THE ROOTS OF OUR SUCCESS

Philanthropy’s Role in Advancing Our Mission

2019 INTERNAL MEDICINE ANNUAL REPORT

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN
2019 HIGHLIGHTS

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CHAIR’S MESSAGE

During 2019, the Department of Internal Medicine turned 171 years old, and the University of Michigan Hospital, where our faculty work, turned 150 years old. Throughout this history, our faculty and staff have done many wonderful things for our patients, our department, our institution and our state and country. We continued to be recognized and honored for our excellence in many ways during the past year. Now we are focused on using these strengths to step up like never before as we face the many unknowns of health care in the coming year.

CHAIR’S REPORT

John Carethers, MD | Chair of Internal Medicine

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THE ROOTS OF OUR SUCCESS

I selected this year’s annual report theme, “The Roots of Our Success — Philanthropy’s Role in Advancing Our Mission,” because I wanted to highlight the many stories made possible by our donors. Philanthropy allows our department to go above and beyond in all areas. It emboldens risk in research, allowing us to find better cures and treatments. It allows us to innovate medical education for future generations. It inspires us to push the limits of understanding of the best ways to care for patients and to bring those ideas to life in the clinic. I hold the John G. Searle Professorship in Internal Medicine — the very first professorship developed for our department in 1968. When I took on the role of chair in 2009, there were 28 professorships. Now just 10 years later, we have more than 100! The tremendous impact of this growth of support is reflected throughout the pages of this report.

NATIONAL HONORS

U.S. News & World Report
2019–2020 Rankings

Hospital
No. 11 (Honor Roll)

Specialty Areas

Pulmonary
No. 10

Endocrinology
No. 11

Rheumatology
No. 12

Cardiology & Heart Surgery
No. 13

Geriatrics
No. 15

Gastroenterology & GI Surgery
No. 20

Nephrology
No. 32

Diabetes & Cancer
No. 34

Medical Education
The U-M Medical School was ranked No. 6 for training primary care physicians and for internal medicine. It is No. 16 nationally among research medical schools.
NEW ROLES

Internal medicine faculty are providing valuable leadership through our department, Michigan Medicine and the university.

Leslie Aldrich, MD; David Smith, MD and Vallerie McLaughlin, MD, became associate chief clinical officers in our new U-M Medical Group ambulatory care structure.

Eve Kerr, MD, MPH was named the inaugural vice chair for equity, inclusion and well-being for the Department of Internal Medicine, along with Assistant Vice Chairs Sarah Gualano, MD, and Michael Lukela, MD (page 25).

Timothy Laing, MD, previously our vice chair for clinical operations, transitioned to director of billing and compliance. He will be working with our new Clinical Experience & Quality Team that began in early 2020 (page 22).

Bethany Moore, PhD, became the acting department chair for the Department of Microbiology & Immunology at U-M.

Scott Flanders, MD, was named Michigan Medicine’s chief clinical strategic officer for the University of Michigan Health System.

2019 PATIENT CARE

Our volume of off-site primary and specialty care and on-site specialty care continued to increase during 2019. This is primarily due to the great success of our many new outpatient facilities in Ann Arbor, Brighton, Livonia and Northville helping us meet the growing demand for patient care in southeast Michigan.

\[\text{Geriatric Medicine Inpatient + General Medicine Inpatient + Outpatient} \]

\[\text{2014-15 Total 240,168} \]

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\[\text{new roles} \]

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\[\text{new roles} \]
A NEW HOSPITAL
In late October 2019, Michigan Medicine broke ground on a new 12-story adult inpatient hospital. The facility is needed to increase patient access while also providing state-of-the-art care to patients, with an emphasis on clinical neurosciences and cardiovascular services. Each of the 264 rooms in the hospital will be private and will be capable of being converted to intensive care. The 690,000-gross-square-foot hospital will allow more patients to access Michigan Medicine’s high level of care. Currently, hospital facilities often operate at more than 90 percent capacity. This project was slated to be completed in 2024 but has been put on temporary hold as Michigan Medicine focuses its resources on meeting the needs of the COVID-19 crisis.

STEPPING UP
As we go to print with our report this year, our world has just been hit with a global pandemic. This is a time unlike anything any of us has seen before. Every day I am humbled by the incredible heart, courage, determination and hope our faculty, staff, residents and students are bringing to the frontlines. Many of the same people you see featured in this report are now taking every bit of their talent, energy, compassion and innovation and applying that to this unknown, new world. We are determined to help more patients survive and thrive, to protect frontline workers and to find new solutions to treating and preventing COVID-19. I have never been prouder of our work or our department. On the next page, we’ve added a brief overview of the current COVID-19 response at Michigan Medicine.
COVID-19 Response

The state of Michigan confirmed its first two COVID-19 cases on March 10, 2020. In the three weeks that followed, the number of cases in the state soared to more than 10,000, making it one of the nation’s hot spots. Michigan Medicine has been getting many direct and transferred COVID-19 patients since mid-March.

Regional Infectious Containment Unit

Part of Michigan Medicine’s comprehensive COVID-19 planning and response program included opening an isolation unit called the Regional Infectious Containment Unit (RICU), a negative-pressure unit specifically created for these kinds of crises. The unit provides 32 private isolation rooms, and follows CDC guidelines. In addition, focused locations with similar capabilities are available within the university’s hospitals. All staff caring for these patients are prepared, trained and have the right supplies.

Division of Hospital Medicine Chief Vineet Chopra, MD, MSc, led the creation of the all-COVID unit, with a team of hospitalists, nurse practitioners, physician assistants, nurses, respiratory therapists and other staff volunteers.

By the end of March, they had handed over the reins to a team of experienced intensive care professionals, so the unit could focus on the sickest patients. The RICU team moved on to transforming other areas of the hospital, and training their staff, in the same way.

VA Ann Arbor Healthcare System

The VA Ann Arbor Healthcare System (VAAAHS) opened its doors to non-Veteran (i.e., “humanitarian” or “civilian”) admissions on April 5, 2020. To date, VAAAHS has cared for more civilians during the COVID crisis than any VA in the country outside of New York City. Many internal medicine faculty have been part of this effort including Sanjay Saint, MD, MPH, the chief of medicine at VAAAHS.

Medical School

On March 17, the U-M Medical School suspended student clinical rotations and moved all classes online, in accordance with guidance from the Association of American Medical Colleges. Faculty members continued to mentor students beyond the clinical setting, including helping them channel their efforts to maximum collective benefit through student-driven community projects, including blood donation drives, free babysitting services for frontline care providers and producing and distributing hand sanitizer to the local homeless population.

Outpatient Care

To help our patients receive appropriate care with minimal risk of spreading disease in their communities wherever possible, we are providing enhanced access to outpatient care during the COVID-19 pandemic, including a COVID-19 hotline, curbside screening and enhanced access to virtual care (e-visits or video visits).

Protecting Providers

A study led by internal medicine faculty Marisa Miceli, MD, and Peter Higgins, MD, PhD, MSc, is exploring how effective Hydroxychloroquine (HCQ) may be in protecting health care providers. This provider prevention study, with 15,000 participants nationwide, randomizes health care providers to HCQ vs. placebo to identify whether HCQ can reduce infections in health care providers at high risk and reduce the overall severity of COVID-19.

Improving COVID-19 Care

Michigan Medicine has also teamed up with 25 other Michigan hospitals and Blue Cross Blue Shield of Michigan to collect comprehensive clinical data on COVID-19 patients to be included in an extensive registry that will provide insight into best practices in treating patients with the virus. Titled MI-COVID19, the comprehensive, multisite registry will likely be one of the largest collections of COVID-19 patient data in the country. It was developed by a team from the Michigan Hospital Medicine Safety Consortium, a Blue Cross-funded CQI led by Scott Flanders, MD, chief clinical strategy officer at Michigan Medicine.

By analyzing the registry data, participants of the MI-COVID19 initiative aim to identify factors associated with higher levels of critical COVID-19 illness and worse outcomes; identify patient characteristics and treatment regimens associated with improved outcomes; and understand long-term complications for hospitalized patients.
FACULTY AFFAIRS

The total number of Department of Internal Medicine faculty continued to grow in our clinical track during 2019. The chart at the right breaks down our faculty growth trends by year and faculty type.

FACULTY PROMOTIONS

Fifty-one faculty members from the Department of Internal Medicine were promoted effective September 1, 2019. We congratulate these faculty members on their new status and achievements.

HONORS

Department of Internal Medicine faculty are recognized for their expertise and excellence.

Elif Oral, MD, MS, a professor in the Division of Metabolism, Endocrinology & Diabetes was inducted into the American Society of Clinical Investigation.

Bill Herman, MD, MPH, a professor from the Division of Metabolism, Endocrinology & Diabetes was inducted into the Association of American Physicians.

The American Gastroenterological Association (AGA) presented its highest honor, the Julius Friedenwald Medal, to John Allen, MD, MBA, AGAF, for his incredible contributions to the field of gastroenterology and AGA over several decades. The Julius Friedenwald Medal, presented annually since 1941, recognizes a physician for lifelong contributions to the field of gastroenterology.

Sanjay Saint, MD, MPH and Eve Kerr, MD, MPH were elected as Masters of the American College of Physicians.

DIVERSITY, EQUITY & INCLUSION AND WELLNESS

Eve Kerr, MD, MPH was named the inaugural vice chair for equity, inclusion and well-being for the Department of Internal Medicine, along with Assistant Vice Chairs Sarah Gualano, MD, and Michael Lukela, MD. This new leadership team will be evaluating our programs and focusing on issues of physician burnout and wellness.

CLINICAL EXCELLENCE SOCIETY

The department inducted 11 new members into the Clinical Excellence Society in 2019 (see photo at right) in honor of their expertise and dedication to providing the best patient care possible and mentorship of other clinicians. The society is made possible by funding from Chair John Carethers’, MD, Searle Professorship.

DISTINGUISHED UNIVERSITY PROFESSORS

Two Department of Internal Medicine faculty members received one of the University of Michigan’s top honors as Distinguished University Professors recognizing their exceptional scholarly achievements, national and international reputations for academic excellence and superior records of teaching, mentoring and service: John Ayanian, MD, MPP, is the Alice Hamilton Distinguished University Professor of Medicine and Healthcare Policy and Anna Suk-Fong Lok, MD, is the Dame Sheila Sherlock Distinguished University Professor of Hepatology and Internal Medicine.
ENDOWED PROFESSORSHIPS

The new professorships inaugurated in the Department of Internal Medicine during 2019 included:

Giles G. Bole, MD, and Dorothy Mulkey, MD, Research Professor of Rheumatology – Michelle Kahlenberg, MD

William Henry Fitzbutler Collegiate Professor – Vincent Young, MD

Stevo Julius Research Professor of Cardiovascular Medicine – Robert D. Brook, MD

Melvyn Rubenfire Professor of Preventative Cardiology – Venkatesh L. Murthy, MD

Richard D. Schwartz, MD, Collegiate Professor of Nephrology – Panduranga S. Rao, MD

Larry Soderquist Professor – Rodica Busui, MD

Alpheus W. Tucker, MD, Collegiate Professor of Internal Medicine – Theodore Ivashyna, MD

Nancy Wigginton Oncology Research Professor of Thyroid Cancer – Megan Haymart, MD

Nancy Wigginton Oncology Research Professor – Frank Worden, MD

ABOVE & BEYOND

Much of the Department of Internal Medicine’s faculty success, innovation and impact that I get to report on each year is supported and made possible by professorships you will read about in this year’s report. This funding not only helps us recruit and retain the best and brightest, it also gives our faculty the time and resources they need to truly shine as leaders and best in research, education and patient care.
Sanjay Saint, MD, MPH  |  Chief of Medicine, VA Ann Arbor Healthcare System; Vice Chair for VA Programs; AOA Councilor, U-M Medical School

The VA Ann Arbor Healthcare System (VAAAHS) continued to experience steady outpatient and inpatient activity in 2019. Our Ann Arbor campus handled 654,748 outpatient encounters and 93,423 inpatient encounters. Through numerous quality improvement and patient safety initiatives, we continue to address the needs of our Veterans through efforts that are serving as models to improve patient care across the country.

BREAKING GROUND
In late April 2019, construction began on the first Fisher House in Michigan at VAAAHS. A groundbreaking ceremony was held on June 14, 2019 and it was officially completed and turned over to the VA on April 20, 2020. Once open, up to 16 families will be able to stay there free of charge on any given night, allowing them to be close to their loved ones at the most stressful time — during hospitalization at the VA Ann Arbor Medical Center. Veterans receiving outpatient care may also access lodging at the Fisher House as long as they bring a companion to stay with them. This 16-suite, 13,400-square-foot “comfort home” will join 87 other Fisher Houses operating in the United States and Europe. It is expected to open in late spring 2020.

EXPANDING OUR REACH
In September 2019, VAAAHS announced the location of a new Community Based Outpatient Clinic (CBOC) on the border of Canton and Westland. Once built, the nearly 40,000-square-foot clinic will serve Veterans in western Wayne County, and will allow for the full implementation of the Patient-Aligned Care Team model of care delivery, improving operational efficiencies and the Veteran experience. The new CBOC will provide primary care, and mental health, laboratory, pathology and imaging services to Veterans in a right-sized, state-of-the-art, energy-efficient health care facility serving over 14,000 Veterans. The clinic’s anticipated completion date is late 2021.

FACULTY APPOINTMENTS
During 2019, the following faculty took on new appointments:
- **Grace Su**, MD, became interim chief of the Hematology and Oncology Section.
- **Ashwin Gupta**, MD, was named chief of the Hospital Medicine Section.
- **Caroline Vitale**, MD, was named the associate director for education and evaluation at the Ann Arbor VA Geriatric Research Education and Clinical Center.

AWARDS & RECOGNITION
Our VAAAHS internal medicine faculty are regularly honored and recognized for their expertise in Michigan and across the country.

- **Jeff Curtis**, MD, received the 2019 John B. Barnwell Award, the VA Clinical Science Research and Development’s highest honor, given for scientific contributions that change clinical practice for Veterans. A pulmonologist and critical care physician at the VAAAHS, he has dedicated his career to making fundamental contributions to the understanding of chronic obstructive pulmonary disease (COPD) and lung defense from bacterial pathogens. He has also mentored many early-career scientists and fostered the next generation of VA investigators.
- **Sarah Krein**, PhD, RN, was honored with the 2019 Distinguished Scientist Award from the Association for Professionals in Infection Control and Epidemiology.
- **Brahmajee Nallamothu**, MD, MPH, was appointed to serve on the Medicare Evidence Development & Coverage Advisory Committee.
- **Vineet Chopra**, MD, MSc, chief of the Division of Hospital Medicine, was invited to be a member of the Annals of Internal Medicine Editorial Board.
- **Akbar K. Waljee**, MD, AGAF, and **Vineet Chopra**, MD, MSc, were each honored with 2019 Distinguished Clinical and Translational Research Mentor Awards by the Michigan Institute for Clinical & Health Research.
CONCLUSION

The theme of this year’s report highlights the many ways philanthropy is advancing our department’s missions of research, education and patient care. I am honored and grateful that Veterans benefit from these innovations. There are so many dedicated faculty at VAAAHS developing programs and research that are improving quality of life and saving lives. As the recipient of the George Dock professorship myself, I have been able to focus my career on improving patient safety by preventing hospital infections and teaching the next generation about how they can improve hospital medicine and become better, more effective physicians. As chief of medicine of VAAAHS, I know I am just one of many from the Department of Internal Medicine ensuring that the very best standards and methods are translated to the care of our nation’s Veterans.
BASIC & TRANSLATIONAL RESEARCH PROGRAMS

Ben Margolis, MD | Vice Chair of Basic and Translational Research

A record high in annual research expenditures at the University of Michigan in 2019 led to innovative research and scholarship endeavors that are addressing emerging problems and developing new technologies. U-M, which has ranked No. 1 in research volume among the nation’s public universities for the past nine years, reported $1.62 billion in research expenditures during 2019. Among U-M units the Medical School ranked No. 1 in research expenditures, with $690 million. More than a third of that funding comes from the work of internal medicine faculty. The Department of Internal Medicine competed for and obtained $198 million in research support in 2019 and published more than 2,200 research publications.

Some of the advancements, honors and notable awards from the past year are detailed below:

TRANSFORMING FOOD ALLERGY RESEARCH

The Mary H. Weiser Food Allergy Center (MHWFAC) announced a major new initiative called the Michigan Food Allergy Research Accelerator (M-FARA), in 2019. This program was made possible by a five-year gift of $5 million from an anonymous donor, which is renewable for a second $5 million after its initial period has lapsed.

This gift aims to establish a program designed to transform how individuals understand the fundamental mechanisms that are driving an increase in food allergy rates in both children and young adults. Additionally, the program seeks to develop innovative strategies to diagnose and treat food allergies. Internal medicine faculty member James Baker, Jr., MD, leads the MHWFAC (page 69).

NATIONAL HONORS

Internal medicine faculty members Kenneth Langa, MD, PhD; Suzanne Moenter, PhD; Linda Samuelson, PhD; and Shaomeng Wang, PhD were elected as fellows of the American Association for the Advancement of Science in 2019. Fellows are elected annually by the AAAS Council for “efforts on behalf of the advancement of science or its applications which are scientifically or socially distinguished.”

J. Michelle Kahlenberg, MD, PhD, received the Presidential Early Career Award for Scientists and Engineers, the highest honor bestowed by the U.S. Government to outstanding scientists and engineers.

INVESTING IN OUR FACULTY

Recruiting and training the next generation of scientists and retaining top leaders and mentors is essential to keeping U-M at the forefront of novel basic and translational research. As you will see throughout this year’s report, the Department of Internal Medicine’s commitment to investing in and honoring its faculty through professorships is not only creating a better future for medicine; it’s creating better lives for our patients.
NOTABLE AWARDS

Bethany Moore, PhD
NIH R35 $5.9M (6 years)
National Heart, Lung, Blood Institute Outstanding Research Investigator Award
“Immunobiology of Lung Injury and Fibrosis”

Marc Peters-Golden, MD
NIH R35 $6.5M (7 years)
National Heart, Lung, Blood Institute Outstanding Research Investigator Award
“Novel Functions of Lung Macrophages and Fibroblasts in Pulmonary Inflammation and Fibrosis”

Theodore Standiford, MD
NIH T32 $4.9M (5 years)
“Multidisciplinary Training Program in Lung Disease”
Competitive renewal of a federally funded training program that is now in its 26th year of funding.

Subramaniam Pennathur, MD
NIH P30 $2.9M (5 years)
“University of Michigan O’Brien Kidney Translational Core Center”
Center established to assist investigators and clinicians worldwide in kidney disease research.

David Pinsky, MD
NIH T32 $3.1M (5 years)
“Multidisciplinary Cardiovascular Research Training”
Competitive renewal of a federally funded training program that is now in its 21st year of funding.

Anna Lok, MD; Grace Su, MD; and Thomas Wang, MD, PhD
NIH U01 $3.3M (5 years)
“Novel Strategies to Improve Liver Cancer Surveillance Update and Early Detection”

2,200 Research Publications
My role this year has expanded to include both clinical and health services research. This is an exciting opportunity to capitalize on the inherent, bidirectional synergies in these arenas. As our clinical trialists identify effective interventions, our outcomes researchers can examine them in clinical practice. And if an intervention falls short in practice, our trialists can compare alternatives.

A perfect example of this kind of synergy is the work being done by Vineet Chopra, MD, MSc, chief of the Division of Hospital Medicine. The lead author of the Michigan Appropriateness Guide for Intravenous Catheters (MAGIC), he has found through his health services research that peripherally inserted central catheters, or PICCs, are the most common means of antibiotic delivery. Despite this, no clinical studies have been conducted to assess alternatives. To address this, Chopra enrolled in the 2019 Clinical Trials Academy and has designed a study, which he is submitting to the Agency for Healthcare Research and Quality, to compare the safety and effectiveness of midline catheters vs. PICCs for extended antibiotic delivery.

This is the perfect example of how health services and clinical research can inform each other to improve clinical care.

**Clinical Research Updates**

Our early-career investigators continue to flourish. We hosted 12 participants in the 2019 Clinical Trials Academy, five from Internal Medicine. All successfully completed their clinical trial protocols and received seed funding. Thomas Enzler, MD, PhD, from the Division of Hematology & Oncology, was one of four participants to receive additional funding for his outstanding trial design for the treatment of pancreatic cancer. Our first participant from a nonclinical department, Scott Lempka, PhD, from biomedical engineering, has already received an NIH R01 for his trial on spinal cord stimulation for pain. In addition, one of our 2018 graduates, Scott Hummel, MD, MS, from the Division of Cardiovascular Medicine, learned that his clinical trial of home-delivered, heart-healthy meals after discharge for heart failure has been approved for multisite trials by the Veterans Administration Cooperative Study Program.

Another rising clinical research star from the Division of Cardiovascular Medicine, Salim Hayek, MD, received the 2019 Samuel A. Levine Early Career Clinical Investigator Award from the American Heart Association. It recognizes his research showing that suPAR is a promising prognostic biomarker and potential therapeutic target for acute kidney injury following cardiovascular procedures.

In 2019, MDiabetes launched a Clinical/Translational Research Scholars Program to support early-career diabetes researchers, providing up to 50 percent salary support for three years. Brian Schmidt, DPM, from the MEND Division, was one of two inaugural awardees. Our 2019 Clinical Research Spotlight recognized Anna Mathew, MD, from the Division of Nephrology. She is using metabolomics and proteomics to study the mechanisms behind kidney patients’ increased cardiovascular risk with the goal of identifying targeted therapies.

We are pleased to announce a new Steno North American Diabetes Fellowship. Funded by the Novo Nordisk Foundation, it will support exchanges of early-career diabetes and obesity investigators from U-M, the University of Toronto and the Steno Diabetes Centers in Denmark. Fellows will work in both clinical care and on clinical or health outcomes research, exchanging ideas, forming research collaborations and developing projects that can be submitted to the Novo Nordisk Foundation. The new partnership will be marked with a symposium in 2021 to honor the 100-year anniversary of the discovery of insulin.
group within U-M’s Institute for Healthcare Policy and Innovation (IHPI). In response to the recent expansion of my role, I have been scheduling meetings with several of these researchers to learn how we can add value to the robust infrastructure of the IHPI, such as helping to connect clinical and outcomes researchers to achieve the kind of synergistic insights Vineet Chopra is aiming for.

Because our health services research footprint is so vast, we have the perfect opportunity to stimulate the development of clinical research projects that address pressing topics already being investigated by our IHPI colleagues, from healthy aging to the opioid epidemic. Examples include research by Division of General Medicine investigators such as Deborah Levine, MD, MPH, who examines risk factors and outcomes for stroke, cognitive impairment and dementia, and Pooja Lagisetty, MD, MSc, who explores equity, access and evidence-based care for individuals with chronic pain and substance use disorders.

The opportunities to synergize are endless; I look forward to collaborating with my clinical and health services research colleagues to take full advantage of them.

2019 JI PROJECTS

The Michigan Medicine/Peking University Health Science Center Joint Institute for Translational and Clinical Research funded 12 projects for 2019. Those co-led by internal medicine researchers include:

GASTROENTEROLOGY & HEPATOLOGY
Elizabeth Speliotes, MD, PhD, MPH
Genetic and microbiome effects on non-alcoholic fatty liver disease and its complications in a Chinese population
Andrea Tosisco, MD & John Kao, MD
Molecular signatures of the progression of intestinal metaplasia: a multi-omics approach

RHEUMATOLOGY
Jason Knight, MD, PhD
LILRA3 as a novel regulator of thrombo-inflammation in antiphospholipid syndrome

CARDIOVASCULAR MEDICINE
Bertram Pitt, MD & Porama Thanaporn, MD
Evaluation of mineralocorticoid antagonists in aldehyde dehydrogenase type 2 deficiency
To advance medicine, effective teamwork is needed. In our clinics, you see physicians and in our research labs, you see scientists. However, tucked away in our offices sit the administrative staff — our unsung medical heroes. Overseeing finances, personnel decisions, process improvement and compliance — the decisions made by our administrative staff directly impact the care of our patients. This past year, we have welcomed new administrative team members, rewarded hard work and found ways to decrease costs while ensuring our continued success.

Identifying the best ways to continue advancing science while decreasing the financial burden of unfunded research was the topic of the 2019 leadership retreat. The event brought together department vice chairs, division chiefs and administrators to share ideas and help identify and implement next steps to this complex problem. Attendees were engaged early on in the process through preliminary discussions, as well as opportunities to review and comment on a proposed plan. The team came together and endorsed the final plan, which allowed the department to establish a consistent process to be followed across all divisions.

In October 2019, the fifth annual Service and Excellence Celebration took place, which recognizes the many contributions, dedication and meritorious service staff have made to the Department of Internal Medicine. The celebration also featured individuals who have achieved a milestone anniversary with Michigan Medicine within the past year. Attendees enjoyed lunch, a fun trivia quiz and prizes.

2019 Staff Award for Excellence Recipients

- **Mark Cichocki**, Registered Nurse, Infectious Diseases
- **Kaley German**, Administrative Specialist, Hospital Medicine
- **Rosanne Hadlock**, Administrative Assistant, Gastroenterology and Hepatology
- **Tracy Hunt**, Physician Assistant Lead, Hospital Medicine
- **Matthew Magers**, Administrative Assistant, Nephrology
- **Charmaine Prichard**, Business Manager, General Medicine
- **Dawne Vowler**, Graduate Medical Education Program Administrator, Metabolism, Endocrinology & Diabetes

2019 Administrator of the Year Award

**Marisa Rodriguez**, Division Administrator, Hospital Medicine
NEW TEAM MEMBERS

Swati Bajpayee, MS, joined our team as the new interim administrator for the Division of Allergy and Clinical Immunology. She previously served as the interim clinic manager for the Center for Reproductive Medicine. Bajpayee has also acted as the director of operations for a student-run free clinic, held a role as a graduate researcher and worked closely with the Medical School Faculty Affairs Office as they enhanced the reporting associated with faculty satisfaction survey data.

Erin Price, MPH, joined our team as the new program manager for the Office of Diversity, Equity and Well-Being. She partners closely with Drs. Eve Kerr, Sarah Gualano and Michael Lukela in their work to evaluate, monitor and refine diversity, equity and inclusion (DEI) and well-being initiatives. Price has a wealth of experience providing leadership and decision support for a variety of projects in administrative, educational, clinical operations/quality improvement and DEI spaces. Prior to joining our team, she was a project manager in the U-M Department of Obstetrics & Gynecology for nearly six years and was responsible for their DEI initiatives and implementation. Additionally, Price teaches diversity and cultural communication courses as adjunct faculty at the University of Toledo College of Business and Innovation.

OPERATION OPPORTUNITY

Founded in 2015, Operation Opportunity is a two-week youth mentorship program designed to help highly motivated Wayne-Westland high school students learn more about the many career paths in medicine. The program has evolved over the years to become a partnership between Michigan Medicine’s Department of Internal Medicine and Office of Clinical Affairs, Wayne-Westland Community Schools (WWCS) and Eastern Michigan University Bright Futures.

In 2019, approximately 20 students from WWCS were selected to spend 10 days at Michigan Medicine facilities. Activities in internal medicine included meeting with faculty and staff from the Divisions of Hospital Medicine and Genetic Medicine, participating in simulation activities and having the opportunity to talk with Department Chair John Carethers, MD.

The benefits are felt both by the Michigan Medicine participants and the Operation Opportunity students. For the Michigan Medicine mentors, the program increases their understanding of vulnerable and underserved populations and gives them insight into the students’ life challenges, fears and goals.

The impact on the Operation Opportunity students is significant as it gives them exposure to, and information on, careers in the medical field they might not otherwise have known about; it opens the door and changes their perspectives on what is possible.

2019 STAFF SERVICE AND EXCELLENCE AWARDS

John Carethers, MD, Marisa Rodriguez, Kaley German, Julianne Grant, Dawne Vowler, Matthew Mager, Charmaine Prichard, Mark Cichocki, Rosanne Hadlock and Musty Habhab
The Department of Internal Medicine has a long history of providing leadership and innovation within the U-M Medical School. Our faculty oversee 25 percent of the school’s four-year curriculum, and during 2019 we continued to expand and refine our role in providing education, mentorship and clinical experiences to medical students to cultivate the future of patient care.

**MATCH DAY**

An impressive 97 percent of the Medical School’s 2019 graduating class matched to one of the residency programs they put on their lists, far exceeding the national average. That success rate comes despite intense and growing national competition for a limited number of training spots. Twenty-eight students matched into an internal medicine program and an additional nine students matched into a Med/Peds residency program. Many of the students chose these programs due to the role models they encountered throughout their studies. The students often express gratitude for the strong and nurturing support they receive from the internal medicine faculty and house officers.

**2019 GRADUATION**

We had 164 future health care leaders and physicians in the Medical School class of 2019. Overall, 66 percent of this graduating class completed a Path of Excellence to gain specialized experience and training in subject areas like medical humanities, health policy, scientific discovery and patient safety. Seventy-five students completed Capstone for IMPACT projects, designed to provide students with innovative opportunities to take on society’s biggest challenges in health, health care and health system delivery while in medical school. These important projects included health-related podcasts, student-led national conferences, new electives for future medical students, video series and submissions for journal publications and conferences.

**2019 WHITE COAT CEREMONY**

In July 2019, 177 aspiring physicians were given a white coat, a stethoscope and a reflex hammer to officially mark the beginning of their lives as medical students. Sarah Hartley, MD, who is a prominent educator in the medical education program and an associate director for the internal medicine residency program, was the keynote speaker. These incoming first-year students were immediately immersed in the mature new curriculum, working to understand the science of human health and illness in the clinical setting. They are also building their skills as critical thinkers and collaborative future leaders working with other students enrolled in U-M’s various health professional schools.

**2019 FLEXNER AWARD**

Internal medicine faculty member and Senior Associate Dean for Education and Global Initiatives Joseph Kolars, MD, was the recipient of the prestigious 2019 Abraham Flexner Award for Distinguished Service to Medical Education from the Association of American Medical Colleges. The Flexner Award honors individuals whose contributions have had a demonstrable impact on advancing medical education. It recognizes the highest standards in medical education and is the AAMC’s most prestigious honor.

**SENIOR AWARD**

The Senior Award is given by the graduating class to a clinical faculty member below the rank of associate professor who, in the opinion of the graduating class, has best upheld the ideals of medical education. The graduating class of 2019 recognized Dan Cronin, MD, with this award.

**RICHARD D. JUDGE AWARD FOR EXCELLENCE IN MEDICAL STUDENT TEACHING**

This award is the department’s highest award given for medical student teaching. It is based on student evaluations. Our 2019 recipient was Dale Bixby, MD, PhD. The students were lavish in their praise of him.
as a teacher and mentor. They noted his ability to clearly break down complex concepts in an organized and structured way and communicate them clearly to learners at all levels.

SPECIAL RECOGNITION FOR CONTRIBUTIONS TO THE MEDICAL STUDENT TEACHING PROGRAM

Students recognized our 2019 awardee, Ali Ruff, MD, for teaching medical students in the outpatient clinics. They appreciated her ability to serve as a great role model providing an absolute and positive experience in the ambulatory clinics.

KAISER PERMANENTE AWARD FOR TEACHING EXCELLENCE

The Kaiser Award is the most prestigious teaching award given by the Medical School. The 2019 Dean’s Awards recognized Michael Lukela, MD, with the Kaiser Permanente Award for Excellence in Clinical Teaching. Dr. Lukela is one of our legendary teachers and also serves as the director of our Medicine-Pediatrics Residency Program.

LIFETIME ACHIEVEMENT AWARD IN MEDICAL EDUCATION.

At the 2019 Dean’s Award Ceremony, Ronald J. Koenig, MD, PhD, received the Lifetime Achievement Award in Medical Education. For 25 years, Koenig has provided incredible leadership and service as director of our Medical Scientist Training Program. Hundreds of physician-scientists have thrived under Koenig’s individual approach to their development, resulting in the phenomenal academic success of the program’s graduates.

SUPPORTING OUR FUTURE

As we reflect on the “roots of success” throughout this year’s report, you can see the many ways that philanthropy has contributed to new ideas and different approaches to educating the doctors of tomorrow through the groundbreaking work of our faculty, including James Woolliscroft, MD (page 75); Joseph Kolars, MD (page 80); and Rajesh Mangrulkar, MD (page 77). It also allows our department to provide supplemental programming like the Medical Arts Program (page 43), as well as scholarships, lectures and global experiences that enable our students to grow and flourish.

2019 STUDENT AWARDS

Henry Fitzbutler Award for Excellence in Hospital Medicine
Owen A. Thompson

William Dodd Robinson Award
Jennifer Sun

Eli G. Rochelson Memorial Award
Genevieve Allen

Department of Internal Medicine Senior Scholarships
Genevieve Allen
Jacob Cedarbaum
Nico Cremer
Vinay Guduguntla
Hillary Iksin
Daniel Kim
Lauren Merz
Daniel Nelson
Jennifer Sun
Brian Weiland
The Internal Medicine Residency Program welcomed its incoming intern class of 68 individuals in June, including six graduates of the U-M Medical School along with individuals from other top-tier medical schools. Of this group, 41 percent were newly elected members of the Alpha Omega Alpha Honor Medical Society, and three individuals started our Physician Scientist Training Program track.

This select group came from a pool of more than 2,500 applications, of which approximately 609 medicine and medicine-pediatric candidates were interviewed by our faculty and program leadership from October 2019 through January 2020.

INSPIRATION AWARD

Congratulations to Associate Program Director Jennifer Lukela, MD, for being selected as an American Medical Association Women Physicians Section Inspiration Award honoree in 2019.

The AMA Women Physicians Section Inspiration Award honors and acknowledges physicians who have offered their time, wisdom and support throughout the professional careers of fellow physicians, residents and students. This description definitely describes Lukela — especially her extensive efforts to build community and provide opportunities and programming for women trainees in the Department of Internal Medicine.

PROGRAM UPDATES

This year the program adjusted the resident annual schedule from 12 months to 13 four-week blocks to provide more protected weekends and create predictable time off to promote resident wellness. We have also enhanced our existing wellness program by creating a social event committee with departmental funding. On our inpatient services we have adjusted the number of admissions per team in an effort to account for the high level of patient complexity. The program also continues to grow our primary track, to develop enhanced opportunities for research and to expand our commitment to community service by partnering with clinics in Washtenaw County that provide care for underserved communities.
2019 RESIDENT AWARDS

Bruce A. Jones Award for Outstanding House Staff Spirit
James Brehany, IV, MD
Dr. Jacob P. Deerehake
Community Service Award
Emily Jacobson, MD
Galens Medical Society Bronze Beepers Award
Julie Barrett, MD, MPH
Paul Christine, MD, PhD
Kenneth R. Stark Internal Medicine House Officer Research
Nicole Hadeed, MD
H. Catherine Miller, MD (Oral)
Internal Medicine Award for the Most Outstanding House Officer
Julie Barrett, MD, MPH
Jacob Mack, MD
Laurie Edmunds Award for the Most Outstanding House Officer I
Scott Ketcham, MD
Sarah Uttal, MD

RESIDENCY PROGRAM LEADERSHIP

Kristin Collier, MD
Associate Program Director
John Del Valle, MD
Director, Internal Medicine Residency Program
Kevin Flaherty, MD, MS, FCCP
Associate Program Director
Sarah Hartley, MD
Associate Program Director
Nathan Houchens, MD
Assistant Program Director
Jennifer Lukela, MD
Associate Program Director
Michael Lukela, MD
Director, Med-Peds Residency Program
Rachel Perlman, MD
Associate Program Director
Thomas Sisson, MD
Associate Program Director
Director, Physician Scientist Training Program
Adam Tremblay, MD
Assistant Program Director

2019–2020 CHIEF MEDICAL RESIDENTS

Molly Tokaz, MD; Marcus Geer, MD; Alexandria Miller, MD and Raymond Yeow, MD
QUALITY & INNOVATION AND EXTERNAL RELATIONS

Scott Flanders, MD | Vice Chair for External Relations & Quality

The year 2019 was marked by change, with an exciting reorganization of the department’s Quality & Innovation (Q&I) leadership structure, as well as a new role for me as chief clinical strategy officer for the University of Michigan Health System (UMHS). I will share the department’s progress on the quality and external relations fronts while discussing the new structure and roles that will impact each area.

QUALITY & INNOVATION

Our Q&I program owes a debt of gratitude to James Froehlich, MD, MPH, our assistant chair, who served as interim vice chair for Q&I after I took on my new health systemwide role in February. He has been instrumental in developing our Q&I program and has led several quality initiatives within cardiovascular medicine addressing atrial fibrillation, chest pain and anticoagulation care at Michigan Medicine and statewide.

Froehlich and our quality team, including Tammy Ellies, Linda Bashaw, Katie Grzyb and Elizabeth Spranger continued to support the program’s patient safety/quality improvement (PS/QI) portfolio, including projects, resident education, scholarship and dashboards. They also developed new activities that further raised the profile of the department’s PS/QI work, engaging additional providers and patient perspectives.

The first of these was selecting two second-year resident teams to present their month long PS/QI projects during Grand Rounds in October.

The first team focused on reducing readmissions for hepatic encephalopathy (HE). Through patient and provider interviews, the residents identified key drivers of HE readmission and suggested interventions including patient education materials and a best practice alert (BPA) in MiChart. The BPA, which was implemented by the health system’s cirrhosis readmissions committee, has already resulted in more HE patients being discharged on the optimal medication regimen. The resident team included James Brehany, MD, Paul Christine, MD, Blake Haller, MD, Elizabeth Lin, MD and Johnny Ting-Zheng, MD, with faculty advisor Kate Levy, MD, from the Division of Hospital Medicine.

The second team examined ways to better prevent pneumocystis pneumonia among patients on long-term, high-dose steroid therapy. Using chart reviews and provider surveys, the residents identified a need for the development of Michigan Medicine guidelines on this topic, as well as a MiChart BPA advising providers to include Bactrim prophylaxis when prescribing more than four weeks of steroids. Members of the resident team worked with the antimicrobial stewardship committee to implement their recommendations. The resident team included Amy Wang, MD, Jay Krishnan, MD, Taylor Broome, MD and Chris Hoeger, MD, with faculty advisor Sandro Cinti, MD, from the Division of Infectious Diseases.

Having resident groups with projects impactful enough to be presented at Grand Rounds represents the culmination of our work over the last three years to implement a new PS/QI curriculum and to infuse early-career endowments honor QI leaders

Two of the three recipients of the department’s 2019 Early-Career Endowment Awards are leaders in Michigan Medicine’s patient safety/quality improvement (PS/QI) work (page 62). Elliot Tapper, MD (GI), received the Margaret R. Gyetko, MD, Department of Internal Medicine Early-Career Endowment Award. He leads the health system committee charged with reducing cirrhosis readmissions and supported the resident team invited to present their project on hepatic encephalopathy at Grand Rounds.

Geoff Barnes, MD, MSc (CVM), received the James O. Woolliscroft, MD, Department of Internal Medicine Early-Career Endowment Award. He was part of the PS/QI team that in 2018 incorporated a new chest pain algorithm, high-sensitivity troponin T test and MiChart HEART Pathway to better risk stratify and assess the needs of patients presenting to the emergency department (ED) with chest pain. Analysis of a year’s worth of data showed that the new test and guidance increased the percentage of patients discharged by 13 percent, led to a 2.8-hour reduction in ED length of stay for these patients and freed up 25 hours of ED bed space per day.

quality & innovation and external relations

QUALITY & INNOVATION AND EXTERNAL RELATIONS
our culture with a mindset of continuous quality improvement. After reimagining the PS/QI curriculum for first- and second-year residents, in 2019 we piloted a new format for internal medicine residents in their continuity clinics. Developed by Amanda Cox, MD, from the Division of General Medicine with support from the quality team, the curriculum addressed quality improvement in the ambulatory setting with a focus on panel management. It featured an instructional video that aimed to provide consistent content across six ambulatory sites, engaging residents in implementing interventions to improve a U-M Medical Group (UMMG) focus measure for 2019 — geriatric pneumococcal vaccinations.

We’ve reported extensively on our portfolio of faculty PS/QI projects in previous reports, including the work of our inaugural Faculty Quality Improvement Award recipient, Rajan Ravikumar, MD, from the Division of Allergy and Clinical Immunology. His award supported the evaluation of an inpatient penicillin skin-testing protocol designed to identify patients who were labeled as but not truly allergic to penicillin so that more could be safely treated with first-line antibiotics. Based on his work, in 2019 hospital funding was approved for a Beta-Lactam Allergy Evaluation Service, which will expand this work to also include cephalosporins. His team plans to implement this service hospitalwide in 2020.

We are seeing increased adoption of our efforts to encourage patient participation in PS/QI projects and the use of dashboards for continuous quality improvement. We’ve had patient advisors on our Quality Council since its inception, and we routinely work with the Office of Patient Experience to explore high-value ways to incorporate the patient perspective into our work. For example, the residents on the hepatic encephalopathy project conducted in-depth interviews with patients and their caregivers before developing materials to clarify the steps patients should take in response to specific clusters of symptoms. A faculty-led project convened focus groups to learn how patients on biologics and immunosuppressives could best be supported in complying with the lab-testing regimen required to ensure their safety. The team explored patients’

THIRD FACULTY QUALITY IMPROVEMENT AWARD WINNER

Assistant Professor Jordan Schaefer, MD, from the Division of Hematology and Oncology, wants to ensure that patients’ use of daily, low-dose aspirin therapy matches today’s more conservative guidelines. His QI project aims to better capture patient aspirin use in MiChart and to evaluate a BPA encouraging primary care providers to discontinue aspirin in patients for whom the risk of bleeding outweighs the potential benefit in preventing heart attack or stroke.
understanding of their disease and the need for medication monitoring and identified knowledge gaps, and probed their communication and support preferences.

In terms of dashboards, we now have a foundation that providers can use to readily monitor target metrics and populations, easily spotting trends and generating lists of patients who have gaps in care to devise interventions. Eight divisions selected quality focus measures for 2019, and all made significant progress in achieving them, with many clinics reaching their 90th-percentile goals. Measures included pneumococcal vaccination, monitoring for diabetic nephropathy, prescribing statins for patients with diabetes and vascular disease, screening for geriatric fall risk, colorectal cancer screening for patients with HIV and tobacco cessation counseling for patients with COPD. In addition to helping improve care, our divisional dashboards provide infrastructure that is easy to expand with new patient populations, conditions and measures.

CLINICAL EXPERIENCE & QUALITY

I am delighted that the department’s new Clinical Experience & Quality Team (see box) will be able to build on this momentum. When I took on Quality & Innovation within the department five years ago, the role was brand new. We were able to develop a program — creating initiatives and structures to engage our faculty and trainees in PS/QI so that it is now integral to our culture and practice. This is why the new structure — where quality is viewed less as a discrete portfolio and more as an intrinsic part of the broader clinical experience under a vice chair spanning both — is the ideal next phase in Q&I’s evolution.

This structure, and the team members who fill it, are perfectly positioned to take our progress to the next level. My Q&I successor, Roma Gianchandani, MBBS, has a deep passion for quality improvement. In 2004, she established U-M’s innovative Hospital Intensive Insulin Program, which significantly improved glycemic control in our hospitalized patients. She brings expertise not only in implementing and evaluating PS/QI programs, but in scaling them — which will be the next opportunity for many of our QI projects.

CLINICAL EXPERIENCE & QUALITY TEAM

The Department of Internal Medicine’s new Clinical Experience & Quality team was announced in December 2019 and officially began their new roles in January 2020. The structure of this unit has been enhanced to ensure that the department’s complex clinical operations and all modalities are fully supported, from ambulatory care operations to procedural and inpatient services. This team is partnering with all divisions and units to support the clinical operations of the department.

Kevin Chan, MD (PCCM)
Vice Chair for Clinical Experience & Quality

Tim Laing, MD (Rheum)
Billing & Compliance Officer

Roma Gianchandani, MBBS (MEND)
Associate Vice Chair for Quality & Innovation

Kendra Brown
Director of Clinical Affairs

Vikas Parekh, MD (Hospital Med)
Associate Vice Chair for Inpatient & Hospital Operations

Kevin Chan, MD
Vice Chair for Clinical Experience & Quality

Tim Laing, MD
Billing & Compliance Officer

Roma Gianchandani, MBBS (MEND)
Associate Vice Chair for Quality & Innovation

Kendra Brown
Director of Clinical Affairs

Vikas Parekh, MD (Hospital Med)
Associate Vice Chair for Inpatient & Hospital Operations
EXTERNAL RELATIONS

New Affiliations

In addition to my external relations role within the department, I now serve as the chief clinical strategy officer for UMHS. In this role, I work with the chief strategy officer to represent the medical group and health system as we implement our statewide clinical network strategy.

I’ve been working this year to leverage my departmental experience to develop new clinical affiliations and to deepen relationships with existing partners, building key clinical programs and supporting continuous quality improvement across the network.

At the health-system level, we’ve developed three new inter-institutional relationships. The first is a master affiliation agreement with the Sparrow Health System. One of the affiliation’s initial endeavors is a pediatrics joint venture with Sparrow Children’s Center in Lansing. The second is with Munson Healthcare, northern Michigan’s largest health care system. It will lead with a neurosciences collaboration that aims to enhance delivery of complex care for stroke patients.

While these new affiliations do not yet involve internal medicine, it’s important to note that many of our partnerships begin with specific service lines that allow us to demonstrate our value and explore how we can best work together, creating additional opportunities to collaborate as the relationship evolves.

The third new relationship is a joint venture between Mercy Health and Metro Health-University of Michigan Health. Called the Cancer Network of West Michigan, it aims to foster collaboration on advanced cancer treatment for families in west Michigan.

Services will be offered across three facilities in west Michigan, including Lacks Cancer Center at Mercy Health Saint Mary’s, Johnson Family Cancer Center at Mercy Health Muskegon and Metro Health. Services will be supported by clinicians at each of these facilities who will have a direct tie to advanced clinical trials, emerging protocols and internationally renowned researchers in our Division of Hematology and Oncology and Rogel Cancer Center. The aim is for patients to increasingly be able to access such expertise through their local physicians at Mercy and Metro Health.

The search for an executive director of the Cancer Network of West Michigan is being chaired by UMMG’s Associate Chief Clinical Officer for Cancer, David Smith, MD, professor in the Division of Hematology and Oncology. The role will involve building multidisciplinary cancer programs for lung, breast, gastrointestinal, gynecologic and dermatologic malignancies. It will include clinician recruitment and development as well as strategizing how to best connect the institutions’ cancer programs and extend U-M’s cancer-based clinical research to our west Michigan partners.

Metro & MidMichigan Updates

At Metro Health-University of Michigan Health, we’ve reported previously on the work of Michelle Anderson, MD, MSc, and four of her colleagues in the Division of Gastroenterology and Hepatology to bring care for advanced liver disease, inflammatory bowel disease (IBD) and advanced endoscopic procedures to patients at Metro Health.

While the U-M team initially commuted one day a week to provide these services directly, Metro has begun hiring clinicians to take over and further develop these programs.

Michigan Medicine’s strategic vision is to be a source of high-quality, high-value care for 4 million people across the state by 2025. This includes providing comprehensive care to 400,000 patients locally as well as remote or referral care for another 3.5 million through collaborations with strategic affiliates across Michigan.
In 2019, it hired U-M-trained gastroenterologist Michelle Muza-Moons, MD, PhD, to build Metro’s IBD program. The maturation of Metro’s GI program was foundational in allowing gastrointestinal malignancies to be addressed within the Cancer Network of West Michigan.

Our work with MidMichigan Health continues to mature, as well, in areas from telehealth to quality improvement. Monica Colvin, MD, MS, professor and director of Heart Failure Network Strategy in the Division of Cardiovascular Medicine, aims to use telemedicine to improve MidMichigan patients’ access to the Advanced Heart Failure Clinic she created. Rather than having to block-schedule patients on one day a month and commute to Midland, Colvin can open up more regularly occurring virtual appointments that offer patients more flexible scheduling. This model is becoming increasingly feasible thanks to the health system’s implementation of telehealth services and payers’ greater reimbursement for them.

We also hope to extend this PS/QI work within our partnership with Metro Health.

We have been pleased with our progress in forging important clinical partnerships across the state. I am deeply gratified to be able to share what is best about Michigan Medicine while learning how we can work with our partners to elevate each other in ways that are not possible alone. I continue to be excited about the opportunities these relationships create.
During 2019, Eve Kerr, MD, MPH, professor, Division of General Medicine, and the Louis Newburgh Research Professor of Internal Medicine, became the inaugural vice chair of Diversity, Equity and Well-Being for the Department of Internal Medicine.

Kerr brings to this post a passion for improving equity and wellness, leadership and mentorship experience, and a deep understanding of healthcare improvement science and evaluation. She is charged with directing the department's diversity, equity and well-being initiatives across all 13 divisions.

In addition to her faculty appointment in the department, Kerr is the director of the Michigan Program on Value Enhancement (MPiOVE), and senior investigator at the VA Ann Arbor Healthcare System’s Center for Clinical Management Research. She is also a member of the Medical School’s ADVANCE Committee that helped to develop the Rudi Ansbacher Advancing Women in Academic Medicine Leadership Scholars Program and the annual Leadership Summit for Women in Academic Medicine and Healthcare.

**DIVERSITY, EQUITY & WELL-BEING**

Eve Kerr, MD, MPH | Vice Chair for Diversity, Equity and Well-Being

*I am excited to be appointed vice chair of Diversity, Equity and Well-Being for the Department of Internal Medicine. It is important that our department, which is the largest in the Medical School with nearly 900 faculty members and 300 residents and fellows, has made a significant investment in addressing these critical issues. This commitment reflects our desire to become a more diverse and inclusive community that provides faculty, learners and staff with the tools, resources and support they need to reach their potential and really thrive. We want to provide the kind of cultural environment in which each person’s voice is heard, and each person is given the chance to make a difference.*

**COLLECTING DATA AND CREATING NEW INITIATIVES**

To start, I plan on meeting with all of the division chiefs and administrators to learn about their unique challenges. Many of the divisions have already created very innovative programs to promote issues of diversity, equity and well-being. Our plan is to position representatives from each division on a new council so we can begin to tackle specific issues and challenges, and get feedback about what's going on in each area.

The focus of our inaugural year will be about listening and learning. We want to spend time finding out what the gaps and opportunities are. Of course, we could launch right into new initiatives, but in some ways that might be premature because we need to know what our faculty and staff are thinking about, and that's most important. We have some ideas about the issues that need to be tackled, such as gender equity, which are certainly not unique to our department, Michigan Medicine or academic medicine nationwide, so we will focus on equal opportunities in advancement for women, recruitment and issues of unconscious bias.

The team is currently working on a series of pilot programs made up of representatives from each division. There are instances when you have to act very quickly and do large scale change. But in many cases, if you’re going to try something new, it makes sense to try it first in one or two divisions, or even in one or two clinics, to see how it works. We plan to work...
very closely with divisions that have the most challenges in a particular area, or just in places where someone wants to try something new. From there, we can bring our concepts and ideas to more divisions.

The team will also focus on issues of clinician well-being and burnout, and how best to address these areas. Data suggests that more than 20 percent of our clinicians experience some aspect of burnout. And that’s huge. There are many reasons for this and we are not unique. As part of our focus groups we want to understand what drives physician burnout; especially which of these things are potentially under our control. This is a critical problem for all of Michigan Medicine, and not just the Department of Internal Medicine. If we don’t have healthy clinicians, we can’t deliver the kind of patient care that Michigan Medicine needs to deliver.

DIVERSITY, EQUITY & WELL-BEING

TRACKING OUTCOMES

We also plan to evaluate everything we do and track outcomes. We’re going to bring a model and a framework of implementation science to the work that we do to understand what the barriers are to implementation. If we’re not measuring what we’re doing, we can’t possibly know if it works. This taps into my background as a researcher, and we can elevate the work by rigorously reviewing it. The team will be working with a range of existing data. For example, we’ll be looking at the results of our faculty satisfaction and engagement surveys, and current information around the demographics of our department to see which tracks faculty are on, and what disparities and issues they are faced with. This will help us understand the issues in a much deeper way.

BUILDING A LEADERSHIP TEAM

Kerr will collaborate with two associate vice chairs: Michael Lukela, MD, associate professor of internal medicine and pediatrics, and director of the combined Medicine-Pediatrics Residency Program; and Sarah Gualano, MD, associate professor of internal medicine, and interventional cardiologist at the VA Ann Arbor Healthcare System and Michigan Medicine in leading the diversity, equity and well-being efforts.

Michael Lukela, MD

Lukela serves as chair of the Wellness Committee for the department’s Clinical Excellence Society, of which he’s a member. He practices hospital medicine at the University Hospital and primary care at the HOPE Clinic for the uninsured in Ypsilanti, Michigan. He is also the director for the William Henry Fitzbutler House in the medical student M-Home Learning Community. Lukela brings a deep understanding of undergraduate and graduate medical education coupled with his passion to improve diversity, equity, inclusion and well-being for faculty, staff and learners.

“I’m delighted to have the opportunity to learn from and to work with Drs. Kerr and Gualano. I believe that the creation of this office will enable the Department of Internal Medicine to become a leader in addressing important issues related to diversity, equity, inclusion and well-being as we collaborate with trainees, faculty and staff within and outside of the department to continue cultivating an environment in which everyone is thriving,” he says.

Sarah Gualano, MD

Dr. Gualano trained at the University of Michigan, then joined the faculty at the University of Texas Southwestern Medical Center and served as the director of the cardiac cath lab at Clements University Hospital in Dallas. She graduated from the executive MBA program at Southern Methodist University with a special interest in organizational behavior. At UTSW, she served on the Dean’s Wellness Committee. After her recruitment back to the University of Michigan, she was appointed medical director of the cardiac cath lab at the VA Ann Arbor Healthcare System.

“I am honored to be a part of this talented team dedicated to improving the work lives of the members of the department,” says Gualano. “We are eager to leverage our combined backgrounds and strengths in order to promote a diverse and inclusive community that provides each person with the opportunities and support they need to thrive.”
2019 INTERNAL MEDICINE AWARDS

THE PAUL DE KRUIF LIFETIME ACHIEVEMENT AWARD
Laurence McMahon, Jr, MD, MPH

CHAIRS’ AWARD FOR OUTSTANDING SERVICE TO THE DEPARTMENT OF INTERNAL MEDICINE
Raymond Yung, MB, ChB

DEPARTMENT OF INTERNAL MEDICINE IMPACT AWARD
Rodica Pop-Busui, MD, PhD

JEROME A. CONN AWARD FOR EXCELLENCE IN RESEARCH
Jason Knight, MD, PhD

JOHN G. FROHNA OUTSTANDING TEACHING IN MEDICINE-PEDIATRICS AWARD
Thuy LeDesai, MD

H. MARVIN POLLARD AWARD FOR OUTSTANDING TEACHING OF RESIDENTS
Ivan Co, MD

SPECIAL RECOGNITION FOR CONTRIBUTIONS TO THE HOUSE OFFICER TEACHING PROGRAM
Namita Sachdev, MD

SPECIAL RECOGNITION FOR CONTRIBUTIONS TO THE MEDICAL STUDENT TEACHING PROGRAM
Allison Ruff, MD

RICHARD D. JUDGE AWARD - MEDICAL STUDENT TEACHING
Dale Bixby, MD, PhD

STEVEN E. GRADWOHL EXCELLENCE IN CONTINUITY GENERAL INTERNAL MEDICINE TEACHING AWARD
Linda Terrell, MD

2019 DEAN’S AWARDS

Nine faculty were honored with 2019 Dean’s Awards. The program recognizes Medical School faculty and staff who demonstrate exceptional accomplishment in the areas of teaching, research, clinical care, community service, innovation and administration.

BASIC SCIENCE RESEARCH AWARD
Kathleen R. Cho, MD
Kathleen L. Collins, MD, PhD

CLINICAL AND HEALTH SERVICES RESEARCH AWARD
MeiLan K. Han, MD, MS

DISTINGUISHED FACULTY LECTURESHIP AWARD IN BIOMEDICAL RESEARCH
John V. Moran, PhD

INNOVATION AND COMMERCIALIZATION AWARD
William D. Chey, MD

KAISER PERMANENTE AWARDS FOR EXCELLENCE IN TEACHING
Michael P. Lukela, MD

LIFETIME ACHIEVEMENT AWARD IN MEDICAL EDUCATION
Ronald J. Koenig, MD, PhD

OUTSTANDING CLINICIAN AWARD
John C. Magee, MD
Elisa A. Ostafin, MD
Professorships have been ensuring the Department of Internal Medicine’s continued excellence and stature for more than 50 years while honoring the donors, faculty members, family members, friends, teachers and mentors for which they are named.
THE ROOTS OF OUR SUCCESS

The highest honor that a department can bestow upon a faculty member is a named professorship. Within the Department of Internal Medicine, the tradition of this honor began almost 50 years ago with a gift from a Michigan alumnus, John Gideon Searle, in 1968. Since then, more than 100 professorships have been established.

Professorships are made possible by the generosity of our donors and bring many practical benefits to our faculty. These include advancing innovation and research, providing time to pursue novel or early areas of inquiry and more opportunities to develop younger colleagues and students. Examples of the dramatic impact this support is having on the future of medicine are featured throughout this report.

TYPES OF PROFESSORSHIPS INCLUDE:

- COLLEGIATE PROFESSORSHIPS
  - $500,000 level
- EARLY CAREER PROFESSORSHIPS
  - $1,000,000 level
- RESEARCH PROFESSORSHIPS
  - $1,000,000 level
- FULLY ENDOWED PROFESSORSHIPS
  - $2,500,000 level
### DEPARTMENT OF INTERNAL MEDICINE PROFESSORSHIPS

This listing features current faculty members by division.

<table>
<thead>
<tr>
<th>Department of Internal Medicine</th>
<th>Cardiovascular Medicine</th>
<th>Allergy and Clinical Immunology</th>
<th>James R. Baker, Jr., MD</th>
<th>Ruth Dow Doan Professorship in Biologic Nanotechnology</th>
</tr>
</thead>
<tbody>
<tr>
<td>John M. Carethers, MD</td>
<td>John G. Searle Professorship in Internal Medicine</td>
<td>William F. Armstrong III, MD</td>
<td>Franklin Davis Johnston Collegiate Professorship in Cardiovascular Medicine</td>
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<tr>
<td>Keith D. Aaronson, MD</td>
<td>Bertram Pitt, MD, Collegiate Professorship in Cardiovascular Medicine</td>
<td>James R. Baker, Jr., MD</td>
<td>Ruth Dow Doan Professorship in Biologic Nanotechnology</td>
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<td>Yuqing Eugene Chen, MD, PhD</td>
<td>Frederick G.L. Huetwell Professorship in Cardiovascular Medicine</td>
<td>Stanley J. Chetcutti, MD</td>
<td>Eric J. Topol Collegiate Professorship in Cardiovascular Medicine</td>
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<td>Daniel A. Lawrence, PhD</td>
<td>Frederick G.L. Huetwell Collegiate Professorship of Basic Research in Cardiovascular Medicine</td>
<td>Vallerie V. McLaughlin, MD</td>
<td>Kim A. Eagle, MD, Endowed Professorship in Cardiovascular Medicine</td>
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<td>Robert D. Brook, MD</td>
<td>Eliza Maria Mosher Collegiate Professorship in Internal Medicine</td>
<td>Kim A. Eagle, MD</td>
<td>Endowed Professorship in Cardiovascular Medicine</td>
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<td>Hakan Oral, MD</td>
<td>Frederick G.L. Huetwell Faculty Research Professorship in Cardiovascular Medicine</td>
<td>Fred Morady, MD</td>
<td>McKay Professorship in Cardiovascular Disease</td>
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<td>Anna Suk-Fong Lok, MD, FRCP</td>
<td>Helen G. Ruth, MD and Margery Hopkins Ruth Professorship in Internal Medicine</td>
<td>Chung Owyang, MD</td>
<td>H. Marvin Pollard Professorship in Internal Medicine</td>
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<td>David J. Pinsky, MD</td>
<td>J. Griswold Ruth, MD</td>
<td>Thomas D. Wang, MD, PhD</td>
<td>H. Marvin Pollard Collegiate Professorship in Endoscopy Research</td>
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<td>Josek C. Kolars, MD</td>
<td>Josiah Macy, Jr. Professorship in Health Professions Education</td>
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DEPARTMENT OF INTERNAL MEDICINE PROFESSORSHIPS

General Medicine

John Z. Ayanian, MD, MPP
Alice Hamilton Distinguished University Professorship of Medicine and Healthcare Policy
Alice Hamilton Collegiate Professorship of Medicine

Joel D. Howell, MD, PhD
Elizabeth Farrand Collegiate Professorship in Medical History

Eve A. Kerr, MD, MPH
Louis Newburgh Research Professorship in Internal Medicine

Sarah L. Krein, PhD, RN
Rensis Likert Collegiate Research Professorship

Kenneth M. Langa, MD, PhD
Cyrus Sturgis Research Professorship in Internal Medicine

Rajesh S. Mangrulkar, MD
Marguerite S. Roll Professorship in Medical Education

James O. Wooliscroft, MD
Lyle C. Roll Professorship in Medicine

Geriatric and Palliative Medicine

Neil Alexander, MD, MS
Ivan Duff, MD, Collegiate Professorship in Geriatric and Palliative Medicine

Julie Bynum, M, MPH
Margaret Terpenning, MD, Collegiate Professorship in Geriatric and Palliative Medicine

Lona Mody, MD, MSc
Amanda Sanford Hickey Collegiate Professorship in Internal Medicine

Hematology and Oncology

Laurence H. Baker, DO
Collegiate Professorship in Cancer Developmental Therapeutics

Dean E. Brenner, MD
Moshe Talpaz, MD, Professorship in Translational Oncology

Ronald J. Buckanovich, MD, PhD
Thomas H. Simpson Collegiate Professorship, Medical School

Richard Auchus, MD, PhD
James A. Shayman and Andrea S. Kevrick Professorship in Translational Medicine

Infectious Diseases

Kathleen L. Collins, MD, PhD
Department of Internal Medicine Collegiate Professorship in HIV Research

Vincent B. Young, MD, PhD
William Henry Fitzbutler Collegiate Professorship in Internal Medicine

Metabolism, Endocrinology & Diabetes

Peter Arvan, MD, PhD
William K. and Delores S. Brehm Professorship in Type 1 Diabetes Research

Francis Worden, MD
Nancy Wigginton Oncology Research Professorship in Thyroid Cancer

Hospital Medicine

Sanjay K. Saint, MD, MPH
George Dock Collegiate Professorship in Internal Medicine

Moshe Talpaz, MD
Alexander J. Trotman Professorship in Leukemia Research

Muneesh Tewari, MD, PhD
Ray and Ruth Anderson-Laurance M. Sprague Memorial Research Professorship

Shaomeng Wang, PhD
Warner-Lambert/Parke-Davis Professorship in Medicine

Ray and Ruth Anderson-Laurance M. Sprague Memorial Research Professorship

Shirish M. Gadgeel, MBBS
Marylou Kennedy Research Professorship in Thoracic Oncology

Francis Worden, MD
Nancy Wigginton Oncology Research Professorship in Thyroid Cancer

Hospital Medicine

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Hospital Medicine

Sanjay K. Saint, MD, MPH
George Dock Collegiate Professorship in Internal Medicine

Richard Auchus, MD, PhD
James A. Shayman and Andrea S. Kevrick Professorship in Translational Medicine
Charles F. Burant, MD, PhD  
Dr. Robert C. and Veronica Atkins Professorship in Metabolism

Megan Haymart, MD  
Nancy Wigginton Endocrinology Research Professorship of Thyroid Cancer

Gary D. Hammer, MD, PhD  
Millie Schembechler Professorship in Adrenal Cancer

William H. Herman, MD, MPH  
Stefan S. Fajans, MD/ GlaxoSmithKline Professorship in Diabetes

Martin G. Myers, Jr., MD, PhD  
Marilyn H. Vincent Professorship in Diabetes Research

Rodica Pop-Busui, MD, PhD  
Larry D Soderquist Professorship

William E. Rainey, PhD  
Jerome W. Conn Collegiate Professorship

Nephrology

Matthias Kretzler, MD  
Warner-Lambert/Parke-Davis Professorship in Medicine

Subramaniam Pennathur, MD  
Norman Radin Professorship in Nephrology

Panduranga Rao, MD  
Richard D. Swartz, MD, Collegiate Professorship in Nephrology

Rajiv Saran, MBBS, MD, DTCM, MRCP, MS  
Florence E. Bingham Research Professorship in Nephrology

James A. Shayan, MD  
Agnes C. and Frank D. McKay Professorship

Pulmonary & Critical Care Medicine

Gary B. Huffnagle, PhD  
Nina and Jerry D. Luptak Research Professorship

Theodore Iwashyna, MD  
Alpheus W. Tucker, MD, Collegiate Professorship in Internal Medicine

Vibha N. Lama, MD, MS  
Henry Sewall Research Professorship in Pulmonary and Critical Care Medicine

Bethany B. Moore, PhD  
Galen B. Toews, MD, Collegiate Professorship in Pulmonary & Critical Care Medicine

Theodore J. Standiford, MD  
Henry Sewall Professorship in Medicine

Rheumatology

David A. Fox, MD  
Frederick G.L. Huetwell and William D. Robinson, MD, Professorship in Rheumatology

Michelle Kahlenberg, MD, PhD  
Giles G. Bole, MD, and Dorothy Mulkey, MD, Research Professorship in Rheumatology

Dinesh Khanna, MD, MSc  
Frederick G.L. Huetwell Professorship in Rheumatology

W. Joseph McCune, MD  
Michael H. and Marcia S. Klein Professorship in Rheumatic Diseases

Amr H. Sawalha, MD  
Marvin and Betty Danto Research Professorship in Connective Tissue Research

Pei-Suen (Eliza) Tsou, PhD  
Edward T. and Ellen K. Dryer Early Career Professorship in Rheumatology

Examples of the dramatic impact this support is having on the future of medicine are featured throughout this report.
Many professorships are named in honor of inspiring historical figures who have led the way for others in internal medicine.
It was in the mid-1950s when U-M endocrinologist Jerome W. Conn, MD, treated a young woman who’d reached him in desperation. She’d been struggling since her late 20s with debilitating symptoms — high blood pressure virtually unheard of for her age and electrolyte imbalances that caused spasms in her hands and periodic paralysis in her legs. For seven years she’d gone undiagnosed, but Conn thought he could help — thanks unexpectedly to some research he’d done during World War II to benefit allied troops in the South Pacific.

Conn spent a good deal of time and effort during the war examining how the body acclimates to tropical heat, with a special focus on the conservation of sodium. He suspected the process was regulated by a then-unidentified secretion from the adrenal gland. A number of parallels between his study volunteers and his new patient suggested that the same secretion — by this time identified as aldosterone — might be to blame for her puzzling symptoms.

Eight months of detailed workups convinced Conn of the veracity of his theory, and he proposed surgical exploration of the patient’s adrenals. As Conn looked on, the surgeon discovered a 4-centimeter tumor on one of the young woman’s glands, which Conn immediately recognized as the cause of her illness...

and medical history was made. This would be the first description of primary aldosteronism (PA), also called Conn’s disease, in which an adrenal tumor secrets excess aldosterone, and which can be fully resolved by removing the affected gland.

DIGGING DEEPER INTO PA
“Conn is a historical icon in this field; before his work, I don’t think it was on the table that the adrenal would have these masses that weren’t malignant but produced a steroid in an uncontrolled manner and caused disease,” says William Rainey, PhD, professor in the Department of Molecular and Integrative Physiology and the Division of Metabolism, Endocrinology & Diabetes. An expert in the molecular mechanisms of adrenal function, Rainey was recruited to U-M in 2012 as the first recipient of the Jerome W. Conn Collegiate Professorship, to build on Conn’s legacy by revealing why primary aldosteronism occurs and how to improve its diagnosis and treatment.

“Two-thirds of our lab’s research focuses directly on Conn’s disease,” says Rainey. “I feel like the luckiest researcher in the world to have a professorship named for the person who first described the disease I study.”

Rainey’s lab centers entirely on the adrenals and spans the bench-to-bedside continuum, with his PA work the most clinically focused. On the more basic end, he explores the mechanisms that control zonation of the adrenals (see box) as well as those that instigate premature adrenarche, in which an early rise in DHEA accompanies the appearance...
THE BASICS OF ADRENAL PHYSIOLOGY

The adrenal glands have distinct zones, each producing specific hormones. The outer Zona Glomerulosa produces aldosterone, which regulates salt and water balance in the body and is the key player in primary aldosteronism. The Zona Fasciculata produces cortisol, which is involved in carbohydrate balance and the body’s response to physical and psychological stress. The Zona Reticularis produces DHEA, a hormone that rises then falls as we age and serves as a precursor to the sex hormones testosterone and estrogen.

A unique feature of the adrenals is that the cells from the outer zones continually migrate inward, taking on the form and function of each layer in turn. Rainey’s lab studies how this occurs and how disruptions to this process cause disease.

This is important because, despite being the most common disease of the adrenals — estimates suggest it causes one in 10 cases of high blood pressure and one in five cases of treatment-resistant hypertension — only about 1 to 2 percent of patients who have PA are ever screened for it. Rainey hopes that working with the U-M team of adrenal researchers will change this through a better understanding of the disease and better biomarkers for screening.

GENETIC INSIGHTS FOR TREATMENT & DIAGNOSIS

One of Rainey’s most important contributions to understanding PA is his work characterizing the somatic mutations that cause it. In fact, part of his goal in coming to U-M was to identify the disease’s remaining genetic contributors — work that’s been accelerated by U-M’s resident expertise and resources.

Although there are various subtypes of PA, they are all caused by adrenal cells producing aldosterone independently — that is, of pubic or underarm hair in children under the age of 8 or 9. But it is Rainey’s PA work that is the most sweeping. He and his extensive network of collaborators are elucidating the molecular underpinnings of the disease, with implications for improving its diagnosis and treatment.
This insight has important implications for treatment. While unilateral disease can be treated with removal of the affected adrenal, bilateral disease requires medication for life. The current standard of care, says Rainey, employs mineralocorticoid receptor blockers, which work by blocking the receptor for aldosterone. But another class of drugs, calcium-channel blockers, shows promise in actually preventing production of the excess hormone. Rainey is now partnering with researchers at Harvard University on a clinical trial to test this hypothesis.

Another insight from this work is that the mutations that cause PA appear to be extremely common and accumulate with age, so that even those without frank disease may have subclinical aldosterone excess. The emerging picture is that as these mutated cells cluster and reach a critical mass, bilateral disease occurs.

The tumors characteristic of unilateral disease harbor additional mutations, with surprising features. “These tumor cells appear to be almost a hybrid,” says Rainey, “sort of a cross between the zona glomerulosa and fasciculata. In seeing this, we developed a hypothesis about a series of steroids that would be produced if these cells were truly hybrids. Working with collaborators in Japan, we started measuring these steroids, and it turns out that patients with tumors did indeed produce these unusual steroids, whereas patients with bilateral disease did not.”

Rainey hopes these steroids may be useful as diagnostic biomarkers to identify whether patients are suffering from unilateral or bilateral disease. And because the prevalence of various PA mutations tends to vary by sex and ethnicity, Rainey believes there may be opportunities to further subtype PA for more personalized treatment.

**THE PROFESSORSHIP’S IMPACT**

Rainey says that his research advances could only have happened at Michigan, thanks to the institution’s cutting-edge research tools, a professorship that marks his as the lab for studying Conn’s disease and an adrenal team that is a fitting tribute to Conn’s legacy.

“When I was recruited to U-M, I wasn’t looking for a job,” says Rainey. “But I saw the team Gary Hammer was assembling — with his expertise in adrenal development and cancer, Tom Giordano’s in adrenal pathology and Rich Auchus’ in the biochemistry of steroid synthesis — they’re all internationally known leaders in the field. We all shared a dream of being the best adrenal research team in the world — and developing world-class junior investigators to someday replace us.”

The team’s shared interests were a major draw. “The synergy of our expertise makes our research and grant applications so much stronger,” he says. And the prestige and resources of the professorship sealed the deal, providing an edge in attracting and helping to support top students, postdocs and collaborators in his lab.

During his time here, Rainey has made exceptional progress, tapping expertise in the adrenal group and across the Medical School. Hammer’s mastery of mouse models has helped Rainey’s lab employ a designer receptor exclusively activated by designer drugs (DREADD) to create the first inducible/reversible mouse model of primary aldosteronism. The lab is using this model in its zonation work, and other groups plan to use it to study PA-induced cardiovascular and renal injury. Rainey’s genetic work has taken advantage of U-M’s exceptional access to both healthy adrenals — obtained with permission via autopsy and kidneys donated through the U-M Transplant Center — and archived samples of diseased tissue. The latter became useful to him thanks to methods developed in collaboration with U-M’s prostate cancer researchers to conduct whole exome sequencing on tiny amounts of degraded, paraffin-embedded DNA, which has helped the group identify PA’s remaining mutations.

The other progress Rainey most prizes is tending up the next generation of adrenal breakthroughs. “We send our trainees all over the world,” he says. “But we’ve also got a group of young faculty here — people like Tobias Else, Adina Turcu, Brian Byrd and Juilee Rege — who are creating their own NIH-funded destination labs and will lead us into the future.”

Without prompting by the kidney enzyme renin as part of the body’s normal, tightly controlled feedback loop. This excess aldosterone causes the body to retain too much sodium and increases blood pressure. The two most common types of the disease are primary aldosteronism — the one Conn described, where a benign tumor on one gland pumps out aldosterone — and bilateral hyperaldosteronism, where a benign tumor on one gland pumps out aldosterone. Rainey believes there may be opportunities to someday replace us.
HISTORICAL HIGHLIGHTS

GEORGE DOCK COLLEGIATE PROFESSORSHIP IN INTERNAL MEDICINE

A physician once described as “a man who knows more about clinical procedures than anyone in the United States,” George Dock, MD, led the Department of Internal Medicine from 1891 to 1908. As the first full-time professor of medicine in the U.S., he structured an inspiring academic environment for teaching and the clinical practice of medicine, which led to the clinical clerkship in 1899 and changed medical education across the country. He was widely known as a master clinician and diagnostician. His desire to structure an inspiring academic environment for teaching and the clinical practice of medicine established the groundwork for the U-M Medical School.

The first Dock Professor is Sanjay K. Saint, MD, MPH, a professor in the Division of Hospital Medicine. Saint’s research focuses on enhancing patient safety by preventing healthcare-associated complications, with a special focus on catheter-related infection, translating research findings into practice, and medical decision-making. He is the chief of medicine at the VA Ann Arbor Healthcare System and the director of the Ann Arbor VA Medical Center/University of Michigan Patient Safety Enhancement Program.

THE ALICE HAMILTON DISTINGUISHED UNIVERSITY PROFESSORSHIP IN MEDICINE AND HEALTHCARE POLICY

Alice Hamilton, MD, a member of the U-M Medical School Class of 1893, was the first U.S. physician to devote herself to research in industrial and occupational health. After graduation from medical school, she traveled to Europe to study bacteriology and pathology before returning to Johns Hopkins for additional post-graduate training. In 1919, Hamilton was hired as an assistant professor in a new Department of Industrial Medicine at Harvard Medical School, making her the first woman appointed to their faculty in any field. She published the first American textbook on industrial hygiene and another on industrial toxicology.

The Alice Hamilton Distinguished University Professor in Medicine and Healthcare Policy is John Z. Ayanian, MD, MPP, the inaugural director of the Institute for Healthcare Policy and Innovation — one of the world’s largest groups of health care and health policy researchers. He also serves as a professor of health management and policy in the School of Public Health and professor of public policy in the Gerald R. Ford School of Public Policy. Ayanian’s research is focused on analyzing health care data to assess the impact of policy, payment and practice changes on patients’ health.
When Vincent Young, MD, PhD, was named the William Henry Fitzbutler Collegiate Professor in Internal Medicine, it was an honor along every dimension. First, it served as gratifying recognition of the work he’s done to help build a cadre of expertise at U-M in studying the microbiome’s role in health and disease. Just as importantly, Young has drawn substantial inspiration from both the physician-scientist whose work made the professorship possible and the pioneering physician for whom it is named.

A SERIES OF FIRSTS

Each man represents a series of exceptional firsts for the U-M Medical School. Funding for the professorship was made possible through proceeds from a drug co-created at U-M by James Shayman, MD, the Agnes C. and Frank D. McKay Professor in the Division of Nephrology (page 66). The drug, eliglustat, was the first novel chemical entity to emerge from U-M, beginning as a concept and ending with FDA approval. It was also the first oral alternative to intravenous enzyme replacement therapy for Gaucher disease type 1, and has been used in the treatment of some 1,500 adults worldwide.

The award’s namesake, William Henry Fitzbutler, MD, was the first African American to graduate from the U-M Medical School, in 1872. He established a practice in Louisville, Kentucky, where he served as the only African-American physician for the city’s 18,000 black residents. He went on to found Louisville National Medical College, the first and only medical school owned and operated by African Americans to train black students. Fitzbutler’s wife, Sarah, eventually graduated from the college, becoming the first African American woman to receive a medical degree in Kentucky. She later helped to lead the institution. Its quality was such that it was cited by Abraham Flexner’s historic 1909 inspection tour of medical schools as having one of the best-run hospitals in the country.

Vincent Young himself represents another first: the first to bring to U-M the tools of microbial ecology for medical research. Recruited to the Division of Infectious Diseases in 2007, in part for his carefully amassed expertise in areas from high-throughput sequencing to systems biology, he also co-led U-M’s Host Microbiome Initiative. And among his enduring accomplishments, teaching fellow investigators how to probe the microbiome — exploring its structure and function, the factors that perturb it and their consequences for human health.

TANGIBLE SUPPORT AND INSPIRING LESSONS

When Young reflects on the careers of Shayman and Fitzbutler, he is struck by a number of themes that resonate deeply for him. “The first,” he says, “is that your background doesn’t define you.” Fitzbutler was the son of a slave who fled with his family to Canada via the Underground Railroad. Yet, with few advantages beyond hard work and passion, Fitzbutler was able to shatter expectations, not only becoming a physician but creating the infrastructure for others to do so.

In many ways, this message is one that has made Young an unparalleled catalyst for microbiome research at U-M. The PI on five NIH U grants, he has an exceptional record of drawing researchers from varied
Shayman is working to bring treatment for rare diseases to underserved parts of the world. In his career, Young has worked to change how physicians think about the role of microbes, not only as causative agents of disease but also as beneficial partners in maintaining health.

Finally, says Young, his professorship reminds him daily of the importance of mentorship. “Any kind of success in biomedical fields — in research, as a clinician, as an educator — stems from the mentorship you get during all stages of your training and career,” he says. “It’s true for me, it was true for Jim Shayman and I imagine it was a driving force in the Fitzbutlers establishing a medical college. Interestingly, Jim has helped mentor me ever since I came to U-M, explaining how Michigan Medicine works and how to do research here that can transform patients’ lives.”

Young is particularly grateful that his professorship affords him time and resources to mentor others. He is currently using it to help a postdoc pursue an extension of his signature research.

Young’s work at U-M has focused extensively on Clostridiodes difficile, a major cause of life-threatening diarrhea sparked when broad-spectrum antibiotics kill the beneficial bacteria that normally keep this pathogen at bay. He has shown how a decrease in the diversity of the microbiome increases susceptibility to C. difficile, demonstrated the therapeutic mechanisms of fecal transplant, and helped develop models that use big data and machine learning to predict which hospitalized patients are most at risk for infection.

With professorship funds, he’s now supporting one of his postdocs in developing mouse models to examine the link between C. difficile and inflammatory bowel disease (IBD). “We see clinically that patients with IBD are at greater risk of C. difficile infection and have worse outcomes after infection,” he says. “My postdoc was eager to explore this link, and the professorship funds are allowing her to do aspects of the work that are outside of our NIH grant.”

“Disciplines into large team-science projects. And as the lead for the Microbiome Explorer Program, Young has helped more than 50 U-M investigators learn how to incorporate microbiome-oriented analysis into their research. He has done this by welcoming interested investigators from every discipline, affirming that varied perspectives are an asset and that one’s background is a launching pad, not a limitation.

The next theme for Young is that physicians are well-positioned to serve as change agents in a variety of ways. Fitzbutler founded a newspaper that advocated for equality and human rights.

Shayman is working to bring treatment for rare diseases to underserved parts of the world. In his career, Young has worked to change how physicians think about the role of microbes, not only as causative agents of disease but also as beneficial partners in maintaining health.

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“The science is so important, but mentorship is my proudest achievement. That’s why this award means so much to me.” — Vincent Young, MD
Lona Mody | Amanda Sanford Hickey Collegiate Professor of Internal Medicine

ADVANCING WOMEN IN MEDICINE

AMANDA SANFORD HICKEY, MD, CREATED A PATHWAY THAT ENDURES TODAY

When Amanda Sanford Hickey, MD, walked up to the podium to accept her diploma at commencement on March 29, 1871, she was pelted with wads of paper launched by male students who disapproved of a woman graduating from the U-M Medical School. This unfortunate turn of events lingered in Hickey’s memory for years to come, and led her to advocate for women’s rights and health throughout her life.

Little would she know that nearly 150 years later, Lona Mody, MD, MSc, associate chief, Division of Geriatric & Palliative Care Medicine, and associate director of translational research for the U-M Geriatrics Center, would be awarded the Amanda Sanford Hickey Collegiate Professorship in Internal Medicine.

The professorship was created to honor Hickey as the very first woman to graduate from the University of Michigan Medical School and the sole female member in a class of 90. After graduation, she returned to her home in New York to set up a practice in Auburn, which was subsequently expanded and named the Auburn City Hospital. She went on to become a pioneer in obstetrics, gynecology, surgery and general medicine. Her dedication to the advancement of women’s health and advocacy for gender equality were profound and endure to this day.

Mody hopes to carry on her spirit throughout her work.

“I am very humbled to receive this professorship. I hope to do justice to all the women in medicine that came before me,” says Mody. “Dr. Hickey embodied what women in medicine are all about. All of her classmates were male. It was certainly a different time, and she endured no shortage of discrimination and challenge, yet forged ahead despite the limitations she faced. Dr. Hickey paved the way for many other women to be absolutely fearless in their pursuits.”

INITIATIVES UNDER THE PROFESSORSHIP

Overall, the professorship has given Mody the flexibility to advance different causes and ideas that may not necessarily be funded through federal grants.

“The professorship has given me some recognition, and helped me advance some causes that I deeply care about,” she says.

GRAND ROUND SERIES: WOMEN IN ACADEMIC MEDICINE

Mody will use a portion of the funding from the professorship to host a grand round series on faculty career development with a focus on advancing women in medicine. “Our vision is to invite speakers who champion the advancement of women in academic medicine. Women have made great advancements in medicine, but when you look at their trajectories in leadership and career advancement, they are falling behind,” says Mody. “We have to take a deeper dive and a look at why that is happening and what we can do to make it better. I’m so proud that our community comes together for these events.”

One of the group’s first speakers was Rita Redberg, MD, MSc, FACC, professor, University of California, San Francisco School of Medicine, who gave a grand round on disparities between men and women in salaries, career advancement, leadership,
authorship and grant funding. Mody and her team will hold similar grand rounds in the coming year to focus on women in leadership and overall career development issues.

The team will also invite speakers who are part of dual career couples. “I am part of a dual physician household, so I understand what a joy and a challenge this is,” she says. “There’s a give and take between both members of a family when they are in the same career and are physicians, with issues ranging from where to train to where to match, as well as child care responsibilities. This is an emerging area for us, and we have applied for a small grant to do surveys and interview physicians in dual career situations.”

Mody has also written on this subject, including a 2019 paper published in JAMA, titled “Dual Physician Households — Strategies for the 21st Century,” which she co-authored with Lauren Ferrante, MD, MHS, from the Yale School of Medicine. This paper has now been viewed over 46,000 times.

**MEDICAL ARTS PROGRAM**

Another beneficiary of the professorship is The Medical Arts Program, which aims to enhance the ability of medical students and house officers to provide high-quality, humanistic clinical care through experiences and analysis of the musical, theatrical, literary and visual arts. “This program is very near and dear to me, as I am an artist myself. I love to paint in oils and acrylics. So, over the past two years, we have started a studio class for our medical students and residents to paint and then display their work at the Medical School,” explains Mody.

**MENTORING JUNIOR FACULTY**

Training the next generation is critical to advancing science and improving health. “Since my early days as a fellow, I have held a deep interest in career development and mentoring,” she says. In this regard, she has helped several junior faculty, fellows, postdoctoral students and residents in developing their research vision and conducting clinical, epidemiologic and laboratory-based research projects.

**PATIENT ENGAGEMENT**

Hickey was very interested in patient engagement and did a considerable amount of community outreach. “She lectured and educated patients outside of the health care setting so that they could understand the implications of medical illnesses,” says Mody. The professorship has allowed Mody to work in the same methods. “Recently, we conducted a community survey of about 650 patients and asked them what kind of values they appreciated in their physicians,” she says. “We were really surprised to see that we got a response from 85 percent of our patients. They care about providers who practice in this health care system and they have an opinion about how things should be done so that it is more patient-centric as opposed to institution-centric. We are now writing up the results.”

As a woman in academic medicine, Mody cannot help thinking about Hickey from time to time as she faces the challenges ahead. “If Dr. Hickey were alive today, I think she would marvel at the many ways in which women have progressed in medicine,” says Mody. “It gives me chills just thinking about it. But we still have a long way to go.”

“I am very humbled to receive this professorship. I hope to do justice to all the women in medicine that came before me.”

— Lona Mody, MD, MSc
HONORING OUR PAST

PASSING THE TORCH

THE LEGACY OF ALBION WALTER HEWLETT, MD, LIVES ON WITH THE WORK OF KIM EAGLE, MD

Albion Walter Hewlett, MD, the founding father of cardiology, served as the chief of medicine at the U-M Medical School from 1908 to 1916. During his tenure, he earned the reputation as one of the finest teachers and researchers on the medical faculty.

When Kim Eagle, MD, director of the U-M Frankel Cardiovascular Center, was awarded the inaugural Albion Walter Hewlett Professor of Internal Medicine in 1997, he was determined to carry the torch forward. Since joining the faculty in 1994, Eagle has overseen a vigorous outcomes research program focused on quality, cost-effectiveness, use of practice guidelines in cardiovascular care, evaluation and management of acute coronary syndromes and the evaluation and management of aortic diseases. His team has led innovative quality improvement initiatives across the state of Michigan in acute myocardial infarction, heart failure and coronary angioplasty.

ALBION WALTER HEWLETT

The professorship was established by his son William R. Hewlett with the support of his son, Walter Hewlett, daughter Eleanor H. Glimon and Walter’s wife Esther. During his tenure, Albion Walter Hewlett earned a reputation as one of the finest teachers and researchers on the medical faculty. His advocacy for laboratory tests to supplement clinical evaluation was an important contribution to American medicine.

Beginning in 1912, Hewlett created an elective course in circulation that included disturbances of cardiac rhythm, the consequences of valvular lesions and the causes and effects of hypertension and pulmonary edema. He is also credited with bringing the first electrocardiogram machine to the U-M campus in 1913.

Hewlett left the University of Michigan in 1916 to continue his clinical, research and teaching work at Stanford University, where he remained until passing away from a brain tumor shortly before his 51st birthday.

CARDIOVASCULAR PIONEER

Eagle credits much of the work done today at the Frankel Cardiovascular Center to the early efforts of Hewlett and his colleagues. “This professorship honors one of the great men in our historical journey as a medical school: one of the earliest cardiovascular pioneers in education and research at U-M,” says Eagle. “Dr. Hewlett was a cardiologist well before the specialty existed. He published papers on cardiac arrhythmias and disorders of cardiac conduction, among other related topics. I was fortunate to be asked to carry this mantle for the last 20 years. It has been a true joy and a privilege. I’d like to believe that the work we are doing today would honor Dr. Hewlett and what he accomplished 100 years ago.”

In 1997, at the inaugural celebration for the professorship, Eagle became acquainted with several members of the Hewlett family, who had traveled from Palo Alto, California, to attend. “We became friends,” he says. “And not long after, I started to provide medical care for a few of the family members. It has been nice to be able to give back from a health care perspective.”
Hewlett’s son, William R. Hewlett, made the family name famous around the world when the company he co-founded, the Hewlett-Packard Company, became one of the most recognizable names in the computer and electronics industries.

**FREEDOM TO EXPLORE**

Eagle says that what has been most beneficial throughout the years is that the professorship has protected his time, and allowed him to take on things that are academically useful for the department, the Medical School and the university. “This award has been instrumental in the development of a number of innovations and initiatives. It has also allowed me to continue, in a more traditional investigative sense, with the work that I do in aortic diseases,” says Eagle. “It has given me the opportunity to take on projects that might not immediately lead to national level funding, yet may have an impact. I think sometimes unique opportunities happen. And having the ability, creativity and support to explore them is really important. Many things I’ve been able to do would never have been possible without it.”

Further affirming the important role professorships occupy in the recruitment and retention of faculty, Eagle confesses that he was being courted by another institution at the time of the inauguration of the Hewlett award. “I must say that this professorship was significant in the decision I made to stay at the University of Michigan,” he explains.

**DEVELOPING NEW INITIATIVES**

The professorship has provided Eagle with time to develop innovative ideas and make a difference.

**Michigan Cardiovascular Outcomes Research and Reporting Program**

Twenty-five years ago, Eagle started a laboratory, called the Michigan Cardiovascular Outcomes Research and Reporting Program, to study common cardiovascular conditions and procedures among large populations; develop modern mathematical tools to assess risk and outcomes; and promote evidence-based care models that incorporate best science into care itself by targeting physicians, nurses and patients. “Through that laboratory, we were able to begin a 12-week summer internship program for undergraduates and some graduate students in medicine, nursing and public health. Students participate in clinical research using a registry science that we have around a variety of conditions,” says Eagle. “They also get wonderful opportunities to work on national projects. This internship has been a big success.”

“Dr. Hewlett was a cardiologist well before the specialty existed. He published papers on cardiac arrhythmias and disorders of cardiac conduction, among other related topics. I was fortunate to be asked to carry this mantle for the last 20 years.”

— Kim Eagle, MD
exposure to medicine through shadowing of physicians, nurses, surgeons and scientists. I think it’s been a real positive experience. More than 250 students from around the country have gone through it in the past 10 years.”

**Project Healthy Schools**

Seventeen years ago, Eagle founded a program called Project Healthy Schools, an educational intervention at middle schools in Michigan with the mission of fighting childhood obesity and its long-term health risks. The program focuses on sixth-grade students, and aims to stem the tide of the epidemic by teaching youth healthy habits, developing healthy school environments and creating an infrastructure that supports program sustainability and replication. “The program is now in 100 middle schools in the state, and we’ve reached more than 70,000 students since we initiated it,” he explains. “I’m really proud of this. It’s had a large impact on students’ health, in terms of what they eat, how much they move and the things that really matter like lowering blood pressure and cholesterol.”

**Project My Heart Your Heart**

In 2012, Eagle started a program called Project My Heart Your Heart. “A few years ago, one of our electrophysiology fellows had taken care of a patient who needed a pacemaker. And we put the pacemaker in. Unfortunately, the patient died a few months later,” says Eagle. “The patient’s husband brought the brand-new pacemaker back to our clinic and asked us to ‘give it to someone in the world who could not afford a pacemaker.’” Over the past eight years, Eagle and his team have developed protocols and are now doing a research study on implanting used pacemakers in countries in the world where patients can’t afford to purchase one. Project My Heart Your Heart has implanted used devices in a number of African countries. “We started the first pacemaker laboratory last year in Sierra Leone, and the second in Kenya,” he says. And our team, led by Thomas Christopher Crawford, MD, associate professor, Division of Cardiovascular Medicine, is visiting Nigeria next month. There is a great disparity between the high- and low-income countries in terms of pacemaker and defibrillator availability. Each year 1 to 2 million individuals worldwide die due to a lack of access to pacemakers and defibrillators. Meanwhile, almost 90 percent of individuals with pacemakers would donate their device to others in need if given the chance.

Currently, the Frankel Center is conducting a series of research projects aiming to establish pacemaker and defibrillator reuse as a feasible, safe and ethical means of delivering this life-saving therapy to patients with no resources. Throughout this process they have been engaged with the Food and Drug Administration in order to obtain approval and begin a clinical trial. “This is just another example of how the professorship allows me unfunded time to invest in an idea that could have a profound influence,” says Eagle. “The notion of pacemaker recycling has been there for a long time, but somebody had to take it on. We believe that through studying this carefully, and doing this in a very methodologically rigorous way, we can make pacemaker recycling a reality. This is another example of what I consider to be transformational thinking: the ability to imagine pacemaker recycling from a global health point of view.”

**SHAPING CAREERS**

Among the many awards and accolades that make up a distinguished career, Eagle says that he is most proud of the opportunity he has had to help shape the careers of medical students, residents and fellows. “There’s no joy that’s greater than to see them grow up in their profession and be successful and happy,” he says. “That’s just one of the wonderful things about being at U-M: the chance to interact with really talented young people and play some role in the shaping of their careers. That’s a reward that’s just unbelievable for me.”
HISTORICAL HIGHLIGHTS

LOUIS NEWBURGH RESEARCH PROFESSORSHIP IN INTERNAL MEDICINE

The professorship was developed to honor Louis Newburgh, MD’s multiple accomplishments in medicine, among them a dedication to advancing research protocol. The studies that he has skillfully conducted as an active member of the Department of Internal Medicine faculty from 1917 to 1922 made him an authority on the subject of nutrition, obesity and diseases involving metabolism. His many publications in this field brought him widespread recognition.

Eve Kerr, MD, serves as the first Newburgh Professor. She has dedicated her research career to understanding how to more effectively translate advancements from clinical and translational research to routine practice in order to improve patients’ health and health care. In particular, she is internationally recognized for developing innovative, clinically meaningful methods to assess and improve quality of care and decrease low value care. Kerr is the inaugural vice chair of diversity, equity and well-being for the Department of Internal Medicine, the director of the Michigan Program on Value Enhancement and a senior investigator at the VA Ann Arbor Center for Clinical Management Research.

ELIZABETH FARRAND COLLEGIATE PROFESSORSHIP IN MEDICAL HISTORY

Elizabeth Martha Farrand, MD, was an author, librarian and physician. She wrote the second book-length history of the University of Michigan and the one that was most frequently cited thereafter, “History of The University of Michigan,” in 1885. She served as assistant librarian at U-M from 1878 until 1884. In a surprising career change, she left the library after being accepted to the Medical School from which she received an MD degree in 1887. After a year’s residency training at the Woman’s Hospital in Detroit she spent the rest of her life in private medical practice in Port Huron, Michigan.

The Elizabeth Farrand Collegiate Professorship in Medical History is held by Joel D. Howell, MD, PhD, a professor of internal medicine at the Medical School, professor of history in the College of Literature, Science and the Arts and a professor of health management and policy in the School of Public Health at U-M. Howell also serves as director of the Medical Arts Program. His special interest lies in the history of medical technology and the medical humanities.
Over the past decade the Department of Internal Medicine has started naming professorships honoring the careers and impact of senior and recently retired faculty.
CREATING A LEGACY

Raymond Yung | Jeffrey B. Halter, MD, Collegiate Professor of Geriatric Medicine

HONORING U-M’S GERIATRICS HERITAGE

PROFESSORSHIP SUPPORTS DIVISION’S LEGACY OF LEADERSHIP

When Raymond Yung, MB, ChB, was inaugurated as the Jeffrey B. Halter, MD, Collegiate Professor of Geriatric Medicine in 2017, he was keenly aware of the honor bestowed upon him. After all, he had trained under Halter as a geriatrics fellow in the mid-’90s, had worked with him for two decades and in 2011 had stepped into his shoes as chief of the Division of Geriatric and Palliative Medicine.

“Dr. Halter brought the division and research program to where it is today, with an incredible national and international reputation,” says Yung. “Having his name attached to mine as a credential is a mark of excellence that is recognized around the world.”

BUILDING U-M’S GERIATRICS INFRASTRUCTURE

Halter came to U-M in 1984 to lead the new Division of Geriatric Medicine. Within five years, he’d secured major external funding to help launch a multidisciplinary U-M Geriatrics Center modeled on the newly formed Cancer Center. With initial funding from the John A. Hartford Foundation and a National Institute on Aging (NIA) Geriatrics Leadership Award, U-M’s Geriatrics Center brought together key specialists and researchers, and featured a strong community orientation.

“The center featured an innovative social work component that created community programs to engage older adults around health, disease prevention and social support,” says Halter. “It helped find people in need and bring them into the health system. People from all over the world have come to learn how we did that.”

As a Medical School center of excellence, the Geriatrics Center complemented existing expertise in the universitywide Institute of Gerontology, which focused on aging in society and the basic science of aging. The two would eventually merge, but at this point, they set the stage for two high-profile awards in 1989 that, for Halter, were the perfect counterparts to U-M’s national basketball championship that same year.

The first was the NIA Geriatrics Center Grant, designed to support research and training at U-M’s Geriatrics Center.

“There was a national competition, and the NIA initially could only fund one center — and we were the one,” says Halter. “That was a huge milestone: we emerged as the national leader in geriatrics and aging research.”

The grant supported a robust research program on how inflammation and metabolism change with age and affect health outcomes. These were perfect fits for Raymond Yung | Jeffrey B. Halter, MD, Collegiate Professor of Geriatric Medicine

“In clinical departments, there’s really no good funding stream to support the level of training and mentoring most faculty want to do, so professorships provide time and resources to do that.” — Jeffrey B. Halter, MD
both Halter’s research focus on metabolism in aging and Yung’s on the origins and effects of chronic inflammation in age-related disease.

The NIA would later rename this grant, referring to funded centers as Claude D. Pepper Older American Independence Centers. U-M’s center has maintained continuous funding since 1989, solidifying its national leadership in aging-related health research. The second coup for U-M in aging-related health research came in 1998, with the NIH’s establishment of the American Independence Centers. The NIA would later rename the division of geriatric medicine as the Division of Geriatric and Palliative Medicine in 2011, he became chief of a renamed Division of Geriatric and Palliative Medicine. He later succeeded Halter as director of the Geriatrics Center and Institute of Gerontology in 2016.

According to Halter, Yung has been a “spectacular leader.” He has overseen a number of care innovations, such as the development of Acute Care for Elders (ACE) units, featuring interdisciplinary team-based care, watchfulness for geriatric syndromes, early transition planning and senior-friendly facilities. He also led the creation of U-M’s Palliative Care Service, a collaboration among Internal Medicine, Family Medicine and University Hospital to coordinate adult outpatient palliative care through the Geriatrics Center and community care in affiliation with Arbor Hospice and Elara Caring. But one of Yung’s signature efforts has been ensuring that all full-tenured professors in his division have named professorships. “Professorships are critical to recruiting and retaining top talent,” says Yung. “They provide recognition and flexible funding to undertake work you are passionate about.”

In Yung’s case, his Halter Collegiate Professorship supports his local and national mentorship effort, funds research activities and allows him to be present at important national meetings so that he can connect with colleagues and mentor former trainees.

Halter believes the professorships Yung has developed will be foundational to the division’s future success. “Endowed professorships are vital to our research and education missions,” says Halter. “In clinical departments, there’s really no good funding stream to support the level of training and mentoring most faculty want to do, so professorships provide time and resources to do that. In terms of research, they do more than simply fund pilot work and provide protected time to write grants — even though that is invaluable. They also make us more competitive for grants. When reviewers see that applicants have salary support from an endowment, it’s almost like matching funds — it shows that we can provide an impact that’s greater than could be achieved with the grant funding alone.” Yung’s goal going forward is to build on these efforts and create professorships for early-career physician-investigators to attract them to the division and support them as they become independently funded. “Some places have mountains and saltwater,” says Yung. “I want professorships for junior faculty to set Michigan apart.”

Halter says he is proud of what Yung has achieved for the division in the professorship realm. He is also gratified to have a professorship named after him. “It’s a wonderful feeling to see Ray’s signature block in an email with my name on it,” says Halter. “I am thrilled that he holds this professorship. It’s also a huge honor to have my family name connected to such a great institution. I’ve been on the faculty at U-M for more than 36 years, so to know that association will live on is a dream come true.”

Yung feels the same. “I think Jeff would say that his most important contribution to geriatric medicine throughout the decades has been his ability to bring up the next generation,” he says. “He did it for me, and with this professorship I hope to continue that legacy.”
Creating a Legacy

William Chey | Timothy T. Nostrant, MD, Collegiate Professor of Gastroenterology

Fueling GI Innovation

Professorship Inspires and Funds Patient-Centered GI Innovation

It was 1990 when U-M gastroenterology (GI) fellow William Chey, MD, first met the professor who would serve as his clinical mentor for the next three years — and a beloved friend and professional touchstone for the ensuing two decades — Timothy Nostrant, MD. What struck Chey most at the time was Nostrant’s breadth of expertise and commitment to his patients.

“Nowadays, you’re either a luminal gastroenterologist, a hepatologist or an interventional endoscopist,” says Chey. “Tim was all those things. He was also known for putting his patients first — always fitting in an extra consult or procedure to put them at ease. His tremendous knowledge made him the go-to person in the division, and the relationships he formed with his patients made him one of the most popular gastroenterologists in Michigan.”

Among the most important things Chey learned from Nostrant was the joy of being a physician. Another was the value of looking forward, of embracing change. “The first flexible fiber optic endoscope was developed at U-M, and Tim was one of the earliest physicians to adopt the technology,” says Chey. “He saw its potential and drove the creation of our Medical Procedures Unit. He was pivotal in helping endoscopy flourish here.”

Most of all, says Chey, Nostrant was a force of nature — passionate, demanding and generous to a fault. Chey recalls him routinely pulling out his checkbook — even once spontaneously gifting his car — when he noticed someone was struggling.

“Tim was instrumental in my development, both personally and professionally,” says Chey, “which is why being named the Timothy T. Nostrant, MD, Collegiate Professor of Gastroenterology means so much to me. Every time I see my title, I think of him and hope I’m living up to his expectations. So often when I face a big decision, I find myself wondering: ‘What would Tim do?’ His example figures into my calculus on a regular basis.”

Funding Innovation

Nostrant retired in 2011 and passed away in 2015, but he lived to see his protégé installed in the professorship bearing his name. Like his mentor, Chey is also an accomplished clinician, educator and researcher, but he is perhaps even better known as an innovator. Chey has developed new clinical programs, like the Michigan Bowel Control Program, a multidisciplinary model for other academic medical centers treating patients with chronic constipation and fecal incontinence. He introduced the low-FODMAP diet to Michigan Medicine, conducting the nation’s first randomized clinical trial on it and using it to transform the way gastroenterologists manage patients with irritable bowel syndrome (IBS). He created the Digestive Disorders Nutrition & Behavioral Health Program, one of the few programs in the country to incorporate nutritional counseling and a GI psychologist to help patients manage GI conditions. He
Considered by many “the face of gastroenterology at U-M,” Timothy Nostrant completed his residency and GI fellowship in the division, joined the faculty in 1979 and served U-M in a variety of leadership roles for 36 years. During his career, he trained more than 300 fellows, built key clinical infrastructure and systems and was an architect of the clinician-scholar track. Nostrant and Chey were both awarded the American Gastroenterological Association’s Distinguished Clinician Awards in 2012 and 2015 respectively.

My GI Health also helps lead the Food for Life Kitchen, which provides cooking classes for patients and novel “culinary medicine” programming.

Chey is also a creator of new technologies; he currently holds two patents. He has co-developed mobile and web-based apps, including My GI Health, which uses an adaptive interview process to probe patients’ symptoms, generate a detailed medical history for their physician and offer educational materials tailored to their symptoms. He’s now leveraging the platform to recruit patients for clinical trials. He is also developing My Nutrition Health to help patients with IBS identify the relationship between their diet and GI symptoms. In partnership with biomedical engineers, Chey has co-invented two disposable, point-of-care devices — a digital manometry and rectal expulsion device — to help doctors easily identify a type of constipation that is best treated with biofeedback and physical therapy rather than laxatives.

It is for these and other efforts that Chey was recognized by the Medical School with the 2019 Dean’s Innovation and Commercialization Award. Much of this work, says Chey, has been fueled by the resources available through his professorship.

“The professorship has been critical,” he says. “It helped get our nutrition and behavioral medicine programs off the ground. It provides seed money for our research projects. It allows members of my team to present at key scientific meetings. But most importantly, it allows me to take risks — it’s literally the fuel that allows me to innovate.”

Among the ways he’s used this support is to help fund study coordinators for novel research projects — many of these aims to drill down into which poorly digested sugars, or FODMAPs, are the biggest drivers of IBS symptoms. One of these efforts is to help fund the SID results from an enzyme missing from the lining of the small intestine, which can lead to abdominal pain, gas, bloating and diarrhea. Chey is working to understand the prevalence of SID and whether an enzyme supplement can resolve patients’ symptoms.

Chey’s group is also launching a precision-medicine trial to explore whether breath testing can identify the subset of IBS patients whose symptoms are likely to improve with the non-absorbable antibiotic Rifaximin.

Not surprisingly, there are numerous other projects in the hopper, each driven by a vision of improving the lives of those with GI conditions. “Tim was always focused on what was best for his patients, and that’s what drives us, too,” says Chey. “That is why receiving a professorship in his name is so validating to me; it has truly been one of the most meaningful points in my career.”
"There are a number of therapies targeting T and B cells but none really targeting macrophages or monocytes. That’s because we need a better understanding of how those cells contribute to disease pathology. Our lab is trying to provide that."
— Bethany Moore, PhD

CELEBRATING A MENTOR
For Moore, the memory of that evening speaks volumes about her dear friend and mentor. First, he was passionate about research and mentoring, always managing to find time in his demanding schedule for both. Second, he was a champion of collaboration between clinicians and basic scientists, believing deeply that sharing their skills made everyone’s work stronger. “Galen was a trailblazer in this regard,” says Moore. “There were very few PhDs in clinical departments, yet Galen hired five of us. He and the whole division supported and valued us, sharing their clinical insights so we could make our mouse models best fit the diseases we studied together.”

In fact, Toews was so committed to helping his PhDs succeed that he “adopted” Moore after her original collaborator took a position out of state. “At U-M at the time, PhD faculty in clinical departments had to be affiliated with a clinician’s lab,” says Moore. “So, when my original mentor left, I found myself in the strange position of sitting in the pulmonary division with a grant studying chemokines in prostate cancer. Galen said, ‘You can do anything you want in my lab — but it’s got to relate to the lung.’”

The pair decided to merge Moore’s exploration of chemokine signaling with Toews’ focus on interstitial lung disease. “Most pulmonologists at the time thought fibrosis didn’t have an immune component because they’d tried anti-inflammatories and steroids with little effect,” she says. “Yet here was Galen bringing in an immunologist to work on it.”

The combination was kismet. Moore had a graduate school friend who’d made a chemokine receptor (CCR2) knockout mouse, which the pair used to show that these mice were protected from drug-induced lung fibrosis. Their work revealed how activation of this chemokine signaling pathway recruited myeloid cells to the lung, causing them to produce factors that injured the lung epithelium and signaled fibroblasts to produce excess extracellular matrix.

Not only did they show that there was an immune component to pulmonary fibrosis, but that it was the innate immune system — monocytes and macrophages — rather than the adaptive immune system — T and B cells — that was promoting a profibrotic cytokine cascade. This was a major breakthrough for a poorly understood disease with limited treatment options.

This was just the first of a series of insights to emerge from a collaboration that...
Macrophyte activation and polarization toward a fibrosis-inducing phenotype. A lot of the same players and molecules are important.

THE PROFESSORSHIP’S IMPACT
Moore says she is using her professorship to advance her research (see box), particularly where it involves collaborators within her division. “I’ve used it to fund research projects on apoptosis in fibrosis with Jeff Horowitz, microbiome studies with David O’Dwyer, and a number of others,” she says. “I feel a great responsibility to use this professorship wisely and in a way that Galen would approve of. This means supporting young researchers in the division.”

To this end, Moore has funded travel for pulmonary graduate students and fellows to present their research at national meetings and conferences. She’s also funded essential research equipment, which is beyond the scope of NIH funding. One example is replacing a failing medical freezer that housed patient samples of lung disease, which are critical to corroborating findings between humans and animal studies.

But perhaps the most significant impact of her professorship has been on Moore herself. “If I think about the most meaningful days in my life, there’s the birth of my children, my marriage and my professorship ceremony,” she says. “Galen meant so much to me, so having a professorship with his name on it is incredibly special. Then, as a scientist, the most important thing you have is your body of work — and you’re being told it’s worthy of a professorship. And, of course, there is this wonderful ceremony. My division, my trainees, my family and Galen’s family were all there. It was a celebration of Galen’s life and the biggest honor I could imagine.”

MOORE’S RECENT FINDINGS
With support from her Toews Collegiate Professorship, Moore’s group published research in 2019 on the role of the microbiome in lung fibrosis. They showed that the amount and composition of bacteria in the lungs were different for patients with progressive vs. stable fibrosis. They also identified cytokine profiles associated with various types of bacteria, which may help explain the difference in disease progression.

Her lab also published a study showing that patients who developed certain herpes virus infections after a stem cell transplant had a greatly increased risk of developing an inflammatory, sometimes fibrotic, lung complication known as idiopathic pneumonia syndrome. Mouse models she developed confirm these findings and are allowing her lab to probe this process.
Kim A. Eagle, MD, Endowed Professorship in Cardiovascular Medicine

EAGLE IS RECOGNIZED FOR CAREER SPANNING 25 YEARS

THE NAMING OF THE KIM EAGLE, MD, ENDOWED PROFESSOR OF CARDIOVASCULAR MEDICINE

In 2014, Kim Eagle, MD, director of the U-M Frankel Cardiovascular Center, was honored with the naming of the Kim A. Eagle, MD, Endowed Professor of Cardiovascular Medicine. Since joining the faculty in 1994, Eagle has overseen a vigorous outcomes research program focused on quality, cost-effectiveness, use of practice guidelines in cardiovascular care, evaluation and management of acute coronary syndromes, and the evaluation and management of aortic diseases. His team has led innovative quality improvement initiatives across the state of Michigan in acute myocardial infarction, heart failure and coronary angioplasty.

The impetus for the named professorship began with several grateful patients who initiated discussions with division leadership about establishing some kind of legacy to honor Eagle’s 25-year career at U-M, and the impact he has made on preventive cardiology at the university and beyond. “One patient in particular was very interested in trying to make that happen, so he made a major financial commitment to set this in motion,” says Eagle.

From there, David Pinsky, MD, chief of the Division of Cardiovascular Medicine, and John Carethers, MD, chair of the Department of Internal Medicine, worked with a number of Eagle’s other patients, and the U-M Office of Development, to try to bring the funding to a full professorship, which they did. “It’s very humbling to have your bosses and your patients come together and do something like this. Obviously I was thrilled that it happened,” says Eagle.

“Obviously, it’s great for the department when we can raise professorships from our grateful patients. They have the means, and they have a dedication to one or more providers who have made a pretty big difference in their medical journey. And they’re looking for a way of honoring that by giving back, whether it’s to a research fund, endowed professorship, fellowship or student scholarship,” says Eagle. “It’s very humbling to have your bosses and your patients come together and do something like this. Obviously I was thrilled that it happened. It has been very powerful for me,” he says.

PROFESSORSHIPS AWARDED TO ACTIVE FACULTY MEMBERS

It is important to note that Eagle’s status as an active faculty member has given considerable weight to the support of this endowment. “This professorship calls to mind the fact that sometimes we care for patients who want to give back to the institution. They have the means, and they have a dedication to one or more providers who have made a pretty big difference in their medical journey. And they’re looking for a way of honoring that by giving back, whether it’s to a research fund, endowed professorship, fellowship or student scholarship,” says Eagle. “Obviously, it’s great for the department when we can raise professorships from our grateful patients. If you look across the Medical School, the department and the division, there are many faculty members who have amazingly impactful careers who could have a professorship named after them. I was just fortunate that some of the patients I cared for wanted to do this, had the means and exercised that option. To be awarded this professorship while I am still working is very gratifying.”

EAGLE RECRUIT IS RECIPIENT OF NAMED PROFESSORSHIP

Eagle was particularly delighted in 2014, when the Department selected Vallerie McLaughlin, MD, associate chief of the Division of Cardiovascular Medicine, to be the inaugural Kim A. Eagle, MD, Endowed Professor of Cardiovascular Medicine. “I recruited Vallerie to the U-M in 2003 from Chicago to run the Pulmonary Hypertension Program at the U-M Frankel Cardiovascular Center,” he says. “This professorship sends a strong message to Vallerie, the first woman in our division to be awarded a professorship, that the institution is deeply committed to her programs in research, education and patient care. And, in her administrative growth. That she was selected is especially meaningful for me.”

A fellow of the American College of Cardiology, American
College of Chest Physicians, and American Heart Association, McLaughlin has been the principal investigator on several major clinical trials of drug therapies for pulmonary arterial hypertension and has published numerous papers in this field.

Eagle maintains that these types of endowments in the department, and in the Medical School, are invaluable. “They allow us to recruit and retain individuals who are really important to our mission,” says Eagle, who is also the Albion Walter Hewlett Professor of Internal Medicine. This appointment honors Albion Walter Hewlett (1874–1925), a founding father of cardiology, who served as chief of medicine at the U-M Medical School from 1908–1916.

“A fellow of the American College of Cardiology, American College of Chest Physicians, and American Heart Association, McLaughlin has been the principal investigator on several major clinical trials of drug therapies for pulmonary arterial hypertension and has published numerous papers in this field.

“This professorship calls to mind the fact that sometimes we care for patients who want to give back to the institution. They have the means, and they have a dedication to one or more providers who have made a pretty big difference in their medical journey. And they’re looking for a way of honoring that by giving back, whether it’s to a research fund, endowed professorship, fellowship or student scholarship.”

— Kim Eagle, MD
Melvyn Rubenfire, MD, Professorship in Preventive Cardiology

PUTTING PREVENTIVE CARDIOLOGY ON THE MAP

PROFESSORSHIP HONORS MELVYN RUBENFIRE, MD, A PIONEER IN CORONARY DISEASE PREVENTION

In 2012, David Pinsky, MD, chief of the Division of Cardiovascular Medicine, U-M Department of Internal Medicine, called Melvyn Rubenfire, MD, professor of internal medicine, and director of preventive cardiology, into his office to talk about an “interesting opportunity.”

That’s when Rubenfire, an esteemed clinician and researcher, learned that the division wanted to honor him with a named professorship: The Melvyn Rubenfire, MD, Professorship in Preventive Cardiology. “I remember saying something to the effect of ‘wow,’ as it was overwhelming to hear this news, especially because professorships like this don’t usually happen until a faculty member has passed away. To receive this while I was still working was very exciting. And it was something that I couldn’t possibly say no to,” says Rubenfire, a general cardiologist, who has focused his career in patient care, research and teaching in the areas of prevention, early detection and treatment of atherosclerotic cardiovascular disease. Over the last 20 years at U-M, he helped to develop internationally recognized programs in cardiac rehabilitation, lipid management, pulmonary hypertension and metabolic fitness programs.

Within months, the Melvyn Rubenfire, MD, Professorship in Preventive Cardiology was established to provide ongoing financial support to allow a faculty member to continue to use multidisciplinary teams of health care providers, innovative technology and novel strategies for detecting, limiting, treating and, in some cases, reversing atherosclerosis — the core of Rubenfire’s work. The professorship would represent an endowment of $2 million, giving the recipient the latitude to spend a percentage of that sum annually for research and program development. Also, the endowment would continue in perpetuity.

This award is especially important to Rubenfire, given that just 10 years prior to the naming, the practice of preventive cardiology had not yet garnered serious attention in medicine. “Back then, nobody really cared about prevention in academic medical centers and teaching programs. The only people that cared about it were patients that suffered from cardiovascular disease,” explains Rubenfire, who joined the U-M faculty in 1991. “Early detection and risk assessment, diet and exercise, the value of statins and cardiac rehabilitation were not considered important, but that changed. And in 2017, suddenly the word ‘personalized medicine’ came to the forefront. We were actually already doing this in those days, not realizing that there would be a name assigned to it. For example, while cardiac rehabilitation has been available for over three decades, and proven to be very effective, it wasn’t until the past few years that the insurers actually encouraged, and most recently mandated, referral to cardiac rehabilitation because it reduced costs of cardiovascular care.”

In May 2019, Venkatesh Murthy, MD, associate professor of radiology, and associate professor, Division of Cardiovascular Medicine, was inaugurated as the first holder of the professorship. As the decades have demonstrated, Rubenfire was a true pioneer in coronary disease prevention. “I was always doing prevention in my previous work,” he says. Before joining the U-M faculty, he was chair of the Department of Internal Medicine and chief of cardiovascular medicine at Sinai Hospital in Detroit, and professor of medicine.
at Wayne State University School of Medicine.

PROFESSORSHIPS BUILD VALUE
Rubenfire, now 80 years old, recalls that prior to the establishment of the professorship in 2012, there was an attempt to recruit a new director of preventive cardiology at U-M who would eventually get the Rubenfire Professorship. “The department did a national search, but was not successful in filling the position,” says Rubenfire.

“That turn of events influenced the trajectory of my career. With the job still open, I decided to extend my tenure at U-M years beyond what I had planned. Whether the professorship was created or not, my work was ongoing and very interesting to me. I was active in the education of students and advanced trainees in cardiovascular research. I enjoyed a range of research opportunities with colleagues. My clinical load was particularly satisfying, and I had great personal relationships with my patients. Also, it was easy to stay because my colleagues were among the best in the country.”

As it turned out, this was one of the best things that could have happened. Rubenfire has remained on the faculty, in part, to recruit and train the people who will eventually carry on the program. “We have 80 people working with us and several different programs. Now the legacy we created will continue because Michigan Medicine will recruit faculty whose interest is in prevention,” he explains.

Rubenfire also had responsibilities to an international program that he had developed, and wasn’t ready to leave. “These things have kept me here. And now I’m enjoying it such that, even when I am replaced as director of the academic program, I’ll still stay on to enjoy the research, teaching and clinical work that I do, likely at a 50 percent appointment,” he says.

Rubenfire remains grateful to Pinsky and John Carethers, MD, chair, Department of Internal Medicine, who were both very supportive in instituting this professorship. “I’m also very appreciative of the major donors, most of whom were my patients, family and members of the Detroit Jewish community with whom I had a personal relationship,” says Rubenfire. “If it was years after my death and they wanted to honor me, I can’t imagine this happening. I came to realize that helping the process was important but it was very difficult to ask for funds for a professorship in my name.”

LEAVING A LEGACY
Three years ago, Rubenfire took a sabbatical. “I knew that I was going to be replaced over the next several years, but I wanted to be involved in something that would have an important impact on patient care,” he says. “I decided to try to create a relationship between the major cardiac rehab programs in Ontario and Michigan with the goal of comparing two health care systems with very similar patients and only a bridge apart. A friend and colleague worked at the University of Windsor in kinesiology, teaching students exercise physiology and cardiac rehabilitation. We recruited four large programs in Ontario and at the Henry Ford Hospital in Detroit and formed the Great Lakes Cardiac Rehabilitation Consortium. Our mission is to improve both short- and long-term quality of life, and prevention of disability and death from coronary disease, by increasing utilization, developing novel programs (women-only, home-based, telehealth) at a lower cost.”

Rubenfire has devoted the last 5-10 year project, because we’re going to use this relationship to improve and refine both systems, and to find the best parts of each in Canada and the United States. From there, we want to distribute what we’ve learned through the academic community. And then perhaps we will be able to change cardiac rehab, making it a very cost-effective program for both countries. This will be my last piece of work. And it wouldn’t have happened had I not received this professorship, because I wouldn’t have stayed on this long. The fact that there will be a legacy to what I have spent 50 years creating is very meaningful to me.”

Venkatesh Murthy, MD
CREATING A LEGACY

A PLACE CALLED MICHIGAN

PANDURANGA RAO’S CAREER TRAJECTORY IS MARKED BY A FIRST INTERVIEW WITH RICHARD SWARTZ, MD

Panduranga Rao | The Richard D. Swartz, MD, Collegiate Professor of Nephrology

Panduranga Rao, MD, professor, Division of Nephrology, was a medical student at Stanley Medical College in Chennai, India, in the early 1980s when he first heard about “a place called the University of Michigan” just across the globe in Ann Arbor, Michigan. “I happened to read about the university and it left a lasting impression on me,” he says.

Rao spent the next 14 years finishing his postdoctoral training, including an internship, two residencies in internal medicine and two fellowships in internal medicine nephrology. In 2000, he accepted a position as assistant professor at the Medical College of Ohio, in Toledo, Ohio.

It wasn’t long before that spark of intrigue from his early days in India led Rao to the University of Michigan; in 2003, he applied for a faculty position with the Division of Nephrology. At the time, Richard Swartz, MD, widely renowned for his expertise in the area of chronic kidney disease and end-stage renal disease, was a professor of internal medicine — and, as luck would have it, conducted the initial interview with Rao. “It was like a dream come true for me,” says Rao. “In talking with Dr. Swartz, I quickly sensed the enormous dedication he had to patient care and education.”

In 2003, Rao joined the U-M faculty as assistant professor. Swartz has served as a role model and an inspiration for Rao throughout his career at U-M. “I’ve tried to continuously improve myself based upon how he works with patients, colleagues and students,” he says. “When I come across patient issues that are not readily solvable, Dr. Swartz is the first person I turn to. He always comes up with really sensible and very practical advice on how to handle the situation. He has no pretensions, and he’s very direct and refreshingly frank in his communication.”

Swartz is also highly regarded for end-of-life care for patients with debilitating diseases. “Stories abound about Dr. Swartz’s compassion, and how he has driven to a patient’s house to find out how he or she is doing,” says Rao. “He has a keen ability to communicate with his patients. Many physicians struggle with how to talk with patients whose prognosis is poor, and how to talk about various treatment options, including the option of not pursuing active treatment in the face of a terminal disease. Dr. Swartz, by virtue of his expertise in end-of-life and palliative care issues, continues to serve as a role model for how to improve such difficult conversations.”

In 2010, Swartz retired from active faculty status. He currently holds the title of professor emeritus of internal medicine. His contributions to the Division of Nephrology have been invaluable at U-M where he has served as medical director of acute dialysis, chief of clinic, director of the inpatient service and chief of staff.

COMING FULL CIRCLE

In 2019, after serving six years on the U-M faculty, Rao’s dream about “a place called the University of Michigan” came full circle when he was awarded the Richard D. Swartz, MD, Collegiate Professorship in Nephrology. “It is an extraordinary privilege and honor for me to hold this professorship. Dr. Swartz is an iconic person in the division, and he has a long reputation as an outstanding clinician and educator,”
says Rao, whose research focuses on outcome studies in kidney transplantation. “This award gives me a sense of responsibility to become a better doctor, a better teacher and a better human being every single day.”

LOOKING FORWARD
A year after receiving the professorship, Rao will tell you that he’s really just getting started. “I have not had the opportunity to fully leverage this professorship, since it’s relatively new. But I would like to accomplish a few things, especially in the areas of training and education,” says Rao, who also serves as the director of the U-M Nephrology Fellowship Training Program. “I want to improve global nephrology exposure for my trainees, using the resources available. This would give my fellows the opportunity to experience nephrology beyond what they see in Michigan, and even the United States, and gain a wider perspective. That makes them better nephrologists — which, in turn, impacts patient care.” Toward that goal, Rao plans to establish a nephrology training exchange program at St. Paul’s Hospital Millennium Medical College in Addis Ababa, Ethiopia. “I think it would be extraordinary for our fellows to actually get exposure to the physicians in Ethiopia and train under them because there’s a lot to learn even from a resource-poor environment about how physicians in other situations handle their patients, and how they approach things when the sources are limited,” he says.

THE CIRCLE CONTINUES
Four months ago, Rao gave a presentation for the general public at the A. Alfred Taubman Health Sciences Library to highlight the Division of Nephrology, with many of the division’s patients in attendance. “After the talk, three people from the audience approached me to say how delighted they were that I was the Swartz professor. They were Dr. Swartz’s patients, as well as donors for this professorship,” says Rao. “It was very heartwarming, and gave me a renewed sense of purpose in terms of what is expected of me, and all I want to accomplish with this professorship.”

In 2010, Swartz retired from active faculty status. He currently holds the title of professor emeritus of internal medicine. His contributions to the Division of Nephrology have been invaluable at U-M where he has served as medical director of acute dialysis, chief of clinic, director of the inpatient service and chief of staff.
Beginning in FY19, the department initiated the creation of three Early Career Endowment awards annually ($250,000 each) for five years for an ultimate total of 15 awards by the close of FY23. These awards are competitively assigned to junior faculty at the assistant professor level (any track) who are within five years of their terminal residency/fellowship/post-doctoral training. These junior faculty endowments are named after a current or former faculty member, and will be held by the incumbent for one five-year cycle as long as they do not hold another endowment.

The 2019 awards were named in honor of esteemed senior faculty members: Margaret R. Gyetko, MD; Susan G. Urba, MD; and James O. Woolliscroft, MD.

**2019 RECIPIENTS**

**Geoffrey Barnes, MD, MSc,** from the Division of Cardiovascular Medicine received the James O. Woolliscroft, MD, Department of Internal Medicine Early Career Endowment Award. His research interests include anticoagulation, venous thromboembolism, quality improvement and shared decision making. He currently co-directs the Michigan Anticoagulation Quality Improvement Initiative, a six-centered BCBSM-sponsored anticoagulation quality improvement collaborative and registry. He is leading an NIH-sponsored study to improve the coordination and care of patients on chronic anticoagulants around the time of surgical procedures.

**Elliot Tapper, MD,** from the Division of Gastroenterology and Hepatology received the Margaret R. Gyetko, MD, Department of Internal Medicine Early Career Endowment Award. His clinical activity and research efforts focus on the outcomes of patients with cirrhosis, particularly those with hepatic encephalopathy. Prior to joining the faculty, he was resident, chief resident, and a fellow in gastroenterology and transplant hepatology, all at Beth Israel Deaconess Medical Center in Boston, MA, where he served as director of quality improvement for the Liver Center.

**Adina Turcu, MD,** from the Division of Metabolism, Endocrinology & Diabetes received the Susan G. Urba, MD, Department of Internal Medicine Early Career Endowment Award. Her research focuses on adrenal disorders, including congenital adrenal hyperplasia, Cushing’s syndrome, primary aldosteronism and pheochromocytoma/paraganglioma.

The Department of Internal Medicine continues to attract, recruit and retain the most promising faculty to fulfill and excel at its missions of research, education and patient care. Recruiting and training the next generation of leaders to keep the University of Michigan strong and at the forefront of novel basic, translational, clinical and health services research is essential.
CREATING A LEGACY

2019 Early Career Endowment Honorees and Recipients (from l to r):
Susan G. Urba, MD; Adina Turcu, MD; Margaret R. Gyetko, MD; John Carethers, MD; Elliot Tapper, MD; Geoffrey Barnes, MD, MSc; and James O. Woolliscroft, MD
Philanthropy allows our faculty to explore new ideas in research and education that are transforming the field and supporting further innovation.
MULTIPLIER EFFECTS

A UM-INVENTED DRUG SUPPORTS THE NEXT GENERATION OF PHYSICIAN-INVESTIGATORS

Few might have expected that a casual chat on a bus ride to a U-M research retreat in 1988 would spawn a collaboration that would, decades later, yield the first small-molecule drug invented at U-M to reach the marketplace. A drug that would also become a new treatment paradigm for lysosomal storage diseases.

A NEW TREATMENT APPROACH

Perhaps most surprised by the ripple effects of that chance conversation were the ones engaged in it. James Shayman, MD, now the Agnes C. and Frank D. McKay Professor in the Division of Nephrology and a professor of pharmacology, was then a faculty recruit and rising star contemplating a change in research direction. His conversation partner was Norman Radin, PhD, a professor of neurochemistry decades his senior and an expert in lipid biochemistry, who was puzzling out a new way to treat lysosomal storage diseases.

These diseases include 50 or so genetic disorders in which the enzymes that normally break down wastes in our lysosomes are missing or defective. This allows the wastes, or “substrates,” to accumulate in various organs, leading to organ damage, even death. Radin’s focus was Gaucher disease type 1, in which fatty molecules accumulate chiefly in the liver and spleen.

The prevailing treatment strategy was to break down this waste by giving patients more of the missing enzymes, an expensive approach requiring IV infusion.

Radin felt it made more sense to block the enzymes that were producing the waste in the first place. As early as 1971, he’d been pioneering what is now called “substrate reduction therapy.” When he met Shayman, Radin had already identified a compound that could bind to and inhibit the enzyme that created glucosylceramide, the problem substrate in Gaucher.

When Shayman first learned of the approach, he was skeptical. He assumed it would create other problems for patients, causing molecules further upstream to accumulate or preventing the formation of other important lipids. But, he figured, even if the pair never devised an effective drug, they’d still generate valuable insights in sphingolipid biochemistry, cell biology and lysosomal pathology.

The duo collaborated for years, synthesizing and testing variants of Radin’s initial drug lead, with Shayman becoming increasingly convinced of the soundness of their approach. When Radin retired, Shayman continued his research until he had created a more specific and potent compound that possessed the characteristics of a drug candidate.

THE PATH TO COMMERCIALIZATION

While this should be the story’s peak, it was in some ways just the beginning. As a pioneer in drug development at U-M, Shayman discovered there were multiple hurdles to clear before patients could benefit from his work.

Shayman’s drug-development success has supported seven endowed professorships in the department and a more robust climate for drug development at the university.

Eliglustat is the first novel chemical entity to emerge from U-M beginning as a concept and ending with FDA approval. It is now a first-line oral treatment for adults with Gaucher disease type 1. Shayman received the 2016 Distinguished University Innovator Award for this work.
The first step was securing a patent. Although this process is now robustly supported by U-M’s Office of Technology Transfer, at the time it was the chair of internal medicine, Tachi Yamada, MD, and Shayman’s division chief, Roger Wiggins, MD, who chipped in to cover the costs of the initial application.

The next step was finding a partner. Shayman pitched his candidate compound to several biotech and pharmaceutical companies — including Genzyme, the primary player in Gaucher disease — yet none initially showed interest. However, in 2000, Genzyme licensed Shayman’s candidate compound and worked with him to further refine it, leading to the discovery of eliglustat, which they ushered through clinical trials and FDA approval.

Eliglustat is now sold under the brand name Cerdelga and has been used to treat more than 1,500 adults worldwide.

SUPPORTING TOMORROW’S BREAKTHROUGHS

Professorships

Though Shayman’s greatest gratification has been the drug’s benefit for patients, he is also pleased that the U-M/Genzyme license and its royalty stream are helping to fund medical advances of the future. The Medical School has used resources from Shayman’s work to invest in its Clinical Trials Support Units, and the Department of Internal Medicine has funded the creation of seven endowed professorships.

“I am tremendously satisfied by this,” says Shayman. “The historical legacy of the Department of Internal Medicine has been in recruiting and nurturing the careers of physician-scientists. Professorships provide us with protected time to concentrate on the lab as well as resources to take risks. This is critical for maintaining U-M’s tradition of cutting-edge research.”

Six of the professorships made possible by his work are named for individuals of historical importance to the Medical School and department (see sidebar). This includes one honoring Radin, which has been earmarked for Shayman’s home division of nephrology.

Another was created in Shayman’s own name and that of his late wife, a UM-educated landscape architect who designed beautiful, functional spaces on the U-M campus and throughout Ann Arbor. The James A. Shayman and Andrea S. Kevrick Professorship in Translational Medicine was awarded in 2019 to Richard Auchus, MD, PhD, an expert in steroid biochemistry in the Division of Metabolism, Endocrinology & Diabetes.

It’s a meaningful award for both men. They began their careers in adjacent labs at Washington University, Auchus a graduate student and Shayman a fellow (in fact, Shayman served as lead author on Auchus’ very first paper as a graduate student). In addition, both men study diseases driven by defective enzymes. One of Auchus’ signature projects focuses on 21-hydroxylase deficiency, in which defective enzymes cause the adrenals to make sex hormones and unusual steroid intermediates instead of cortisol. By mapping this process, he hopes to develop better biomarkers for diagnosis and treatment monitoring.

“It’s difficult to describe what an honor it is for me to hold a professorship named for Jim Shayman,” says Auchus. “It signifies that we’re working to...”
HISTORICAL PROFESSORSHIPS
In addition to a professorship in his name, proceeds from Shayman’s work have endowed six professorships named for figures of historical importance to the Medical School and department.

Daniel Goldstein, MD
Eliza Maria Mosher Collegiate Professor of Internal Medicine

Eve Kerr, MD, MPH
Louis Newburgh Research Professor of Internal Medicine (page 47)

Kenneth Langa, MD, PhD
Cyrus Sturgis Research Professor of Internal Medicine

Lona Mody, MD, MSc
Amanda Sanford Hickey Collegiate Professor of Internal Medicine (page 42)

Subramaniam Pennathur, MD
Norman Radin Professor of Nephrology

Vincent Young, MD, PhD
William Henry Fitzbutler Collegiate Professor of Internal Medicine (page 40)

FUELING INNOVATION
continue his legacy of using science to change the way we understand disease and deliver care that helps patients live as productively as possible.”

Fittingly, Shayman’s own lab has also been the beneficiary of endowment funding, both from the McKay Professorship and eliglustat’s proceeds. With this support, he is continuing his drug-development work with longstanding members of his research group and division, including Research Assistant Professors Vania Hinkovska-Galcheva, PhD, and Jonathan Shillingford, PhD, and Associate Research Scientist Liming Shu, PhD. One project focuses on analogs of eliglustat that could cross the blood-brain barrier. With collaborators, including Scott Larsen, PhD, the Joseph Burckhalter Collegiate Research Professor of Medicinal Chemistry in the College of Pharmacy, his lab hopes to develop a compound to treat lysosomal storage diseases affecting the central nervous system, such as Tay-Sachs and other forms of Gaucher. In addition, Shayman is taking on other passion projects, such as exploring ways to bring treatments for rare diseases to underserved parts of the world.

Lessons in Drug Discovery
There are other, less tangible ways in which Shayman’s journey has had ripple effects on drug development at U-M. “Jim’s work was pioneering in so many ways,” says Vincent Groppi, PhD, immediate past director of Michigan Drug Discovery. “With his own moxie and little structured support, Jim took a lead compound to the point of licensing by a drug company. The goal at Michigan Drug Discovery is to take what Jim did over 20 years and shorten it by half — making the path from bench to bedside accessible to researchers who might not have the time or passion he did.” To do that, Michigan Drug Discovery works closely with U-M’s other drug-development catalysts — such as the Office of Technology Transfer, Fast Forward Medical Innovation, the Michigan Institute for Clinical & Health Research (MICHR) and the Rogel Cancer Center — to accelerate the translation of promising research into new medicines.

Shayman serves on Michigan Drug Discovery’s executive committee, where he is a strong advocate for the types of support researchers need at every step. This support is now light years beyond where it was for Shayman — and, according to current director Peter Toogood, PhD, is among the most robust, coordinated and sophisticated in the academic medical community. Researchers engaged in drug development now have access to a coordinated suite of funding opportunities and core laboratory services, including assay development and screening, compound libraries, structure-based design, medicinal chemistry and pharmacokinetics.

“All the things Jim had to do so laboriously, researchers can now outsource to other experts at U-M,” says Groppi. “It shortens development time tremendously.” Things have come a long way since Shayman and Radin first launched their partnership. Their legacy includes not only the patients they’ve helped with their pioneering therapy, but also the advances yet to emerge from the physician-investigators their work will support for generations to come.
When James Baker, Jr., MD, then chief of the Division of Allergy and Clinical Immunology, was called to consult on a patient, he never imagined the encounter would result in a professorship, never mind more than a decade of mentorship from Michigan’s “father of venture capital” — both of which would help him develop a revolutionary vaccine platform and launch three biotech companies to commercialize his work.

**COMMON GROUND**

The serendipitous consult introduced Baker to Herbert D. “Ted” Doan. Doan was the grandson of Dow Chemical Company’s founder and a retired president of the company. The two men, it turns out, had much in common. Both were innovative, visionary spirits. Both dealt in chemistry — Doan, through his leadership at Dow, and Baker, as the founder and director of what is now the Michigan Nanotechnology Institute for Medicine and Biological Sciences, where he was developing ultra-small synthetic materials that could perform medically important tasks. Both men also served in the military — Doan, in the Air Force during World War II, and Baker, in the Army during the Gulf War.

It was, in fact, in the Army that Baker first became interested in nanomedicine. Having been involved in the development of vaccines to combat acute respiratory illnesses among the troops, Baker gleaned a number of insights. First, he observed that viruses were unique in their ability to enter cells because of their small size, and the human immune system evolved to clear viruses in part because of this size. He came to believe that efforts to deliver drugs and genes with most viruses would fail because of this immune response, but that synthetic materials of the same size, which did not elicit an immune response, might be more successful.

Believing that engineered nanoparticles would be essential to realizing progress in areas from vaccine development to targeted cancer treatment, Baker fixed his attention on nanomedicine when he returned to U-M after the war. By the time he met Doan, Baker and his collaborators had made some promising discoveries. One of these was a nanoemulsion capable of “exploding” microbes on contact. It was created by emulsifying soybean oil with water and detergent to form spheres 200 to 800 nanometers across, resulting in tiny droplets with extremely high surface tension. Their composition was such that they wouldn’t merge with each other but would readily merge with the membrane of any pathogen they encountered, blowing it apart. Fortuitously, most human cells have sufficient structure to resist this effect — with the exception of sperm and red blood cells.

**A COMMERCIALIZATION MENTOR**

As the men chatted about this research, Doan immediately saw its potential. He connected Baker with a chemist at Dow to collaborate on dendrimers — branched nanomolecules used for targeted drug and gene delivery. As their relationship developed, Doan began to mentor Baker, setting him on the path to entrepreneurship.

By 2001, Doan institutionalized his support by establishing the Ruth Dow Doan Professorship of Biologic Nanotechnology, an endowment named for Doan’s mother and earmarked for Baker. The professorship was made possible through Doan’s gift and support from the Herbert and Junia Doan Foundation, and the Herbert H. and Grace A. Dow Foundation.

“Thanks to the professorship, I was able to take a lot of chances in my research,” says Baker. “It gave me protected time to go out and do the talks and make the contacts and seek the grant funding we needed to be successful.”

— James Baker, Jr., MD
Herbert D. “Ted” Doan was the grandson of Dow Chemical Company’s founder. Doan institutionalized his support by establishing the Ruth Dow Doan Professorship of Biologic Nanotechnology, an endowment named for his mother and earmarked for Baker.

As Baker reflects on his mentor, he credits Doan not only for his vision in creating the professorship, but also with a change in perspective that was pivotal to Baker’s success. “With Ted’s input, I started thinking about the university as a platform to create things that could be developed beyond its walls, rather than thinking about how to secure my next grant to keep myself employed,” he says. “As a result, we’ve developed therapeutic platforms and vaccines that are making their way to the clinic, and we built a nanotech center that inspired the nanomedicine program at the NIH. Ted changed the way I think, and ultimately that changed my life.”

These professorships are transforming the entire university. We are creating a critical mass of expertise that is making Michigan ‘first in class’ in addressing food allergies from every angle. Our goal is nothing short of universal therapies that will eventually end this disease.”
— James Baker, Jr., MD
THE MARY H. WEISER FOOD ALLERGY CENTER’S ENDOWED PROFESSORSHIPS

Nina and Jerry D. Luptak Research Professorship
Gary Huffnagle, PhD
Askwith Research Professorship in Food Allergy
Simon Hogan, PhD
Kenneth and Judy Betz Family Research Professorship for Food Allergy
Chang Kim, PhD
William Chandler Swink Research Professorship in Food Allergy Research
TBA
Ashken Family Professorship
TBA

As a platform technology, Baker’s nanoemulsion vaccine has also shown promise in treating food allergies. In fact, his spinoff company BlueWillow has intranasal vaccines for peanut and milk allergy in the pipeline. In 2019, the company was awarded a Small Business Research Innovation contract from the NIH to complete the necessary steps to prepare the peanut-allergy vaccine for human trials.

Baker’s Ruth Dow Doan Professorship helped pave the way for this. “One of the ways I’ve used the professorship is to support junior faculty while they’re getting independently funded,” he says. “In today’s climate, even terrific researchers, particularly PhDs, are getting their first NIH grants in their 40s. They need additional support and protected time if they’re going to be successful.”

One of the junior faculty he’s helped support is Jessica O’Konek, PhD, a research assistant professor at the Mary H Weiser Food Allergy Center and MNIMBS (Michigan Nanotechnology Institute of Medicine and Biological Sciences). She has been instrumental in creating and testing the vaccine, which integrates the food allergen and nanoemulsion. She’s demonstrated in peanut-allergic mice that just a few doses of the vaccine can turn off their allergy for an extended period and is now working out the mechanisms by which this occurs.

This work is just one example of the ways in which endowments are helping to revolutionize U-M’s approach to food allergy. This work got a substantial boost in 2015, when the family of U-M Regent and retired Ambassador Ronald N. Weiser directed $10 million to U-M’s Food Allergy Center, which was renamed the Mary H Weiser Food Allergy Center, in honor of his daughter-in-law’s food allergy advocacy. The gift aimed to help the center double down on its mission, conducting cutting-edge research to understand and treat food allergies, creating a national destination center for treatment, and advancing information and public policy on the issue. In the ensuing five years, the center has raised more than $28 million, and in 2019, it announced a renewable $5 million gift to further escalate research through the Michigan Food Allergy Research Accelerator.

The center has also amassed five endowed professorships designed to attract world-class expertise. Current professorship holders are exploring topics from how the microbiome mediates food allergy to the immunology of food-induced anaphylaxis to how vitamins, metabolites and other factors alter the immune response.

“Our goal has been to build a multidisciplinary scientific team to examine the fundamentals of food allergy,” says Baker, who directs the Mary H. Weiser Food Allergy Center. “Sometimes the scientists with the expertise we needed weren’t even working in this area, so the professorships provided a carrot for coming here and getting involved in food allergy.”

The center’s research team now includes 11 diverse faculty focused on preventing, treating and studying the development of food allergy. Basic research encompasses the physiological, immunological, biological, gastrointestinal and environmental influences on food allergy. Translational research aims for improved diagnostics, prevention and treatment. And clinical researchers at the center helped pave the way for the recent FDA approval of desensitization therapy by conducting clinical trials at U-M.

“These professorships are transforming the entire university,” says Baker. “We are creating a critical mass of expertise that is making Michigan ‘first in class’ in addressing food allergies from every angle. Our goal is nothing short of universal therapies that will eventually end this disease.”
It was in 1949 when Delores “Dee” Soderquist was diagnosed with type 1 diabetes by U-M’s Jerome Conn, MD (page 36). The prognosis, even under one of the world’s leading endocrinologists, was grim. Conn met with Dee and her fiance, William “Bill” Brehm, to help the young couple anticipate their future. He told them that Dee would probably not have children; could expect serious, perhaps debilitating complications; would have a shortened life expectancy; and would battle diabetes her entire life.

In the ensuing 70 years, Dee has defied the odds, proving Conn wrong on the first three counts. And thanks to a $44 million gift from Dee and her devoted husband, the Brehms are driving the field closer to a cure.

The Brehms’ plan started with an endowed professorship — but it quickly evolved to include a second professorship, five supported investigators, a national coalition and a center for diabetes research within a building that also bears their name.

The ripple effects of this support have been extraordinary. The Brehms’ generosity has helped catalyze a movement of philanthropy-driven, collaborative diabetes research.

It has also yielded an entirely new understanding of diabetes as a disease marked by complex metabolic derangement and protein-folding errors — an understanding that offers new leads toward prevention, treatment and ultimately a cure.

The Brehms’ starting point was endowing the William K. and Delores S. Brehm Professorship in Type 1 Diabetes Research. It was used to recruit Peter Arvan, MD, PhD, as chief of the Division of Metabolism, Endocrinology & Diabetes (MEND) and overseer of the U-M diabetes programs. Arvan, who arrived in 2003, was an accomplished diabetes researcher whose focus was understanding the synthesis and secretion of insulin and how pancreatic beta cells function in healthy people and those with diabetes.

“I met with Mr. Brehm during my recruitment,” says Arvan, “and it was clear that he wanted to help me build a first-rate diabetes program, while also giving me freedom to fulfill a vision of my own.”

To help build the program, the Brehms had designated a portion of their gift to fund what would become known as Brehm Investigators. “This was funding that allowed me to partner with the heads of various departments and centers to help recruit leading diabetes scientists,” says Arvan. “This is how we were able to build diabetes expertise across internal medicine, physiology, pharmacology and pediatrics, such as Malcolm Low, Santiago Schnell, Les Satin, Joyce Lee, Scott Soleimampour and a number of others.”

The Brehms also endowed a second professorship, which they named in honor of Dee’s brother, Larry D. Soderquist, who died in 2005. That professorship is now held by Rodica Pop-Busui, MD, PhD, one of the world’s leading diabetes researchers. The Brehms’ generosity has helped catalyze a movement of philanthropy-driven, collaborative diabetes research.

It has also yielded an entirely new understanding of diabetes as a disease marked by complex metabolic derangement and protein-folding errors — an understanding that offers new leads toward prevention, treatment and ultimately a cure.

**NETS OF INNOVATION**

**BREHM’S GIFT CATALYZES U-M DIABETES LEADERSHIP, NEW UNDERSTANDING OF DISEASE**

**DIABETES AS A PROTEIN-FOLDING DISEASE**

**THE EVOLUTION OF A GIFT**

**“Professorships provide flexibility that no grant or clinical activity can ever do; they allow faculty time to think the great thoughts that are needed to advance the field.” — Peter Arvan, MD, PhD**
Dee Brehm is one of only about 500 people in the nation known to have lived with type 1 diabetes for as long as she has. She is also in the fortunate half of that group who have managed to avoid the disease’s typical complications. Yet she and all those with type 1 diabetes remain reliant on insulin and live with the constant fear of low blood sugar that can develop without warning.

So it was in 2000, after giving herself more than 100,000 insulin injections, that Dee asked her husband to help find a cure. As chairman emeritus of SRA International, a pioneering information technology consulting and systems integration firm, and a Defense Department appointee under three U.S. presidents, Bill was not one to shrink from a challenge. His career had given him faith in the power of systems analysis and informatics to solve even the most challenging problems.

After considering how to best catalyze a cure, the Brehms made a record-setting gift to U-M. The gift recognizes not only Bill’s alma mater, but the excellent care Dee received and the university’s reputation for stellar endocrine research.

THE GIFT OF A CURE

William and Dee Brehm

leaders in the study of diabetes complications (page 100).

Of course, researchers need space, and the Brehms’ vision was to leverage U-M’s culture of collaboration in support of a cure. In 2004, they announced their support for the Brehm Tower, a new building that would house both the Brehm Center for Diabetes Research and the Kellogg Eye Center. Opened in 2010, the tower houses a critical mass of researchers in a collaboration-friendly space. Together these Brehm Center researchers use mouse models, cell lines, human tissue samples, clinical research and bioinformatics to look at everything from how the brain drives obesity to how beta cells fail to how metabolic disturbances initiate complications.

“You can’t engineer synergies,” says Arvan, “but you can provide an environment where good things can happen. The Brehms’ gift allowed us to recruit excellent people and position them for success. It’s like gardening: You plant seeds, fertilize, provide water and light, and then you wait. In the end, people develop their own collaborations, synergies and partnerships. Many of us have written grants, review articles and book chapters together — and since I’ve been here, U-M has become the number one funded institution from the NIDDK, the NIH’s diabetes institute.”

To further coordinate the rich diabetes-related work on campus, the Elizabeth Weiser Caswell Diabetes Institute was created. Directed by Martin Myers, Jr., MD, PhD, the Marilyn H. Vincent Professor of Diabetes Research in the MEND Division, the Elizabeth Weiser Caswell Diabetes Institute coordinates the research of more than 250 scientists working on diabetes from various disciplines and programs. It aims to help integrate rigorous science — such as that produced by the Brehm Center for Diabetes Research — with patient-centered care to prevent, treat and cure diabetes, its complications and related metabolic disorders.

COLLABORATION BEYOND U-M

The Brehms’ gift has also been used to catalyze collaborations beyond U-M. The most high-profile example is the Brehm Coalition, an inter-institutional collaborative of 12 leading type 1 diabetes researchers from across North America. Initiated with Brehm funding, the coalition lives on, pursuing a common research agenda and sharing expertise among the more than 100 scientists in members’ labs.

“The Brehm Coalition helped set in motion a number of things,” says Arvan. “From a scientific perspective, it challenged key assumptions about type 1 diabetes. For example, it was originally believed that autoimmunity wiped out insulin-making cells in type 1 diabetes. We’ve come to realize that patients do have insulin-making cells; they’re just highly dysregulated. The fact that they’re there is important because it means there’s a possibility they could be rescued.”

Discoveries like this happened in part, says Arvan, because the Brehms’ gift inspired other donors with an interest in diabetes to make high-impact gifts of their own. Such gifts, along with the coalition’s model of inter-institutional cooperation, helped catalyze a national tissue bank called the Network for Pancreatic Organ Donors with Diabetes. Funded by the Juvenile Diabetes Research Foundation, it is leading to significant advances in diabetes research.

While the Brehm Coalition can’t take full credit for these outcomes, says Arvan, it did start a movement — a movement of “philanthropy-based, collaborative science tackling diabetes’ big biological problems.”
THE PROFESSORSHIP’S IMPACT

In Arvan’s own lab, the Brehms’ endowment has contributed to a new understanding of diabetes — as a protein-folding disease. Since coming to U-M, Arvan’s lab has shown that the misfolding of proinsulin is one of the forces underlying beta cell failure. Proinsulin is a protein “prohormone” that, in healthy pancreatic beta cells, is converted to insulin — the hormone that acts throughout the body to help lower blood glucose.

Proinsulin begins inside an organelle called the endoplasmic reticulum. Without successfully making and folding proinsulin, there is no insulin.

By studying a genetic form of diabetes, Arvan’s team found that a mutation which changes just a single amino acid in proinsulin causes the protein to misfold. “When you’re born, you get two copies of the gene encoding proinsulin, one from each parent,” says Arvan. “With this mutation, not only can the mutant proinsulin not be converted to insulin, but the misfolded product actually associates with the ‘normal’ proinsulin from the ‘good’ gene, creating large protein aggregates. The result is that patients can’t produce insulin even from the good gene, and as a result they get severe insulin-deficient diabetes, often within the first year of life.”

He named the disorder MIDY, for Mutant Ins-gene Induced Diabetes of Youth. The name is an homage to MODY, or Maturity-Onset Diabetes of the Young, a genetically driven subtype of type 2 diabetes in young people first described in 1964 by U-M endocrinologist Stefan Fajans, MD.

Since that time, Arvan’s lab has shown that proinsulin misfolding is also at work in type 2 diabetes, where it occurs without any mutations. As the body’s cells become less sensitive to insulin, beta cells have to make more of it to control blood sugar. As production increases, so too do protein-folding errors.

“It’s like that old “I Love Lucy” sketch, where Lucy’s wrapping candy on a conveyor belt,” says Arvan. “It starts going faster and faster until she can’t keep up, so she starts pushing them aside and eating them.”

As this process continues, the creation of misfolded proteins outpaces the cell’s ability to break them down, stressing the endoplasmic reticulum and toppling the beta cell.

Arvan’s team has found that the rise of misfolded proinsulin occurs even before blood sugar becomes noticeably elevated. They also found in animal models that when misfolded molecules reach 30 percent of total proinsulin, the animals start to develop diabetes from pancreatic beta cell failure.

He is now working to address the problem, pursuing strategies from enhancing the degradation rate of the misfolded molecules to blocking their contact with normal proinsulin so they can’t form dysfunctional aggregates.

He is partnering in this work with U-M colleagues Ling Qi, PhD, professor in the Department of Molecular & Integrative Physiology and in the MEND Division, and Billy Tsai, PhD, the Corydon Ford Collegiate Professor in the Department of Cell & Developmental Biology, who study disposal pathways for misfolded proteins in the endoplasmic reticulum.

Though his lab has several NIH grants supporting this and related work, Arvan says his progress wouldn’t have been possible without his Brehm Professorship. “NIH grants are invaluable, but there are many things that these grants will not support,” he says. “My professorship gives me funded time to do creative thinking, which is the most precious part of what I do. Because of that, this professorship has a claim on every invention and every discovery I’ve ever made.”
In 2001, a generous gift from the estate of Marguerite S. Roll, in memory of her husband, Lyle C. Roll, former CEO of the Kellogg Company in Battle Creek, Michigan, led to the establishment of the U-M Medical School’s Lyle C. Roll Program for Humane Medical Practice in support of numerous medical education and research efforts. The endowment also established the Lyle C. Roll Professor of Medicine, which was awarded that same year to James Woolliscroft, MD, professor, Division of General Medicine, honoring his work in enhancing the practice of medicine through education.

An internationally recognized medical educator and former dean of the U-M Medical School from 2006 to 2015, Woolliscroft has played a major role in the education of medical students, residents and fellows. He has also helped to establish standards for education and accreditation at a national level for medical schools and graduate medical education.

Woolliscroft’s influence on medicine extends well beyond the state of Michigan, including his work with the Medical School’s international academic program known as Global REACH. During the past two decades, he has worked extensively with educators at Chinese medical schools. In 2010, the Medical School partnered with the Peking University Health Science Center in Beijing, China, to form the Joint Institute for Translational and Clinical Research, which sponsors collaborative research between scientists based in China and the United States to advance global health. Researchers are currently collaborating in the areas of renal, pulmonary and cardiac medicine.

“IT was a great honor to receive the Roll Professorship. I served as a physician for both Lyle C. Roll, who died in 1984, and his wife, Marguerite S. Roll, who died in 1996. For years, I have kept a photo of Mr. and Mrs. Roll in my office. These are patients that I had the great privilege of caring for and getting to know,” says Woolliscroft, who joined the U-M faculty in 1980.

ACCELERATING PROGRESS

Throughout his academic career, Woolliscroft has been an institutional leader in the application of educational theory to physician education, and he has accomplished much in this area via this professorship. “Most importantly, the professorship has given me the chance to get things done without having to wait on funding,” he says. “Even before it was established, the Rolls were incredibly generous, with an annual donation of $100,000, which went to activities that I was able to direct. This was something that really benefited the work I was trying to do.”

The professorship has also funded educational research studies that, Woolliscroft admits, he wouldn’t otherwise have been able to pursue. “In many ways, it laid the groundwork for the large educational transformation that we did when I was dean because it allowed me to expand my thinking about education,” says Woolliscroft. “A very early example of this was looking...”
at the evaluation of residents’ humane care; comparing patient, faculty, chief resident and nurse assessments thereof.”

Funding has also facilitated the development of the Objective Structured Clinical Examination, a practical exam initiated at U-M many years ago, and which continues to this day. “It predated the National Board of Medical Examiners Clinical Skills examination, and really demonstrated that, first of all, there was a need for an integrative exam like that and it could be done in a reliable and valid fashion,” he says. “We also created the Pattern Recognition Exam, currently called the Chief Complaint Exam, that continues to this day. The exam was developed in collaboration with National Board of Medical Examiners experts in psychometrics and test construction, wherein we developed a whole new way of assessing the progression of expertise of medical students.”

A visionary, Woolliscroft foresaw that clinical care would increasingly be provided in ambulatory settings, and was among the first to require that medical students spend time learning and training in community clinics, rather than just hospitals — a perspective that informs today’s curriculum changes. He was instrumental in creating the nation’s first medical student clinical skills course using community facilities for the elderly as educational sites. “This facilitated the medical students’ clinical skills education and their understanding of the challenges faced by the elderly,” says Woolliscroft.

THE VALUE OF ENDOWED PROFESSORSHIPS

Woolliscroft is quick to acknowledge that endowed professorships, and the scholars who hold them, are the foundation of an academic research institution. “The prestige and resources professorships provide are fundamental to Michigan’s ability to attract and retain the brightest, most talented faculty possible — a strength that translates into top medical education for our students, a robust program of biomedical research and the latest advances in clinical care for our patients,” he says. “We are grateful to those who, through their gifts and spirit of giving back, have expressed enormous confidence in Michigan and our mission of excellence in medical education, research and patient care.”

Over the last 10 years, the number of professorships in the Department of Internal Medicine has nearly quadrupled, from 28 to 106. “This is largely due to a renewed focus on professorships from leadership,” says Woolliscroft. “It has also resulted from an understanding of how important it is to have funds such as this available for recruitment, research, faculty development and all sorts of different activities, as other sources of funds become more constrained. Back when I was working with the Rolls, there was just one person in the development area. And now, there’s a whole cadre of folks who have that as their primary focus. So I think it’s really a juxtaposition of all of these different factors that has led to that. And honestly, it’s a time when a lot of wealth is being transferred intergenerationally. So it’s a very propitious time to be looking at professorships.”

That growth has also impacted Michigan Medicine and the Medical School. “I would expect this growth will only be positive. And, just as importantly, this is part of an enduring legacy. The Roll Professorship was funded for $2 million, which was considered a large professorship in that era,” he says. “It is growing, and we’ve been able to split it and do all sorts of different things. That’s the magic of years and compounding.”

I see that as being ever more important going forward. This will be as important to the legacy of all of these professorships as anything because, hopefully, in 20 or 40 years, we will continue to have good financial stewards who will enable work that we can’t even imagine at this point in time.”

Over the last 10 years the number of professorships in the Department of Internal Medicine has nearly quadrupled from 28 to 106.
THE LEGACY OF MARGUERITE S. ROLL

DEVELOPING A MORE HUMANE MEDICAL COMMUNITY

When you walk into the office of Rajesh Mangrulkar, MD, on Catherine Street in Ann Arbor, Michigan, it’s impossible not to notice the sizable portrait hanging by the door. “People usually walk in and say, ‘Who is this? Is this your grandmother? And why do you have this large portrait in your office?’ It’s a wonderful conversation starter,” admits Mangrulkar, associate dean for medical student education. “That’s when I am able to tell the story that surrounds this photograph of Marguerite S. Roll, which has hung at the entrance of my office since 2015. And I’m both proud and humbled to be able to carry on the legacy of this extraordinary woman who cared so much about the humane medical treatment of individuals.”

The intricate history of how that portrait came to hang in Mangrulkar’s office actually took root decades ago, when James Woolliscroft, MD, former dean of the U-M Medical School, assumed the inaugural mantle of the Lyle C. Roll Professor of Medical Education (page 75). It was during the long illness of Lyle C. Roll, then head of the Kellogg Company in Battle Creek, Michigan, that his wife, Marguerite S. Roll, came to know Michigan Medicine (then known as the U-M Health System) and to appreciate the care of its physicians, especially Woolliscroft, who served as physician to both Lyle and Marguerite Roll.

In 1984, many years after Lyle Roll died, his estate honored the Medical School in the form of generous annual gifts to support education and research focused on the doctor-patient relationship. After Marguerite Roll’s death in 1996, a gift from the couple’s estate led to the establishment of the Lyle C. Roll Program for the Humane Practice of Medicine. Marguerite Roll was passionate about advancing the humaneness and compassion that incorporate an understanding of the whole patient. Throughout her husband’s frequent hospitalizations, she did all she could to humanize the experience for him. She would make sure that The Wall Street Journal was on his bedside table every day, along with a flower. She would also bring favorite paintings from home so he had something familiar to look at. Her interest in improving the experience of hospitalized patients led to the establishment of the Art Cart — a U-M program that brings framed art to patient bedside and endures to this day.

ESTABLISHING A SECOND PROFESSORSHIP

By 2012, the endowment for the Lyle C. Roll Professor of Medical Education had grown to such a point that it could now result in two professorships. “That’s when the Marguerite S. Roll Professor of Medical Education was established,” he says. Jim Woolliscroft asked me to assume the first endowed position in 2015, which honors the extraordinary philanthropic spirit of the couple, and their deep trust and belief in the Medical School. At the time, the focus of this new professorship had not been clearly defined. There were no family survivors, so we had to infer its focus based on Mrs. Roll’s values and what someone who holds this professorship should represent.”

“I see this professorship as really building the foundation for more innovation in medical education in ways that are often constrained by the reality on the ground.”

— Rajesh Mangrulkar, MD
In the absence of clear direction, Mangrulkar and his mentors shaped a vision where the resources of the professorship would be shepherded by a faculty member with a deep passion for medical education and who would care especially about training physicians to be more humane. Also important was that the holder would be dedicated to the relationship that students created with their patients, and also to giving students a chance to express themselves in different ways, growing a culture and a community that is humane and relationship-centered.

“Being named the inaugural Marguerite S. Roll Professor of Medical Education reflects the glow of the amazing teams and mentors I have been so fortunate to work with during my career here,” says Mangrulkar. “I have nothing but gratitude for having received this professorship, and I’m grateful to Dr. Woolliscroft for opening this door for me.

Medical educators in my role don’t traditionally hold endowed professorships.”

Mangrulkar recalls that, early on, Woolliscroft actually used some of the funds from the Lyle C. Roll Professor of Medical Education endowment to allow him to pursue advanced training in the scholarship of higher education. “Long story short, my career in educational leadership really grew from that seminal experience over the ensuing two decades,” says Mangrulkar, who joined the U-M faculty in 2001.

As a primary care physician at the VA Ann Arbor Healthcare System, Mangrulkar carries his strong focus on humane treatment into his outpatient practice every day. “My relationship with the Veterans who have served their country is so important to me,” he says. “And I want to do that in a way where I really listen to the person. I want to understand where these individuals are coming from and their lived experience, so that I can be a true partner with them on their health, rather than telling them what to do, which we know doesn’t work.”

MARKING NEW INITIATIVES

As associate dean, Mangrulkar provides oversight of the curriculum, student affairs and admissions units for the Medical School. He has also led the Medical Schoolwide initiative to transform the curriculum into a program that will graduate physician leaders who help drive change in patient care, health care delivery and research.

Much of Mangrulkar’s work through this professorship has been about supporting students who may not otherwise get funding to do scholarly work or take risks in education, research and patient care projects. “I see this professorship as really building the foundation for more innovation in medical education in ways that are often constrained by the reality on the ground,” says Mangrulkar. “A lot of the investments made through this professorship have been in innovative projects, led by students, and initiatives that are more outside the box that wouldn’t normally get traditional grant funding.”

Several different initiatives have resulted from this professorship that center around the humane practice of medicine and the relationship and culture of medical education.

**Capstone for Impact**

Over the last 10 years, Mangrulkar has led the transformation of the medical student curriculum. “As part of this new program, all students, upon graduation, are required to complete a Medical School Capstone for Impact project, a culmination of the Impact curriculum where students demonstrate how they can move medicine forward,” he says.
Through the professorship, they have tried to fund initiatives that allow students the opportunity to work on highly creative and scalable projects that will influence medical education for years to come.

**Sling Health**

Funding from the professorship has been used to support the creation of Sling Health, an innovation lab run by students who are interested in entrepreneurship. U-M was the third school in the country to create a competitive startup unit like Sling Health. The lab is inherently interdisciplinary and uses creative problem-solving and teamwork to come up with solutions to complex medical problems.

**Wolverine Street Medicine**

The professorship has also helped fund the startup of Wolverine Street Medicine, founded in 2017 by medical students interested in the health disparities of those facing homelessness or housing instability. Their mission is to improve the health of the homeless community, incorporate education about the care of and service to this population into the medical student curriculum and educate the members of the community about health issues related to homelessness.

**Leadership Coaching**

Mangrulkar has also used some of the funds to support the growth of a community of educators who are coached in more humane practices through the U-M Office of Medical Student Education, and an external company, the Marteney Group. “This leadership learning community coaching experience has allowed us as leaders in medical education to really understand each other’s paths, role model how we work on ourselves and in interpersonal spaces and then translate that culture to our students,” says Mangrulkar.

**M-Home Parallel Universe Seminar Series**

With this professorship, Mangrulkar and his colleagues have also invested in the Parallel Universe Seminar Series, a series of workshops and seminars where students learn from faculty and staff about authentic struggles in medicine, drawn from mistakes and failure, and also about the circuitous route that most physicians take in their careers. “We call it a parallel universe because it’s in parallel with the universe that students experience in the hospital and in the classroom, which can be stressful and focused on achievement,” he says.

**RISE**

Finally, Mangrulkar has most recently used some of these resources to help launch Research, Innovation, Scholarship, Education (RISE), an innovation initiative for health sciences education for which he is executive director. The work of RISE aligns with the education pillar of the Medical School Strategic Plan and is beginning to cultivate a learning community of practice that engages in bold and innovative education for the advancement of science, health and health care delivery. Currently in its pilot phase, RISE is being built to transform the culture of education in the health sciences at the U-M Medical School.

Mangrulkar will tell you that the professorship has served him well, but he hopes it has also contributed to the educational community. In moving ahead, he remains as committed as ever to carry on Marguerite Roll’s vision for a more humane community. “Although there are many different endowed professorships with various purposes, the Marguerite S. Roll Professorship felt like the one that fit me the best,” says Mangrulkar. “I’ve been nothing but honored to carry this title.”
Josiah Macy, Jr., was born in 1837 to a philanthropic family in New York. His father, Josiah Macy, established a shipping and commission firm in New York City, after leaving the family home in Nantucket, Massachusetts, where they had settled during the early 17th century. Macy Jr.’s wealth came in 1872 when the refinery he and his family operated was purchased by John D. Rockefeller’s Standard Oil Company.

Just four years later, in 1876, Macy Jr. died of typhoid fever at the young age of 39. In the decades to follow, his daughter, Kate (Macy) Ladd, worked to extend the family’s philanthropic focus. In 1930, to honor her late father, she created the Josiah Macy, Jr., Foundation, with its initial commitment to the promotion of health and the ministry of healing.

In 1996, the foundation selected the University of Michigan from among 52 competing applicants for the grant that funded the establishment of the Josiah Macy, Jr., Professor of Health Professions Education.

James Woolliscroft, MD, professor, Division of General Medicine, and then-dean of the U-M Medical School, was named the inaugural holder of the professorship.

Kolars recalls his early experience with the foundation when thinking about his own development as a medical educator. “I was a student and a beneficiary of the foundation’s education programs dating back to the 1980s,” he says. “This was long before I became aware of the type of opportunities that Jim Woolliscroft was subsequently afforded through this award in transforming medical education.”

THE MACY PROFESSORSHIP
In 2013, Kolars was awarded the Josiah Macy, Jr., Professor of Health Professions Education. He has held a number of leadership roles in education programs for medical students, residents and fellows, including program director of one of the largest internal medicine residencies in the United States. Kolars’ scholarship has emphasized educational outcomes, measurements of competency, faculty development and effective learning venues. He has also worked closely with the Accreditation Council for Education in Medicine and Osteopathic Education.
In 1930, to honor her late father, she created the Josiah Macy, Jr., Foundation, with its initial commitment to the promotion of health and the ministry of healing. At the time of Ladd’s death in 1945, the foundation was valued at $19 million.
initiatives, Kolars leads efforts to adapt and enhance the full spectrum of medical training — from undergraduate to continuing education to biomedical research education — and to bring it together with global impact. He serves as director of U-M Global Reach, created to help facilitate and promote the Medical School’s international initiatives in research, education and collaborations in health.

A large part of his work centers around strengthening health systems in low-resource and underserved countries. “We are focused on human capital, and how we can prepare better doctors, better nurses and better health care professionals who are relevant for a country’s or a community’s needs,” says Kolars. "I’ve spent a lot of time in Africa, Asia and South America working to create new initiatives. The fact that I’m coming from a strong institution in the United States with an esteemed professorship lends credibility in the global environment, and this has been an asset in my career.”

In 2010, Kolars was appointed inaugural co-director of the Joint Institute for Translational and Clinical Research between the University of Michigan Medical School and Peking University Health Science Center, a virtual institute that consists of four thematic programs and three cores to facilitate joint research projects and training initiatives between the schools and their affiliated hospitals.

He has played a leadership role in China in shaping their competency-based medical education movement. “We have collaborations with the China Medical Board and the Ministry of Health,” he says. “There’s been this wave of change that is going on in China.

ABRAHAM FLEXNER AWARD FOR DISTINGUISHED SERVICE TO MEDICAL EDUCATION

Joseph Kolars, MD, was the recipient of the 2019 Abraham Flexner Award for Distinguished Service to Medical Education from the Association of American Medical Colleges (AAMC). The Flexner Award honors individuals whose contributions have had a demonstrable impact on advancing medical education. It recognizes the highest standards in medical education and is the AAMC’s most prestigious honor.
FUELING INNOVATION

where they’re not just looking at how smart a person is, or what their knowledge base is as a doctor, but what their performance is about. Also, how performance can be measured, keeping that at the center point of medical education. It’s a big change that’s going through the largest country in the world, and I was able to play a part in that.”

Kolars has also been instrumental in a sizable movement in Africa with the Medical Education Partnership Initiative, whereby medical schools in Africa are partnered with medical schools in the United States to enhance the quality of their education and the number of health care providers. “I felt very fortunate to be a part of that movement at the leadership level, but also in playing a consulting role with different governments, civil society and the institutions themselves in terms of transforming their schools for better education and better care in Africa,” says Kolars.

U-M CENTER FOR GLOBAL HEALTH EQUITY

During 2019, former Department of Internal Medicine Chair Tadataka Yamada, MD, and his wife Leslie, made a $10 million gift to inspire faculty to make a greater positive impact on the health and health care of people with the greatest need worldwide. A new U-M Center for Global Health Equity is being developed to accelerate work addressing inequities in health in the poorest nations and in disadvantaged populations in middle-income countries.

Building on the Yamadas’ vision, the new center’s initial concept was developed by a team led by Kolars and John Z. Ayanian, MD, MPP, who leads the U-M Institute for Healthcare Policy and Innovation and holds professorships in the Medical School, School of Public Health, and Gerald R. Ford School of Public Policy.

“The Yamada’s recent gift provides us with an opportunity to show how the University of Michigan, a great public institution, can be relevant to problem-solving at the societal level,” Kolars explains. “And how we can start to assemble a great diversity of talent across our institution to address problems in health care, as well as turn our focus to social determinants of health, and relationship of policy, economics, education and climate.”

SHAPING THE FUTURE

As a revered leader in medical education at U-M for three decades, Kolars reflects on what has been most important to him. “At the end of the day, I think my best work has been the one-on-one with students, trainees and faculty who are trying to shape their careers. If my success or impact was to be measured, it would be the chance to touch these different lives, and to be touched by them, in terms of creating new solutions and opportunities in education.”

“The Yamada’s recent gift provides us with an opportunity to show how the University of Michigan, a great public institution, can be relevant to problem-solving at the societal level,” Kolars explains. “And how we can start to assemble a great diversity of talent across our institution to address problems in health care, as well as turn our focus to social determinants of health, and relationship of policy, economics, education and climate.”

— Joseph Kolars, MD
DEVELOPING BETTER TREATMENTS & CURES

Funding for cancer research is allowing internal medicine faculty to make a world of difference.
It was 1999, and Gary D. Hammer, MD, PhD, was fresh from his postdoc and being vetted to launch an international adrenal cancer program at U-M. After a torrent of interviews, his last meeting was a group dinner with legendary football coach Bo Schembechler. Schembechler had lost his beloved wife Millie to adrenocortical carcinoma and was raising millions toward an endowment he hoped would spare others the same fate. Sitting in the Gandy Dancer as Schembechler strolled in, Hammer thought a train was passing. “The whole place, 300 people or so, stood up and started clapping,” he says. “As Bo reached the table, the room fell silent. He looked me dead in the eye and said, ‘Dr. Hammer, I have just one question for you: When you negotiated with these gentlemen, did you negotiate football tickets? Because, if you didn’t, you’re a damn fool.’ The place roared with laughter as Bo sat down, eyes transfixed, without even the hint of a smile. So I stood up, took his hand and replied, ‘Bo, I think that’s why you’re here tonight.’” Hammer reflects fondly on that meeting, as he knew it was a test. “He wanted to be sure I wasn’t a shrinking violet,” he says. Instead, the coach found the young doctor very much his equal in grit and passion. The men became fast friends and fellow crusaders. By 2005, Hammer had become the Millie Schembechler Professor of Adrenal Cancer in the Division of Metabolism, Endocrinology & Diabetes (MEND) as well as the inaugural director of the Endocrine Oncology Program in the Rogel Cancer Center. “When I started, we had just a handful of doctors working on adrenal cancer, two rooms in the cancer center and no nurse,” says Hammer. “We’ve now grown to more than 25 physicians and scientists, 20 rooms and the largest, most recognized adrenal cancer program in the world.” But more than that, U-M’s adrenal team has led along every dimension — it’s catalyzed two global networks to share samples and data, unveiled pathways driving the development and virulence of this deadly disease, identified and tested some of the first new therapies in 60 years, even helped draft national rare-disease legislation.

When asked how they did it, Hammer answers with a single word — “leverage.”

“The team

Hammer is the first to admit he stands on the shoulders of giants. U-M has a nearly 70-year history of pioneering work in the adrenals, from identifying Conn’s syndrome (page 36) to birthing the field of endocrine surgery to developing...
the first nuclear imaging agents for adrenal disease.

But despite this expertise, adrenal cancer is so rare — fewer than 1,000 cases are diagnosed in the U.S. each year — and often shows no symptoms until it has metastasized, that Millie’s U-M doctors had little to offer when she was diagnosed. “The only drug they had — and still the only drug approved for adrenal cancer — is mitotane, a derivative of the pesticide DDT,” says Hammer. “It’s used because it’s fatally toxic to adrenal cells, but it only works in about 20 percent of patients.”

Bo became frustrated because even with a team that was one of the best in the world, they couldn’t do much for Millie other than operate, not for a cure but to combat tumor growth and control the excess steroids her tumor was producing.”

When Millie passed away, Bo turned his grief into action. He began hosting golf tournaments, drawing NFL players, celebrities and U-M alumni, ultimately raising several million dollars to fund a professorship and research fund in his wife’s name.

As the steward of both endowments, Hammer knew he would have to use them strategically to make a dent in a disease that was poorly understood and wildly underfunded. His goal was leverage — making each investment yield proliferating returns.

He started with Schembechler’s most famous mantra: the team, the team, the team. His vision was to expand U-M’s existing expertise into the best, most comprehensive adrenal team in the country. “We started with leaders like endocrine pathologist Tom Giordano; Ed Schteingart, who was Millie’s endocrinologist; and Michigan’s top endocrine surgery, medical and radiation oncology teams,” says Hammer.

“To flesh out the team, we needed specific expertise — and we wanted the best.” To make this happen, Hammer’s strategy was to let the endowment grow. “That way, when we found someone we wanted to recruit, we had resources for their startup packages. That made it easier for departments to hire them, and that’s how we got the country’s leading adrenal experts, like Rich Auchus and Bill Rainey, as well as the next generation of leaders like Tobias Else and Adina Turcu.”

But Hammer had even more sweeping visions of teamwork. He knew he’d have to connect researchers and resources around the world if the field had any hope of gathering the data, tissue samples and patient participation it would take to understand such a rare disease, forge new treatments and conduct meaningful clinical trials.

So, with Schembechler funds, he and his U-M colleagues hosted a meeting in 2003, inviting the handful of adrenal cancer researchers around the world. What began as a series of tentative conversations evolved into two cooperating global networks: ENS@T, the European Network for the Study of Adrenal Tumors, and the A5, the American Australian Asian Adrenal Alliance.

Although he credits Schembechler for this outcome, Hammer’s influence is difficult to write off. “If Gary sets his mind to something, God help you if you’re in the way or you’re the target,” says MEND colleague William Rainey, PhD, the Jerome W. Conn Collegiate Professor, whom Hammer recruited to U-M when he was decidedly not looking for a job. “His enthusiasm is unlimited, and his ability to bring people together around a common vision is like nothing I’ve ever seen.”

In one of the first big payoffs of this cooperation, the National Cancer Institute agreed to deep sequence adrenal cancer through the Cancer Genome Atlas. It was a coup to get a rare cancer included in the project, and it was possible only because Michigan’s global...
partners were able to deliver 100 samples within months.

In a more recent example of leverage, the worldwide tissue bank and genomic database U-M launched on behalf of the A5 drew substantial support from donors Hirair and Anna Hovnanian. The database and repository, which is now named in their honor, allows for a collaborative global effort, which is pivotal for rare diseases, as researchers across the world can access the information, identify biomarkers and genetic markers, study genetic syndromes of tumors, and accelerate markers, study genetic syndromes that drive adrenal cancer, improving prognostics and suggesting potential treatments. In a 2019 paper in Clinical Cancer Research, Hammer’s group reported on a technology they’ve patented that uses the molecular features of a patient’s disease to stratify them by risk of recurrence and identify key treatment targets.

Interestingly, two of the pathways central to this stratification, IGF and WNT signaling, were among the first Hammer studied with the help of Schembechler funds. His lab’s work on the IGF pathway helped set the stage for phase I, II and III clinical trials of the IGF-inhibitor insitinitib, which led to progression-free survival in patients for whom IGF was the dominant mutation.

In terms of the WNT signaling pathway, Hammer’s group identified a previously unknown loss-of-function mutation in the ZNRF3 gene, which accounts for 20 percent of adrenal cancers and is likely to be targetable by drugs currently under development.

The third stratification pathway is driven by cell cycle activation and DNA methylation, and results in the most aggressive cancer, says Hammer. Members of his lab are working to understand the underlying biology in the hopes of identifying therapies that might improve outcomes for patients.

To further the development of new therapies, Hammer has helped launch two U-M spinoffs. The first, Vasaragen, aims to develop precision treatments matched to patients’ key mutations, leading with the IGF pathway.

The second, Millendo Therapeutics (a portmanteau of “Millie” and “endocrinology”), resulted from the efforts of patient-turned-research-collaborator Raili Kerppola, PhD, MBA, to repurpose a drug designed for atherosclerosis into one for adrenal cancer. The drug, ATR-101, changes the way cholesterol is handled in the body, making it fatally toxic to adrenal cells, which use cholesterol as a steroid precursor. Kerppola used her background in the pharmaceutical industry to study ATR-101, co-launch Millendo and shepherd the drug into phase I clinical trials before her passing.

A final treatment insight concerns immunotherapy, which has traditionally been ineffective in adrenal cancer. “We knew that adrenal tumors contained very few immune cells, but we didn’t know why,” says Hammer. “In most cancers, the number of immune cells correlates to how many mutations there are — the more alien the cancer cells look, the more immune cells show up. But with adrenal cancer, it was the opposite. We finally got a clue by focusing on the endocrinology. Adrenal cells with the most mutations also have the highest levels of cortisol. Cortisol inhibits the immune system. So we think adrenal cancer is essentially using cortisol to hide.”

His lab has just received two Department of Defense grants to study this process and determine if inhibiting cortisol production will make immunotherapy more effective.

Hammer says he believes the field is approaching a watershed moment when a single treatment, approved in the 1950s and based on a pesticide, will finally yield to a future of personalized medicine. “This is all because of Bo,” he says. “Bo taught me to be bold, to have the courage to hire and work with people smarter and better than me and to empower that team to make a difference. That’s how we’re tackling this disease and honoring the Schembechler legacy.”

On the invitation of Senator Ted Kennedy, Hammer helped draft health care legislation directed at rare cancers. While overshadowed by healthcare reform, the bill began a dialogue, advocating for research funding and insurance coverage for patients to receive care at national centers of excellence.
MOBILIZING THE VILLAGE

FORBES ENDOWMENT HARNESSES EXPERTISE ACROSS DISCIPLINES TO STRIKE AT THE HEART OF CANCER

When Madeline and Sidney Forbes gave the University of Michigan $17.5 million to fund multidisciplinary translational cancer research through the Forbes Institute for Cancer Discovery, there was no one better to lead the effort than Max Wicha, MD. An internationally recognized breast cancer researcher, Wicha served as chief of the Division of Hematology and Oncology for a decade and as the founding director of what is now the Rogel Cancer Center for 30 years. Perhaps most importantly, Wicha epitomizes the Forbeses’ vision for cancer research: He collaborates vigorously with partners in six university departments, around the world and in the pharmaceutical industry, harnessing wide-ranging expertise for a single goal — to cure cancer.

Cure. It’s not a word many in the cancer community dare to embrace. After all, cancer has proven to be a uniquely evasive foe. Yet that is the very reason for Wicha’s optimism: his research strikes at the heart of cancer’s evasiveness — targeting stem cells, the cells most responsible for metastasis, invasion and recurrence.

Thanks to his sprawling vision, his “village” of collaborators and the funding that has given him the freedom to pursue out-of-the-box ideas, Wicha is unmasking the role of stem cells in cancer and developing cunning ways to disarm them. Known internationally for being the first to identify cancer stem cells in a solid tumor, he’s identified the molecular markers that characterize these cells, helped build tools to isolate and interrogate them, and conceptualized treatments — from vaccines to cellular reprogramming — that he hopes will end cancer during his students’ careers.

FREEDOM TO INNOVATE

Professorships have played a pivotal role in Wicha’s research breakthroughs, first through the Distinguished Professorship in Oncology that he held as head of the cancer center, and now as the Madeline and Sidney Forbes Professor of Oncology. “Endowment funding led to our discovery of breast cancer stem cells,” says Wicha, “and more recently has allowed us to partner with immunologists to get the immune system to target these cells.”

The big granting agencies increasingly want projects that already have evidence that they’re going to work, he says, and endowment funds can help provide that. But they can also be leveraged into larger, more flexible “high-risk/high-reward” grants. Wicha’s team is submitting the immunology results as part of a large National Cancer Institute SPORE grant that aims to engage researchers from bench to bedside in finding new approaches to battling cancer. He previously used his track record of innovation to secure an R35 grant, the NCI’s Outstanding Investigator Award, designed to allow cancer’s most accomplished researchers to be adventurous in breaking new ground, rather than spelling out exactly what they propose to do.

Wicha has seen the value of endowments from other

“The Forbes Institute has fulfilled a dream of mine — to have philanthropic money that can be used to stimulate new collaborations and ideas.” — Max Wicha, MD
angles as well. He helped develop several professorships that were instrumental in recruiting and retaining talent that has helped make the Rogel Cancer Center one of the best in the country. “With the help of the Emanuel N. Maisel Professorship of Oncology, for example, we were able to recruit Eric Fearon and hold onto him as he developed not only as a terrific scientist but into an outstanding leader of the cancer center,” says Wicha. “The same is true for Dan Hayes, one of the world’s top breast cancer researchers, who holds the Stuart B. Padnos Professorship of Breast Cancer Research.” These and other professorships — including one named in Wicha’s honor — are crucial to keeping U-M at the cutting edge of cancer research, education and care.

As director of the Forbes Institute for Cancer Discovery, Wicha stewards another type of endowment — one that provides seed funding for interdisciplinary cancer research. “We give out grants of up to $250,000 to help move basic science into clinical applications,” he says. “It’s about being creative and original, and it’s also about building teams that capitalize on U-M’s expertise across the 10 different schools that are involved in the cancer center — each of which is top 10 in the country.”

The money is flexible and designed to be leveraged for greater impact. “We can buy equipment for people,” says Wicha. “One of the grants helped fund pilot costs in single-cell spatial analysis that went on to receive a large grant from President Mark Schlissel’s Biosciences Initiative. In addition, the SPORE proposal we’re submitting involves about 30 people in 10 labs working on cancer stem cells, and each of the projects has done preliminary research with Forbes funding.”

**GROUNDBREAKING DISCOVERIES**

There is no better case study for the results of well-leveraged flexible endowment funding than Wicha’s own team’s science portfolio. In 2019, Wicha was named U-M’s Henry Russel Lecturer, the university’s highest honor for senior faculty members. He used his lecture, “Attacking Cancer at Its Roots: It Takes a Village,” to demonstrate the value of cross-disciplinary cooperation in turning the tide on cancer metastasis and recurrence.

While great strides have been made in areas such as early detection, immunotherapy and drugs targeting the mutations specific to a patient’s cancer, big challenges remain. Most notable are relapse — where a patient’s cancer becomes resistant to treatment — and metastatic disease, for which targeted and
immune-based therapies have not been as effective. This is because stem cells, which may comprise only 1 to 5 percent of a patient’s cancer cells, have unique properties that make them resistant to therapy and almost diabolically suited to their purpose. One is an unlimited capacity for self-renewal. Another is plasticity. Wicha’s group and others have found that stem cells can rewire themselves to avoid relying on a pathway being targeted by a drug. They can change states — from a mesenchymal type suited to metastasis to an epithelial one programmed for proliferation. They can lie dormant for years, only to be reawakened without notice. They can even travel through the bloodstream, not only as a single cell, but as a cluster of cells with a portable microenvironment ideally suited for growth at a distant site.

Wicha’s career has focused on understanding these cells, identifying the markers that differentiate them from other cancer cells and finding drugs to target the pathways that regulate them. He has co-founded OncoMed Pharmaceuticals to develop stem cell-directed therapies, and the cancer center has run seven breast cancer clinical trials for them.

CANCER STEM CELL VACCINE

One of Wicha’s latest collaborative projects is a vaccine against cancer stem cells. It was an outgrowth of the finding that immunotherapy is enhanced by chemotherapy — not so much because of the latter’s effectiveness in killing cancer cells but because doing so exposes the immune system to antigens from the tumor. Wicha used this insight to launch a collaboration aimed at developing a vaccine against antigens specific to cancer stem cells. “Our proof of concept used a peptide against one of the molecules we first discovered as a cancer stem cell marker,” says Wicha. “It’s delivered by a nanoparticle, developed by James Moon from the College of Pharmacy, right to dendritic cells of the immune system. We found that by combining the vaccine with an immune checkpoint blocker, we can almost completely knock out cancer stem cells. We’re looking at adding other antigens so the cancer is less likely to develop resistance. Dr. Moon has formed a company in Ann Arbor to commercialize the vaccines, and we hope to be running clinical trials here in the next year or two.”

STEM CELL REPROGRAMMING

Another of Wicha’s collaborative projects aims to reprogram cancer stem cells into more differentiated cells that are easier to kill. This builds on a number of previous findings, including those discovered by a team that won a Nobel Prize in 2012, which showed that adding various transcription factors to cells can cause them to change types — even going from a fully differentiated cell to an induced pluripotent stem cell.

“We launched a collaboration with Indika Rajapakse, a brilliant mathematician who was looking at how the structure of chromatin regulates gene expression,” says Wicha. “He developed an algorithm that allowed us to predict, based on the three-dimensional chromatin structure, which transcription factors needed to be added in what order to reprogram a particular cell into any other type of cell.

“What we want to do now is look at the structure of cancer stem cells’ chromatin and gene expression, and predict how we can use epigenetic-like therapies to reprogram these cells into a type of cell that is amenable to being killed by therapeutics or to directly induce cell death.”

SINGLE CELL RNA ANALYSIS

A major challenge to targeting cancer stem cells has been determining whether therapies are effective. Are they actually killing the stem cells, reprogramming them or affecting a targeted pathway? Learning this required a way to identify and capture these rare cells and sequence their RNA to determine which genetic pathways were active. With funding from the Forbes endowment, Wicha collaborated with U-M engineers Euisik Yoon, PhD, and Sunitha Nagrath, PhD, to develop a microfluidic device that can capture and barcode each cancer stem cell circulating in the blood, sequence them, and then determine which cells each sequence came from. Wicha believes the technology, called Hydro-Seq, will transform researchers’ ability to understand and target cancer stem cells — and ultimately lead to a true cure for cancer.
After 50 years in medical oncology, Laurence H. Baker, DO, has left his mark. One of the world authorities on sarcomas, Baker launched his career revolutionizing the treatment of these cancers, devoted decades to testing new diagnostics and therapies and is now closing the loop with a focus on survivorship. But this impact only scratches the surface. Baker also helped U-M usher in the modern era of cancer care, education and research, and advanced clinical research on the national stage.

He’s received a professorship that not only honors his work, but will inspire the development of cancer therapeutics at U-M for years to come.

Starting with serendipity Baker spent the first half of his career at Wayne State University, deeply engaged in first-in-human clinical trials. It was through this work that he came to focus on sarcomas — cancers that arise in bone and soft connective tissue. It’s also how he would find himself at the center of a treatment revolution. “One of the very first drugs I worked with in the early ’70s was doxorubicin,” he says. “We discovered that it worked in a number of cancers, including, remarkably, sarcoma. Few oncologists at the time were treating sarcomas, so I took it on.” At the time the standard treatment for young people with a bone sarcoma was amputation. “You can imagine that one of the last things a teenager wants is to lose a limb,” he says. “The surgeons asked if we could start patients with chemotherapy in order to build in time to make better prostheses. This ultimately led to a partnership with a pediatrician at MD Anderson with whom we tested the idea of giving patients chemotherapy followed by surgical resection. The cure rate went from 20 to 30 percent up to 70 to 80 percent with this approach — and patients were able to keep their limbs.”

That serendipitous discovery cemented Baker’s interest in sarcomas. He went on to study other treatments — including ifosfamide, oral mesna and IGFR-1 kinase inhibitors. He also took the lead of Wayne State’s oncology division, cancer center and the sarcoma committee of SWOG (formerly the Southwest Oncology Group), one of the largest federally funded cancer clinical trials cooperatives in the world.

**SHARING EXPERTISE**

It was in 1994 when a conversation with U-M’s cancer center director Max Wicha, MD (page 89), convinced Baker to bring his expertise in sarcoma and clinical research to U-M. At the time, says Baker, U-M was best known in cancer for its basic research. But there was enthusiasm among Internal Medicine physicians to provide comprehensive care for patients with cancer.

“My success had been in developing a strong training program and recruiting outstanding clinicians, engaging them in clinical research and getting them to partner with lab scientists.”

— Laurence H. Baker, DO
Medicine’s leadership to enrich other aspects of the mission.

“My success had been in developing a strong training program and recruiting outstanding clinicians, engaging them in clinical research and getting them to partner with lab scientists,” says Baker.

Asked to do the same at U-M, Baker agreed, and was appointed deputy director of what is now the Rogel Cancer Center, director of its clinical research and professor in the Division of Hematology and Oncology.

The Veteran oncologist got straight to work. In education, he helped revamp resident rounding and the Hem/Onc fellowship, putting the patient experience at their core — and making U-M a coveted Hem/Onc training destination in the process. He did the same for patient care, serving as an early champion of multidisciplinary care — establishing this model for sarcomas and helping to make tumor boards standard throughout the cancer center. Baker also helped catalyze clinical research — advocating for team science, especially projects designed to move promising lab discoveries into clinical trials and trial results back to the lab for deeper insight. He’s proud that the first team science award from the American Association for Cancer Research went to U-M jointly with the Dana-Farber Cancer Institute.

In his own lab, Baker continued his work on sarcomas, testing advances from diagnostic blood tests for circulating tumor DNA to new chemotherapy regimens designed to prevent recurrence and limit side effects. He also built U-M’s sarcoma team, anchored with strong clinical researchers, such as Professor Scott Schuetz, MD, PhD, and Associate Professor Rashmi Chugh, MD.

Baker increasingly took his passion to the national stage. From 2005 to 2013, he served as chair of the SWOG Research Network. Under his leadership, the group expanded its patient advocate and cancer prevention programs, partnered with basic science centers and established a biospecimen bank, which is now a global resource for cancer research. Baker also helped launch SARC, an organization that fosters collaborative research among national centers of excellence in sarcoma. He’s served as its chair and as a principal investigator on a SARC SPORE grant testing new therapeutic strategies and biomarkers.

A FOCUS ON SURVIVORSHIP

In recognition of his impact, in 2012 Baker was named the Collegiate Professor of Cancer Developmental Therapeutics. He’s used the protected time afforded him by the professorship to create the country’s first Sarcoma Survivorship Program. Developed with Monika Leja, MD, assistant professor in the Division of Cardiovascular Medicine, the program helps patients deal with sarcoma’s major adverse outcomes: recurrence, heart disease and psychosocial distress.

“What we’ve learned since our early success in treating young patients is that, while we cured the vast majority, many developed coronary artery disease at a very early age,” he says. “It turns out that doxorubicin causes inflammation of the coronary arteries, which leads to atherosclerosis. Survivors can have strokes as early as their 20s or 30s.”

Facing such complications and the specter of recurrence, survivors often grapple with anxiety, depression and suicidal thoughts. So, in addition to working with cardiologists, the program has partnered with the School of Social Work to address patients’ psychosocial needs.

Baker says the most important resource his professorship has given him in this effort is time. “I don’t see patients in a typical 15-minute slot,” he says. “I see them for an hour or more. This is a young population of cancer survivors who struggle mightily, and you have to spend time together for them to be comfortable talking with you and for you to accurately assess their needs.”

In 2019, Baker transitioned to emeritus status. But he is still hard at work, both on his survivorship program and a multi-institutional SPORE proposal that will allow him to investigate whether combining doxorubicin with a new molecule that inhibits DNA repair will not only make sarcoma treatment more effective, but reduce its cardiovascular effects.

While he pursues these efforts, Baker will retain his professorship. Afterward, it will become the Laurence H. Baker Collegiate Professorship of Cancer Developmental Therapeutics, and it will support another torch bearer while memorializing Baker’s prodigious legacy.
In 2007, Nancy Wigginton, of West Bloomfield, Michigan, was diagnosed with an advanced papillary thyroid cancer. The cancer was aggressive and had spread to her brain, which required radiation treatment that she received at Henry Ford Hospital, says Francis Worden, MD, professor, Division of Hematology and Oncology.

Together with Megan Haymart, MD, associate professor, who has a primary appointment in the Division of Metabolism, Endocrinology & Diabetes, and a secondary appointment in the Division of Hematology and Oncology, the team cared for Wigginton until she passed away in 2013 at the age of 65.

“Once Nancy’s disease became refractory to radioactive iodine, i.e., when iodine was not taken up by her tumor and radiation was no longer effective, she was referred to me by Dr. Haymart. Nancy’s disease had spread beyond her head and neck at that point, involving her lungs and perhaps her bones,” says Worden, whose clinical research focuses on the treatment of patients with head, neck and thyroid cancers. “At the time, drugs were just beginning to be launched from clinical trials for the treatment of iodine-refractory differentiated thyroid cancers; the same drugs that are now FDA-approved for thyroid cancer.”

Worden reflects with great fondness on the period of time he provided medical care for Wigginton. “We shared meaningful time together. Nancy asked some pretty difficult questions about her prognosis and about her own mortality. We learned from each other, and she was very special to me,” he says. “Nancy was a courageous and thoughtful woman who was always looking for a new opportunity to treat her cancer. In this regard, she was very brave to participate in clinical trials with drugs that were showing some benefit, yet had not been proven by clinical standards.”

Wigginton was part of the landmark trial with Sorafenib, a drug that inhibits the effect of proteins (tyrosine kinases) that are overactive in many of the pathways that cause cells to be cancerous. “She really believed in the benefits that she was getting from the clinical trials, and was able to have somewhat of an improved quality of life and to live longer than she probably would have otherwise. Today’s treatment options, which are fairly effective, were just not available then, and Nancy’s participation really helped to

“Nancy was a courageous and thoughtful woman who was always looking for a new opportunity to treat her cancer. In this regard, she was very brave to participate in clinical trials with drugs that were showing some benefit, yet had not been proven by clinical standards.”
— Francis Worden, MD
produce new therapies,” says Worden.

Nearing the end of her life, Wigginton approached Worden and said, “I want to do something for you,” and asked for suggestions. Worden told her that supporting an endowed professorship would be invaluable because it could provide funding toward clinical trials research. After she passed away, her husband, Jim Wigginton, expressed an interest in supporting thyroid cancer research at U-M. He was especially interested in supporting Worden, as well as Haymart, who was involved in health outcomes research related to thyroid cancers, a strong interest of his.

**TWO PROFESSORSHIPS ARE ESTABLISHED**

In December 2019, a generous gift from Jim Wigginton in honor of his late wife Nancy created two new professorships which will focus on clinical research for thyroid cancer, including the Nancy Wigginton Oncology Research Professorship in Thyroid Cancer awarded to Worden; and the Nancy Wigginton Endocrinology Research Professorship in Thyroid Cancer awarded to Haymart.

At Worden’s request, the funding was distributed between himself and Haymart. “I believe it is extremely important for these professorships to be shared across disciplines in the Department of Internal Medicine, bridging oncology with endocrinology,” he explains. “I also think it’s important in this era to support women in medicine. Megan is a world leader, and, with support from this professorship, she can continue to advance the field of thyroid.”

In general, professorships are not commonplace for every academic physician. “And oftentimes they are the result of gifts from very generous individuals like Jim and Nancy,” says Worden, who in collaboration with the U-M Endocrine Oncology Program has been the leading medical oncologist for the treatment of metastatic thyroid cancers in the state of Michigan. “I am very grateful to have been awarded this particular professorship as it focuses on treatments of thyroid cancers that are so very rare. This honor is meaningful to me in so many ways, namely it will allow me to collaborate further with colleagues in developing and treating patients under clinical trials that will hopefully continue to change the therapeutic landscape of these malignancies.”

**TESTING NEW TREATMENTS**

With this funding, Worden and his team have identified novel agents that are active in thyroid cancers. “We don’t really have a hierarchy of treatment regimens that you might observe in other cancers, such as breast or lung cancer, where if a particular agent doesn’t work, there may be a second line agent,” he explains. “I am presently enrolling patients with medullary thyroid cancers in a clinical protocol with a novel agent that targets the RET oncogene. The results from this clinical trial are due to be published in 2020, and will undoubtedly lead to an approval by the FDA. We will next test to see if this agent performs better than standard tyrosine kinase inhibitors that are approved and commercially available for this particular cancer.”

The professorship is also allowing Worden time to establish smaller pilot projects. “For example, one of the nuclear medicine physicians approached me about an agent we’ve actually used in adrenal cancer that may have some activity in thyroid cancer,” says Worden.
“So we’re talking around the idea of developing a pilot study, which means treating a small group of patients after they’ve failed their conventional treatments to see if there is a signal suggesting clinical activity.”

Another idea from the endocrine oncology team is to evaluate the responses to tyrosine kinase inhibitors before and after undergoing PET imaging. Worden and Anca Avram, MD, professor, Radiology; director, Nuclear Medicine Medical Student Education; and medical director, Nuclear Medicine Therapy Clinic, conducted a retrospective analysis that suggested the degree of response on PET imaging correlated with duration of treatment response and progression-free survival in patients receiving tyrosine kinase inhibitors for their iodine-refractory thyroid cancers. “The idea now is to test this hypothesis with a prospective clinical study,” he says. “This is an investigator-initiated study, and such an opportunity would not be possible if we did not have additional funding to pay for data management, a research nurse and the additional non-standard of care PET scans that will be required.”

Worden is grateful for the exceptional support he and Haymart have received from the department. “The backing from John Carethers, MD, chair, Department of Internal Medicine, has been very important to us,” says Worden. “John very much values endowed professorships, and he has been exceptionally helpful in bringing these gifts to fruition.”

**IMPROVING MANAGEMENT OF THYROID CANCER**

For years, Haymart has recognized that thyroid cancer research was understudied, and she saw an opportunity to make a difference through research. “The lack of high-quality research influenced the quality of patient care,” says Haymart, who in the past decade built and now leads an internationally recognized research team focused on outcomes and health services research in thyroid cancer diagnosis, prognosis, management and survivorship. Her investigations focus on variation in the management of thyroid cancer, with an emphasis on the role of patients, providers and health systems in thyroid cancer diagnosis and treatment.

Haymart has set up collaborations with other researchers at U-M with complementary skills, including survey methodology, health economics and decision psychology, and with clinical colleagues who have expertise in surgery and radiology. “More recently we’ve started to collaborate with individuals at other institutions to make sure that we have greater reach with the work that we’re doing,” she says: “Without Mr. Wigginton’s support we wouldn’t be able to build the team that we currently have. And we wouldn’t have nearly the level of productive data we’ve collected with our research. We’re very appreciative of his interest in our work. We are inspired by our patients, especially by the Wiggintons. Jim is someone who loved his wife dearly,” says Haymart. “He was exceptionally devoted to her and to the idea of improving the care of patients with thyroid cancer. I’m deeply honored to receive this professorship.”
THE REDDY FAMILY GENETIC MEDICINE CANCER FUND

GOUTHAM NARLA, MD, PHD, SUPPORTS FUNDING FOR A PROFESSORSHIP FOCUSED ON ADVANCING CANCER RESEARCH

“If my grandparents were alive today to see our efforts in establishing this professorship, they would be very happy,” says Associate Professor Goutham Narla, MD, PhD, chief, Division of Genetic Medicine. Narla’s grandfather had prostate cancer and passed away a few years ago, and his grandmother was an ovarian cancer survivor who then developed mesothelioma years after that. She passed away in 2019. “Both were born in India and believed so much in the education of their children and grandchildren. This professorship would mean so much to them in that an institution of this caliber would mean so very much to them and their grandchildren, and they would be very happy,” says Narla.

A gift from Narla’s mother, Jyothsna Narla, MD, a pathologist in San Jose, California in the fall of 2019, established the Reddy Family Genetic Medicine Cancer Fund within the U-M Division of Genetic Medicine in memory of and to honor his grandparents R.S.N Murthy and Bhaskaramma Reddy for their unwavering commitment and passion for medicine and education. “This is actually a currently endowed cancer fund, and the idea is that it would eventually be converted to a professorship in the family’s name after monies are in place,” says Narla. The mission of the fund is to support highly innovative basic and clinical research, and educational activities in the field of cancer with a goal toward further developing new therapies for cancer patients. The fund has already grown, with gifts and pledges from additional donors, including Narla and his wife, Analisa DiFeo, PhD, associate professor, U-M Department of Pathology, and associate professor, U-M Department of Obstetrics & Gynecology, and other members of his family, and is expected to be fully endowed within the next four years.

From a long-term perspective, Narla believes that the impact of the professorship will be in the development of new ways to treat cancer, coupling knowledge of the genetics and genomics of cancer with novel targeted therapies. “In the near term, it would result in better access to patients, especially those who are underserved,” says Narla. “And I mean that broadly — from minority populations to those who are socioeconomically disadvantaged to those in rural areas of Michigan — to really have access to state-of-the-art genetics testing and precision medicine. For example, expanding patient populations that have access to state-of-the-art sequencing at U-M, and things that my division and others are doing from a sequencing perspective. And then pairing that with our oncologists to allow patients with metastatic cancer to get the newest and best therapies.”

Looking forward, Narla and his family would like to support a faculty member who believes in and has a track record of mentorship of the next generation of physician-scientists and genetic counselors. “The idea is to support the research efforts, the laboratory and an individual who really epitomizes that commitment,” he explains. “Of course, we want that person to be doing cutting-edge science in medicine. But we also want that person to be someone who truly believes in mentorship and is focused on education.”

Narla is optimistic that this dream will come to fruition. “In the ever-changing landscape of health care and research funding, oftentimes our biggest and boldest ideas can be difficult to support from more traditional mechanisms, such as the National Institutes of Health or other funding agencies,” says Narla. “I really think that philanthropy paves the way for some of our most bold and audacious ideas, and gives them a chance to really see the light of day. I am so incredibly grateful to my parents, as well as the University of Michigan, for doing such an exceptional job in raising money to support those bold ideas and concepts.”

The Reddy Family Genetic Medicine Cancer Fund was created to honor R.S.N Murthy and Bhaskaramma Reddy.
Advancing Clinical Care

Professorship support is inspiring faculty to boldly explore new ideas, bring them into the clinic and dramatically improve patient outcomes.
When Rodica Busui, MD, PhD, was introduced to diabetes in the 1980s as a medical student in Timisoara, Romania, she had no way of knowing she’d one day be at the leading edge of the field. “As medical students, we didn’t have glucose meters or even insulin syringes,” she says. “I remember rushing to the hospital every morning to boil urine before the wards opened and dosing insulin with archaic, heavy instruments with blunted needles.” But what she remembers most were the complications. That’s when she became determined to do everything in her power to help patients with diabetes have a better life.

BUILDING EXPERTISE

Preventing complications became Busui’s mission — particularly the peripheral neuropathy that led so many of her patients to amputations and the cardiac autonomic neuropathy that predisposed them to sudden cardiac death. As a medical trainee, she became involved in the first diabetic foot salvage efforts in Romania. But she also wanted to better understand why diabetes predisposed patients to nerve damage at a molecular level. So, after her residency, she pursued a PhD in molecular biology, using her dissertation to examine the role of oxidative stress in this process.

This preparation put her in the ideal position to exploit an event that opened up opportunities she could never have imagined. “The resources for diabetes research in Romania were nonexistent,” says Busui, “but the [1989] revolution opened doors for me.” In 1995, she was able to take advantage of her newfound freedom to pursue postdoctoral research in the U.S. on a Fulbright Scholarship.

“They asked me where I wanted to go, and I immediately said, ‘Michigan!’” says Busui. “There was a pause, and they replied, ‘Do you know how cold it is there?’ But I began rattling off all of U-M’s expertise in endocrinology and diabetes, and they could see I had made my decision.” She arrived in what is now the Division of Metabolism, Endocrinology & Diabetes under Division (MEND) Chief Douglas Greene, MD. An expert in the pathogenesis and prevention of diabetic neuropathy, he became Busui’s mentor. At the bench, they explored new mechanisms behind peripheral nerve damage in diabetes, which they hoped would lead to disease-modifying therapies. Then, with Martin Stevens, MD, Busui engaged in clinical studies of autonomic nervous system dysfunction in the diabetic heart.

A faculty position in Ohio introduced Busui to clinical research. She became a principal investigator in the Action to Control Cardiovascular Risk in Diabetes (ACCORD) trial, which tested the efficacy of tight glycemic control, tight blood pressure control and the treatment of multiple blood lipids in lowering the risk of major cardiovascular events in adults with type 2 diabetes. Not only would this experience provide the foundation for a number of insights Busui would generate during her career about the relationship between blood sugar fluctuations, cardiac autonomic neuropathy and cardiovascular risk, it also gave her experience in the very type of research the MEND Division was eager to develop.

So it was in 2005 that Busui was recruited back to U-M to develop a diabetes clinical research program. Division Chief Peter Arvan, MD, PhD, (page 72) took the bold step of encouraging her to shutter the basic research portion of her lab and focus on becoming a leader in translational and clinical research. Though it rankled her a bit at the time, she says, it was some of the best advice she ever received.
In the ensuing decade and a half, Busui has dug deeply into how complications develop from a mechanistic standpoint — especially why some patients develop them while others are protected, regardless of their glucose control — as well as the efficacy of various prevention and treatment strategies. She collaborates on much of this work with her U-M colleague and mentor, Eva Feldman, MD, PhD, the Russell N. DeJong Professor of Neurology.

Busui has offered expertise and leadership to many of the landmark diabetes trials funded by the National Institutes of Health, including ACCORD, the Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications (DCCT/EDIC), a multicenter clinical trial of allopurinol to Prevent GFR Loss in Type 1 Diabetes (PERL), Glycemia Reduction Approaches for Diabetes: A Comparative Effectiveness Study (GRADE), Bypass Angioplasty Revascularization Diabetes 2 (BARI-2D), Targeting Inflammation with Salsalate for Type 2 Diabetes (TINSAL T2D), as well as many other foundation-and industry-funded and investigator-initiated studies.

Through this work she has contributed foundational insights, including the importance of early, tight glucose control for the prevention of cardiac autonomic neuropathy and other complications in type 1 diabetes; the inability to reverse established complications with later glucose control; and the superiority of insulin-sensitizing over insulin-providing treatments in reducing peripheral neuropathy in type 2 diabetes; and the role of cardiovascular autonomic neuropathy as an independent risk factor for cardiovascular events and death in type 1 and type 2 diabetes.

More recent team science with U-M colleagues has provided insight into the heterogeneity in patients’ risk for complications, including differences in amino acid and TCA metabolism between those who do and do not develop complications, as well as a genetic locus on chromosome 2 associated with significant protection against diabetic neuropathy. They are now working to identify therapeutic targets relevant to these findings.

As robust as her body of research is, Busui is also a compassionate clinician, dedicated educator and dynamic university leader. She is co-director of the Michigan Peripheral Neuropathy Center and vice chair for clinical research in the Department of Internal Medicine. In her latter role, she has supported the Medical School’s ambitious overhaul of its clinical trial enterprise and worked to connect researchers across disciplines and along the research continuum. “My goal is to create mechanisms that foster communication along the entire pathway from our talented bench colleagues who are identifying critical disease pathways to our clinical researchers who can design trials for proposed interventions to our outcomes researchers who can study the intervention in clinical practice,” she says.

In 2018, Busui built on her earliest work in diabetic neuropathy by helping to launch a diabetic foot research center at U-M within the NIDDK’s Diabetic Foot Consortium. The center is helping to validate biomarkers that predict healing outcomes and suggest appropriate treatments.

The center builds on the success of a MEND-podiatry partnership that led to a 50 percent reduction in the rate of major, nontraumatic lower limb amputations for Michigan Medicine patients.
One of her signature contributions has been developing infrastructure to train the next generation of clinical research leaders. In partnership with Assistant Dean for Clinical Research Anna Lok, MD, MSc (page 103), Busui co-created the Clinical Trials Academy. Designed to be the clinical-trial counterpart of MICHRC’s highly successful R01 Boot Camp, it brings together U-M’s leading trialists, statisticians and regulatory experts to teach junior faculty how to design robust clinical trials. Its graduates have already secured government, philanthropic and industry funding and launched investigator-initiated trials.

**THE REWARDS OF A PROFESSORSHIP**

It is for this body of work that in 2019, Busui was installed as the Larry D. Soderquist Professor. The professorship, which aims to accelerate medical research related to type 1 diabetes, was created by William K. and Delores “Dee” Brehm.

Busui also feels a kinship to Larry Soderquist. Like Busui, he was a Fulbright Scholar, a holder of dual doctorates and a leading expert in his field, which was securities law.

The Larry D. Soderquist Professorship, which aims to accelerate medical research related to type 1 diabetes, was created by William K. and Delores “Dee” Brehm.

Being the first woman in her division to receive an endowed professorship is especially significant to Busui. “It’s important that Dr. Carethers has put so much effort into acknowledging the excellent quality research and work that is done by women in our department, and is working to give faculty equal access to this type of recognition and resources, irrespective of their sex,” she says.

Of course, the resources that come with the professorship are highly prized as well. “Professorship support gives you the freedom to be bold, to explore something out of the box that is not ready for traditional funding, but may lead to a much bigger discovery,” she says. Busui is using her professorship to conduct experiments on the heterogeneity in the risk of developing diabetes complications.

Busui is also using her professorship resources to support her mentees as they seek sustainable funding of their own. She funded one of them to present her research at an important international meeting, where she won best oral presentation, met and learned from other researchers, and began to establish her international reputation. Busui is funding another mentee so that he is not in clinic every day and has some protected time for research.

This kind of informal support for young investigators is a critical complement to the early-career professorships recently established by the department (page 62). “Dr. Carethers awarded three of these professorships last year and three this year,” she says. “They provide support for talented young investigators, giving them a boost of confidence and the freedom to pursue their ideas and acquire data for a successful grant submission. The professorships also recognize the senior, very accomplished faculty in the department for whom they are named. This is another professorship initiative that has had a huge impact on our faculty, and it has been rewarding to participate in it.”
Anna Suk-Fong Lok, MD, DSc, has defied doubters at several points in her career to become an international leader in hepatology with a legacy of turning robust clinical research into better care for patients with hepatitis B and C. In the process, she’s been awarded most of the honors the field and the university can bestow, including two professorships, and has created endowed research funds to support the next generation of researchers and the breakthroughs they’ll incite.

PASSION FINDS A MENTOR

Flouting her father’s pronouncement that “science is not for girls,” Lok followed her passion into an all-boys school for science in the 12th and 13th grades, proceeding directly into an all-boys school not for girls,” Lok followed her passion into an all-boys school for science in the 12th and 13th grades, proceeding directly into medical school at the University of Hong Kong, where she found a passion for hepatology and, after completing her gastroenterology training, landed the field’s most coveted fellowship at the Royal Free Medical School in London.

This fellowship introduced Lok to the woman who would become her mentor as well as the namesake for the Distinguished University Professorship she would receive from U-M in 2019 — Dame Sheila Sherlock, MD. “Dame Sheila was one of the founders of modern hepatology,” says Lok. “She was a pioneer, a master clinician, an outstanding scientist and a mentor to more than 300 trainees from all over the world, including the only two directors of the Michigan hepatology program — the late Keith Henley and myself.”

It was during this fellowship that Lok first engaged in clinical research. One of her highest-impact studies compared dosing regimens for interferon in the treatment of chronic hepatitis B. Her finding that dosing patients three times a week was as effective as daily injections but with fewer side effects became the worldwide standard of care for the next decade.

Under Sherlock’s influence, Lok developed her deep commitment to mentoring, her forthright style of teaching and her personal approach to her patients. “I remember Dame Sheila would ask her patients a lot about their lives — about their families, even their pets,” she says. “And she would put this information into the medical record. As a trainee, I thought this was strange: Why would you document a patient’s German Shepherd? But I realized that the next time she saw the patient, she would ask after the dog, and the patient immediately felt at ease.”

After her fellowship, Lok joined the medical faculty at the University of Hong Kong, where she began a career-long research focus on the natural history of hepatitis B. After quickly becoming the equivalent of a full professor, she decided to again defy the advice of those around her and leave her comfortable position for what many thought would be “professional suicide” in the U.S. “My colleagues felt that hepatitis B would soon be eradicated in the U.S. as an effective vaccine had become available, and that I would never find a patient base or grant funding,” says Lok.

But, eager to take her work to the next level, Lok took the plunge. She accepted a position with Tulane University in 1992 and then moved on to the University of Michigan in 1995.

Lok credits “the Sherlock brand” for her ability to make this leap. “As a foreign medical graduate with no clinical training in the U.S., I would not have landed a faculty position at U-M, let alone an appointment as a full professor and director of a clinical program, had I not trained with the best in the world,” she says. “Dame Sheila inspired me and many others that it’s possible for women to reach the top in science and medicine.”

LEADERSHIP & IMPACT

At U-M, Lok built the hepatology program into one of the largest in the U.S., expanding from five to 16 faculty with expertise across the spectrum of liver disease. She also continued her clinical research program, which would go on to change how hepatitis B and C were treated, dramatically improving patient outcomes and advancing clinical care.

LOK’S RESEARCH IMPACT

At U-M, Lok led the research program, which would go on to change how hepatitis B and C were treated, dramatically improving patient outcomes and advancing clinical care.
ADVANCING CLINICAL CARE

preventing the progression to cirrhosis and liver cancer.

In hepatitis B, Lok has helped identify the influence of viral variants on disease progression and response to treatment. She has also been involved in clinical trials for all the approved antiviral drugs, which have made chronic hepatitis B a controllable disease, despite not fully eliminating the virus from patients.

Lok has also developed methods to assess the severity of liver disease, including the Lok Index and the aspartate aminotransferase-to-platelet ratio index. These scores — which indicate a patient’s risk for liver fibrosis and cirrhosis — allow clinicians to prioritize patients for treatment and have been adopted by the World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC).

In hepatitis C, Lok was the first to demonstrate that a short course of orally administered antiviral drugs can cure the disease. Her proof-of-concept trial paved the way for the development of combinations of direct-acting antivirals that can cure hepatitis C without the use of interferon in more than 95 percent of patients.

Lok has also written international guidelines for AASLD and WHO on hepatitis diagnosis, prevention and treatment.

SUPPORTING PATIENTS, TRAINEES

Yet for all the impact it has had, Lok’s research is only part of her mission. “I take pride in my research, but I went into medicine to be a doctor,” she says. “There is nothing more meaningful than to be recognized by patients and families for your medical skills and compassion.”

This is precisely what happened in 2004 when Lok got a call from Charles Andrews, the husband of Lok’s former patient Alice Lohman Andrews, who had lost her battle with liver disease eight years earlier. Both Charles and Alice were U-M graduates, and he asked Lok how the family could support U-M’s search for more effective treatments.

Lok says she was deeply moved, but also surprised that Andrews would think of her after so much time, particularly when she hadn’t been able to save Alice. Andrews told her that what motivated him was Lok’s kindness; he recalled the caring way she’d explained the disease’s progression and how they would approach it — making something terribly difficult a little easier to bear.

Andrews began by supporting Lok’s research through the TUKTAWA Foundation, a family foundation of which he is a trustee. In 2007, the foundation established the Alice Lohman Andrews Research Professorship in Hepatology, which Lok now holds.

Dame Sheila Sherlock, MD, was one of the founders of modern hepatology. She was a pioneer, a master clinician, an outstanding scientist and a mentor to more than 300 trainees from all over the world.
ADVANCING CLINICAL CARE

Lok is honoring this gift by investing in the next generation of hepatologists and the advances they will generate. She supports U-M fellows, residents and students, funding aspects of their research and sending them to meetings to present their results. For international trainees, she often helps cover their health insurance or other essentials not met by their stipend. She helps U-M undergraduates conduct research to strengthen their applications to medical school. This includes several who traveled to China as part of the Michigan Medicine/Peking University Health Science Center Joint Institute for Translational and Clinical Research. Lok’s mentees have investigated topics from how hepatitis B leads to liver cancer to why certain antivirals cause drug resistance to patient knowledge about fatty liver disease. To further this work, Lok recently established an endowed research and training fund through the AASLD Foundation (see box) as well as the Anna S.F. Lok, MD, Hepatology Breakthrough Research Fund at U-M. The latter is an endowed fund designed to support pilot studies by early-career U-M investigators with the potential to dramatically improve liver disease diagnosis and treatment. Through appeals to her patients, medical school classmates, former trainees, fellow faculty, foundations and others, as well as her own contributions and matching funds from the department, she was able to secure a level of commitment that will fund novel studies each year in perpetuity.

“I’ve trained a lot of young people, and I know how difficult it is to get started,” says Lok. “Particularly when you have a wild idea that you think may lead to a breakthrough, but you haven’t yet proven yourself and don’t have the pilot data you’ll need to apply for grant funding.” Her fund aims to support these early swing-for-the-fences studies by junior faculty and fellows.

The first grant was awarded in 2019 to Vincent Chen, MD, clinical lecturer in the Division of Gastroenterology and Hepatology, to explore liquid biopsies for liver cancer. “In liver cancer, it’s often hard to get a biopsy, and even when you do, the sample is not necessarily representative of the entire tumor,” says Lok. “There’s a lot of interest in testing the blood to see if it contains circulating cells that better represent different parts of the tumor. This technique is advanced in breast cancer, but not in liver cancer.” Chen’s team seeks to identify the genetic characteristics of circulating tumor cells that might predict which patients are likely to respond to particular treatments.

Lok says she is deeply appreciative of the support that is allowing her to bring up the next generation in the same way that her mentor, Dame Sheila Sherlock, did for her. Like Sherlock, Lok stays connected to her international “family” of trainees, gathering each year at the AASLD meeting and supporting them as they carry on her legacy of transforming the treatment of liver disease.

Lok is among an elite group of clinical researchers to have been funded continuously by the NIH for more than two decades. She was also ranked in the top 1 percent of most-cited researchers from 2002 to 2012 by Thomson Reuters. In 2017, she served as president of the American Association for the Study of Liver Diseases (AASLD) and is now assistant dean for clinical research at the U-M Medical School, leading the transformation of U-M’s clinical trials enterprise.

PAYING IT FORWARD

With numerous awards and two professorships to her name, Lok is paying it forward — using her professorship funds and also launching two endowed research funds to support the next generation of hepatology investigators. The first — the Anna S.F. Lok, MD, Hepatology Breakthrough Research Fund — is housed at U-M and supports high-potential pilot studies by junior faculty and fellows. The second — The Anna S. Lok Fund for Excellence in Research and Training — is housed at the AASLD Foundation and supports mentored research by early-career academic hepatologists.
Michelle Kahlenberg | Giles G. Bole, MD, and Dorothy Mulkey, MD, Research Professor of Rheumatology

LUPUS WITHOUT ILLNESS

PROFESSORSHIP SUPPORTS QUEST TO FIND LUPUS TRIGGERS, PREVENT FLARES

Michelle Kahlenberg, MD, PhD, is motivated by a clear vision — to create a world in which patients with autoimmunity don’t get sick. She has spent the near-decade since completing her rheumatology fellowship at U-M on a quest to identify the switches that trigger disease flares and complications in lupus, so she can devise therapies to turn them off. And she’s made astounding progress, thanks to the breadth of her expertise and her lab, which spans the basic-to-clinical research continuum. Kahlenberg has already amassed a sizable grant portfolio and a bevy of accolades, including a 2019 PECASE award, the highest honor the U.S. government bestows on scientists and engineers launching their independent research careers. Her success was capped last summer with her installation as the Giles G. Bole, MD, and Dorothy Mulkey, MD, Research Professor of Rheumatology.

RESEARCH MOTIVATION & IMPACT

It was during her fellowship that Kahlenberg found her passion for lupus. “My patients were so much like me,” she says. “They were often working moms my age, whose lives got severely interrupted when they got sick. It was easy to have empathy for them and want to help. There were also so many unanswered questions that I had the skill set to try and answer.”

This is because Kahlenberg’s MD/PhD training engaged her in probing the molecular mechanisms of inflammatory disease. Using mouse models, human tissue samples, clinical trials, bioinformatics, systems biology and cutting-edge techniques from CRISPR-Cas9 to single-cell RNA sequencing, she now works to reveal the mechanisms driving lupus — aiming to interrupt the disease with increasingly personalized treatments.

One of Kahlenberg’s earliest findings was that irritating the skin of mice with lupus induced inflammation in their kidneys. This led her to investigate whether the disease switch she was seeking might be found in the skin.

One of her most promising leads is the inflammatory cytokine interferon kappa (IFN-κ), a switch that her lab has shown can be turned on in photosensitive lupus patients by exposure to sunlight. They’ve revealed that compared to healthy controls, IFN-κ is elevated in the skin of lupus patients and that it can induce the death of

“Receiving the Giles G. Bole, MD, and Dorothy Mulkey, MD, Research Professorship of Rheumatology lets me be creative in my science. With a grant, you have to spell out every step in your plan, but an endowed professorship allows you to take a new direction to push your science to the next level.”

— Michelle Kahlenberg, MD, PhD
Skin cells after exposure to UV light. These dead cells, which aren’t cleared efficiently in lupus patients, appear to help drive the autoimmune response.

Kahlenberg’s lab has also implicated IFN-κ in what may be a vicious cycle of inflammation and disruption to the skin’s microbiome in lupus. They found that the elevated IFN-κ in patients’ skin can interrupt its barrier function, allowing bacteria like Staphylococcus aureus to adhere more strongly to it. They discovered that lupus rashes are, in fact, highly colonized by staph, which in turn produces toxins that can drive both local and systemic inflammation. Promisingly, they found that exposure to the IFN-κ-blocking drug, baricitinib, could interrupt this process.

Kahlenberg is now undertaking three clinical studies in the hopes of translating her findings into treatments. The first, funded by a new 2019 NIH Autoimmunity Center of Excellence grant, will test whether the IFN-κ-blocking drug, tofacitinib, can protect photosensitive lupus patients from the harmful effects of UV light. The second is studying whether topical antibiotics can change the inflammatory profile of lupus rashes. The third, funded by a 2019 Lupus Research Alliance Novel Research Grant, is comparing the effects of UV light on the skin of photosensitive and non-photosensitive lupus patients as well as healthy controls to identify the molecular changes that occur in each.

As her team explores the mechanisms driving various manifestations of lupus, Kahlenberg hopes to make treatment increasingly personalized. “Lupus is a different disease for every patient,” she says, “but today’s treatments don’t reflect that. For example, our lupus nephritis treatments have around 50 percent efficacy, so everybody gets that because half will respond. The problem is we don’t know ahead of time which half — so there’s a lot of trial and error.”

To address this, she has launched a personalized medicine project with a U-M colleague from dermatology, Johann Gudjonsson, MD, PhD, the Arthur C. Curtis Professor of Skin Molecular Immunology. In it, they will analyze biosamples and medical histories from participants with lupus, psoriasis and no autoimmune disease. Among Kahlenberg’s goals for the study are to identify subgroups of patients who share common drivers of disease progression, then examine how they respond to various treatments. This was the first study funded as a Taubman Institute Innovation Project.

A RESONANT PROFESSORSHIP

When Kahlenberg was awarded the Giles G. Bole, MD, and Dorothy Mulkey, MD, Research Professorship of Rheumatology, she found it gratifying along many dimensions. First, she is deeply appreciative of the security and flexibility it provides. “Having a source of funds to help protect your time and pay for expenses if you have a temporary pause in grant funding is very reassuring,” she says. “But just as valuable is that it lets you be creative with your science. With a grant, you have to spell out every step in your plan, but an endowed professorship allows you to take a new direction to push your science to the next level.”

Kahlenberg at the professorship inauguration with Elizabeth Bole.
To that end, Kahlenberg is using her professorship to study diseases that are related to but different from lupus, such as dermatomyositis. “We don’t have a grant for this yet, so the professorship is allowing us to do skin biopsies, and compare and contrast the inflammatory pathways to learn why each disease behaves differently,” she says.

Kahlenberg also deeply values the professorship’s gravitas. “It carries weight and shows that you are respected within your institution,” she says.

But perhaps most rewarding are the personal connections she has found with her award’s namesakes. Giles Bole, MD, is well known for serving as dean of the Medical School from 1990 to 1996, overseeing diversity initiatives, a redesign of the medical student curriculum, a modernization of facilities and a leap in the Medical School’s U.S. News & World Report ranking from 16th to 9th.

Perhaps less widely known is that his research focus was lupus. Early in his career, Bole and his collaborators explored immunosuppression in animal models of lupus and the connection between oral contraceptives and clinical manifestations of lupus in women. Kahlenberg herself is a leader in animal modeling, serving as associate director of the animal modeling core of U-M’s new NIH-funded Skin Biology and Diseases Resource-based Center. She has also been involved in identifying a molecular switch in the skin, called VGLL3, that drives inflammation in lupus and helps explain why the disease is more prevalent in women.

Even less well known is the fact that Bole and Kahlenberg both raised sheep — Bole, extensively in his retirement, and Kahlenberg, on the farm she works with her family today. “The wildest twist, which we didn’t learn until my induction ceremony,” she says, “is that the person who was mentoring my daughter in our 4-H club for showing sheep is actually Giles Bole’s granddaughter!”

Mentoring was an essential part of Bole’s career as well. In fact, it was his mentorship of Dorothy Mulkey, MD, one of U-M’s first female rheumatology fellows, that inspired her to honor Bole with an estate gift that helped establish the professorship that now bears their names. Mulkey would go on to establish a flourishing private practice and serve as assistant dean of Michigan State’s College of Human Medicine.

Mentoring has become a cornerstone of Kahlenberg’s career as well. She is profoundly grateful for the examples and inspiration provided by the careers of Giles Bole and Dorothy Mulkey.

For Kahlenberg, mentoring is among the most satisfying aspects of her job. Not only does she enjoy supporting the scientists in her lab, but she helped establish a national mentorship program for academic rheumatologists through the American College of Rheumatology.
CHETCUTI IS AWARDED PROFESSORSHIP NAMED AFTER REVERED MENTOR ERIC TOPOL, MD

In 1989, Stanley Chetcuti, MD, was a student at the University of Malta Medical School in Msida, Malta, completing a rotation in the cardiac unit when one of his professors said, “You know, we’ve been looking at a lecture that cardiologist Eric Topol gave in the United States. He’s one of the superstars in cardiology, an outstanding speaker, and someone you should really meet if you ever get a chance.”

As fate would have it, in 1995, Chetcuti matched for a fellowship in internal medicine cardiology at the Cleveland Clinic in Cleveland, Ohio, and went on to spend three years training under Eric Topol, MD, then chair of the Department of Cardiology. “It was a program that was very vibrant, and I got to know Eric very well. He’s a dynamic force, and all of us who trained under him have nothing but the utmost admiration,” says Chetcuti, professor, Division of Cardiovascular Medicine, who also serves as director of the Cardiac Catheterization Laboratory and co-director of the Structural Heart Program.

A faculty member at U-M from 1985 to 1991, Topol was instrumental in defining the role of coronary thrombolysis as a lifesaving treatment for acute myocardial infarction. He also made seminal contributions to the understanding of the role of platelets, percutaneous coronary interventions and genetics in acute coronary syndromes. During his tenure, Topol served as director of both the cardiac catheterization laboratory and the interventional cardiology program.

CHETCUTI AWARDED TOPOL PROFESSORSHIP

In 2011, Chetcuti found himself at yet another fateful moment in his career, when he was named the inaugural recipient of the Eric J. Topol Collegiate Professorship in Cardiovascular Medicine, created to honor Topol’s many clinical and research contributions to the subspecialty of interventional cardiology, both at the U-M and in the medical field at large. “This professorship is truly the highlight of my academic career and nothing will come close to it. I was recognized by my institution and, just as important if not more important, the award was handed to me at the ceremony in the presence of Dr. Topol, a world-renowned cardiologist. With it, I’ve been able to think more conceptually about programmatic development of different aspects of interventional cardiology. And to have some breathing space to be able to soar slightly above the clouds and to think on a much grander scale than just the day-to-day grind,” he says. “Dr. Topol has always been one of the preeminent leaders in the field, so having this award comes with considerable weight and responsibility. Not only do you need to deliver patient care in the best possible way, you also need to remain open to new frontiers and territories.”

Since joining the faculty in 2000, Chetcuti has focused his research on intravascular ultrasound, novel
“Dr. Topol has always been one of the preeminent leaders in the field, so having this award comes with considerable weight and responsibility.
— Stanley Chetcuti, MD

ADVANCING CLINICAL CARE

treatment for acute coronary syndromes and percutaneous management of patients with structural heart disease. “The last nine years were very productive with the program’s involvement in many landmark clinical trials in the field of percutaneous treatment of aortic stenosis,” says Chetcuti. “The results of these trials has led to a completely new way of managing patients with aortic stenosis. There is currently a new focus in the mitral and the tricuspid valve space with many trials planned for the coming four years.”

The award has given Chetcuti the time and resources to focus on the growth of the U-M Frankel Cardiovascular Center’s Structural Heart Program, recognized as one of the top centers in the country with regard to transcatheter aortic valve replacement (TAVR), a minimally invasive, catheter-based procedure to replace the diseased aortic valve in patients with severe aortic stenosis who are unable to withstand an open-heart procedure.

TAVR has evolved at record pace since the first procedure was performed at the Frankel Center in 2011. “The program was in its infancy when I received this award. Through this professorship, we not only grew the program, but we’ve made it a powerhouse both clinically and academically. Just to put things in perspective, when we started doing structural heart procedures, we were doing 75 per year. Now, we’re doing over 300,” he says. “When TAVR was first introduced, we were only working with patients who were too sick to have surgery. Now the procedure is approved for all over the age of 65, and TAVR has surpassed open heart surgery as the most common way to replace an aortic valve in the United States, and in the state of Michigan. That’s dramatic. Today, we’re thinking about TAVR in the lifetime management of a patient with aortic valve disease.”

Chetcuti adds that Paul Michael Grossman, MD, professor, Division of Cardiovascular Medicine, has built an active TAVR program at the VA Ann Arbor Healthcare System. Funding from the professorship has also given Chetcuti the latitude to develop and conceive of several new programs and initiatives, such as the Chronic Total Occlusions (CTO) program, led by Daniel Stephen Menees, MD, assistant professor, Division of Cardiovascular Medicine, to treat nearly complete blockage of one or more coronary arteries. “We have also initiated a MATRix (Mitral and Tricuspid Interventions) Multidisciplinary Team which is committed to providing catheter-based therapies for mitral and tricuspid valve disease,” says Chetcuti. “And we’ve recruited a faculty member who is helping us treat patients with chronic thromboembolic pulmonary hypertension, a form of pulmonary hypertension caused by blood clots affecting the lungs.”

Dr. Topol has always been one of the preeminent leaders in the field, so having this award comes with considerable weight and responsibility.
— Stanley Chetcuti, MD
CLINICAL TRIALS

In the last decade, Chetcuti and his team have been involved in a number of multi-center clinical trials with TAVR. “We are one of the highest enrollers in the country of all clinical studies done with self-expanding valves for this procedure,” he says.

In 2016, the Frankel Center enrolled its first patients in a newly expanded indication trial for the CoreValve® Evolut® R System, a TAVR system that’s only been approved in the United States for high- and extreme-risk patients. The trial was designed to assess the safety and performance of a new approach to aortic valve replacement. The CoreValve® Evolut® R System is the only next-generation recapturable, self-expanding transcatheter aortic valve replacement system commercially available in the United States. The system was designed to increase the potential for optimal device placement during TAVR by providing physicians the option to recapture the valve and reposition it during the procedure as necessary. U-M was one of the first heart centers in the country, and the first in Michigan, to use the device.

Chetcuti reports that there are currently several new clinical studies on the horizon, including new edge-to-edge repair in the mitral and tricuspid space, annular synching procedures and percutaneous mitral and tricuspid valve replacement.

U-M has become very progressive in the aortic space with newer technologies and other innovations, offering patients five different valves, including: the SAPIEN 3, CoreValve®, Lotus Edge, Accurate Neo and Jena valves as part of their clinical practice multi-center trial. “Many companies and venture capitalists consider U-M to be a primary implanter of new valve devices,” says Chetcuti. “Typically, when a new device is created, companies go to South America or Europe to get them implanted or tested. We would like to make U-M an ideal site for companies to come to for testing first devices in humans. There are a plethora of new devices we have to learn, test and integrate into our practice. It’s a whole new horizon.”

The space of interventional cardiology has undergone a dramatic shift over the past 10 years. “Looking ahead, not only do we have to change our training programs, but we need the bandwidth to lobby national institutions, like the American College of Cardiology, to change the format of our training programs to incorporate newer technologies and techniques.”

— Stanley Chetcuti, MD
W. Joseph McCune | Michael H. and Marcia S. Klein Professor of Rheumatic Diseases

ADVANCING TREATMENT FOR RHEUMATIC DISEASES

A GIFT FROM MARCIA AND MICHAEL KLEIN BRINGS NEW THERAPIES TO LIGHT

In 2001, Marcia Klein, of Bloomfield Hills, Michigan, was diagnosed with both lupus and rheumatoid arthritis. The unsettling news led her, along with her husband, Michael Klein, to seek the help of W. Joseph McCune, MD, professor, Division of Rheumatology, and director of the U-M Lupus Program. A relationship was forged as the Kleins delved into learning about the two autoimmune diseases that so deeply affected their lives, the treatment options currently available, and the research being done at the U-M.

Since joining the U-M faculty in the early 80s, McCune had concentrated his clinical research on rheumatic diseases, with particular focus on lupus, an autoimmune disorder that affects the joints, skin, kidneys, heart, blood vessels, lungs and brain. His investigations study how to predict disease progression and activity, prevent permanent organ damage and reduce flares.

As the Kleins learned about McCune’s research — and about the 3.6 million Americans affected by the pain, inflammation and debilitation of rheumatoid arthritis and lupus — they decided to establish a research fund to advance the work being done at U-M. The fund also supports a long-term study to determine the causes and treatment of premature cardiovascular disease in women with lupus.

ESTABLISHING A PROFESSORSHIP IN RHEUMATIC DISEASES

The Kleins saw an even greater need for research in lupus and other rheumatic diseases, and decided to make a new gift from their family foundation to transform the Klein Research Fund into a professorship bearing their name. In September 2014, the Michael H. and Marcia S. Klein Professorship in Rheumatic Diseases was inaugurated and was subsequently awarded to McCune.

“It is important to note that, prior to the establishment of the professorship, the couple had already supported McCune’s work at $100,000/year for more than 10 years. The Lupus Program has grown significantly as a result of the Kleins’ generosity, and has supported the creation of the most important multidisciplinary clinical centers for treating lupus in the state. The collaboration includes the expertise of rheumatologists, nephrologists, pulmonologists, hematologists, dermatologists and high-risk obstetricians and gynecologists, all with a special interest in lupus, who provide comprehensive care for all lupus patients. McCune points to the value of philanthropic support that allows faculty to start projects before they’re funded, or to finish projects that are not completely funded. “If someone has enough grant money, for example, from the NIH, oftentimes, the actual funds aren’t sufficient to complete the project, or to pursue an idea,” he
SUPPORTING NEW RESEARCH

The professorship has given McCune the opportunity to participate in many research studies that would not have been possible otherwise, such as observational trials designed to study the manifestations of systemic lupus and systemic vasculitis, and to characterize these diseases more accurately by analyzing them in an organized way in large groups of patients. It has also helped to support young researchers who are just starting out. “I’ve had several younger researchers, for example, who had part of their time protected so they could do research or start research projects, and that’s been helped by the professorship,” says McCune.

**Lupus Clinical Trials Consortium**

He has used a large portion of the funds to support the Lupus Clinical Trials Consortium, a multicenter consortium designed to provide infrastructure for performing lupus clinical trials. “Lupus is a very complex disease. Clinical trials, which typically operate at a loss, have been very difficult to perform, and are almost impossible to do without philanthropic support. “For example, a large portion of the actual income from the professorship has gone to support a team of three coordinators who work in the clinical trials group. To actually be able to prove that a new lupus drug works is much more difficult than, for example, a new rheumatoid arthritis drug.”

**Understanding the Genetics of Lupus**

In addition, McCune and his team have been able to do more translational research focused on the genetics of lupus, such as why people of different ages and genetic backgrounds get the disease, the mechanisms by which lupus flares and the way in which therapeutic drugs work.

**The Role of Interferons in Lupus**

The Lupus Clinical Trials Unit has helped to perform multiple trials of new therapeutic agents, notably belimumab, or “Benlysta,” a drug designed to inhibit specific processes that induce lupus flares. Belimumab proved to be an effective drug with relatively few side effects and became the first FDA-approved therapy for lupus in 40 years.

In another avenue of research, McCune and former colleague Mariana Kaplan, MD, who has since moved to a leadership role at the National Institutes of Health, showed that one of the major causes of disability and death in lupus patients — cardiovascular disease — is significantly worsened by the direct action of interferons on blood vessels. Vascular damage is thus one of the many ways in which interferons cause disease in lupus, triggering lupus flares and inflammation in multiple organs, including skin, joints and kidneys.

**Michelle Kahlenberg, MD, PhD, associate professor, Division of Rheumatology, who trained in Kaplan’s laboratory, has broadened these earlier investigations into the importance of interferons in the pathogenesis of lupus to further characterize injury in various tissues. Her research has revealed that interferons are very important in skin disease (page 106). Based on such discoveries new therapies are being evaluated in clinical trials.**

“One of the recent drugs that we have looked at actually keeps interferons from reaching the receptor,” says Kahlenberg. “So work related to the role of interferons in causing lupus activity in various means, and identifying compounds that suppress interferon activity, has been the thrust in terms of what kinds of therapies are likely to be recognized and supported in the next few years.”

“This professorship has been an invaluable resource fostering collaborative research focused on rheumatic diseases, both within the university and with other investigators nationally and internationally. It’s getting us much closer to better treatments,” says McCune.
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