the majority of his career at Grady Hospital in Atlanta, an inner-city hospital. Dr. Feliciano’s clinical research on trauma care has been a hallmark basis of contemporary advanced trauma life support. He has presided over the most important trauma associations in the U.S. and worldwide, and he has been co-editor of Trauma since 1988. Dr. Feliciano has an intense commitment to educating upcoming generations of physicians and has been a mentor to many fellows and surgery residents. For these efforts, he has received 37 teacher of the year awards from medical students and surgical residents at academic institutions where he has served.

Fellowship: Obstetric Anesthesia, Wake Forest School of Medicine, Winston-Salem, North Carolina (1985–1986)

Residency: Anesthesia, Mayo Clinic School of Graduate Medical Education, Rochester, Minnesota (1983–1985)

Internship: Medicine, Mt. Zion Hospital, San Francisco, California (1982–1983)

Medical School: University of California, San Francisco (1978–1982)

Graduate: Master’s Degree, Chemistry, California Institute of Technology, Pasadena (1976–1978)

Undergraduate: University of Nebraska Lincoln (1972–1976)

Native of: Iowa

Fellowship: Cardiovascular Surgery, Baylor College of Medicine, Houston, Texas (1978)

Residency: General Surgery, Mayo Clinic School of Graduate Medical Education, Rochester, Minnesota (1973–1978)

Internship: Surgery, Mayo Clinic School of Graduate Medical Education (1970–1971)

Medical School: Georgetown University School of Medicine, Washington, D.C. (1966–1970)

Undergraduate: Georgetown University (1976)

Native of: New York City
Mayo-lel trial signals possible changes for metastatic brain tumor treatment

Research led by Paul Brown, M.D. (I-1 ’96, RADO ’00), Department of Radiation Oncology at Mayo Clinic in Rochester, has shown that patients with three or fewer metastatic brain tumors who were treated with stereotactic radiosurgery (SRS) had less cognitive deterioration three months after treatment than patients who were treated with both SRS and whole brain radiation therapy (WBRT).

Dr. Brown says the study of using SRS treatment alone resulted from concerns that while a combination of SRS and WBRT has been shown to help control growth of metastatic brain tumors, WBRT also may damage cognitive function.

The 213 patients in the study were randomly assigned treatment with SRS alone or treatment with SRS followed by WBRT. In patients treated with SRS alone, researchers found less cognitive deterioration and higher quality of life (QOL) at three months. There was no statistically significant difference in median overall survival between treatment groups — 10.4 months for patients treated with SRS alone and 7.4 months for patients treated with SRS and WBRT.

This Mayo-led study was the first large-scale clinical trial to evaluate this patient population with a comprehensive battery of cognitive and QOL instruments.

“WBRT has often been offered early in the disease course for patients with metastatic brain tumors but, because of this trial, we know the negative impact of WBRT on quality of life and cognitive function is significant,” says Dr. Brown. “With these findings, we expect practice will shift, reserving WBRT for patients with more extensive disease in the brain.”

This federally funded, multi-institution study by the NCCTG (Alliance for Clinical Trials in Oncology) was published in the Journal of the American Medical Association.
Mayo Clinic launches first-in-U.S. blood test using plasma ceramides to assess risk of heart attack

Mayo Clinic has launched a new type of blood test to predict adverse cardiovascular events in patients with coronary artery disease (CAD). The test measures blood concentrations of plasma ceramides, a class of lipids closely linked to cardiovascular disease processes. The results are highly predictive of subsequent cardiac events. Researchers say this test may be especially useful for patients with CAD that has not improved with treatment, young patients with premature CAD and patients with risk factors in whom the decision to start treatment is less than clear cut.

**Plasma ceramides**

“Plasma ceramides are promising biomarkers for the prediction of adverse CV events in primary and secondary prevention,” says Allan Jaffe, M.D. (CV ’99), chair of the Division of Clinical Core Laboratory Services with joint appointments in the departments of Cardiovascular Diseases and Laboratory Medicine and Pathology at Mayo Clinic in Rochester. “Studies suggest that observed risk score developed from specific ceramide species can be used to presage events within the next five-year period. Preliminary indications are that high-ceramide concentrations are modified by common lipid-lowering therapies.”

The test for plasma ceramides is to be used in conjunction with clinical evaluation and patient risk assessment as an aid in predicting risk of imminent adverse cardiovascular events. Risks indicated by ceramides are independent of traditional biomarkers including age, sex, smoking and history of CAD. In a study published in 2016 in the *European Heart Journal*, plasma ceramides were found to predict the likelihood of an adverse cardiovascular event within one year in CAD patients. In patients with suspected CAD and chronic heart failure, the test can predict the likelihood of an event within three to five years, based on studies published in the *Canadian Journal of Cardiology* and the *International Journal of Epidemiology*.

The new test is available to Mayo Clinic patients and health care providers worldwide through Mayo Medical Laboratories (MML), which offers advanced laboratory testing and pathology services to more than 5,000 health care organizations in more than 60 countries. MML launches more than 150 new tests each year and collaborated on the new plasma ceramides test with Zora Biosciences Oy, a diagnostics company based in Finland that specializes in cardiovascular disease.
Mayo researchers identify unique breast microbiome and bacterial differences between healthy and cancerous tissue

A team of Mayo Clinic researchers has identified evidence of bacteria in steriley obtained breast tissue and found differences between the breast tissue microbiomes of women with and without breast cancer. The findings are published in the Aug. 3, 2016, issue of Scientific Reports.

“Our work confirmed the presence of a distinct breast tissue microbiome that is different than the microbiome of the overlying breast skin and differs between women with benign and malignant disease,” says Tina Hieken, M.D. (S ’11), Department of Surgery at Mayo Clinic in Rochester.

Microbiome differences
The researchers found that several types of bacteria were more common in women with cancer in their breasts than in those without cancer. Women with cancer had increased relative abundance (higher levels) of five types of bacteria — Fusobacterium, Atopobium, Hydrogenophaga, Gluconacetobacter and Lactobaccilus — compared to women who did not have cancer. For example, Fusobacterium, a bacterium also associated with colon cancer, was more common in the breast tissues of women with cancer. Researchers say it’s possible that these types of bacteria have cancer-promoting properties.

While there are established risk factors for breast cancer, at least 70 percent of breast cancer occurs in women of average risk, and current prediction models are poor at identifying risk for individual women.

“Differences in the microbiome may be implicated in cancer development and the aggressiveness of cancer,” says co-investigator Amy Degnim, M.D. (S ’03), Department of Surgery at Mayo Clinic in Rochester. “Eliminating dangerous microorganisms or restoring normal microbiota may reverse this process.” Next steps could include looking for ways to change the bacteria or support beneficial microbes to keep women healthy.

Dr. Hieken says it remains unclear whether small shifts in microbial communities, the presence of a virulent pathogenic strain or the absence of a beneficial one might be responsible for promoting the development of cancer in the breast microbiome. The findings of this study will spur further research to identify potential causes of breast cancer development and new microbial-based prevention therapies. The investigators are working to secure funding to expand the project on a much larger scale. “The overall goal of this work is to develop a microbial risk-prediction signature for breast cancer and develop microbial-based breast cancer prevention strategies such as vaccines to prevent breast cancer from developing in the first place.”
Mayo Clinic in Florida adds regenerative medicine suites

Mayo Clinic in Florida has added two suites dedicated to delivering regenerative medicine technologies that just a decade ago were unimaginable. The comprehensive suites are among the first in the world designed exclusively for regenerative medicine, and they’ll accommodate multiple specialties at once.

Prior to the new suites, regenerative medicine therapies took place at various locations in the hospital. “Now all regenerative medicine therapy is consolidated, providing our multidisciplinary team of experts the valuable space they want for the procedures their patients need,” says Thomas Gonwa, M.D. (HYT ’01), the Jorge and Leslie Bacardi Associate Director of the Center for Regenerative Medicine in Florida and deputy director of translation for Mayo Clinic’s Center for Regenerative Medicine.

The initial emphasis of the regenerative medicine suites will be on orthopedics and sports medicine, plastic surgery and dermatology.

Shane Shapiro, M.D. (FM ’04, FM-SM ’05), Department of Orthopedic Surgery at Mayo Clinic in Florida, was one of the first users of the suites. His pioneering work applies regenerative medicine technologies such as platelet rich plasma and stem cell therapy to heal bone and tendon injuries, ligament sprains and arthritis. He especially likes that the suites take a holistic approach to care — even the lighting has been designed for comfort.

“These therapies mobilize the body’s ability to heal and repair tissue where previously it had failed to do so,” says Dr. Shapiro. “Our strategies form the foundation upon which the future of cell-based therapies for orthopedic disease will be built.”

Dr. Shapiro points out that these regenerative therapies are not orthopedic surgery. Rather, the new hybrid suites will form a boutique of sorts that will provide the latest therapies to patients who elect not to have or are not candidates for more traditional invasive procedures.

“These are therapeutic interventions that do not require the complex resources of an operating room,” he says. The suites are another step in Mayo Clinic’s drive to integrate regenerative technologies into everyday patient care.”

Gianrico Farrugia, M.D. (I ’91, GI ’94), vice president of Mayo Clinic and CEO of Mayo Clinic in Florida, says, “Amazing things are happening here, with vast implications in neurodegenerative diseases, musculoskeletal conditions, heart, vascular and kidney disease. Regenerative medicine might also be a component to treating or curing individuals with spinal cord injuries, type 1 diabetes, Parkinson’s disease and Alzheimer’s disease.”
Intestinal bacteria may cause, predict and prevent rheumatoid arthritis

Intestinal bacteria are a possible cause of rheumatoid arthritis and can be checked to predict susceptibility, according to two Mayo Clinic studies.

Veena Taneja, Ph.D. (IMM ’98), Department of Immunology at Mayo Clinic in Rochester, led the studies, which indicate that testing for specific microbiota in the gut can help physicians predict the onset of rheumatoid arthritis. Some bacteria may be useful for preventing the development of arthritis.

Predicting, preventing
One study aimed to find a biomarker that predicts susceptibility to rheumatoid arthritis. The study found that an abundance of certain rare bacterial lineage causes a microbial imbalance found in rheumatoid arthritis patients.

“We’re trying to determine if the gut microbiota can predict response to drugs so patients are treated with the drug that will help them from the start,” says Dr. Taneja.

Treating
The other study treated a group of arthritis-susceptible mice with the bacterium *Prevotella histicola* and compared it to a group that had no treatment.

The study found that mice treated with the bacterium — present in a healthy human gut — had decreased symptom frequency and severity and less inflammation than that associated with rheumatoid arthritis. The treatment did not produce side effects such as weight gain and villous atrophy that may be linked with more traditional treatments.

Mice and human immune systems and arthritis are similar, so this study shows promise for positive effects in humans.

“We’re carrying out preclinical models with *Prevotella histicola* to test how dysbiosis can be corrected to suppress inflammation,” says Dr. Taneja. “We’re preparing to test its safety in humans. We’re hoping to incorporate what we learn from these microbiome studies into practice in a few years.”

The studies were funded by the Mayo Clinic Center for Individualized Medicine and the Department of Defense, and were published in *Genome Medicine* and *Arthritis & Rheumatology*. 
Mayo enhances emergency telemedicine practice

Mayo Clinic has enhanced its emergency telemedicine practice, which is offered to 50 hospitals in nine states. Mayo now has a single operation, administration and management of the emergency telemedicine practice, and works with one telemedicine vendor for standardized services for telemedicine across all locations.

Prior to this change, Mayo worked with numerous technology vendors. The consolidation enhances technical proficiency and ease of use for Mayo Clinic care teams and provides a seamless patient experience and more opportunity for Mayo Clinic to grow its clinical telemedicine service lines.

“A pool of Mayo specialists across the enterprise serves our telemedicine partners, using a single technology platform both at Mayo and at the remote hospitals, and common policies and procedures,” says Bart Demaerschalk, M.D. (N ’01), Department of Neurology at Mayo Clinic in Arizona and medical director of synchronous (telemedicine) services for the Mayo Clinic Center for Connected Care. “This convergence helps to ensure we have top-quality, efficient, clinician-friendly virtual care for patients and referring physicians.”

“We’re focused on delivering time-sensitive diagnoses and acute care to patients in need at facilities that do not have the requisite subspecialists. We can’t have Mayo subspecialists at all of these hospitals, but we can have subspecialists available for remote care to assist physicians and nurses who are at the bedside.”

The initial emergency telemedicine service lines to participate in the convergence are telestroke and teleonatology. Mayo Clinic provides care to more than 5,000 people per year through these service lines. New lines in development for telemedicine practice convergence are emergency telemedicine, telepsychiatry, telepediatrics, teletrauma and teleburn.

Emergency telemedicine provides acute medical assessments to people who need immediate emergency care through video communications. A Mayo Clinic medical specialist located at a distance from the patient connects via technology with local care teams to assess, diagnose and treat patients. The 50 hospitals provided with telemedicine services are Mayo Clinic Health System facilities, Mayo Clinic Care Network members and independent subscribers.

Obituaries

Louis “Bud” Buie Jr., M.D. (S ’59),
died May 11, 2016.

Jerry Dorsch, M.D. (ANES ’87),

Richard Earlam, M.D. (SR ’67),
died July 23, 2016.

Charles Hedges Jr., M.D. (OPH ’53),

Bruce Hyma, M.D. (PATH ’87),
died April 17, 2016.

Debora Kim, M.D. (MED ’89, CP ’92, TRMED ’93),
died Aug. 23, 2016.

Eduardo Leonardo, M.D. (PDA ’66),
died June 11, 2016.

Rosie Villagomez Palisson, M.D. (I ’97),
died Sept. 24, 2016.

Charles Piper Jr., M.D. (S ’59),

Joseph Snyder, M.D. (I ’62),
died June 7, 2016.

Diane Sorenson, M.D. (I ’85),
died June 7, 2016.

Andrew Weis, M.D. (I ’66),
died June 3, 2016.

Allen Wittchow, M.D. (OPH ’54),
died April 12, 2016.

alumniassociation.mayo.edu/people for complete obituaries and alumni news
Mayo Clinic remembers administrator Sister Generose Gervais

Sister Generose Gervais, long-time administrator of Saint Marys Hospital and president of the Poverello Foundation, died on Oct. 7 in the hospital where she served for many years.

Sister Generose worked tirelessly on behalf of patients and the staff of Saint Marys Hospital, focusing on perpetuating the Franciscan legacy — nurturing the values of respect, integrity, compassion, healing, teamwork, innovation, excellence and stewardship among Mayo Clinic staff.

A native of Currie, Minnesota, Sister Generose entered the Congregation of the Sisters of Saint Francis in Rochester in 1938 at age 18. She trained as a teacher, but her career took a different path when she attended Stout State University in Menomonie, Wisconsin, to study nutrition. She received a bachelor’s degree in 1945 and began a dietetics internship at Saint Marys Hospital the same year. She received a master’s degree in hospital administration from the University of Minnesota in 1954.

Sister Generose was named administrator of Saint Marys Hospital in 1971 — the fifth and final Franciscan Sister to hold that post in the hospital, which was built by the Sisters of Saint Francis in concert with W.W. Mayo, M.D., in 1889.

During Sister Generose’s time as administrator, the hospital saw significant growth. She oversaw the construction of the Mary Brigh Buildng, which included 40 new operating rooms, 130 beds, two intensive care units, an enlarged Emergency/Trauma unit and a parking ramp. After completion of the building, she was named to the new position of executive director of Saint Marys Hospital.

“Sister Generose was known for her faith, her quiet leadership, her wise counsel, her dedication to patients and staff, her sense of humor and the example of service that she lived every day,” says Mayo Clinic President and CEO John Noseworthy, M.D. (N ’90). “Mayo Clinic was blessed by her presence for more than 60 years.”

Sister Generose served on boards including the Franciscan Health System, American Hospital Association and Catholic Health Association. In 1979 she was the first female member of the board of directors for the Federal Reserve Bank of Minneapolis.

Out of concern about patient needs, Sister Generose started the Poverello Foundation, a ministry to help patients of Saint Marys Hospital with medical expenses. The foundation has contributed more than $1 million annually to help patients and has assisted almost 13,000 people since its inception in 1983. She worked diligently on the annual fundraiser, where the most sought-after items were her jams, jellies and pickles.

Sister Generose stepped down from her formal leadership position in 1985 but remained present and involved in the hospital. She was instrumental in the integration of Saint Marys Hospital with Mayo Clinic in 1986 and helped to create a sponsorship board to promote and preserve the founders’ values and the Catholic identity of the hospital. In 1993 Mayo Clinic

She was a mentor, a friend and a sister. She loved her faith, her religious community, her family and her ministry of healing at Saint Marys. … She served on so many boards and organizations, but her pleasures were simple. She enjoyed life, a cup of cappuccino and a cookie, peanut M&Ms, a Twins game and a good joke in the afternoon.” – Sister Lauren Weinandt
honored her by naming its new mental health care facility on the Saint Marys campus after her. In 2011 she received a Lifetime Achievement Award from the Catholic Health Association of the United States for leadership that extended beyond the community and served to inspire others.

Until her death, Sister Generose traveled the hallways of Saint Marys Hospital, providing compassionate service to patients and their families and remaining active in hospital activities. She was a popular speaker and teacher at Mayo Clinic and often said, “Values are caught, not taught.”

Sister Generose mentored her family of Mayo Clinic staff and exhorted them to live Mayo Clinic’s primary value — the needs of the patient come first. She often referenced St. Frances to make her point: “I tell the staff what the beggar told St. Francis — ‘Be sure that thou are as good as the people believe thee to be, for they have great faith in thee.’”

Sister Generose told those close to her that the best way to remember her was “through gifts to the Poverello fund or your good works.”

Remembering former Mayo CEO William Eugene Mayberry, M.D.

Former Mayo Clinic CEO William Eugene Mayberry, M.D. (I ’59), died on Sept. 18 in Rochester.

He served as president, CEO and chairman of the Board of Governors of Mayo Clinic from 1976 to 1987. He led Mayo Clinic through a period marked by significant change. He spearheaded developments including:

- Establishing Mayo Clinic sites in Arizona and Florida
- Integrating Mayo Clinic with Saint Marys and Rochester Methodist hospitals
- Championing early efforts in diversity
- Expanding development activities to support Mayo’s mission in clinical practice, education and research

“Dr. Mayberry was an outstanding physician scientist who cared deeply for his patients and the staff and employees of Mayo Clinic,” says John Noseworthy, M.D. (N ’90), president and CEO of Mayo Clinic. “His pioneering leadership brought forth great change and was vital in shaping Mayo Clinic as a destination for patients from across the nation and around the world. He will long be remembered as one of the great leaders in Mayo Clinic history.”

Dr. Mayberry was a Tennessee native who graduated from Tennessee Technological University ( Cookeville) in 1947 and the University of Tennessee School of Medicine (Memphis) in 1953. He served in the Navy’s Underwater Demolition Team for two years before beginning postgraduate work in endocrinology. His research interest was in thyroid function, and he continued his studies at Mayo Clinic School of Graduate Medical Education, the University of Minnesota (Minneapolis), New England Center Hospital (Boston, Massachusetts), and the National Institute of Arthritis and Metabolic Diseases (Bethesda, Maryland).

Dr. Mayberry joined the Mayo Clinic staff in 1960 as a consultant in medicine and spent most of his 36-year career at Mayo. He was chair of the Department of Laboratory Medicine from 1970 to 1975, and was professor of laboratory medicine and professor of medicine at Mayo Clinic School of Medicine. He retired in 1992.

He is survived by his daughter, Ann Mayberry of Chicago, Illinois; his son, Paul Mayberry of Atlanta, Georgia; and six grandchildren. He was preceded in death by his wife, Jane.
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 environment that respects and supports diversity in staff and patient populations.

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SHARE YOUR NEW CHAPTER

Do you ever read this magazine or look at the Alumni Association website and think, “That could be me — I have a story to share”? Obviously, a magazine and website dedicated to decades of Mayo alumni tends to skew older. It goes with the territory of having such a rich history of accomplished alumni.

We’ve created a new way to share stories about younger alumni. New Chapter is a new feature on the Alumni Association website. Visit the site to tell us about your career. We’ll choose some of these stories to develop into profiles on the website.

Katheryn Norris, D.O. (FM ’05), is one of these. She practices at Yakima Valley Farm Workers Clinic at Grandview Medical-Dental Clinic in Grandview, Washington. She received the 2016 Washington Osteopathic Medical Association’s Physician of the Year award. Read more about her, and tell us your story.

links.mayo.edu/newchapter

We know many of you have similar stories to share — we hope to hear from you.