<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>CHAIR’S REPORT</td>
</tr>
<tr>
<td>4</td>
<td>CLINICAL PROGRAMS</td>
</tr>
<tr>
<td>6</td>
<td>FACULTY AFFAIRS</td>
</tr>
<tr>
<td>8</td>
<td>VETERANS AFFAIRS</td>
</tr>
<tr>
<td>10</td>
<td>BASIC &amp; TRANSLATIONAL RESEARCH</td>
</tr>
<tr>
<td>12</td>
<td>CLINICAL RESEARCH</td>
</tr>
<tr>
<td>14</td>
<td>QUALITY &amp; INNOVATION</td>
</tr>
<tr>
<td>16</td>
<td>ADMINISTRATIVE PROGRAMS</td>
</tr>
<tr>
<td>18</td>
<td>UNDERGRADUATE EDUCATION</td>
</tr>
<tr>
<td>20</td>
<td>GRADUATE EDUCATION</td>
</tr>
<tr>
<td>28</td>
<td>LEADERSHIP</td>
</tr>
<tr>
<td>54</td>
<td>EDUCATION</td>
</tr>
<tr>
<td>68</td>
<td>RESEARCH</td>
</tr>
<tr>
<td>90</td>
<td>PATIENT CARE</td>
</tr>
</tbody>
</table>

INTERNAL MEDICINE 2015 ANNUAL REPORT
STILL GOING STRONG

In 2015, U-M and the Department of Internal Medicine continued to receive recognition as standouts in the field. The annual U.S. News & World Report Best Graduate Schools rankings rated the U-M Medical School tied for 11th in the nation among research-based medical schools. U-M also increased its rank among medical schools for primary care training, coming in at 4th. Four U-M specialties ranked in the top 10, including geriatrics at 4th, internal medicine and women’s health at 6th and family medicine at 8th. Our U-M Medical School graduates continue to be rated highly by the directors of residency programs across the country.
LOOKING BACK
As the University of Michigan prepares to celebrate its bicentennial in 2017, I wanted this year’s report to take on a historical perspective. Using the bicentennial theme, “Always Healing, Forever Valiant,” we explore the developments of the U-M Department of Internal Medicine over the years.

While the front section of the report still features our updates from 2015, the rest of it is dedicated to documenting the evolution and growth of our department in leadership, research, patient care and education since the U-M Medical School was established in 1850. Where have we been? What impact have we had on Michigan and the field of medicine? While this report is by no means all-inclusive — it would take several volumes to accomplish that — we have done our best to capture some of the major highlights.

As the oldest and largest department in the medical school, we have been an integral part of its success in medical education, then clinical education and scholarly activity. You will be impressed by the medical discoveries, contributions and leadership that have been provided by our faculty.

NEW LEADERSHIP TRANSITIONS
Rob Ernst, MD, was brought on as the new assistant chair for primary care and associate division chief for general medicine for the purpose of optimizing our delivery of primary care services to provide high-quality care with a well-balanced workforce. He will also help us build our general medicine faculty and improve job satisfaction among our providers.

James Froehlich, MD, MPH, was named assistant chair for quality and innovation.

After 25 years with us, Kathleen Cooney, MD, transitioned to chair of medicine at the University of Utah on March 1, 2016. Pavan Reddy, MD, has been named interim division chief of hematology/oncology.

IN MEMORIAM
In 2015, we lost Timothy Nostrant, MD. During his 36 years of service for the Division of Gastroenterology, he was an outstanding diagnostician, skillful endoscopist and compassionate teacher. His tremendous clinical knowledge and expertise made him the “go-to” person in the division for any gastrointestinal problems.

Roger Grekin, MD, who joined our faculty in 1974, also passed away. Roger was a leader in the field of endocrinology with special expertise in endocrine hypertension. He held numerous key leadership positions including associate chief of staff for research and development at the Ann Arbor VA Medical Center (1989-2013).

Pulmonologist Robert Green, MD, died at age 89 in 2015. He started in 1958 as chief of the pulmonary disease section of the VA Ann Arbor Healthcare System and went on to serve as assistant dean of the medical school, associate dean for student affairs and chair of the faculty senate. His warmth, humor and dedication touched many during his decades at Michigan.

THE NEXT ERA
The University of Michigan Department of Internal Medicine has contributed immensely to the history of medicine in Michigan and the United States. We’ve done a wonderful job of discovering new solutions, taking care of patients and attracting top faculty. I look forward to seeing what will be accomplished in the next era as our top-tier department continues to build upon the strong foundation created by those before us.

Always healing, discovering, learning. Forever valiant.
Our clinical programs continued to grow, and demand remained strong in 2015. Our volume of ambulatory care and specialty care visits both on- and off-site keeps increasing. Our outpatient facilities in Ann Arbor, Livonia and Brighton continue to perform well; our new center in Northville has been extremely well received. We may soon be adding a similar facility at this site in order to meet the demand for services. We continue to plan and implement new approaches to respond to patient care needs in all areas.

**NEW FACILITIES PLANNED**

We are in the active planning stages for the major expansion and renovation of our Brighton and West Ann Arbor clinics. There are ongoing discussions about including the East Ann Arbor clinic in future plans.

**HOSPITAL ADMISSIONS**

<table>
<thead>
<tr>
<th>Year</th>
<th>Discharges</th>
<th>Observation Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-11</td>
<td>19,192</td>
<td>20,096</td>
</tr>
<tr>
<td>2011-12</td>
<td>20,096</td>
<td>19,725</td>
</tr>
<tr>
<td>2012-13</td>
<td>19,725</td>
<td>19,910</td>
</tr>
<tr>
<td>2013-14</td>
<td>19,910</td>
<td>20,190</td>
</tr>
<tr>
<td>2014-15</td>
<td>20,190</td>
<td></td>
</tr>
</tbody>
</table>
The University of Michigan Health System (UMHS) plans to build a new, 75,000-square-foot health center to provide expanded clinics, primary and specialty care and other health care services in the west Ann Arbor area. The $46 million project will be built in Scio Township. The new facility is expected to greatly expand capacity and include specialty services in multiple areas, including allergy, cardiology, gastroenterology, neurology, ophthalmology and psychiatry, along with infusion, radiology and diagnostic imaging services.

There are also plans to construct a 320,000-square-foot health center to provide expanded primary and specialty care in the Brighton area. The $175 million project will be built in Brighton south of Challis Road, on 32 acres owned by UMHS. This project is about three times the size of our most recent building project in Northville. It will bring more than 40 University of Michigan specialty services to children and adults under one roof. It is expected to have multiple exam and operating rooms, a pharmacy and specialty services in both pediatric and adult health care, musculoskeletal health, ophthalmology, radiology and diagnostic imaging, and pathology and comprehensive cancer services including radiation oncology.

**SHORT-STAY UNIT**

We are also making U-M’s advanced patient care available to even more patients, by renovating an existing hospital area to create a 22-bed short-stay unit staffed by our Hospitalist Service. Now, adults who need just one or two days in the hospital before going home or to another care setting can receive treatment in the new unit or one of two others already located in the flagship University Hospital.

**MIPART: IMPROVING PATIENT CARE**

Given the rapid growth and demand for our services, access to our inpatient beds is becoming more challenging. UMHS has launched a strategic initiative aimed at maximizing our existing capacity and optimizing our patient flow to better serve our patients. MiPART — Michigan Patient Arrival and Rapid Throughput — consists of five separate but interconnected programs developed to address these issues over the next year and a half. Two of these programs are being co-led by internal medicine faculty: Priority Discharge with Robert Chang, MD, the director of the medicine faculty hospitalists program, and Patient Placement Decision Making with Vikas Parekh, MD, the medical director for care management and clinical effectiveness for UMHS.

**OUR EVER-CHANGING LANDSCAPE**

When I first came to work for the Department of Internal Medicine almost 30 years ago, we had 11 clinics taking up about half of the third floor of Taubman Center. In that time, there has been a massive expansion of our services. Multiple off-site locations have been developed, and we’re now seeing twice as many patients at Taubman alone. In fact, internal medicine is now providing care for half of all adults who use the U-M Health System. As quickly as things have changed during that time period, I anticipate medicine, clinical care and how we provide it to change faster than ever over the next five years. But I have no doubt, as “leaders and best,” we will be up for the challenge.
The total number of Department of Internal Medicine faculty continued to grow in 2015. Our clinical track faculty increased by more than 15 percent, while our instructional and research faculty numbers remained relatively steady. The chart breaks down that growth by year and by faculty type.

**FACULTY PROMOTIONS**

Our department handled 110 new faculty hires and 40 faculty promotions during 2015. Congratulations to these faculty members on their new status and achievements.

Two of our internal medicine faculty members, University of Michigan President Mark Schlissel, MD, PhD, along with the head of the U-M Health System, Marshall Runge, MD, PhD, called for increased...
integration and collaboration within UMHS and between the health system and the rest of the university. A restructured leadership team is being created to help the university’s world-class health system better respond to rapid changes in the health care industry and to ongoing competitive challenges.

Runge, currently the university’s executive vice president for medical affairs (EVPMA), assumed additional responsibility as dean of the medical school on Jan. 1, 2016. Bringing together the EVPMA and dean roles will naturally increase collaboration between the University of Michigan Health System and the medical school to meet the missions of education, clinical care and research.

David Spahlinger, MD, was promoted to executive vice dean for clinical affairs and president of the hospitals, health centers and the U-M Medical Group. Spahlinger had been senior associate dean and head of the faculty group practice overseeing the ambulatory care centers.

As the health system continues a process of assessment and review of priorities, additional top leaders will be named in academic affairs and education programs, the research enterprise and information technology.

**NATIONAL HONORS**

Internal medicine faculty are regularly recognized nationally for their contributions to the field of medicine. Some examples from the past year include:

- **Max Wicha**, MD, was appointed by President Barack Obama to the National Cancer Advisory Board.
- **Internal Medicine Chair John Carethers**, MD, was elected as a fellow of the American Association for the Advancement of Science.

**CLINICAL EXCELLENCE**

Internal medicine inducted 13 new members into our department’s Clinical Excellence Society in 2015 and 10 more outstanding clinicians in 2016. The society recognizes faculty who, by their peers and their division, exude and demonstrate clinical excellence toward their patients and colleagues. This initiative, started by our Chair **John Carethers**, MD, is working toward improving the position of clinical faculty within the department and increasing job satisfaction, mentoring opportunities and academic advancement.

**ENDOWED PROFESSORSHIPS**

Eight new endowed professorships were inaugurated in 2015 while six new ones were created. The more endowed chairs we have, the more our department can continue to recruit and retain top faculty at Michigan, creating stability and cultivating excellence.

**THE RIGHT BALANCE**

I was hired in 1981. In that time, our department and our faculty have grown tremendously. The Department of Internal Medicine has always been committed to balancing its major missions of education, patient care and research. It continues to foster and preserve this balance throughout time. Very few institutions can claim this. This has a lot to do with our longstanding tradition of excellence and the dedication of our faculty.

**CLINICAL EXCELLENCE SOCIETY INDUCTEES, MARCH 2016**

Left to right: William Armstrong, Jennifer Wyckoff, Scott Flanders, Karen Hall, Michael Lukela, Peter Higgins, William Hasler, Vladimir Ognenovski.
The VA Ann Arbor Healthcare System (VAAAHS) experienced a 9 percent increase in outpatient visits with steady inpatient activity in 2015. Through numerous ongoing initiatives and efforts, we continue to decrease our readmission rates and lengths of stay for patients.

FACILITY IMPROVEMENTS
The VAAAHS 2015 projects included the addition of a new Patient Education Resource Center, which will centralize meeting spaces and create a new multipurpose computer room and teaching lab for our patients and their families.

FACULTY APPOINTMENTS
Hitinder Gurm, MD, was recently named chief of the cardiovascular medicine section at the VAAAHS. He also serves as the associate chief of the Division of Cardiovascular Medicine at the University of Michigan.

There are currently 155 internal medicine faculty holding VA appointments with 22 new hires in 2015.
NOTABLE AWARDS & RECOGNITION
During 2015, VA faculty members were making an impact on patient care and research in many different ways. These are just a few of the highlights:

• Eve Kerr, MD, MPH, was elected as a member of the Association of American Physicians.
• Brahmajee Nallamothu, MD, MPH, was inducted into the American Society for Clinical Investigation.
• Carolyn Kaufman, MD, chief of the infectious diseases section at VAAAHS, was named a master of the American College of Physicians and also received the Department of Internal Medicine’s Paul DeKruif Lifetime Achievement Award.
• Andrew Odden, MD, the former VAAAHS associate chief of medicine, received the Richard D. Judge Award for Excellence in Medical Student Teaching.
• Sarah Hartley, MD, received the H. Marvin Pollard Award for Outstanding Teaching of Residents.
• Karen Hall, MD, PhD, was given the internal medicine Chair’s Award for Impact.

EFFORTS TO IMPROVE PATIENT CARE
Several VAAAHS faculty were involved in creating a new detailed guide that gives doctors and nurses information to help decide which hospital patients may benefit from a urinary catheter — and which ones don’t. The Ann Arbor Criteria for Urinary Catheter Appropriateness was published in the Annals of Internal Medicine as a special supplement. Jennifer Meddings, MD, MSc, was the lead author.

VA researchers led by Jeremy Sussman, MD, MS, were also part of a team that released a “precision medicine” approach to diabetes prevention in 2015. Their newly published model examined 17 different health factors, in an effort to predict who stands to gain the most from a diabetes-preventing drug, or from lifestyle changes like weight loss and regular exercise. Seven of those factors turned out to matter most.

The model was published in the BMJ (formerly the British Medical Journal). They hope to turn it into a tool for doctors to use with patients who have “pre-diabetes,” currently defined by abnormal results on a test of blood sugar after fasting. They also hope their approach could be used to develop similar precise prediction models for other diseases and treatments.

SERVING THOSE WHO’VE SERVED
Since 1953, VA Ann Arbor Healthcare System has provided state-of-the-art services to the men and women who have proudly served our nation. More than 65,000 veterans living in a 19-county area of Michigan and northwest Ohio utilized VAAAHS during 2015. We have the highest patient satisfaction score of all VA hospitals in the United States and are widely regarded by our peers as one of the top VA hospitals in the nation. The medicine service is the largest service at the VAAAHS, and throughout the country many other VA health systems are envious of our relationship and collaboration with the U-M Department of Internal Medicine. Our top research programs can gather data through VA grants that allow us to pursue major National Institutes of Health grants. This, in turn, is helping us provide and create the best possible care and outcomes for our nation’s veterans.
During 2015, the Department of Internal Medicine produced nearly 2,800 publications and was awarded nearly $162 million in federal and non-federal grants, a six percent increase from the previous year. The funding outlook continues to look brighter with recent developments, including increases in funding and new opportunities nationally and on campus.
ON THE NATIONAL FRONT
The National Institutes of Health received a $2 billion funding increase in the federal spending bill released in late 2015.

The bill gives $200 million to the Obama administration’s Precision Medicine Initiative — an effort to find treatments that can be targeted to an individual’s genetic makeup. Many of our Michigan faculty are active in this area, including Matthias Kretzler, MD, who applies precision medicine to kidney disease.

In addition, Vice President Joe Biden has been called upon to lead a new, $1 billion national “Moonshot” initiative to accelerate cancer research efforts and break down barriers to progress by enhancing data access and facilitating collaborations with researchers, doctors, philanthropies, patients, patient advocates and biotechnology and pharmaceutical companies. Internal medicine has many investigators within the cancer center who will participate in this program.

ON CAMPUS
With the many advances of the past year, we have many positive developments on the horizon for clinical and translational research at the University of Michigan. Due to the recent change in leadership and reorganization of the U-M Health System, we will be getting a chief scientific officer. A new campus-level biological sciences position is also being created to lead the effort to make the University of Michigan “a powerhouse in the biosciences and a global leader in discovery and societal impact.”

The vice provost for biological sciences position will be filled by a senior bioscientist with broad creative vision and extensive leadership experience. The person will chair a coordinating committee comprised of leaders from the many units that do life science and related research.

Thirty new faculty positions will be added and $150 million will be allocated by this new vice provost and the coordinating committee with the goal of catalyzing the development of research and educational programs that tap into U-M’s great breadth.

THEN AND NOW
As you will see on the research milestones timeline (p. 68), there have been many firsts and exciting findings made in our department. This year was no different. The recent discoveries of internal medicine researchers Elizabeth Speliotes, MD, PhD, MPH, and Christen Willer, PhD, which help to explain why some people are more likely to gain weight and develop obesity-related diseases, were published in two papers in the journal Nature.

By analyzing genetic samples for more than half a million individuals as part of the GIANT research project, which aims to identify genes that regulate human body and size, they were able to identify more than 100 locations across the genome that play roles in various obesity traits. Learning more about these genes and biological processes may guide the development of weight-loss therapies, and help doctors tailor the health advice they give to patients.

As we benefit from positive developments in basic and translational research across the country and at U-M, we will be able to continue to “make history” — changing the face of medicine and improving patient care in Michigan and beyond.
The Department of Internal Medicine’s clinical research activity has continued to increase in the last year. With the added support of funding and infrastructure from the U-M Medical School, we are hoping our faculty will be able to develop even more effective treatments for our patients at a faster rate.

**Clinical Research Highlights**

Some notable clinical research news involving Department of Internal Medicine faculty in 2015 included:

**Transforming Heart Treatments**

The U-M Frankel Cardiovascular Center performed its 500th transcatheter aortic valve replacement (TAVR), a minimally invasive procedure that’s transforming aortic valve care for elderly adults. U-M participated in clinical studies showing the survival benefit of TAVR and is also testing the next generation of heart devices designed to allow doctors to replace an aortic valve without opening a patient’s chest.

Cardiovascular specialists and internal medicine faculty members Stanley J. Chetcuti, MD, P. Michael Grossman, MD, and Daniel Menees, MD, are part of the team leading the treatment transformation, performing more TAVR procedures than any other heart team in Michigan.

**Developing Precision Medicine for Kidney Disease**

U-M researchers and their colleagues presented promising results from a clinical trial of the experimental drug baricitinib in people with diabetic kidney disease at the American Diabetes Association Scientific Sessions in 2015. In a randomized, controlled Phase II study, they found it reduced a key sign of kidney damage, with higher doses producing the largest effect, few side effects and signs of sustained impact even after patients stopped taking it.
That connection resulted from the work of a team led by Matthias Kretzler, MD, and Frank Brosius, MD, whose clinical study set the trial in motion. It's a fast-track example of the new treatment-development approach known as precision medicine.

**MEDICAL SCHOOL SUPPORT**

The U-M Medical School along with the U-M Medical Group invested $30 million to transform the clinical trial enterprise. One of the major initiatives involves the creation of clinical research support units (Nodes). Four proposals were selected for funding in 2015, including:

- Acute and critical care clinical trials
- Children's clinical trials
- Heart, vessel and blood
- Oncology

The objective is to ensure that a standardized, efficient infrastructure is available to all faculty conducting clinical trials irrespective of their home department. Having node staff dedicated to and expert in the administrative and financial aspects of clinical trials allows faculty and research staff to focus on planning and carrying out the research and in analyzing and publishing the results. The new model will provide a more structured and formalized path for developing investigators early in their careers or new to clinical trial research.

Similarly, study coordinators will have a defined path for professional and career development. The new model will also ensure all faculty and study coordinators have proper training in the conduct of clinical trials and compliance with regulatory requirements. With stronger institutional support for clinical trials, U-M will be able to retain and recruit clinical scientists, improve our national visibility as a center of excellence in clinical research, and efficiently translate discoveries from the bench to the clinic.

**JOINT INSTITUTE UPDATES**

The Joint Institute for Translational and Clinical Research, a U-M Health Systems’ partnership with the Peking University Health Science Center in China, just finished its fifth year and has been renewed for another five years. This has been an extremely successful collaboration (see highlight box).

**JOINT INSTITUTE FOR TRANSLATIONAL AND CLINICAL RESEARCH**

- 25 projects funded from 52 submitted.
- $10.8M USD allocated (of which $5.7M has been spent); $3.2M remains of the original $14M for future JI activities.
- 14 peer-reviewed publications from JI projects.
- Four research teams have received external funding (totaling more than $3M).
- Training and exchange programs have been established and are enjoying success:
  + Two fellows, funded by the Fogarty NIH Global Health Research Training Grant, completed their training and two new fellows are currently enrolled in the research training program at PUHSC.
  + Four PUHSC students have been admitted to the joint MD/PhD program.

In the past, clinical research was under-appreciated at U-M. This is slowly changing. In 2008, I became the first faculty member to be appointed as associate chair for clinical research in the department. This position was created because of the recognition of the importance of clinical research and the unique challenges clinical investigators face in the presence of ever-increasing scrutiny on human subject research. The investment of the U-M Medical School and U-M Medical Group in clinical research and the strong support from the department will greatly accelerate the pace of clinical research at U-M and resulting breakthroughs in patient care.
As we reflect on the past, present and future of quality improvement in healthcare, it is clear that although much has evolved over the years, we can continue to get better. The Department of Internal Medicine Quality and Innovation Program provides a model in which we can reflect on our successes and challenges, while organizing our efforts and leading the way to provide high-value, appropriate patient-centered care in the current healthcare landscape.

BUILDING THE FOUNDATION

Working together with James Froehlich, MD, MPH, assistant chair for quality and innovation, Maria Han, MD, MSHPM, medical director for population health, and the Internal Medicine Quality Council, we aim to build a robust structure to lead and sustain the department’s quality improvement efforts. We will continue to refine our guiding principles and program strategy in the coming year, in alignment with the U-M Health System’s strategic quality goals.

We are partnering with institutional resources and our divisions to develop automated performance dashboards for specific populations and conditions. With a focus on critical quality measures, these dashboards will assist us in highlighting areas of strength and identifying...
opportunities for improvement. The first dashboard to be developed — for chronic obstructive pulmonary disease — is in the testing phase, and we expect additional dashboards to be activated in 2016.

Successful improvement efforts require strong interdisciplinary teams. Pairing the strength and caliber of our faculty, fellows, residents and students with resources for project support is critical. This upcoming year, we will identify internal resources for project management and quality improvement consultation as well as data reporting and analytics. This will address some of the key challenges identified by faculty, with the goal of accelerating the impact and pace of improvement efforts.

CONNECTING THE DOTS

The Internal Medicine Quality Council, which is comprised of divisional faculty, fellow and resident representatives as well as patient advisors, began meeting in March 2015. Quarterly meetings offer the opportunity to learn about quality efforts across the department and health system, establish quality improvement strategic plans and review performance data.

Collaboration with multiple divisions and departments is key when complex problems are identified. We recently partnered with institutional quality improvement teams on a project to improve atrial fibrillation. Representatives from cardiovascular medicine, hospital medicine and emergency medicine came together to develop new clinical pathways for treatment of atrial fibrillation in the Emergency Department and created a rapid-access follow-up clinic for patients after they have been discharged. The next project will focus on improving inpatient clinical care for patients with atrial fibrillation. Teams are tracking data to monitor the success of meeting project goals: improving outcomes, increasing patient satisfaction and avoiding unnecessary admissions. This is but one example of the many interdepartmental efforts that are underway throughout all of our divisions.

IMPROVING AND LEARNING

During 2015, there were more than 90 quality improvement projects initiated by our faculty and trainees, and 100-plus improvement projects completed within our clinical programs. Our faculty are involved in an impressive variety of internal, local and national quality committees and consortiums. These activities are a testament to the strong foundation for quality improvement in the department.

With a focus on engaging physicians earlier in their careers, training programs must teach quality improvement principles and the skills needed to identify opportunities and navigate successful interventions. We aim to communicate and promote the importance of quality improvement and share project results through publications, conference submissions, site visits and visiting speakers. In November 2015, we hosted a Grand Rounds talk by Ralph Gonzalez, MD, MPH, associate dean for clinical innovation and chief innovation officer at the University of California, San Francisco, entitled “Engaging the Front-Lines in the Quadruple Aim: Unit-Based Leadership Teams and Caring Wisely.” We also plan on partnering with departmental fellowship, residency and student training programs to support quality improvement education and facilitate project connections between trainees and faculty.

Continuous learning and the relentless pursuit of improvement will position us well for the future.

We believe our efforts will lead the way toward improving the quality of care for patients within our health system and beyond.
The past year showcased many reasons to be excited and proud to be part of the Department of Internal Medicine. Our administrative team, a wide-ranging group of staff who work tirelessly to support the needs of our faculty, staff, residents and students, once again amazed me with their commitment, energy and passion to advance our mission. In a large department such as ours, one can only imagine the amount of work occurring behind the scenes. Highlighted below are four examples of major administrative initiatives undertaken in 2015.

**IDENTIFYING STRATEGIC GOALS**
To support our health system’s commitment to continuous improvement, a team of departmental administrators assembled last fall to create the framework to support the review and update of our department’s strategic goals. The result of these efforts will culminate with a strategic planning retreat in summer 2016. The departmental leadership team, comprised of division chiefs, associate chairs, division administrators and directors, will participate with the goal of developing the overall direction for improvement. From there, the improvement plans will be communicated and reviewed with each of our divisions and programs.

**QUALITY IMPROVEMENT INITIATIVES**
Quality improvement initiatives have been directed toward two of our departmental administrative units: finance and human resources.
In the finance area, we are expanding on the work completed by health system teams last fall. A core team of internal medicine pre-award grant administrators and staff are evaluating how to best meet the needs of the faculty and staff involved in the pre-award process. This analysis will be expanded as we extend our review to the post-award process and the budget process. Surveys, focus groups and reviews of how other UMHS departments and other departments of internal medicine support their faculty will provide important perspective as we evaluate necessary changes to our processes. This core team is led by Judy Carrillo (grants manager), with Eric Mullen (director of finance) and Ben Margolis, MD (associate chair for basic research) serving as executive sponsors.

Support for our human resource needs is also undergoing a transformation, as the health system implements a "High Impact HR" model. This new structure created roles for business partners who support the business units with higher-level human resources strategies such as employee relations, workforce planning and employee engagement. Our business partners are supported by Jolena Nollar (director of administrative operations), Mari Jo Honeck and Luke Brown (departmental front-end staff) and a health system transaction-based unit (referred to as the Solutions Center). Transitions to new business partners, new processes and a new structure can be challenging, but this team remains focused on creating a system that fully supports our business needs.

RENOVATION PROJECTS
Finally, during this past year, we have been preparing for two major renovation projects. First is the work planned for the administrative spaces on the third floor of the Taubman Center, with construction planned for spring/summer 2017. Second, we were successful in securing additional administrative space in University Hospital South, and will move faculty and staff from the Division of Infectious Diseases and the Hospitalist Program to this area. Once renovated, this new space will not only provide offices for incremental faculty, but will also expand and enhance the space footprint for the existing teams with much-needed conference rooms, enhanced telecommunication capabilities and increased office and work space for the faculty and staff.

RECOGNIZING OUR STAFF
To show our appreciation to the administrative staff for their many contributions and achievements and to honor the milestone anniversaries of our faculty and staff, an inaugural Service and Excellence Celebration was held April 16, 2015. During this event, Staff Awards for Excellence were bestowed upon employees who were nominated and selected for their outstanding performance in administration/teaching, research or clinical support activities. It was a wonderful opportunity to recognize individuals who regularly provide service that is above and beyond expectations. Our 2016 award recipients are featured on page 27 and we applaud them for the outstanding service they provide to our department.

So many important administrative initiatives are underway, and all of these serve to keep our department strong and resilient in the face of many other changes.
ENTERING THE FIRST PHASE

The first phase of our new U-M Medical School curriculum implementation was initiated this past year. Medical students who began in 2015 were immersed in the clinical care world of the U-M Health System starting their first semester, sooner than classes before them. They will specifically learn about the patient experience, the health care system and how caregivers work with patients in teams to help improve their health. Some highlights include:

- A new “doctoring” course to help students learn the many intangible skills that physicians need, along with new opportunities to build leadership skills.
- Students choosing one of an expanding offering of Paths of Excellence — a way to focus their passion in areas such as ethics, health policy, global health, medical humanities and scientific discovery.
- More chances to learn about, from and with students enrolled in U-M’s other health professions schools, including nursing, dentistry, pharmacy, public health, kinesiology and social work.
- Students getting “sorted” into one of four new houses within the M-Home, the learning community newly launched by the UMMS to build ties among classmates, members of other class years and dedicated faculty advisors and coaches, as a way of fostering learning and professional development.
AN EXCITING NEW SPACE

Medical school students also have access to an entirely new and much larger medical learning space, in the renovated Taubman Health Sciences Library, which opened with the start of the medical school academic year. After a $55 million renovation, the 35-year-old building on U-M’s medical campus was transformed into all-digital, light-filled, dynamic learning space for future physicians, scientists and other health professionals.

With dozens of classrooms and small-group meeting rooms, a realistic simulated clinic and advanced educational technology, it greatly expands and enhances students’ options to develop the knowledge and skills they’ll need as doctors.

A CHANGE OF DEANS

After eight years of service as dean of UMMS, internationally recognized leader and internal medicine faculty member James O. Woolliscroft, MD, stepped down at the end of 2015. In honor of his extensive contributions to medical education at Michigan, the medical school class of 2016 selected him as their commencement speaker.

Marschall S. Runge, MD, PhD, U-M’s executive vice president for medical affairs, became dean of the medical school on Jan. 1, 2016.

THE MORE THINGS CHANGE...

Given the historical theme of this report, it’s interesting to note the elements of medical education that remain vital to our success. While technology has revolutionized the way we do medicine, each incoming class of students has proven themselves to be early and easy adapters of these new advancements. In the meantime, our clinical volume has exploded over the last 30 years. Throughout all of these changes, it’s the hands-on experiences that remain priceless. No lab or computer can replace “real” patient care communication and interaction. The human element of medicine in the caregiver experience remains as important as ever.
This year, the Department of Internal Medicine Residency Program received more than 3,100 applications. Approximately 532 medicine candidates were interviewed by our faculty and program leadership from November 2014 through January 2015.

The Internal Medicine Residency Program welcomed its incoming intern class of 58 individuals in June 2015. They included five graduates of U-M Medical School along with graduates of other top-tier medical schools. Of this group, 31 percent are newly elected members of the Alpha Omega Alpha Honor Medical Society and nine individuals have additional advanced degrees. The program also recruited three outstanding MD, PhD graduates for the physician-scientist track.

Six of the incoming interns are with the program for one preliminary year of training before joining the Neurology Residency Program and eight are members of the combined Medicine-Pediatrics Program, directed by Michael Lukela, MD.
CHIEF MEDICAL RESIDENTS

Annually, the Department of Internal Medicine and Medicine-Pediatrics Residency Programs select new chief medical residents (CMRs) in their respective programs. The CMRs are chosen by the leadership for each program based on outstanding performance during residency, endorsement by their peers and their strong commitment to their respective programs.

During 2015, the CMRs for internal medicine were Andrew Admon, MD, Lauren Heidemann, MD, Christopher Petrilli, MD and Katie Scally, MD. In the medicine-pediatrics program, the CMR was Mansoor Arain, MD.

CMRs coordinate many of the clinical and educational opportunities for our medical residents while building their skills in education and leadership. Each is assigned to a different administrative area on a monthly rotating basis and has the opportunity during the course of the year to direct the ambulatory and inpatient programs at the University Hospital and the VA Hospital.
STUDENT AWARDS
William Dodd Robinson Award
Sarah Brown
Eli G. Rochelson Memorial Award
Muazzum Shah
Henry Fitzbutler Award for Excellence in Hospitalist Medicine
Michael Chu
Department of Internal Medicine Senior Scholarships
Sarah Brown
Elias Dayoub
Frederick Howard
Muazzum Shah

RESIDENT AWARDS
Kenneth R. Stark Internal Medicine House Officer Research Award
Andrew Admon, MD
Kamal Menghrajani, MD
Ashmita Chatterjee, MD
Dennis Chen, MD
Laure Edmunds Award for the Most Outstanding House Officer I
Bryan Petersen, MD, PhD
Internal Medicine Award for the Most Outstanding House Officer
Andrew Admon, MD
Bruce A. Jones Award for Outstanding Housestaff Spirit
Dennis Chen, MD
Ashwin Gupta, MD
Dr. Jacob P. Deehake Community Service Award
Amanda Lyon, MD
Jessica Parsh, MD

FACULTY AWARDS
Special Recognition for Contributions to the Medical Student Teaching Program
Eleanor Sun, MD
Special Recognition for Contributions to the House Officer Teaching Program
Vikas Parekh, MD
Richard D. Judge Award for Excellence in Medical Student Teaching
Andrew Odden, MD
H. Marvin Pollard Award for Outstanding Teaching of Residents
Sarah Hartley, MD
Steven E. Gradwohl Excellence in Continuity General Internal Medicine Teaching Award
F. John Brinley III, MD
John G. Frohna Outstanding Teaching in Medicine-Pediatrics Award
Sara Platte, MD
2015 DEAN’S AWARDS FOR Faculty

Basic Science Research Award
Cristen Willer, PhD

Clinical and Health Services Research Award
Sanjay Saint, MD, MPH

Distinguished Faculty Lectureship Award in Biomedical Research
Eric Fearon, MD, PhD

Innovation and Commercialization Award
James Shayman, MD

Lifetime Achievement Award in Clinical Care
Fred Morady, MD

Medical School Community Service Award
Michele Heisler, MD, MPA

Outstanding Clinician Award
Kevin Chan, MD
Daniel Kaul, MD

Administrator of the Year
Masada (Musty) Habhab

Dean James Woolliscroft, MD, and Kevin Chan, MD

Cristen Willer, PhD

Fred Morady, MD
Back row (left to right): Raymond Yung, MB, ChB (Geriatric & Palliative Medicine); Peter Arvan, MD, PhD (Metabolism, Endocrinology & Diabetes); Chung OwYang, MD (Gastroenterology); Theodore Standiford, MD (Pulmonary & Critical Care Medicine); John Carethers, MD (Chair of Internal Medicine); Eric Fearon, MD, PhD (Molecular Medicine & Genetics); Kathleen Cooney, MD (Hematology & Oncology); and Frank Brosius III, MD (Nephrology). Front row (left to right): James Baldwin, MD (Allergy & Clinical Immunology); David Fox, MD (Rheumatology); David Pinsky, MD (Cardiovascular Medicine); Laurence McMahon, Jr., MD, MPH (General Medicine); Powel Kazanjian, MD (Infectious Diseases).
Left to right: Anna S. F. Lok, MBBS, MD (Clinical Research); Sanjay Saint, MD, MPH (Veterans Affairs); Cyril Grum, MD (Undergraduate Medical Education); John Carethers, MD (Chair of Internal Medicine); John Del Valle, MD (Graduate Medical Education); Scott Flanders, MD (Quality & Innovation); Richard H. Simon, MD (Faculty Affairs); and Musty Habhab (Chief Department Administrator). Not pictured: Benjamin L. Margolis, MD (Basic & Translational Research); Timothy J. Laing, MD (Clinical Programs).
Left to right: Christopher Petrilli, MD; Katie Scally, MD; John Carethers, MD, Chair of Internal Medicine; Lauren Heidemann, MD; Andrew Admon, MD.
DEPARTMENT OF INTERNAL MEDICINE STAFF EXCELLENCE AWARDS

Left to right: Kerry Ryan, Carole Ramm, Colleen Harvey, Lisa White, Nancy Polmear-Swendris, Debra Ventura, Susan Olsson, Heather Refalo, Delores Mortimer, Jeni Chapman.

ADMINISTRATIVE/TEACHING EXCELLENCE
Jeni Chapman - Nephrology
Delores Mortimer - Gastroenterology
Heather Refalo - Gastroenterology
Debra Ventura - Administration

CLINICAL EXCELLENCE
Susan Olsson - Rheumatology
Nancy Polmear Swendris - Allergy
Lisa White - Gastroenterology

RESEARCH EXCELLENCE
Colleen Harvey - Hematology, Oncology
Kerry Ryan - General Medicine
Carole Ramm - Metabolism, Endocrinology and Diabetes
ALWAYS LEADING | FOREVER VALIANT

Leadership
From training the most promising doctors of tomorrow to recruiting visionary researchers to ensuring the health system is best meeting the needs of patients, the following profiles of notable Department of Internal Medicine leaders capture both the excellence and the challenges faced during their times.
George Dock, MD, arrived at his post as chair of the theory and practice of medicine in 1891 with the best training his era could offer — training that would ultimately guide his efforts to reshape medical education at U-M and throughout the field.

After attending the University of Pennsylvania’s three-year medical school program, Dock took the unusual step of arranging his own year-long internship at a Catholic hospital in Philadelphia. Alongside his clinical training, he used the opportunity to take language lessons from the German nuns to prepare for a study trip to Germany and Austria, the epicenter of laboratory medicine at the time. Over the next three years, he dug into topics from bacteriology to pathology and parasites to physical therapy, for a time attending some 30 autopsies a week. He returned to intern under the preeminent American internist and medical educator William Osler, who would later call Dock “a man who knows more about clinical procedures than anyone in the United States.”

With this preparation, Dock was recruited to U-M as the country’s first full-time professor of medicine under newly installed Dean Victor C. Vaughan, MD, as part of a dream team of exquisitely prepared medical faculty. He arrived with the Catherine Street hospital under construction, which by 1900 would give him access to the largest teaching hospital in the country.

Dock’s philosophy emphasized laboratory and clinical work over lecture and demonstration, and he put this philosophy into practice directly. He rejected the tradition of repeating lectures for two consecutive years, helping to implement the new four-year graded curriculum during which students actively participated in lab work. He established a course in percussion and auscultation, and held an internal medicine clinic for fourth-year students twice a week where he taught the art of diagnosis through the Socratic method and hands-on training.

He also exploited his access to a busy university hospital by introducing the clinical clerkship to Michigan. Established in 1899, it was similar to one launched at Johns Hopkins four years earlier, giving students responsibility for patient care under faculty supervision. The approach became a model for medical schools across the country.
Dock would make other important contributions to the medical school as well. He had a passion for old medical texts and served eagerly as chair of the library committee, where he channeled his love of medical literature into assembling one of the most complete collections of international medical journals available. The aim was to augment textbooks with journal access so that students would develop habits of lifelong learning. He also made his own contributions to the history of medicine by engaging a stenographer to document his clinic teaching, an effort that now fills 16 volumes in U-M’s Bentley Historical Library.

Dock’s tireless efforts to make students active participants in their education put U-M among a handful of elite institutions at the forefront of this movement, prompting Abraham Flexner in his 1910 report on medical education to name Michigan’s medical school one of the best. He also established a tradition of leadership and innovation in medical education that lives on in the department and medical school today.

Sources:
As the second chair of the Theory and Practice of Medicine, Albion Walter Hewlett, MD, built upon Dock’s efforts to bring medical education to the bedside by linking the bedside with the laboratory. He believed strongly that academic physicians should do research and that new clinical laboratory methods should be incorporated into patient care, and he did his utmost to foster these ideas at U-M.

Hewlett’s driving conviction was that disease must be approached from a physiological, rather than a purely anatomical, perspective. This approach, quite prescient for its time, evolved during a training program that was not unlike his predecessor’s — a medical degree from Johns Hopkins, an internship and residency at New York Hospital and 18 months’ study in Germany with physician-scientist Ludolf Krehl. Hewlett then served on the faculty at Cooper Medical College, where he launched a cardiovascular research program that garnered enough attention for him to be tapped as a founding member of the American Society for Clinical Investigation — an organization that would elect him president nearly two decades later.

When he was recruited to Michigan in 1908, Hewlett set about making his imprint on every aspect of internal medicine’s mission. He set an example of vigorous research, publishing on arrhythmia, cardiac conduction disorders, peripheral circulation and related topics, and he encouraged his assistants to do the same. His contributions led to an invitation from British cardiologist Thomas Lewis to serve as one of six co-editors of his new journal Heart (later renamed Clinical Science), which debuted in 1909.

In clinical care, Hewlett oversaw a dramatic increase in patient volume and revenue. But his primary contribution was encouraging colleagues to adopt recent advances in testing, from lab tests for TB and syphilis to electrocardiography. In fact, Hewlett acquired U-M’s first electrocardiograph in 1913, an instrument in which he saw great diagnostic potential.

Hewlett made several contributions in the education arena as well. While he rounded daily with medical students, he offered...
supplementary Sunday rounds to those with a special interest in internal medicine. These lasted throughout the year, not just during students’ assigned medical rotation. He also conducted sessions on new diagnostic techniques, and offered a popular elective on the clinical physiology of circulation, addressing topics such as arrhythmia, valvular lesions, hypertension and pulmonary edema. On a more operational note, he helped raise the quality of the medical school’s incoming residents by improving their living conditions.

When the promise of expanded laboratory space lured him to Stanford in 1916, its president Ray Wilbur said of Hewlett, “There is no better man of his age in clinical medicine in this country.” He fostered a paradigm shift from the empiric to the investigational from which the field and the department have never looked back.

Sources:

“Hewlett was one of the first…chair[s] of medicine in an important medical school whose chief interest lay in the functional rather than in the structural aspects of disease—in pathologic physiology rather than in pathologic anatomy.”
— U-M CARDIOLOGIST FRANK WILSON, MD

1920
Frank Norman Wilson directs the U-M Heart Station (1920–1952), a precursor to the Cardiology Division.

1922 – 1925
Louis Marshall Warfield, Chair

1922
Section of Endocrinology & Metabolism is created under Louis Harry Newburgh (1922–1943).

1925
Preston Manasseh Hickey, Chair

1926 – 1928
James Deacon Bruce, Chair

1927
Thomas Henry Simpson Institute for Medical Research is founded under Cyrus Cressey Sturgis (1927–1956); it later functions as the Hematology Section.
Cyrus Cressey Sturgis, MD, presided over the Department of Internal Medicine for nearly three decades, an exceptionally long run for a department chair, at an exceptional time in history. His tenure witnessed social upheavals from the Depression to World War II; scientific advances from penicillin to cancer chemotherapy; and changes to academic medicine including the advent of significant extramural NIH funding, the trend toward specialization, the rise of new fields such as genetics and nuclear medicine and the expansion of postgraduate training.

Any administrator during this time would need to be adroit and well-prepared. Sturgis was both. He was Phi Beta Kappa at Johns Hopkins medical school, interned at the Peter Brent Brigham Hospital, then joined the Army Medical Corps as the U.S. entered World War I. With the assistance of The Brigham’s physician-in-chief, Sturgis was assigned to a Harvard-staffed Army hospital in New Jersey. It was here that he began his career as an investigator, examining the physiologic aspects of “soldier’s heart” (related to what we now call post-traumatic stress disorder). After the war, Sturgis completed his residency at The Brigham and rose through the ranks at Harvard until a compelling offer succeeded in luring this heavily recruited young faculty member to the University of Michigan.

The offer was for the directorship of the Thomas Henry Simpson Institute for Medical Research — a new institute founded to study pernicious anemia. Established through a philanthropic gift from the wife of a Detroit industrialist claimed by the disease, the institute provided a salary and research support package that was impressive for the day. Though Sturgis had no research record on the topic, he was the strongest candidate in every other respect and was brought on board in 1927 with the agreement that he would be appointed chair of internal medicine the following year.

Sturgis made rapid progress at Simpson. He hired talented hematology researcher Raphael Isaacs, MD, as the institute’s assistant director, and within two years, their group had developed a compound for pernicious anemia that freed patients from the existing standard of treatment — eating a half-pound of liver daily. Called ventriculin,
it was produced under a licensing agreement with Parke-Davis and established a model of productive industry partnership that would characterize Sturgis’ administration. The publicity surrounding the treatment raised U-M’s profile in cutting-edge hematology research and led to a spike in referrals from Michigan and surrounding states. The institute’s work also impacted the educational mission: Isaacs developed a third-year elective on diseases of the blood, students participated in institute research and Sturgis himself produced a hematology textbook in 1948. As pernicious anemia became treatable, the institute’s mission was broadened to general hematology.

As Sturgis stepped into the chairmanship, he found the path to success a slightly steeper one. Despite the department’s legacy of excellence, it had found itself somewhat rudderless of late. According to historian Steven C. Martin, “In the decade between Hewlett’s departure and Sturgis’ arrival, five different men occupied the chairman’s post. At one point, the school was unable to attract a suitable candidate and the chairmanship was briefly held by a radiologist. It was clear by the middle 1920s that the department required reinvigoration.”

Among Sturgis’ most pressing challenges were revising students’ clinical teaching and intern supervision, securing sufficient financial support for his clinical and research faculty, and establishing relationships with the department’s eminent researchers Frank Wilson, MD, and Louis Harry Newburgh, MD.

To address the education and training piece, Sturgis replaced the department’s four specialized services — metabolism, cardiology, tuberculosis and a private medical service — with four general medicine services. On a philosophical level, this move aligned with his reticence about the trend toward specialization and how it might impact physicians’ holistic approach to their patients. On a practical level, his intention was to reduce the time commitment from full-time faculty, thus freeing up more of Wilson and Newburgh’s time for research, while enhancing teaching and supervision by providing senior faculty as attendings on all medicine services.

Sturgis also addressed the financial piece head-on, albeit with mixed results. The area in which he flourished was research funding. He was successful with both of the major sources of support available in the early part of his term — the pharmaceutical industry and "[T]he widespread publicity given to the new treatment has placed in the hands of the family physician an efficient method of treating [pernicious anemia] patients in their homes rather than sending them to the hospital. Yet...patients have come [to U-M] from all over Michigan, as well as from many other states.”

— CYRUS CRESSEY STURGIS IN A 1931 REPORT TO THE Regents ON THE RISE IN PATIENT VOLUME ATTRIBUTED TO THE SIMPSON INSTITUTE’S CUTTING-EDGE RESEARCH


private foundations. He developed partnerships with firms such as Parke-Davis, Upjohn and Lilly, and garnered support from numerous foundations. It was during Sturgis’ tenure, for example, that the Rackham Foundation established a million-dollar endowment and funded the Rackham Arthritis Unit, which Sturgis vigorously supported.

The area in which Sturgis had less success was securing competitive salaries for his clinical faculty. Though his own generous salary was made possible through Simpson philanthropy, the university funded his faculty. He felt the salary levels left the department vulnerable to poaching, a situation compounded by the medical school’s “full-time plan,” which prohibited his faculty from supplementing their incomes through private practice. Though he petitioned his superiors on both accounts throughout his tenure, it was never resolved to his satisfaction.

Despite this, Sturgis managed to keep the department on solid footing. He saw it through the tumult of the Great Depression, during which he had to cut salaries and dismiss a faculty member, and, later, World War II, when financial scarcity gave way to a shortage of manpower. During this time, he continued to support leading research by Newburgh, Wilson and Isaacs and to maintain the department’s clinical and educational caliber.

As a consultant to the Army, Sturgis saw that physicians returning from the war were going to seek additional specialty training and worked to make such training available at U-M. He also recognized that the rapid post-war increase in federal research funding was going to reshape the research environment. Ironically, during his tenure the department partook of little of the NIH largesse, in part because Sturgis felt he had sufficient foundation funding for the department’s needs and in part because he, like many in academic medicine, had concerns about the potential for federal extramural funding to politicize the research process. At one point, Sturgis declined an opportunity for such funding, citing the fact that all the department’s research projects were fully funded. Though not an issue during his tenure, subsequent chairs faced the challenge of repositioning the department to capitalize on NIH support.

Despite many trials, some from within and more on the world stage, Sturgis kept a steady hand, managing to grow the department in size, funding, output and quality. During his tenure, the faculty more than doubled from 20 to 56, the number of inpatients cared for increased from 2,700 to 4,000 and the number of students taught by the department rose from 300 to 800. In addition, the department’s research funding increased exponentially, a new Kresge Research Building provided much-needed research space and faculty publications increased sixfold. Sturgis’ own stature in the field is exemplified by his election to the presidency of the American College of Physicians in 1953, four years before his retirement.

Sources:
"Cyrus Cressey Sturgis and American Internal Medicine, 1913–1957" by Steven C. Martin in "Medical Lives and Scientific Medicine at Michigan, 1891-1969" by Joel D. Howell.

As departments grew, chairs of Sturgis’ era took on greater administrative roles and had to put more effort into balancing the conflicting demands of research, patient care and teaching.

1952

1956
Division of Allergy is founded under John Sheldon (1956–1967).


1957–1958
Paul S. Barker, Chair
VENTRICULIN: A PROFILE IN EARLY INDUSTRY PARTNERSHIP

The Simpson Institute’s first significant breakthrough was the discovery of ventriculin, a powder made from desiccated, defatted hog stomach that could treat pernicious anemia. It provided a welcome alternative for patients to the standard treatment at the time — eating a half-pound of broiled liver daily.

Members of the institute explored this line of research based on their observations of changes in the stomachs of patients with the disease. After demonstrating ventriculin’s safety and efficacy, U-M partnered with Parke-Davis to make the product available to patients.

In exchange for manufacturing rights, Parke-Davis agreed to pay U-M three percent of the wholesale price, which was directed to a blood-disease research fund; to submit the finished product to the institute for assay before distribution; and to consult the university on pricing. The goal was to ensure the product was potent, of uniform quality and sold at a reasonable price.

This productive partnership was one of many during Sturgis’ administration that would pave the way for the fertile culture of technology transfer the department enjoys today.
William D. Robinson, MD (Rheum), stepped into his role as chair during what his successor Bill Kelley calls “the Golden Age of Internal Medicine.” The public’s respect for physicians and belief in the promise of science was at an all-time high, and the most highly sought residencies were internal medicine’s. Moreover, U-M, the medical school, and the department all enjoyed strong reputations nationally.

But for all its glow, this period would also see seismic shifts — in both the field of academic internal medicine and the role of the chair — that would require adaptations from its leadership.

Robinson undertook all of his medical training, from student to research fellow, at U-M, where he was mentored by leading metabolism and nutrition researcher Louis Harry Newburgh, MD (MEND). The whole of his career would also be at U-M, save for a stint with the Rockefeller Foundation from 1940 to 1943, during which he spent time in Franco’s Spain studying post-civil war nutritional deficiencies among its people. After WWII, he would consult for the Surgeon General on the nutritional status of liberated Europe.

Robinson joined the internal medicine faculty in 1944, where his interests shifted to arthritis. He became known nationally for research on the effects of adrenal corticosteroids in rheumatoid arthritis, led the Rackham Arthritis Research Unit and served as president of the American Rheumatism Association.

Under his chairmanship, the department made notable contributions along every dimension of its mission. In research, this is when Stefan Fajans, MD (MEND), did his seminal work on Maturity-Onset Diabetes of the Young (MODY), Ron Easterling, MD (Neph), established the first state-wide end-stage renal disease registry in the U.S. and Stevo Julius, MD, ScD (CVM), revealed the enormous public health consequences of hypertension.

But the department’s particular strengths were in clinical care and education. One example was the University Health Plan, led by Robert Carpenter, MD, which former Dean James O. Wolliscroft, MD (Gen), calls “a visionary model for primary care.” In a structure...
foreshadowing the medical home, a panel of internal medicine residents served at the center of a care team which included a supervising faculty member, nurse practitioner, LPN and medical secretary, with support from psychiatry and social work. “It was a very forward-thinking clinical setting that would inform how I looked at educating our students and residents,” says Wooliscroft.

Yet for these many accomplishments, there were a few areas in which the department would struggle to keep pace with developments in the field. Perhaps the most visible was research support. The NIH instituted its modern granting mechanism in 1946. By 1957, the year before Robinson took office, its funding had reached $100 million; it would grow to $1 billion in 1974, the year before he was ready to step down. Based in part on the legacy of his predecessor, the department was slow to take advantage of this funding. While some divisions secured federal grants during Robinson’s tenure, the effort was uneven. When Bill Kelley took over in 1975, he was surprised to find the department ranked 42nd in NIH funding, and when former GI Division Chief Tachi Yamada, MD, arrived at his post in 1983, he says the division’s only NIH grants were the ones he brought with him.

Another watershed event in the field was the launch of Medicare and Medicaid in the 1960s, which created a surge in demand for clinical care. Between 1959 and 1970, the U-M Medical School faculty more than doubled, from 300 to 649, the largest proportion of whom were in internal medicine.

This change in scale had important implications. First, in the face of such growth, a chair’s approach to recruiting would profoundly shape the department. In Robinson’s case, limited space and funds for recruiting constrained his efforts, says Jeffrey Stross, MD (Gen), who served as both chief resident and assistant professor under him. As a result, he did almost all of his hiring from within.

Second, says department historian Joel Howell, MD, PhD (Gen), the increasing size of the department turned the chair into an administrator — and not every chair relished this change. “Robinson was an incredibly nice, understated man who was a wonderful clinician, researcher and teacher,” says Stross. “When he came into office, the department was small, and he could do everything more or less solo. But as it grew, it became clear to him that more administrative structure and a renewed focus on research and recruiting were needed to move things forward.”

When Robinson’s era came to an end in 1975, the time was ripe for a chair with the leadership skills necessary to accomplish these very things.

1969
Park Weed Willis III

1971
John G. Weg
becomes chief of the Pulmonary Division (1971–1985).

1971
Frances E. Bull
heads the Section of Medical Oncology (1971–1978).

1972
Keith Henley

1973
Stefan S. Fajans
becomes chief of the Division of Endocrinology & Metabolism (1973–1987).

1974
Stevo Julius

1974
The Pulmonary Division is renamed the Division of Pulmonary and Critical Care Medicine.
THE KELLEY ERA
William N. Kelley
1975–1989

Speak with anyone affiliated with the department during the chairmanship of William N. Kelley, MD (Rheum), and you’ll hear a familiar refrain: The era was transformative. Says department historian Joel Howell, “Kelley took over a drifting department in 1975 and yanked it into the upper echelon.”

The data tell the story. During his 14 years as chairman, internal medicine skyrocketed from 42nd to 4th in research funding. Not only that, but Kelley left in his wake a Howard Hughes Medical Institute; state-of-the-art facilities; a departmental structure extolled as a national model; an intensive, structured approach to teaching; and a faculty that would produce many of the great leaders of American internal medicine.

Yet he was just 36 when he took the job and learned later from the consultants who vetted him that they expected him to last just a couple years because the changes he’d make would be so disruptive.

So how did he endure, and go from being “disruptive” to “transformational”?

There are several reasons, say those who worked alongside him. He’s hard-wired to be both uncompromising and tireless — legendarily working through two shifts of secretaries. He also possesses a striking clarity of vision and holds himself and others to exacting standards. Kelley himself credits the fact that he cut his teeth under some of the great chairs of his time — Don Seldin at Southwestern, Alex Leaf at Mass General and Gene Stead and Jim Wyngaarden at Duke. But perhaps most importantly, Bill Kelley has a natural penchant for turning challenges into opportunities.

FROM OBSTACLES TO OPPORTUNITIES

As it turns out, the challenges that awaited him in his new position were many. Kelley arrived on his first day to find his house officers picketing. He put out that fire, only to discover the hospital planning efforts stumbling, no space for his lab and a departmental hiring freeze.

1976

1977
Division of Medical Genetics is founded under Thomas D. Gelehrter (1977–1987).

1977

1977
Rather than pack up, Kelley decided to find other ways forward. His lab space was the most urgent; his research had not only established his reputation in the field, but kept him at the cutting edge of science, which was essential for recruiting and teaching.

Fortunately, he had a joint appointment in Biological Chemistry and its chair, Jud Coon, PhD, carved out some space for him. But the situation impressed upon him in a very personal way the need for departmental research space.

The next facilities challenge surrounded the planning for a new university hospital. Kelley minces no words about the unsuitability of “Old Main,” with its noisy, open, hangar-like wards, which he saw as a liability to recruitment, patient care and teaching. When he arrived, the hospital planning committee had been stalled for nearly two decades and was signing off on a plan to create a surgical hospital next to the VA, leaving medical services in Old Main until a future phase could relocate them.

In his first committee meeting, Kelley vetoed the plan. He would later play a similar role with the new ambulatory care center, when it was earmarked for the old St. Joseph Mercy Hospital.

In both cases, Kelley’s opposition and strong leadership from then-President Robben Wright Fleming and Provost Harold Shapiro helped turn things around, setting the stage for what he calls the “phenomenal” University of Michigan Hospital and A. Alfred Taubman Health Care Center U-M has today.

Kelley’s next challenge was figuring out how to shake loose his hiring. Since his arrival at Michigan, he’d been talking with the Howard Hughes Medical Institute, with whom he had relationships from his time at Duke, and had pitched what he called the Center for the Clinical Application of Molecular Genetics. He envisioned it funding eight research faculty with a clinical orientation in genetics, an area in which his own lab’s work in enzyme-deficient gout gave him particular credibility.

He planned to structure the center so that, rather than the HHMI money being distributed to existing senior faculty as was the case at other institutions, it would be used to fund the recruitment of top-tier, early-career physician-scientists to the medical school, several of whom would be in internal medicine.

Bookended with the installment of genetics superstars David Ginsburg, MD (Hem/Onc and MMG), as the first and Francis Collins, MD, PhD (PCCM and MMG), as the last of these new U-M HHMI investigators, the program was a coup — both in launching influential scientists and in funding research that helped unravel the genetics of bleeding and clotting diseases, cystic fibrosis, neurofibromatosis and Huntington’s disease, among others.

In the meantime, Kelley was also working on another, broader mechanism to support faculty recruitment — the medical practice plan. He was eager to implement a system like Duke’s in which full-time faculty were compensated for patient visits, but billing flowed through the department, rather than through the hospital or private practices. The dean’s office was skeptical, but Kelley was a self-described “squeaky wheel.”

“The practice plan turned out to be a phenomenal opportunity to grow,” says Kelley. “We began making millions of dollars a year from

---

1978
- Division of Hematology/Oncology is established under Albert LoBuglio (1978–1982), uniting previous sections of hematology and medical oncology.

1978

1981

1982
just delivering the care we were delivering before — but now the department was collecting for it. It allowed me to begin to recruit people starting in the summer of ’77 — and by the time I left, I had recruited 93 percent of the 233 faculty in the department.”

BUILDING A FACULTY: THE SECRET OF HIS SUCCESS
And when Kelley says “he” recruited them, he means it. He was exceptionally hands-on in faculty recruitment, as he was in every aspect of his tenure. “I was personally involved in virtually every hire,” says Kelley — largely because he viewed the quality of the faculty as the department’s bedrock.

His philosophy was that faculty destined for his new clinician-scholar track — those who would serve as clinicians, educators and clinical or health services researchers — could best be hired from within. After all, he and his faculty had worked alongside them as residents and fellows and knew their clinical skills firsthand. In contrast, he wanted all of his bench researchers to come from outside to broaden the range of expertise. “If a bench scientist was trained at Michigan, we’d just be giving the scientist who trained that person one more set of hands,” he says.

By all accounts, Kelley was unmatched in recruiting. When asked about his approach, he reveals what amounts to a three-pronged strategy. First, he had to know where to look. Though he kept it close to his vest at the time, he started by developing a pipeline from one of his most respected programs.

“Gene Braunwald was the chief of medicine at The Brigham and was, I thought, fantastic at recruiting great trainees,” says Kelley. “So I figured if I could get some of his trainees here, I could build a critical mass of faculty who were all good friends, and it would be easier to bring them here. There were exceptions, of course, but we looked at a lot of people from The Brigham in those days.”

Step two was to personally vet the candidates. “I listened to their science,” he says. “If their science was world-class and if I enjoyed them as people — if I had confidence that they could get along well with the other faculty, house staff and students — then we put every effort into getting them here.”

The final step was finding the right pitch. “I used to tell candidates, Look at the advantages in Ann Arbor,” he says. “First, we’ll pay you more, the cost of living is less and you’ll be able to live twice as well. You can buy a four-bedroom home in a great neighborhood with great schools. And look at all the superstars here — it’s just like Boston — but here we interact more. We do things together; we learn from each other.”

The approach quickly bore fruit. “As we got a critical mass of people, from The Brigham particularly, it really began to flourish,” he says.

Of course, hiring is only the first step in building a great faculty; they also need support. This was another area in which Kelley excelled. His method was to seek out junior faculty with star potential, being willing to mentor them as they seasoned their skills. Former Hem/Onc Division Chief and U-M Comprehensive Cancer Center Director Max Wicha, MD, is one such example.

“In 1982, Bill Kelley approached me and asked, ’How would you like to be Hem/Onc division chief?’” says Wicha. “I was two years out of my fellowship and just starting as an assistant professor, and said, ’You’ve got to be kidding. I’m just getting my own lab going; I don’t know anything about administration.’ He said, ’You’re a scientist, and I want to build the Department of Medicine into the biggest scientific powerhouse in the country. Just go out and find the best physician-scientists, and I’ll work with you to recruit

1983

1983

1983

1984
Division of Geriatric Medicine is founded under Jeffrey B. Halter (1984–2011).
Wicha agreed, and like so many other division chiefs of this time, he grew into his leadership role, dramatically increased the division’s research funding and made lasting impacts on the field.

**ROOM TO GROW**

Of course, with recruitment taking off, Kelley needed a place to house all these physician-scientists, and his stopgap strategy of leveraging joint appointments to secure space in other departments and reallocating existing space was stretched thin. He needed new buildings.

He decided to launch a research institute, which would in turn require a building. He approached H. Marvin Pollard, MD (GI), a well-known clinician with a lot of grateful patients who Kelley thought might be willing to support this effort, and asked if he could build a research institute in Pollard’s name.

Pollard and the university agreed, and the architects designed a series of three buildings for the allotted footprint: Medical Science Research Buildings (MSRBs) I, II and III. It turned out that as the finishing touches were being put on the design, the Howard Hughes Medical Institute was committing to Michigan and decided to acquire one of the buildings.

“The reason we had a shovel-ready research building the size that HHMI wanted was because the Pollard Institute had been designed,” says Kelley. “So one building was paid for by HHMI, and we just shifted our funding to the next building. That’s how MSRB I and II got done so fast.”

**A STUDY IN SYNERGY**

As important as these individual achievements were, even more important was the way in which they reinforced each other. The new facilities made recruiting easier; the recruiting of physician-scientists positioned internal medicine at the cutting edge of its subspecialties, which spurred referrals; and the growth in the clinical program funded more recruitment.

Jeoffrey Stross, MD (Gen), Kelley’s first chief of general medicine and associate chair of patient care, shares the synergistic aspects of the practice plan as an example. “The start of the practice plan was important overall because it brought a great deal of money to the department — but it had a number of other effects, as well. In order to bill for what you did, you had to be involved in patient care. So the attendings began taking part in rounds on a regular basis and became more actively involved in teaching and care. This meant the house staff got a great deal more teaching, the faculty worked harder but got paid more, and patient care improved because more senior people were involved — we saw this through a dramatic reduction in patients’ length of stay.”

And like most of what Kelley did, these synergies were no accident; they were the result of careful planning and structure.

**THE VALUE OF STRUCTURE**

Structure was a hallmark of the Kelley era, and nowhere was it more evident than in the realm of education. Recalls Stross, “When I went through the program in the late ‘60s and early ‘70s, you worked on the inpatient service and had faculty members who would attend and help, but there was no formal educational program. All that changed the day Bill Kelley got here.”

Kelley implemented a fixed weekday schedule with a very deliberate goal. “We needed time for a real exchange of ideas and listening to what’s happening in the world of science as it applies to the practice of medicine,” says Kelley.

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
</table>
KELLEY’S WEEKDAY TRAINING SCHEDULE

8:00–9:00 a.m.
Kelley rounds: Chair rounds with students and trainees on various services in rotation

9:00–10:00 a.m.
Morning report: Chair meets with senior residents to discuss cases from the previous night

10:00 a.m.–Noon
Regular rounds: Regular teaching rounds with attending on the service

Noon–1:00 p.m.
Noon conference: Formal teaching conference

Afternoon
Patient visits and admission work

He felt that participating in rounds kept him connected with the students and house staff, lent an air of formality to the experience and kept learners on their toes. Each student had the chance to present to him once, and they were expected to appear in appropriate dress — for men, this meant wearing ties as a mark of patient respect — and to report on their patient’s history and physical findings from memory at the bedside. After this, Kelley grilled the group: reviewing the history; performing his own exam; and probing each presenter on the implications of various findings, rationale for therapies and latest research. His intensity was legendary; colleagues recount stories of students going mute, fainting and conjuring up last-minute trips overseas at the prospect of Kelley rounds.

In addition to making medical education more rigorous, another key goal was making it more relevant. James Woolliscroft, former dean of the U-M Medical School and the Lyle C. Roll Professor of Medicine, was a chief resident under Kelley and was chosen by Kelley to serve as the department’s clerkship director. “Around this time, we began to recognize that our graduates would increasingly be providing care outside of the hospital, and they’d need a new skill set,” says Woolliscroft. “So I pioneered moving students into the community — into clinics and facilities for the elderly. We were, if not the first, among the very first in the nation to make ambulatory-based education a requirement for all of our internal medicine students.”

Kelley also worked to make the faculty accountable for their teaching. At the end of the year, he sat down with each resident for feedback on the program, asking them to rate every faculty member as a clinical teacher. “Knowing that the chairman was going to find out how residents viewed their teaching certainly improved the faculty’s effort,” he says.

As hands-on as Kelley was during his tenure, he recognized that even he and secretary Candy Johnson, who, he says, “could do the work of five people,” couldn’t meet all the demands of a large and growing department on the rise. Much like the structure he brought to the educational experience, he brought a clear delineation of leadership roles to the department. In addition to the division chiefs, he instituted a series of associate chairs for patient care programs, research, house staff education, medical student teaching, medical services at the VA and affiliated hospitals and a business administrator.

1987

1987

1988

1988
In a special article in the August 28, 1980 New England Journal of Medicine, Robert Petersdorf, outgoing chairman of medicine at the University of Washington, cited this structure as a possible solution to the growing demands on chairs of medicine for the decade ahead.

But the real proof of whether a department is organized and functioning well, of course, is what it is doing. The research, clinical care and education timelines in this report are rich with breakthroughs catalyzed during the Kelley era. There is also little question that Kelley helped launch to international prominence several subspecialties and research emphases that were just taking shape as he took office — from geriatrics to health services research to molecular medicine and genetics.

1988

1989–1990
John Marshall, Interim Chair
THE YAMADA ERA
Tadataka “Tachi” Yamada 1990–1996

Following in Bill Kelley’s steps as chairman was a person he’d not only hand-picked to head the Division of Gastroenterology six years earlier, but was willing to wait for. When Kelley first tried to recruit Tachi Yamada, MD, PhD, to U-M, Yamada wasn’t quite ready for the move — but Kelley promised to hold the position until he was.

Kelley felt that a scientist of his caliber was worth the wait, and both were well-aligned in their molecular biology orientation. Yamada’s focus was on the synthesis and function of gut hormones, and his lab helped detail how the peptide somatostatin regulates GI function.

As division chief, Yamada demonstrated many of the skills needed in a department chair. Forging ties across departments, he won an NIH Center grant, which would form the basis for the Michigan Gastrointestinal Peptide Research Center. He took the division from having no NIH grants prior to his arrival to $4 million in research funding at the end of his six years as chief. He also made a number of strong recruitments and enhanced clinical care by creating the Medical Procedures Unit to house endoscopy and related services.

When he was tapped to replace Kelley, Yamada’s goal was to continue the department’s momentum, though his style was markedly different than his predecessor’s. “Dr. Yamada viewed his department as an extended family,” says Jeffrey Stross, who served as his associate chair for patient care programs. Even so, under Yamada’s tenure the department reached unprecedented levels of both research funding and clinical activity, and had responsibility for a third of all medical student teaching.

Yamada says he worked to take a number of strong elements to the next level. He played an important role in helping the young but ascendant Division of Geriatrics secure a grant from pharmaceutical company Tanabe to bring the principles of geriatric medicine from the U.S. to Japan. “I think it’s telling about the quality of the work the division was doing that a Japanese pharmaceutical company would want to partner with U-M,” he says. “It was, and still is, one of the leading geriatrics divisions in the world.”

Yamada also played a major role in supporting the smooth development of the cancer center. “There could have been a struggle as the cancer center got on its feet because to some extent the NIH cancer centers could be seen as competing with existing departments,” he says. “But I was able to negotiate a deal with the executive director of the hospital, John Forsyth, to commit $10 million of his reserves as an endowment to support the Hem/Onc Division under Rob Todd and another $10 million to support the Comprehensive Cancer Center under Max Wicha.”

1990 Chung Owyang becomes Gastroenterology Division chief (1990–present).
1993 James Baker becomes chief of the renamed Division of Allergy & Clinical Immunology (1993–2012).
The result was that both entities had the resources they needed to ramp up their activities: the cancer center embarking on the new building it would share briefly with the geriatrics center, and the division beginning a wave of clinical recruiting that would allow it to take a leading role in cancer clinical trials.

General Medicine was also on a roll. Laurence McMahon, MD, and Joel Howell, MD, PhD, secured a Robert Wood Johnson Clinical Scholars Program, and Rodney Hayward, MD, took the reins of the new VA Health Services Research and Development Field Program, both of which would strengthen the department’s burgeoning health services research effort. In addition, some of the department’s new recruits, such as Steven Katz, MD, and Mark Fendrick, MD, would go on to become national leaders in this arena. The University of Michigan is known by the quality of people it has and the quality of people who have spent time there. These include leaders in every aspect of the field — the pharmaceutical industry, major foundations, the NIH and academia. And the people who stayed created an enormous powerhouse of medical research and clinical medicine at U-M.”

— TACHI YAMADA

In the realm of education, Yamada had two goals for the department: to ramp up house officer training and medical student education, under the direction of Joseph Kolars, MD (GI), whom Yamada recruited, and James Woolliscroft, respectively.

Though the increasing size of the department forced Yamada to scale back a bit from his predecessor’s five-day rounding schedule, he retained a hands-on philosophy, conducting chief rounds and morning reports three days a week. In addition, he met with the chief residents every Friday to discuss the trainees and program — and put particular effort into resident recruiting. “I think the quality of the house officers we attracted reflected the care and attention Joe Kolars and I put into improving that program,” he says.

A second effort was in medical student education. “I had inherited Jim Woolliscroft from Dr. Kelley’s time, and he was a consummate educator and scholar,” says Yamada. “He understood how to measure the impact of teaching, not just in terms of outputs but outcomes. I worked closely with Jim to make sure our curriculum was relevant and we had multiple methodologies in place to measure the quality of education.” With Yamada’s support, Woolliscroft built on work he started under Kelley, positioning the department at the forefront of a national movement in competency-based education and assessment. When Yamada left for the pharmaceutical industry in 1996, the department was on strong footing and ready for another physician-scientist to make his mark.

1994

1994

1996–1999
David Humes, Chair

1997

1999–2000
Laurence McMahon, Interim Chair

1999
Alan Weder becomes Hypertension Division chief (1999–2003).

2000
Roger Grekin becomes interim chief of the Division of Endocrinology & Metabolism (2000–2003).
THE LIPPMAN ERA
Marc E. Lippman
2001–2007

Marc E. Lippman, MD (Hem/Onc), was recruited to take the reins of the department in 2001 by then-Dean of the medical school Allen Lichter, MD. The two had worked together at the NIH: Lippman, as head of the Medical Breast Cancer Section and Lichter, as head of the Radiation Therapy Section at the National Cancer Institute.

Both men knew their outlooks aligned, and after chairing the Department of Oncology at Georgetown and heading its Vincent T. Lombardi Cancer Research Center, Lippman says he was eager to make a wider impact.

“I had spent my career becoming more and more expert about a more and more narrow field,” he says. “I was excited about the opportunity to lead something broader – a department of medicine – exploring how multiple disciplines could work together, play together and create a community of scholarship that would transcend what a single cancer center could do.”

Looking back at his tenure, his impact was far-reaching. He left the department eighth in NIH funding, its highest ranking in years; grew the faculty from 325 to 500; and took the endowed chairs from 15 to 28.

The department was also playing central roles in a number of high-profile cross-disciplinary efforts. The U-M Life Sciences Institute was founded under Alan Saltiel, PhD (MMG), with strong departmental membership. Steven Bernstein, MD (Gen), and Caroline Blaum, MD (GIM), were among the UMHS leads for a Centers for Medicare and Medicaid Services Demonstration Project, which was able to improve quality while reducing costs, making it a prototype for aspects of the Affordable Care Act. Internal medicine faculty were also principal investigators on NIH Roadmap grants in nanoscale membrane research and clinical research infrastructure, and partners on several others.

On the education side, the department developed a “short track” program to recruit top fellows, supported scholarships to attract students to internal medicine and engaged the Simulation Center to build trainees’ skills while enhancing safety and quality.

This just scratches the surface. But when asked about them, Lippman says he sees these as outcomes rather than causes of excellence. He says the real effort of his tenure lay in understanding and improving how different parts of the institution worked together.

2002
Stephen J. Weiss becomes chief of the Division of Molecular Medicine & Genetics (2002–2010).

2003
Division of Cardiovascular Medicine forms, uniting the previous divisions of hypertension and cardiology. David J. Pinsky becomes division chief (2003–present).

2003
Peter Arvan becomes chief of the Division of Endocrinology & Metabolism (2003–present).

2004
Frank C. Brosius III becomes Nephrology Division chief (2004–present).

2005
The Division of Endocrinology & Metabolism changes its name to the Division of Metabolism, Endocrinology & Diabetes (MEND).

2005
Powel Kazanjian becomes Infectious Diseases Division chief (2005–present).
This took many forms. Culturally, he says, he was eager to reinforce a sense of connectivity and of departmental identity. “I was trained in an older era of great internal medicine departments,” he says, “and over the next couple of decades, we saw the field fragment into its subspecialties. I wanted to remind people that they were part of something bigger.”

One of the ways he did this was by establishing the Society of Professors of Medicine. It featured an annual event in an august building with cocktails, dinner, distinguished guests, a scholarly talk and special scarves and ties signifying membership. “We tried to create a sense of tradition,” he says, “with pomp and circumstance, and a sense of permanence and institutionality. It was a very retrogressive step that I thought was wonderful.”

He spent even more effort enhancing scientific connectivity. In his recruiting role, Lippman naturally found himself at numerous scientific presentations, which positioned him perfectly to link researchers working on similar questions from different angles. “To use a metaphor, I found myself coming into a room that looked somehow familiar, but I’d come in through another door,” he says. “It gave me a chance to see that the forces underpinning many of the advances in academic medicine were common to multiple disciplines. So I spent a great deal of time trying to enhance that.”

For example, he says, he might connect cardiologists trying to stop apoptosis in the context of hypoxia with oncologists specializing in how cancer cells circumvent this programmed cell death. His goal was to link researchers studying related pathways and processes — expanding their networks beyond the traditional relationships of disease or organ. And though his approach tended to focus on individual matchmaking, it would complement the more structural mechanisms — such as the Life Sciences Institute and A. Alfred Taubman Medical Research Institute — that aimed for similar ends.

Another important way Lippman helped reshape how various parts of the health system worked together was in the area of finance. He addressed the challenge of rising costs and shrinking reimbursements with tools to track and reward productivity — from effort reporting to incentive plans — but put particular effort into a new financial model. Called the “four walls model,” it was a way to share the margin generated within the four walls of the cancer center, allowing a more equitable allocation of income and expenses among the hospital, cancer center and department.

With negotiations guided by David Spahlinger, MD (Gen), then senior associate dean for clinical affairs, the new model allowed the Hem/Onc division to more than double its faculty — and to broaden its basic science emphasis to include more clinical and clinical research expertise.

But Lippman thought the model was capable of more nuanced effects as well. “If you think of it not just as sharing money,” he says, “it can also help physicians see the interconnectedness of things — that they could personally make more money if they turned off the lights or spent less on malpractice insurance — so suddenly safety is in physicians’ personal interest. It’s a way of keeping everyone invested in the process.”

Having said that, Lippman acknowledges that this type of personal investment in one’s work and the institution are among the things he appreciated most about his time as department chair. “That is truly one of Michigan’s strengths,” he says. “There’s a tremendous amount of joint spirit in working together, and people see the institution as a place worth investing some of your heart into. In my role as chair, I tried endlessly to advance that.”

2006

2007
Robert Todd, Interim Chair

2008
John Del Valle, Interim Chair

THE LIPPMAN LAB
Marc Lippman’s lab focused on basic and translational studies in breast cancer, demonstrating the role of estrogen, growth factors and autocrine and paracrine factors in cancer growth and progression. He also established the first cell culture models for studying estrogen action, characterized the effect of tamoxifen on these cells and designed novel anti-tumor therapies.
When John M. Carethers, MD (GI), was recruited to the chairmanship in 2009 by Dean James W. Wooliscroft, it felt a bit like “coming home,” he says. Having grown up in Detroit, Carethers had family in the area. He’d also done his fellowship at U-M during the Yamada era — with Chung Owyang, MD, as his division chief and Rick Boland, MD, as his mentor in gastrointestinal oncology.

After almost 15 years at the University of California, San Diego, Carethers was ready for the next challenge. His lab had risen to prominence for its work on genetic instability in colorectal cancer, having revealed the mechanisms by which standard chemotherapy is affected by DNA mismatch repair. He had also served UCSD’s GI division in several administrative roles, from fellowship director to section chief of the Veterans Administration Medical Center to division chief, overseeing a period of substantial growth and success.

He would do the same at U-M during his chairmanship — expanding the faculty from 585 to 760; securing seventh place among internal medicine departments in the 2015 U.S. News & World Report; and presiding over unprecedented levels of scholarship, research funding and patient care.

A FOCUS ON PRIMARY CARE
There were also specific areas Carethers was eager to advance during his tenure, and high on his list was the climate for primary care. “Early on, I did a survey of our primary care physicians,” he says, “and they were in the doldrums.” Physician satisfaction was faltering, and they felt disconnected, practicing in outposts, cut off from each other and a sense of departmental identity.

He did a number of things to address this. The first was helping to launch a Primary Care Council charged with restructuring primary care in the U-M Health System. Formed under his leadership, the task force included chairs and faculty representatives from each of the health system’s primary care departments: internal medicine, family medicine, pediatrics and obstetrics and gynecology.
"One of our goals is to ensure that each practitioner — whether an MA, LPN, RN, nurse practitioner, PA or physician — works to the highest level of his or her degree," says Carethers. "We're making sure we have the right ratios of practitioners and are improving workflow so that everyone makes the best use of their expertise."

They are also in the process of transitioning primary care from a productivity-based payment system to a more quality- and value-based one. "Instead of rewarding physicians for simply taking on more and more patients," he says, "we give them a panel of patients, but reward them for quality — for keeping patients out of the hospital because they're controlling their blood pressure or diabetes, for example."

Another thing the council did was work with the Faculty Group Practice (now known as the U-M Medical Group) to raise primary care providers' salaries — twice. In addition, the department has introduced loan repayments to attract physicians to primary care, has pursued chief medical residents with signing bonuses and has reinstituted a primary care track in the residency program, providing two new internal medicine residency slots with enhanced ambulatory care rotations and primary care mentoring.

Carethers has also done important work in connecting primary care providers with both the department and each other. On the most basic level, he has made it a priority to visit the clinic sites. "When I first came on board, I'd go to Briarwood or Brighton, and people would say, 'Wow, this is the first time we've seen a chair here in 10 years,'" he says. "They felt forgotten. So I visit each of our outposts at least once a year to engage with our primary care faculty there." To further strengthen that connection, the department hired Rob Ernst, MD, as assistant chair for primary care, and Sandeep Vijan, MD, MS, to help the Division of General Medicine and the department implement value-based interventions based on metrics.

To help the faculty connect with each other, the department has established the Steven Gradwohl Art of Primary Care Award and Workshop. Initiated through an outpouring of support in memory of one of U-M's great primary care physicians, the award recognizes a UMHS physician who embodies Gradwohl's approach to patient care, and the workshop gathers faculty, staff, residents and students to explore issues and advances in primary care.

Yet another outgrowth of the discussions around primary care is one of Carethers' signature creations: Academiae Laureati Medici, a Clinical Excellence Society he launched with funds from his own Searle Professorship. Once elected, physicians are members for life, receiving both recognition and special benefits, from enhanced support for continuing medical education to sabbaticals.

“We wanted to create something long-lasting that would recognize our very best clinicians, many of whom are primary care providers,” says Carethers. “It has worked out wonderfully. As people began seeing the Latin name on physicians’ coats, it created buzz around a very important topic. They now have officers and quarterly meetings, they mentor junior faculty and I use them for advice because they’re our wisest clinicians.”

SUPPORTING QUALITY & RESEARCH
Carethers has worked hard to enhance other aspects of the department, as well. One of these is quality: When he arrived, there were no departmental quality structures in place, so in 2014, Carethers named Scott Flanders, MD (Gen), as internal medicine's first associate vice chair of quality and innovation. Flanders, who also directs a collaborative quality initiative of some 50 Michigan hospitals, is charged with measuring the quality of care delivered by the department, identifying opportunities to improve and developing ways to more rapidly implement best practices and standards of care.

Enhancing the research environment was another priority. Carethers undertook a number of efforts to bolster the department's research readiness in an era of tight NIH funding. The first was a near-tripling of endowed professorships, from 28 to 80, which provide not only prestige but a source of continuous funding.

2010 Eric R. Fearon becomes chief of the Division of Molecular Medicine & Genetics (2010–present).
2011 Raymond Yung becomes chief of the renamed Division of Geriatric & Palliative Medicine (2011–present).
2012 James Baldwin becomes chief of the Division of Allergy & Clinical Immunology (2012–present).
He and members of the department have also played leading roles in broader efforts that position faculty to be competitive for major cross-disciplinary, even cross-cultural, funding opportunities that the NIH has increasingly encouraged. These include projects like the North Campus Research Complex, a facility designed around collaboration that houses several cross-disciplinary programs with strong internal medicine leadership and participation. One of these, the Institute for Healthcare Policy and Innovation, headed by John Ayanian, MD (Gen), was awarded 176 new grants in 2015 totaling more than $100 million. It also became one of four sites for the new National Clinical Scholars Program, along with UCLA, Yale and Penn. The NCRC’s other resident programs have had similar successes.

Likewise, internal medicine has played leading roles within Global REACH, the medical school initiative that supports collaborative research and education around the globe. One of its flagship programs is the UMHS Joint Institute with Peking University Health Science Center. Co-directed by Joseph Kolars, it features research efforts in cardiovascular, liver, pulmonary and renal disease, all co-led by internal medicine faculty. Since its establishment in 2010, the JI has funded 25 joint research projects involving more than 100,000 patients in both the U.S. and China, and has generated $3 million in extramural funding.

Much of this research activity, says Carethers, would not have been possible without these structures and the support provided for them by UMHS and the department.

**ADDITIONAL ACCOMPLISHMENTS**

Along the way, there have been other important milestones in the department’s evolution — leadership or participation in a dozen UMHS destination programs; a successful migration to a new Affordable Care Act-compliant electronic medical records system (MiChart); the launch of a self-sustaining continuing medical education program to replace the medical school’s CME office; the launch of the Weiser Food Allergy Center; the relocation of multidisciplinary labs to NCRC; helping enable the fast forward research areas of the microbiome and protein folding diseases; the restructuring of palliative care into the Geriatric and Palliative Medicine Division; the launch of a Faculty and Staff Awards Recognition Program with Chief Administrative Officer Masada (Musty) Habhab; the implementation of new models for care, such as the VA’s medical home model, the Acute Care for Elders Unit and the Medical Short-Stay Unit; providing support for the recruitment and leadership development of women and minority candidates; and leading the current redesign of the medical school’s curriculum.

In a recent Digestive Diseases and Sciences profile, Carethers shared a piece of advice that has served him well: *Work hard and others will notice you.* In light of the latest rankings, it seems that the hard work of enhancing the department’s connectivity, quality and resources has indeed been noticed.

Sources:
Department of Internal Medicine division histories, division chief and faculty interviews and the U-M Medical School historical timeline.
Education is where it all began and at the heart of everything we do. The Department of Internal Medicine’s leadership and vision have made a tremendous impression on the U-M Medical School and on generations of students, residents and fellows.

Note: Due to space limitations, we are only including the names of internal medicine faculty who led or co-led a particular initiative. The divisions noted in parentheses are based on their current names.
1848
The Board of Regents establishes a three-member medical department, known today as the University of Michigan Medical School.

1850
The medical school opens its doors to more than 100 students. They are charged $5 a year for two years of education.

1867
University enrollment reaches an all-time high of 1,255 students, nearly half of whom are enrolled in the medical school.

1877
The annual session is extended from six to nine months, the first of a series of reforms that immediately places Michigan in the vanguard of medical education.

1880
The medical school moves to a three-year curriculum, introduces laboratory instruction and assigns grades for the first time.

1889
Johns Hopkins Medical School first opens in 1893 with eight full professors. Four have medical degrees from Michigan and two are directly from the faculty, an indication of U-M’s standing as the strongest scientific medical school in the country.

1890
U-M adopts the four-year medical school program still in use today. Courses on diseases of the nervous system and “insanity” are included for the first time.

1893
Practical work—percussion

1899
George Dock introduces the clinical clerkship at Michigan and produces a clinical teaching program that will become a model for other medical schools across the country. The breakthrough is made possible by the fact that U-M owns its own hospital. (Privately owned hospitals would not allow medical students to care for patients.)
• Medical Building

1900 The U.S. medical community recognizes the Catherine Street Hospital as the largest teaching hospital in the country. Over a half-century, Michigan’s Medical School has become one of the best in the world, changing the role of the student from passive observer to active participant in the learning process, offering high-caliber laboratory instruction and a clerkship.

1901 The cornerstone of the large Medical Building (now the School of Natural Resources and Environment) is laid with great ceremony. In addition to offices and museum space, the building will contain spacious laboratories, two large amphitheaters and two recitation rooms.

1910 Abraham Flexner’s influential study of American medical education gives high praise to the U-M Medical School, noting that its faculty are “productive scientists as well as competent teachers.”

1915 Nellis Barnes Foster (MEND), one of the leading diabetologists in the U.S. in the early 1900s and head of the Department of Internal Medicine, writes a textbook titled “Diabetes Mellitus: Designed for the Use of Practitioners of Medicine.”

1915 The Rackham Arthritis Research Unit is established and becomes one of the first places in the nation to provide training in the investigation of the rheumatic diseases.

1942 To meet military demand for doctors during WWII, 66 of 78 medical schools in the U.S. and Canada, including the U-M Medical School, institute an accelerated program to graduate students in three years rather than four.

1950 In 1950, the Cardiology Fellowship Program is launched under Franklin Davis Johnston (CVM).

1951 The U-M Medical School pledges to the state of Michigan to do everything it can to increase “medical manpower.” The size of the entering freshman class increases 30 percent, to 204. Concurrent with a plan to build a complete medical center, the UMMS curriculum committee seeks to modernize medical instruction at Michigan by enlarging and refitting the basic science departments.

1954 After four years of admitting first-year classes of approximately 200, total fall enrollment reaches 760, making U-M the largest medical school in the U.S. and Canada.

1956 The Division of Allergy begins training fellows. It is the very first allergy division and training program in the United States.

1957 The Division of Rheumatology is awarded its first NIH Training Grant — three years before it is established as a distinct clinical unit in 1960.
**1960s–1990s**

1958 Robert Green (PCCM) arrives to head the pulmonary program at the VA Hospital. He promptly broadens the teaching, consulting and patient care activities. Most notable was his weekly chest conference, which was a highlight of the educational activities.

1959 William Hubbard joins the University of Michigan as professor of internal medicine and dean of the medical school. At age 39, he was one of the youngest in the nation to hold such a position. He was the medical school’s first full-time dean — without private practice and departmental administration responsibilities. In 1969, the U-M Regents will make him the first dean to also have responsibility for directing the medical center. He helps redefine this role until resigning in 1970 to become vice president of the Upjohn Company.

1965 Russell Loyd Miller Jr., a native of West Virginia, becomes the first African-American internal medicine intern at Michigan. Miller will go on to become dean of the Howard University College of Medicine, then vice president for health affairs. In 1990, he will be appointed senior vice president of Howard University.

1968 The medical school incorporates increased clinical training into the first two predominantly basic science years of medical school. An interdepartmental Introduction to Clinical Medicine and senior year sub-internships are introduced and are still part of the curriculum today.

1969 The 30,000-square-foot Towsley Center for Continuing Medical Education and Medical Science Building II open. Med Sci II brings all medical school students and departments to the U-M Medical Center for the first time.

1976 Jeoffrey Stross (Gen), originator of seminal contributions on the “educationally influential physician,” becomes first chief of the Division of General Medicine. Over the next 12 years, he goes on to establish the primary care training program and develops the forerunner to modern resident ambulatory care clinics.

1981 Timothy Nostrant (GI) trains key clinical faculty members as the lead physician of the Faculty Diagnostic Unit, which serves as a national model for the development of the clinician-scholar track. He will also develop the curriculum for the GI Fellowship Program. Much of it is still used today.
1989
A $6.1 million grant from the National Institute on Aging establishes the *U-M Geriatric Research and Training Center*, the first of its kind in the country, to enhance research and training in geriatrics and aging.

1990
While teaching the clinical skills course, James Wooliscroft (Gen) introduces the concept of ambulatory-based education by having medical students interview residents at nursing homes. Once he becomes clerkship director, he moves third-year medical students out of the hospital for one month into clinics in the community. U-M becomes among the very first schools in the nation to make this a requirement for all medical students. He will work with the National Board of Medical Examiners in 1991 to create the *Comprehensive Clinical Assessment* for medical students. The test, based on real-patient scenarios, assesses students’ ability to make critical connections and correctly diagnose patients at the end of their third year. This assessment will become a model of clinical testing nationwide.

1990
Chair of Human Genetics Thomas D. Gelehrter and Francis Collins (MMG) publish a textbook titled “Principles of Medical Genetics,” the first to integrate modern molecular biology and medical genetics. It becomes the definitive text in the field of medical genetics. A second edition of the book will be published with David Ginsberg (MMG) in 1998.

1993
Laurence McMahon and Joel Howell (Gen) are named co-directors of the new Robert Wood Johnson Clinical Scholars Program at U-M, a program that will endure for more than 20 years producing hundreds of scholars trained in quantitative and qualitative research methods who have gone on to be national leaders in health and health care.

1995
Ronald Koenig (MEND) becomes director of the *Michigan Medical Scientist Training Program* that facilitates the combined MD-PhD degree education of outstanding, dedicated students. Since its inception in 1979, the MSTP has graduated 217 fellows and includes 92 participants as of the 2015-2016 academic year.
1998

Wendy Uhlmann (MMG) co-edits the first textbook on genetic counseling: “A Guide to Genetic Counseling.” It is currently used to train students around the world. A second edition will be published in 2009.

2001

Monica Lypson, James Woolliscroft (Gen) and colleagues at the U-M Medical School develop and implement the Postgraduate Orientation Assessment, an eight-station, objective-structured clinical examination for incoming residents that will become a template for residency programs across the country.

2003

The U-M Medical School begins to implement a new curriculum that integrates biomedical, clinical and psychosocial sciences with clinical skills and professionalism.

2003

The University of Michigan Training Program in Gastrointestinal Epidemiology is established to develop academic gastroenterologists who are thoroughly trained in the design and execution of prospective clinical trials and classic epidemiologic research. It is one of only three programs funded by the NIH in the U.S. for this mission.

2004

One of the very first clinical simulation centers shared by multiple departments opens at U-M. Every resident now logs time in the Sim Center and many practicing physicians use it to keep their skills sharp. The single-room facility will expand to a multi-room area for virtual learning at Towsley Center in 2008.
2006

Internal medicine faculty members John Del Valle (GI), Michael Lukela, Rajesh Mangruikar and Vikas Parekh (Gen) develop a Patient Safety Learning Program that is piloted by the internal medicine and medicine-pediatric residency programs. It is one of the first patient safety and quality improvement programs developed for residents and will be recognized with a Provost’s Teaching Innovation Prize in 2010.

2007

The Hospice and Palliative Medicine Fellowship Program begins and in 2009 becomes one of the first Accreditation Council for Graduate Medical Education-accredited palliative fellowship programs in the United States. The founding director is Marcos Montagnini (GPM).

2011

Global REACH, the U-M Medical School’s international academic program, is expanded to develop individuals and programs to improve healthcare through collaborative partnerships in low- and middle-income countries. It is directed by Joseph Kolars (GI), the senior associate dean for education and global initiatives, and Michele Heisler (Gen) is the associate director. In 2015, 47 UMMS students will travel to 20 countries and 48 international students will visit UMMS from 11 countries through the program.
2013 The American Medical Association launches “Accelerating Change in Medical Education.” U-M is one of 11 medical schools chosen to receive funding to transform its curriculum. Rajesh Mangrulkar (Gen), the associate dean for medical student education, is the principal investigator on the grant and spearheads the initiative. The new curriculum is planned, designed and implemented through a phased approach that will extend from 2013 to 2018.

2014 The Department of Internal Medicine Residency Program initiates a primary care track to help meet the growing need for primary care physicians. Funded by the U-M Hospital, these two new resident positions focus on expanded exposure to ambulatory care rotations and interactions with primary care mentors.

2014 Dean James Woolliscroft (Gen) receives the 2014 Abraham Flexner Award for Distinguished Service to Medical Education, the most prestigious honor given by the Association of American Medical Colleges and an accomplishment achieved by no prior dean of the medical school.

2015 An ambitious interprofessional education initiative is launched at U-M to transform the way faculty teach more than 4,000 health professions students. It includes a new course, Team-Based Clinical Decision Making, launched by the schools of dentistry, medicine, nursing and social work and the College of Pharmacy. It is the first course of its kind at U-M and one of the largest in the country.
2015
The renovated Taubman Health Sciences Library opens. It is designed to support key elements of the medical school’s new curriculum: collaborative, active learning and interprofessional education.

2016
The Institute for Healthcare Policy & Research Clinician Scholars Program launches to train scholars to lead policy-relevant research and catalyze partnerships to improve health and healthcare. The program fills the gap left after the Robert Wood Johnson Foundation ended its Clinical Scholars Program for physicians in 2014. The new program is directed by Rodney Hayward (Gen), who previously directed the RWJF Clinical Scholars Program.

Sources:
Department of Internal Medicine division histories, division chief and faculty interviews and the U-M Medical School historical timeline.
William Hubbard, MD
1959-1970

William Hubbard, MD, joined the University of Michigan in 1959 as professor of internal medicine and dean of the medical school. At age 39, he was one of the youngest in the nation to hold such a position. He was the medical school’s first full-time dean — without private practice and departmental administration responsibilities — and helped redefine the role. Hubbard reorganized policy and practices at Michigan, emphasizing the importance of translating medical research advances into educational programs for students and practicing physicians. He was successful in involving the entire faculty in the affairs of the school and aimed to provide leadership that would help students and faculty work more effectively. Hubbard also directed a $33.5 million program to remodel existing buildings and construct new ones.

In 1969, the U-M Regents made Hubbard the first dean of the medical school to also have responsibility for directing the U-M Medical Center. The logic behind this administrative restructuring was that teaching, patient care and research are inseparable, and the chief administrator should be responsible for the intersection of hospital and academic functions. A primary objective of this new position was to increase and efficiently utilize financial support for the medical center’s activities. Hubbard resigned in 1970 and became vice president of the Upjohn Company. Over the course of his academic and corporate careers, he served on the executive council of the Association of American Medical Colleges and as chair of the board of regents of the National Library of Medicine.

Joseph Johnson III, MD
1985-1990

While Joseph Johnson III, MD, was dean of the U-M Medical School, there were significant changes in medical education throughout the nation, with revisions to the medical school curriculum. For example, plans were made to put more emphasis on the importance of preventive care and to improve teaching in ambulatory care. The primary thrust of curricular reform, however, was to foster habits of critical thought and independent learning from premedical work through graduation. Johnson recruited eight new department chairs, and 11 endowed or collegiate chairs were established during his tenure. Research funding from external sources more than doubled and physical resources expanded as well.

Johnson also worked to enhance the U-M Medical Center. He was dean when the new University Hospital and A. Alfred Taubman Center opened in 1986. Several multidisciplinary “Centers of Excellence” were designated by the Regents, including the cancer and geriatrics centers. The Howard Hughes Medical Institute at U-M grew to 10 investigators, improving Michigan’s strength in molecular genetics. In addition, MSRB I was opened in 1986 and MSRB II in 1989, with planning begun for MSRB III. After completing his service as dean in 1990, Johnson remained on the faculty as professor of internal medicine. He died in 2010 at the age of 79.
Giles Bole, MD
1990-1996

Giles Bole, MD, came to U-M in 1959 and from 1969 to 1986 was director of the Rackham Arthritis Research Unit. In 1975, Bole became chief of the Rheumatology Division in the Department of Internal Medicine, a position he held until 1986 when he joined the dean’s office. He served as the medical school’s associate dean for clinical affairs, then as senior associate dean and executive associate dean until 1990. In 1990, Bole was appointed interim dean of the medical school and was formally named dean in July 1991.

The medical school was recognized in several notable ways during Bole’s tenure, receiving a Robert Wood Johnson Clinical Scholars Program Grant and being redesignated one of the top members of the NIH Medical Science Training Program. The school also was refunded with the largest General Clinical Research Grant provided by the National Institutes of Health. The medical school moved up from 16th to 9th in the U.S. News and World Report rankings of research-intensive medical schools, and in 1996 it ranked 9th in total research funding from the NIH. Bole also oversaw the appointment of 12 department chairs, as well as the appointment of the director of the NIH General Clinical Research Center and co-directors of the Mental Health Research Institute. In 1992, the school started using a radically new curriculum, and, to better serve the students, class size was reduced from 207 to 170. Near the end of Bole’s tenure as dean, the medical school commissioned a cultural diversity audit, helping the school to critically assess itself and develop new ways of integrating the values associated with diversity into the school’s culture.

Bole’s leadership brought about improvement and growth in the physical plant of the medical school and the entire University of Michigan Medical Center. Medical Science Research Building III was built, and the older Medical Science Buildings I and II were renovated and remodeled. The medical school administration worked with the Michigan delegation in Congress to obtain funding for remodeling and reconstruction of the Ann Arbor VA Medical Center. In July 1996, Bole announced his intention to step down from the deanship and return to the faculty; he was named dean emeritus of the medical school shortly thereafter. Bole died in 2011 at the age of 83.
An internationally recognized leader in medical education, James O. Woolliscroft, MD, stepped down as dean at the end of 2015. The Lyle C. Roll Professor of Medicine and a professor of learning health sciences, he has devoted his career to improving physician education and brought an emphasis on education at all levels to the deanship of the medical school, along with a bold program for international partnerships in education and research. Through a partnership with Peking University Health Science Center in Beijing, China, the Joint Institute for Translational and Clinical Research was formed. In 2008, he led the institutional effort to purchase an adjacent, former pharmaceutical research and development campus that is now the University of Michigan North Campus Research Complex. This site is a hub for exciting new research collaborations, including the Institute for Healthcare Policy and Innovation, one of the largest groups of health services and policy researchers in the nation, united to study how healthcare works and how it can be improved.

Prior to becoming dean, he served in several leadership positions, including associate chair in the Department of Internal Medicine, chief of staff of the University of Michigan Hospitals and Health Centers, associate dean and director of graduate medical education, executive associate dean and interim dean of the medical school from 2006-07. In 2013, he was elected to the prestigious National Academy of Medicine. In 2014, he received the Abraham Flexner Award for Distinguished Service to Medical Education — the highest honor bestowed by the American Association of Medical Colleges, in recognition of his outstanding leadership in transforming medical education in the modern age.

Marschall S. Runge, MD, PhD, became dean of the medical school on Jan. 1, 2016. He also serves the University of Michigan as executive vice president for medical affairs, a position he has held since arriving in Ann Arbor in March 2015. Before coming to Michigan, Runge was the executive dean for the School of Medicine at the University of North Carolina, where he has been a faculty member since 2000. He also served as chair of the UNC Department of Medicine.
DEPARTMENT OF INTERNAL MEDICINE FELLOWSHIPS AND TRAINING GRANTS

FELLOWSHIPS
Allergy and Clinical Immunology
Cardiovascular Diseases
Advanced Heart Failure and Heart Transplant
Interventional Cardiology
Gastroenterology
Transplant Hepatology
Advanced Endoscopy
Geriatric Medicine
Hospice and Palliative Medicine
Hematology/Oncology
Infectious Diseases
Endocrinology & Metabolism
Nephrology/Nephrology Transplant
Pulmonary & Critical Care Medicine
Rheumatology

THE DEPARTMENT OF INTERNAL MEDICINE CURRENTLY HOLDS

9 OUT OF THE 40 INSTITUTIONAL TRAINING GRANTS AWARDED BY THE NATIONAL INSTITUTES OF HEALTH
In 1910, Abraham Flexner noted in his influential study of American medical education that Michigan faculty were “productive scientists as well as competent teachers.” Both then and now — there are very few places where this is more evident than in the U-M Department of Internal Medicine.

Note: Due to space limitations, we are only including the names of internal medicine faculty who led or co-led a particular project. However, it’s essential to acknowledge that none of these breakthroughs would be possible without colleagues from other departments, even other institutions, as well as outstanding lab fellows and students. The divisions noted in parentheses are based on their current names.
**1890s–1960s**

**1896**

George Dock publishes *Some Notes on the Coronary Arteries*, in which he diagnoses a heart attack in a living patient and describes its pathophysiology.

**1916**

Louis Harry Newburgh (MEND) establishes internal medicine’s role as a leader in metabolism and nutrition through rigorous measures of energy balance that require subjects to spend days in a calorimetry chamber, precisely measuring their inputs and outputs. Over the next 36 years, Newburgh will demonstrate that obesity is caused by more energy flowing in through diet than out, and that weight loss can reverse glucose intolerance in what we now call type 2 diabetes. Before the availability of insulin, he will show that a high-fat, low-carbohydrate and -protein diet can control type 1 diabetes. He will also use diet to control edema in chronic nephritis patients.

**1920**

Frank Norman Wilson (CVM) begins a 32-year career at U-M, where he will become a world leader in electrocardiography. By focusing on the tracings’ form, rather than rhythm, he will be the first to properly identify ECG patterns in bundle-branch block. While seeking a mechanism for acquiring unipolar, semidirect recordings, in 1934 he will develop the central terminal, which will give rise to the six precordial leads and form the basis of the modern ECG machine. He will establish conventions for depicting polarity and placing leads. And his analysis of the QRS complex will explain how heart attacks produce Q waves and how their patterns can reveal distribution of injury.

**1927**

Through a philanthropic gift, the Thomas Henry Simpson Institute for Medical Research is launched under Cyrus Cressey Sturgis, also chair of internal medicine. Founded to study pernicious anemia, the institute develops ventriculin, a treatment derived from hog stomach that gives patients an alternative to ingesting a half-pound of liver daily. It will be developed through an innovative partnership between U-M and Parke-Davis. As pernicious anemia becomes treatable, the institute broadens its focus to general hematology.

**1937**

The Rackham Arthritis Research Unit is established as one of the first arthritis research units in the U.S. Its early research in areas such rheumatoid arthritis, gout and the biology of synovial tissue will lay the groundwork for multiple NIH grants from 1977 onward.
1948

James Neel is named director of U-M’s Heredity Clinic. Over a 39-year career at U-M, Neel will develop a reputation as a “father of modern human genetics.” He will identify the genetic basis for sickle cell anemia, study chromosomal damage from atomic radiation and viruses, and propose the “thrifty gene” hypothesis, suggesting that genes associated with diabetes and obesity remain in the gene pool because they protected our ancestors in times of deprivation. He will also establish the first academic department of human genetics in the U.S., which he will chair for a quarter-century.

1954

Jerome Conn (MEND) describes primary aldosteronism, later named Conn’s Syndrome, a curable form of high blood pressure. Caused by an adrenal tumor secreting too much aldosterone, the disorder is one of the few serious forms of high blood pressure that can be cured by surgical removal of the tumor if recognized early. Conn will go on to devise early-detection techniques for adrenal tumors, and U-M will become a worldwide center for the study and treatment of this and other adrenal conditions.

1954

Kenneth Matthews (Allergy) begins exploring the immunologic mechanisms underlying urticaria and will help clarify the role of IgE in this process. His seminal findings help to define “hives” as an allergic phenomenon rather than a neurological one.

1957

Basil Hirschowitz (GI) leads a U-M team that creates the first flexible fiber optic endoscope, which he tests by swallowing the prototype. The scope will become the standard tool for visualizing the GI tract, revolutionizing diagnosis and treatment. The original instrument will later be housed at the Smithsonian.

1962

R.J. Bolt and Arthur French (GI) develop a simplified, multiple-retrieving small-bowel biopsy tube that allows them to perform the first intestinal biopsy and to show the relationship between flattened villi and malabsorption in celiac disease.
**1964**

Stefan Fajans (MEND) describes Maturity-Onset Diabetes of the Young, a subtype of type 2 diabetes that appears in young people because of a defect in a single dominant gene. He did this by studying a large Michigan family where 74 members inherited the condition. Through this, Fajans helps establish that diabetes is not a single disease, but consists of several subtypes with different causes. Fajans will remain engaged with the division for more than 65 years and will later co-identify a genetic marker for MODY, as well as the gene itself.

**1965**

The State of Michigan advances gerontology as a field of inquiry in the U.S. by creating the Institute of Gerontology at U-M, the nation’s first state-funded center on aging. Though it begins with a broad exploration of aging in society, it will evolve to focus increasingly on the basic science of aging until being merged with the Geriatrics Center in 2004.

**1969**

The Michigan Kidney Registry is founded by Ron Easterling (Neph) with a grant from the National Kidney Foundation. It is the first state-wide, end-stage renal disease registry in the U.S., charged with collecting and analyzing patient data to determine how best to treat end-stage kidney disease. In 1981, the registry will produce a seminal study showing the superiority of transplant to dialysis. As the first to address time-to-treatment bias, the study proves instrumental in convincing clinicians to more aggressively pursue transplant for all candidates.

**1971**

William Beierwaltes (MEND & Nuclear Med) drives the development of the first radiopharmaceuticals capable of imaging the adrenals. Working with U-M radiochemists, he helps develop 131-I-radiocholesterol — the basis for later agent NP-59 — for functional imaging of the adrenal cortex, as well as metaiodobenzylguanidine (MIBG) for imaging medullary tumors. These agents will radically transform the diagnosis of pheochromocytoma and neuroblastoma, distinguish different forms of Cushing’s and Conn’s syndromes, and differentiate benign from malignant adrenal cortical tumors.
1971

C. William Castor (Rheum) starts to identify the inflammatory mechanisms responsible for joint destruction in rheumatoid arthritis. By comparing fibroblasts taken from the joints of RA patients to normal controls, he not only characterizes the cells’ differences in metabolism and proliferation, but also identifies cell and chemical stimuli that can induce RA characteristics in normal fibroblasts. His decades-long contribution will receive rheumatology’s highest honors, and his research thread will be picked up in the ’90s by David Fox (Rheum), who will reveal how fibroblasts of the joint interact directly with lymphocytes in RA.

1971

Stevo Julius (CVM) conducts seminal research on prehypertension, showing an increase of sympathetic tone in this very early stage of hypertension and that chemical blockade of autonomic nerves normalizes blood pressure in some patients. He will use the population-based Tecumseh Study to demonstrate the association of prehypertension with cardiac and vascular damage, and the multicenter TROPHY trial to show that early treatment can postpone, but not prevent, later hypertension.

1976

William Solomon (Allergy) launches seminal studies on the allergenicity of airborne particles smaller than pollen grains. He will help identify the prevalence patterns of these aerosols involving various allergens, suggest techniques for minimizing exposure and reveal how chronic exposure actually induces allergy by allowing these small allergens to penetrate the epithelium of the nose and lungs.

“Over his 40-year career at U-M, Stevo Julius changed the way physicians understand and treat hypertension. His work truly bent the curve in reducing mortality from cardiovascular disease.”
—David Pinsky

Main Hospital and medical campus, 1964
1970s–1980s

1977
Robert Fekety (ID) implicates a Clostridial toxin in severe antibiotic-associated diarrhea, helping to establish Clostridium difficile as the infectious agent responsible for this potentially fatal colitis. He also publishes guidelines for the diagnosis and management of C. diff, and will go on to clarify its method of transmission, epidemiology, risks and complications.

1977
Having identified 100 researchers with work relevant to diabetes, U-M is one of five U.S. institutions to be awarded an NIH-funded Diabetes Research and Training Center. Under the direction of Stefan Fajans (MEND), it focuses on basic cell regulation as well as the natural history, genetics, management and treatment of diabetes.

1978
U-M launches the Clinical Research Center under Irving Fox (Rheum). A precursor to MICHR, the center will facilitate the development of new treatments for Wilson’s Disease as well as Fox’s own identification of the relationship between the anti-rejection drug cyclosporine and the development of gout in kidney transplant patients.

1978
PCCM researchers led by David Danzker and Jack Weg conduct cutting-edge large-animal and human research that reveals mechanisms of impaired oxygen uptake in acute respiratory distress syndrome (ARDS). In the next three decades, multi-investigator programs headed by Robert Strieter and Theodore Standiford will improve our understanding of ARDS by clarifying the role of host factors and progenitor cells in lung injury. PCCM researchers led by Galen Toews and Robert Hyzy will participate in landmark clinical trials identifying low tidal-volume ventilation as the standard of care in ARDS and showing the importance of reducing intravascular volume to reduce fluid accumulation in the lung.

1980
William Kelley and James Wilson (Rheum) advance our understanding of the biology and genetics of gout by publishing the complete amino acid sequence of HGPRT, the enzyme whose deficiency Kelley identified as the cause of Lesch-Nyhan syndrome and early-onset gout (Kelley-Seegmiller syndrome). Lab members will go on to sequence several mutant forms of HGPRT and, with Thomas Pallela (Rheum) and collaborators, to successfully transfect the human HGPRT gene into neuronal cells in culture and intact animals. Based on this technique, Kelley and colleagues will later secure a patent for in vivo gene therapy using viral vectors that will be the first and broadest to be issued in the field of gene therapy.

1982
U-M is recognized for its expertise in diabetes complications by becoming one of three national data sites for the NIH Diabetes Control and Complications Trial. In it, researchers help show that intensive insulin therapy significantly reduces eye, kidney and nerve complications in type 1 diabetes. In 1997, U-M researchers will show that tight blood glucose control in type 2 diabetes can also substantially reduce complications. Still later, in the Epidemiology of Diabetes Interventions and Complications study, MEND’s Rodica Pop-Busui will show that tight glycemic control in type 1 diabetes also protects against cardiovascular autonomic neuropathy.

1983
Francis Collins (MMG) joins the U-M faculty. During his time at U-M, he will, with Michael Iannuzzi (PCCM), identify the cystic fibrosis gene by novel chromosome walking and jumping techniques, and, with James Wilson (MMG), go on to correct cystic fibrosis defects in patient-derived cells in a model system using gene transfer approaches. He will later discover the genes responsible for neurofibromatosis and will help identify those for Huntington’s disease. In 1993, Collins will join the NIH to lead America’s Human Genome Project, which will map the entire human genome by the year 2000.
1984
Fred Morady (CVM), who previously performed the first cardiac ablation in man, arrives at U-M and quickly establishes it as an internationally recognized electrophysiology research center. Morady and Hakan Oral (CVM) will optimize the ablation technique, develop new catheters, and demonstrate that atrial fibrillation can be generated not only in the atrium itself but by tissue extending along the pulmonary veins.

1985
David Ginsburg (Hem/Onc & MMG) joins the faculty. Over the next three decades, his lab will help unravel the molecular mechanisms underlying several important bleeding and clotting disorders, including von Willebrand disease, thrombotic thrombocytopenia purpura (TTP), and combined factor V and factor VIII deficiency.

1986
William O'Neill and Eric Topol (CVM) conduct seminal studies demonstrating the value of angioplasty and the clot-busting drug tissue plasminogen activator (rt-PA), respectively, for heart attacks. O'Neill will establish UMHS’ emergency angioplasty program and a regional network of referring hospitals. Topol will lead national and international randomized trials, such as the Thrombolysis and Angioplasty in Myocardial Infarction trial, to determine how best to treat patients with rt-PA. Their work makes U-M a focal point for heart attack research, and their insights will shape international coronary thrombosis care.

1985
The Howard Hughes Medical Institute establishes a molecular genetics research center at U-M. Its first eight scientists include seven from Internal Medicine: Francis Collins, Andrew Feinberg, David Ginsburg, Jeffrey Leiden, Gary Nabel, Craig Thompson and James Wilson, each of whom will make breakthrough contributions to the field.

1986
Tachi Yamada and Chung Owyang (GI) establish the Michigan Gastrointestinal Peptide Research Center, the only center in the nation devoted to the study of GI peptides in the pathophysiology, diagnosis and treatment of GI disorders. With center support, the Owyang lab will discover that somatostatin both excites and inhibits myenteric cholinergic transmission and plays a crucial role in mediating both limbs of the peristaltic reflex. This will lead to the use of somatostatin to treat bowel bacterial overgrowth in patients with chronic intestinal pseudo-obstruction. It is the first instance where a gut peptide is used to treat a GI disorder.

1987
Joe Phine Briggs (Neph) establishes how the kidneys autoregulate. She details the feedback loop that responds to sodium concentrations in the blood by adjusting filtration rates — articulating for the first time how the macula densa and enzyme renin regulate blood flow to the nephrons. Briggs will later head the National Institute of Diabetes and Digestive and Kidney Diseases’ Division of Kidney, Urologic and Hematologic Diseases.

1987
With support from the John A. Hartford Foundation, UMHS launches a U-M regent-designated multidisciplinary Geriatric Center. Led by Jeffrey Halter (GPM), it is one of the first such centers in the U.S. to focus on education, clinical care and research related to the health of older adults, and will form the basis for major national grants just two years later.
**1988 W. Joseph McCune (Rheum) develops a new treatment protocol for patients with severe lupus.** He demonstrates that monthly intravenous infusions of cyclophosphamide can protect kidney function and save the lives of patients whose disease is worsening despite high-dose corticosteroids. Tens of thousands of lupus patients will be treated around the world with this protocol.

**1989 Craig Thompson (Hem/Onc) shows that stimulating the CD28 pathway activates T-cells, prompting them to produce multiple lymphokines/cytokines. This pathway will be foundational to Thompson’s post-U-M career, during which he will clarify CD28’s role in T-cell apoptosis, immune costimulation, and glucose metabolism. His insights will stimulate new ways of treating autoimmune disease by blocking CD28 signaling, of inducing apoptosis as a therapy for lymphoma/leukemia, and of targeting cancer by interrupting its metabolism.

**1989 An indication of its rapid ascent in geriatrics, U-M is awarded the region’s first VA Geriatric Research, Education, and Clinical Center (GRECC) and the National Institute on Aging’s first Geriatrics Center (later renamed the Claude D. Pepper Older Americans Independence Center). Initially under the leadership of Jeffrey Halter, the GRECC will later shift to Neil Alexander (GPM) and the Geriatrics Center to Raymond Yung (GPM). Both centers feature an array of multidisciplinary research, such as groundbreaking mobility studies by Alexander and collaborators in engineering and neurology that will shed light on the mechanisms, measurement and treatment of biomechanical changes related to aging and age-related disease.

**1989 Roger Wiggins (Neph) and colleagues are awarded one of the first George M. O’Brien Kidney Centers, an NIH program established by Congress to promote state-of-the-art basic and clinical kidney research to improve the lives of patients with kidney diseases. The U-M Kidney Center has remained continuously funded by the NIH since that time.**

**1989 Elizabeth Nabel (CVM) and Gary Nabel (Rheum) demonstrate the ability to transfer and express genes within endothelial cells of the arterial wall in an animal model, highlighting the technique’s potential in cardiovascular disease. They will also show that fibroblast growth factor-1 can stimulate new blood vessel growth and may have potential for improving blood flow in selected clinical settings. After U-M, Elizabeth will direct the National Heart, Lung and Blood Institute and Gary, vaccine research at the National Institute of Allergy and Infectious Diseases.**

**1989 Sally Camper (MMG) establishes the Transgenic Animal Core Facility, which will soon include embryonic stem cell technology. Using transgenic mice, Camper will identify a gene responsible for congenital deafness in humans and mice by showing that mutations in myosin 15 lead to defects in hair cells of the inner ear.**
1990

U-M is one of only four U.S. institutions designated as a Human Genome Research Center to map the human genetic blueprint.

1991

Fernando Martinez and Galen Toews (PCCM) begin to build a leading research program in idiopathic pulmonary fibrosis. In the decades to follow, PCCM researchers, including Kevin Flaherty, Bethany Moore and Marc Peters-Golden, will help identify key cells and mediators involved in fibrotic lung disease; test new IPF drugs; and contribute to enhanced diagnostics, such as demonstrating that the presence of fibroblastic foci in the lung tissue of IPF patients is predictive of the disease’s clinical course.

Stephen Emerson (Hem/Onc) combines molecular and cell biologic insights with principles of chemical engineering to develop the first stem cell bioreactor for the production of bone marrow stem cells and blood cells. He also identifies bone-forming cells (osteoblasts) as the key cell in bone marrow that directs blood cell production. These two programs will help advance the science of tissue engineering and our understanding of the role of microenvironmental cues in normal and neoplastic development.

Osteoblast

1992

In two separate experiments just days apart, gene therapy is used by Gary Nabel (Rheum) to fight advanced melanoma and by James Wilson (MMG) to fight familial hypercholesterolemia, an inherited liver disorder causing extremely high levels of blood cholesterol. This is the first gene therapy ever performed in the Western world outside the National Institutes of Health.

1993

Andrew Feinberg (Hem/Onc) helps reveal the role of imprinted genes, in which only one parent contributes a working copy, and loss of imprinting in cancer. He clarifies the link between DNA methylation and cancer, and establishes the molecular basis of the cancer-predisposing disorder Beckwith-Wiedemann syndrome. This work helps establish the causal role of epigenetics—changes in gene expression that do not involve changes to the underlying DNA sequence—in human cancer.

1995

Hepatologist Anna Lok (GI) is recruited to U-M. Over the next 20 years, her research will form the basis for international guidelines on the diagnosis, prevention and treatment of hepatitis B. She will conduct seminal work on the natural history of hepatitis B and C and the role of hepatitis B virus genotypes and variants in patient outcomes. She will also lead the first study showing that hepatitis C can be cured with a combination of oral direct-acting antiviral agents without the need for interferon.
1996

Rodney Hayward (Gen) is named director of the VA Health Services Research and Development Field Program, which later evolves into the Ann Arbor VA Center for Clinical Management Research (CCMR) under the leadership of Eve Kerr (Gen). The program grows from a small group of investigators with two VA-funded projects to an elite health services research center with over 40 investigators, 150 staff, and annual extramural funding of more than $18 million. Center investigators go on to do groundbreaking work using clinical information about the risk and benefit of medical services for individual patients to develop and test better models for decision support and performance measurement.

1996

Kim Eagle (CVM) and colleagues form the International Registry of Acute Aortic Dissections, which will go on to enroll more than 6,500 patients from 42 aortic centers in 13 countries. Through nearly 100 publications, Eagle and fellow IRAD investigators will rewrite our understanding of how this highly lethal condition presents and is managed, and will elucidate multiple opportunities to improve care. For example, IRAD will show that urgent surgery, even in very high-risk patients who would previously have been denied an operation, can be life-saving, both immediately and in the long term.

1997

With more than 25 years’ experience running the Michigan Kidney Registry, U-M teams up with the Urban Institute in Washington, D.C., on a successful bid to coordinate the first national kidney registry, the United States Renal Data System. The team, under Friedrich Port (Neph), will lead the collection and analysis of data on chronic kidney and end-stage renal disease in the U.S. for more than a decade.

1997

Thanks to extensive drug development by George Brewer (GI), the FDA approves zinc acetate as a maintenance therapy for Wilson disease, a potentially fatal genetic condition in which the liver cannot remove excess copper. His group’s studies of dosage, drug interactions and mechanism of action will lead to zinc becoming the treatment of choice for both its efficacy and improved side effect profile.

1997

Dean Brenner (Hem/Onc) demonstrates how to use tissue-based biomarkers to test cancer-preventive compounds, a particular intellectual and methodological challenge when the endpoint — the development of cancer — could be decades away. In a paper confirming that aspirin hits its target in the colon, Brenner outlines how to determine a compound’s efficacy, optimal dosing and safety. Over the next 25 years, he and colleagues will develop a robust biomarker validation system and will use molecular and stem-cell based biomarkers to test numerous natural cancer preventives, such as turmeric, ginger and pepper.

CCMR Investigators Raise Questions, Test Solutions

The Ann Arbor VA CCMR has gained national recognition for questioning assumptions and testing new approaches in the delivery of health care.

CCMR researchers have shown the unreliability of “report cards” on individual provider performance, demonstrated that patients in the Department of Veterans Affairs received higher quality care than those in the private sector, and contributed to an overhaul of national guidelines for cholesterol management.

Other CCMR investigators have led the development of peer-support methodologies for improving diabetes and depression self-management, and interactive voice response technology to improve outcomes for patients with chronic disease.
1999
Mark Fendrick (Gen) develops the concept of value-based insurance design, which aims to increase consumer adherence with recommended care guidelines by aligning consumer out-of-pocket costs with the potential clinical benefit of certain health services and medications. V-BID will later be included in the Affordable Care Act.

1999
As PI of the RALES trial, Bertram Pitt (CVM) improves survival in patients with heart failure by showing that adding a mineralocorticoid receptor antagonist to standard therapy reduces mortality and hospitalization in patients with chronic severe heart failure. He will contribute additional insights through the later EPHESUS trial.

1998
James Baker (Allergy) is named director of a new center that will become the Michigan Nanotechnology Institute for Medicine and Biological Sciences, which aims to help move promising biological nanotechnologies to market. Baker’s own work within the institute focuses on the development of nanoemulsions, including topical antimicrobials for the military and a new type of effective, non-live-virus nasal vaccine. The vaccine, which will later be acquired by a pharmaceutical company, is effective on a variety of mucosal surfaces, making it a platform delivery system suitable for organisms ranging from inhalational anthrax to herpes to hepatitis B.

1997
Stephen J. Weiss (MMG) is named editor-in-chief of the Journal of Clinical Investigation. His lab is involved in identifying key molecules leading to cancer growth and metastasis. Terned Snail1 and MT1-MMP, these factors control normal growth and movement of cells during embryonic development and postnatal development, but also act as master switches in cancer, where their inappropriate reactivation leads to abnormal growth, invasion and metastasis. The lab will later explore their value as therapeutic targets.

1998
Adrenal cancer expert Gary Hammer joins the MEND Division. Studying adrenal growth and development, he will become central to the discovery of adrenal stem cells and how associated genetic defects lead to diseases of adrenal failure and adrenal cancer. Building on the international adrenal network that he and David E. Schteingart ignited, he will later help to identify and leverage critical genetic drivers of adrenal cancer to launch newly developed targeted therapies for this rare and deadly disease.

1999
As PI of the RALES trial, Bertram Pitt (CVM) improves survival in patients with heart failure by showing that adding a mineralocorticoid receptor antagonist to standard therapy reduces mortality and hospitalization in patients with chronic severe heart failure. He will contribute additional insights through the later EPHESUS trial.
Peter Ubel (Gen) heads the Center for Behavioral and Decision Sciences, which will become the Center for Bioethics and Social Sciences in Medicine. This multidisciplinary center conducts research, education and public outreach on medical and health issues in society, such as ethics, justice, genomics, communication and decision-making.

2000

Eric Fearon (MMG) defines the role of the adenomatous polyposis coli tumor suppressor protein in the regulation of the beta-catenin and gamma-catenin proteins in colorectal tumor development. He will later show how the p53 tumor suppressor gene activates the miR-34 microRNA family in normal cells and how p53 loss of function in cancer cells leads to an inability to induce miR-34, resulting in enhanced cancer cell growth and a failure of the cancer cells to undergo programmed cell death.

2002

U-M’s Life Sciences Institute (LSI) is founded under Alan Saltiel (MMG). He will recruit some 450 faculty and staff, including five HHMI investigators, two NAS members, 5 NAM members, seven Pew and Searle awardees and two MacArthur awardees. He will also establish a $220 million LSI endowment and launch centers for stem cell biology, chemical genomics, structural biology and medicine discovery, as well as the U-M-Israeli Partnership for Research.

2002

Daniel Clauw (Rheum) shows a biological basis for augmented pain processing in fibromyalgia through imaging studies and, later, neurochemical assays.

2003

Max Wicha (Hem/Onc) is the first to identify cancer stem cells in a solid tumor. He and Hem/Onc colleagues will go on to clarify the molecular underpinnings of stem cell behavior, showing that mutations in HER2 (human epidermal growth factor receptor 2) and PTEN (protein coding) genes trigger rapid stem cell division and self-renewal in breast cancer, causing them to invade surrounding breast tissue. They will also conduct the world’s first clinical trial of a treatment, called MK-0752, targeting breast cancer stem cells.
**2003**

The FDA approves a radiolabeled monoclonal antibody developed by Mark Kaminski (Hem/Onc) for the treatment of non-Hodgkin’s lymphoma. The new agent, 131 tositumomab (Bexxar), uses cancer cell-seeking antibodies tagged with a radioisotope to target radiation directly to tumors while minimizing exposure to normal cells. The drug yields response rates up to 95 percent, including complete, multi-year remissions, even in patients no longer responding to chemotherapy. This work helps further the paradigm of molecularly targeted cancer therapeutics.

“Mark Kaminski is one of the select few who translated a basic-science concept into mainstream clinical care. That is an enormous accomplishment.”
—Dean Brenner

**2003**

Hepatologist Robert J. Fontana (GI) launches the Michigan Hepatoxicity Clinical Research Network as one of six NIH-sponsored groups across the nation studying drug-induced liver injury. Hoping ultimately to identify genetic associations with DILI, the network’s early findings alert physicians to the higher than expected incidence of DILI, key risk factors, new causality assessment methods, and the range of drugs and herbal and dietary supplements implicated in liver injury in American patients.

**2004**

Daniel F. Hayes (Hem/Onc) reports that circulating tumor cells are prognostic in metastatic breast cancer, paving the way for worldwide research into phenotypic and genotypic characterization of CTCs to better understand the metastatic process and to evaluate and monitor patients with breast and other types of cancer. He will go on to demonstrate the value of other cancer markers, and will become a leader in developing criteria and guidelines for generating and validating tumor biomarker tests for clinical use.

**2004**

Cem Akin (Allergy) launches the mastocytosis program, one of the few around the world dedicated to studying and treating this puzzling allergy-like disorder. He will go on to expand his work on mutations in the tyrosine kinases that allow mast cells to overproduce and will demonstrate the potential of TK-inhibitors to treat the disease, paving the way for clinical trials. He will also describe the first diagnostic criteria and classification for mast cell activation disorders, which are then internationally adopted.

**2005**

Juanita Merchant (GI) clarifies the mechanisms by which Helicobacter pylori infection causes stomach ulcers and cancer, showing that cytokines released after infection both stimulate gastrin production and prevent its inhibition, increasing stomach acid and causing inflammation. She will later implicate the Hedgehog pathway in the transition from inflammation to cancer, and identify a potential biomarker of this transition.
2005
The U-M Center for Stem Cell Biology is established. Under the direction of Sean Morrison (MMG), the center will take a leadership role in educating the Michigan public during the successful 2008 ballot initiative to protect and regulate human embryonic stem cell research in the state constitution.

Morrison’s own lab will help clarify the molecular mechanisms that regulate the maintenance of adult stem cells. Their work reveals that the regenerative capacity of our tissues declines during aging due to increased expression of tumor suppressor genes in stem cells that inhibit the development of cancer.

2005
Stephen Gruber (MMG) highlights the potential protective effect of statins in colorectal cancer development and will later demonstrate the protective effect of hormone replacement therapy for colorectal cancer in post-menopausal women.

2006
Charles Burant (MEND) launches the Michigan Metabolomics and Obesity Center, which will evolve to house two NIH-funded centers, the Nutrition Obesity Research Center and the Regional Comprehensive Metabolomics Resource Core. The latter is one of only six metabolomics cores that support the nation’s research community in investigations in cancer, aging, metabolic diseases and the microbiome. Burant’s own work helps to define the mechanisms by which genetically determined, intrinsic oxidative capacity is related to a reduced risk of diabetes and obesity and is associated with extended lifespan.

2006
Vallerie McLaughlin (CVM) becomes the PI for the Data Coordinating Center of the Pulmonary Hypertension Breakthrough Initiative. Under McLaughlin, U-M maintains the clinical data for a consortium of 13 institutions biobanking lung and blood samples from pulmonary hypertension patients undergoing transplant. The goal is to use pathology, proteomics and genomics to understand and treat this devastating, progressive disease. In 2015, McLaughlin will co-publish findings from a phase 3 clinical trial showing positive results from the first prostacyclin receptor agonist for the treatment of pulmonary arterial hypertension.
Bruce Richardson (Rheum) establishes the importance of epigenetics in autoimmunity by revealing how lupus-causing drugs can change gene expression in normal lymphocytes, prompting them to attack the body’s own cells. He will also show that diet and environmental agents that cause oxidative stress trigger lupus through similar changes in gene expression.

The A. Alfred Taubman Medical Research Institute is launched to help physician-scientists speed the development of effective disease treatment. Housed in the A. Alfred Taubman Biomedical Science Research Building, its activities include the development of stem cell lines and a Taubman Scholars program with three-year grants for leading investigators, many from U-M Internal Medicine, working on issues such as cancer, cardiovascular disease, diabetes and obesity.

Alan Saltiel (MMG) discovers a switch in the activation of the innate immune system in obesity, resulting in a more inflammatory state in fat tissue and directly leading to insulin resistance and diabetes. He will go on to elucidate the immune pathway that is activated, and discover a drug that prevents this process. The latter will be investigated for the treatment of obese patients with type 2 diabetes.
2008
José Jalife (CVM), who leads a world-renowned basic and translational arrhythmia research group, establishes the U-M Center for Arrhythmia Research and is later joined by Héctor Valdivia (CVM), an expert in the study of calcium homeostasis. They will work together to clarify the role of ion channels in the genesis of arrhythmia and to identify the tornado-like rotating electrical waves that characterize atrial fibrillation. They will also work with the division’s clinical arrhythmia researchers to better map irritable areas of the heart and target them for treatment.

2008
The George M. O’Brien Kidney Center is reimagined as a core center to support clinicians worldwide in kidney disease research. The center, which will come under the leadership of Frank Brosius (Neph) in 2010, includes a biobank with a representative cohort of chronic kidney disease patients across the U.S. and provides support in areas such as systems biology, bioinformatics and transgenic animal models. Using the center’s infrastructure, teams led by Matthias Kretzler and Frank Brosius will discover that increased activation of the JAK/STAT signaling pathway in diabetes is a primary cause of kidney scarring and dysfunction, leading to successful clinical trials of a JAKII inhibitor. They will also use the center to identify the first-ever chronic kidney disease biomarker, by showing that low levels of epidermal growth factor in urine can identify patients at risk for end-stage kidney disease.

2008
Kenneth Jamerson (CVM) uses the ACCOMPLISH study to challenge current hypertension treatment guidelines by showing that a fixed-dose combination therapy of a calcium-channel blocker with an ACE inhibitor leads to superior cardiovascular outcomes compared to current recommended diuretic-based therapies. Jamerson is also a leader in using innovative methodologies to research cardiovascular disease in the African-American community, with the goal of devising better treatment strategies.

2009
U-M purchases the former Pfizer campus and begins converting it into the North Campus Research Complex, a hub for collaboration-minded scientists across U-M interested in “igniting improvements to humanity’s health and well-being.” It will offer resources ranging from scientific support to technology transfer, and will house interdisciplinary programs with heavy Internal Medicine representation, such as the Institute for Healthcare Policy and Innovation, Translational Oncology Program, Center for Arrhythmia Research, Center for Health Communications Research, and Ann Arbor VA Center for Clinical Management Research.

2009
Lona Mody (GPM) launches a major research effort in nursing homes that leads to a better understanding of how to prevent infections and antibiotic-resistant bacteria—and to an Agency for Healthcare Research and Quality collaborative to implement lessons learned in 500 facilities across the U.S.
2010 UMHS launches the Joint Institute for Translational and Clinical Research, a partnership with Peking University Health Sciences Center. Under the co-leadership of Joseph Kolars (GI), the institute will conduct collaborative research that leverages the strengths of each university to advance global health. Along with a PUHSC co-lead, Internal Medicine faculty head programs in cardiovascular disease (Eugene Chen/CVM), liver disease (Chung Owyang/GI), pulmonary disease (Margaret Gyetko/PCCM) and renal disease (Matthias Kretzler/Neph). By sharing data and expertise, researchers begin comparing the populations in areas such as genetics, environmental factors and the microbiome to discover the role these and other factors play in health and disease.

2010 The Brehm Tower is built, housing the Brehm Center for Diabetes Research. Center researcher Peter Arvan (MEND) will use the infrastructure to implicate protein folding errors in a severe form of early-onset diabetes. Arvan, who will later help launch the medical school’s Protein Folding Diseases Initiative, identifies Mutant Insulin gene-induced Diabetes of Youth (MIDY), where one mutant insulin gene blocks the product of the remaining normal insulin gene. He finds that this is one disease within a more general class of illnesses affecting a poorly understood intracellular organelle called the endoplasmic reticulum.

2011 Kenneth Langa (Gen) becomes associate director of the Health and Retirement Study, a longitudinal survey of 20,000 U.S. adults and U-M’s largest extramurally funded research project. He and colleagues will use the survey to probe issues such as the causes, prevalence and economic impact of dementia; long-term effects of acute illnesses on the brain and body; and the role of Medicare and Medicaid policies on health outcomes for older adults. One of Langa’s papers on the costs of dementia will receive front-page coverage in The New York Times and inform congressional discussions about funding for dementia care and research.

2011 James Woolliscroft (Gen) expands Global REACH (Research, Education and Collaboration for Health) as an institution-wide mechanism for fostering collaborative research and training in global health. Started in 2001 under the initial leadership of David Stern (Gen), followed by Joseph Kolars (GI) in 2009, the program will evolve to support substantial research platforms in Brazil, China, Ethiopia, Ghana and India and more than 20 additional formal international relationships. In 2015, UMMS global health researchers will produce 100-plus publications and garner nearly $150 million in extramural grant funding.

Research by Caroline Blaum (GPM) demonstrates the heterogeneity of the older diabetes population and suggests the need for a more personalized approach to glycemic control for older patients with diabetes. Her work will help shape recommendations by the American Diabetes Association for better tailoring treatment goals to patients’ age, health status, motivation, resources and complications.

Global Reach participants in South Africa
2010s CONTINUED

2011 Raymond Yung (GPM) uses animal models to begin unraveling the molecular mechanisms of aging by publishing one of the first studies showing that age-related obesity results in more pro-inflammatory immune cells and proteins compared to diet-induced obesity. He will later show how epigenetic changes, especially DNA methylation and histone acetylation, accumulate during aging and contribute to autoimmunity risk.

2011 Ronald Koenig (MEND) shows that the type 2 diabetes drug pioglitazone can be used to treat a special form of follicular thyroid cancer, transforming the cancer cells into more differentiated fat-like cells that have lost their malignant character. This discovery stems from Koenig’s earlier finding that this unusual cancer is triggered by the Pax8-PPARgamma fusion protein that inappropriately connects two unrelated transcription factors. Because pioglitazone binds to PPARgamma, Koenig explores its effects in mouse models of follicular thyroid cancer and, based on the results, ushers pioglitazone into clinical trials.

2011 Steroid biochemist Richard Auchus (MEND) is recruited and establishes a steroid analysis platform within U-M’s metabolomics program. Over the next five years, his team will conduct two phase 1 trials of novel treatments for 21-hydroxylase deficiency, an enzyme defect in cortisol synthesis, which results in excess production of androgens, or male hormones. Their “steroidomics” platform will identify unrecognized steroid hormones in this disease as well as biomarker steroids to monitor disease control. His laboratory will also discover critical biochemical mechanisms of androgen production and drug action in prostate cancer.

2011 The NIH splits its Diabetes Research and Training Centers into two new entities, and U-M is awarded both. The Center for Diabetes Translational Research is directed by Bill Herman (MEND), whose research on the epidemiology and economics of diabetes has shown that lifestyle changes can be more effective than medication in reducing risk for and treating type 2 diabetes. The Diabetes Research Center (DRC) is directed by Martin Myers (MEND), a world leader in understanding how the hormone leptin acts on the brain to regulate fertility, calorie expenditure, appetite and satiety.
2011

Megan Haymart (MEND) calls providers’ attention to the overtreatment of low-risk thyroid cancer, first examining radioactive iodine and, later, surgery. She shows that variation in hospital characteristics influences treatment decisions more than disease severity, exposing patients to unnecessary risks.

John Ayanian (Gen) is named the first director of the Institute for Healthcare Policy and Innovation. This campus-wide initiative will grow to include 470 health services researchers—more than 80 from U-M Internal Medicine—whose work aims to inform policymakers about how to improve the quality, safety, equity and affordability of healthcare. IHPI research will help shape payer policy, healthcare guidelines and international campaigns on appropriate health care utilization.

2012

U-M contributes to the personalized treatment of COPD through SPIROMICS, the NIH's Subpopulations and Intermediate Outcomes in COPD Study. Meilan Han and Fernando Martinez (PCCM) along with imaging collaborators publish a new radiographic biomarker called the parametric response map that can measure airway thickness via CT scans to subtype COPD patients by disease type, severity, location and distribution. Pulmonary researchers, led by Jeffrey Curtis, also identify specific lymphocyte populations and cytokines involved in COPD progression. This research motivates a landmark clinical trial demonstrating the efficacy of azithromycin to reduce COPD exacerbations.

Eugene Chen (CVM) establishes the Center for Advanced Models for Translational Sciences and Therapeutics to develop large animal models to accelerate bench-to-bedside biomedical research and drug development. The center is among the first in the world to establish rabbit embryonic stem cell lines, to generate cloned rabbits, and to produce knockout and knock-in pigs and rabbits.

Steven Katz (Gen), director of the Cancer Surveillance and Outcomes Research Team, receives a National Cancer Institute project award to research the challenges of individualizing treatments for patients with early-stage breast cancer. Findings have highlighted the role of personalized communication and decision-making on patient experiences and outcomes. The research has informed best practices and has markedly contributed to methodology in the growing field of oncology population and implementation sciences.

The "I Can Decide" computer program was developed by U-M experts to help breast-cancer patients make informed treatment decisions aligned with their goals and preferences.
2 0 1 3
Pavan Reddy (Hem/Onc) demonstrates two promising approaches for prevention and treatment of graft versus host disease, as well as the mechanisms behind them. He shows that histone deacetylase inhibition can affect target tissues and cut the incidence of GVHD, and demonstrates the potential for alpha-1-antitrypsin to treat steroid-refractory GVHD. He also implicates the microRNA miR-142 and its targets in GVHD, identifying potential future drug targets.

2 0 1 3
The medical school launches the Host Microbiome Initiative with broad Department of Internal Medicine involvement, including leadership from microbiologists Vincent Young and Thomas Schmidt (ID). The initiative provides infrastructure that supports systems-level research on how the microbial communities on and in our bodies impact health and disease. Topics range from unraveling the therapeutic mechanisms of fecal transplant for treating recurrent C. difficile to studying the role of the gut microbiota in the pathogenesis of inflammatory bowel disease, lupus, multiple sclerosis, food allergy, obesity and colon cancer. Gary Huffnagle and others in PCCM will use the infrastructure to demonstrate the importance of gut and lung microbiota in the pathogenesis of inflammatory lung diseases, including asthma, COPD and ARDS.

2 0 1 3
Joseph Holoshitz (Rheum) advances our understanding of the genetic and molecular basis of rheumatoid arthritis (RA) by showing how variants of the human leukocyte antigen cause RA. His findings show that a subset of genes that code for “shared epitope” proteins lead to joint inflammation and bone erosion not by causing the body to mistakenly identify its own tissues as foreign, but by directly activating inflammation-causing and bone-destroying cells. He will also show that compounds targeting this pathway demonstrate anti-arthritic and anti-inflammatory effects, and may provide a joint-targeted alternative to the whole-body immune suppression from current biologics.

2 0 1 4
The FDA approves a U-M-invented drug for Gaucher disease, a genetic disease in which a deficiency of the enzyme glucocerebrosidase causes fatty substances to accumulate in cells and organs. Co-developed over more than a quarter-century by James Shayman (Neph), the new drug, eliglustat tartrate (Cerdela), is an oral glycolipid synthesis inhibitor that provides an alternative to intravenous enzyme replacement. As the first stand-alone oral agent for this lysosomal storage disease, eliglustat is now used worldwide and may become the standard of care for Gaucher type 1.

2 0 1 4
Under the direction of Rajiv Saran (Neph), the United States Renal Data System coordinating center is again awarded to the U-M Kidney Epidemiology and Cost Center — previously received a nearly $18 million grant from the Centers for Medicare and Medicaid Services. These awards affirm U-M’s importance in national kidney disease monitoring, quality improvement and research.
2015

After helping to clarify the beneficial role of naturally occurring gases such as nitric oxide and carbon monoxide in the cardiovascular system, David Pinsky (CVM) shows that the enzyme CD39 can prevent atherosclerosis in mice. A membrane-bound enzyme that lines human blood vessels, CD39 expression is greatest where blood flow is smooth and reduced at bend and branch points where blood flow is turbulent — which is also where plaque naturally tends to accumulate. His group is hopeful that the protective role of CD39 will have implications for the management of cardiovascular disease.

2014

U-M is the only institution in the country to receive both basic and clinical NIH Autoimmunity Center of Excellence grants. The basic science grant, under Bruce Richardson (Rheum), funds state-of-the-art genomic and epigenomic approaches to unravel the mechanisms causing lupus, identify new therapeutic targets and test a novel biomarker of disease progression. The clinical grant, under David Fox (Rheum), supports mechanistic studies of treatments for multiple sclerosis and scleroderma, and explorations of how clustered auto-immune diseases are initiated.

Sources: Department of Internal Medicine division histories, division chief and faculty interviews and the U-M Medical School historical timeline.
ALWAYS HEALING | FOREVER VALIANT

Patient Care
Every lesson we teach, every discovery we make is to improve (and sometimes save) the lives of our patients. The Department of Internal Medicine cares for more than half of the patients who come to the U-M Health System for both primary and specialty care.

Note: Due to space limitations, we are only including the names of internal medicine faculty who led or co-led a particular clinic or program. The divisions noted in parentheses are based on their current names.
1869 U-M opens the first university-owned medical facility in the United States. The 20-bed hospital is located in the residence of a former professor. It has no wards or operating rooms.

1875 U-M adds two wooden pavilions to the hospital. The structures are designed to be “easily burned down in 10 years because they would be badly infected,” according to the writings of one physician.

1891 A new hospital on Catherine Street replaces the old Campus Pavilion Hospital. It consists of two structures, one for the medical department and one for the homeopathic medical college.

1900 The U.S. medical community recognizes the Catherine Street Hospital as the largest teaching hospital in the country.

1901 University Hospital gains 50 more patient beds, laboratory space and a surgical amphitheater when it takes over the vacated Homeopathic Hospital on Catherine Street. A new homeopathic hospital opens on North University.

1909 Albion Walter Hewlett, a member of U-M’s internal medicine faculty and one of the world’s first physiologic cardiologists, advocates for laboratory tests to supplement clinical evaluation and for the value of the electrocardiogram as a diagnostic tool. In 1913, U-M researchers will introduce the electrocardiogram to American physicians.

1919 Construction begins on a new hospital. The original appropriation is only enough to pay for the shell of the building, and it stands gaunt and boarded from 1921 to 1923, when Governor Alexander Groesbeck obtains an additional $2.3 million in appropriations to complete it.

1920 Frank Wilson (CVM) establishes the first heart station, the precursor to the modern coronary care unit, where patient beds are connected to electrocardiograms in a central room. Before this, no one had ever connected beds to a central monitoring station for rhythm. In the 1940s, his work will play a major role in transforming clinical cardiology by expanding the value of the electrocardiogram for something other than arrhythmias and especially for the diagnosis of coronary artery disease. The designation of “V” for vector to describe the leads that are attached to the body during an EKG is derived from Wilson’s research.
1925
A new 700-bed University Hospital (also known as the Main Hospital) replaces the Catherine Street Hospital and is designed by renowned architect Albert Kahn.

1928
The Pulmonary and Critical Care Division begins at U-M as the tuberculosis ward on the 7th floor of the University Hospital under the leadership of John Blair Barnwell. In 1946, he will become director of the Tuberculosis Division of the Veterans Administration in Washington, D.C.

1947
Sibley W. Hoobler (CVM) forms a special unit whose main thrust is research and patient care in hypertension. This is the second unit of its kind in the nation. He will direct the hypertension unit from 1947 to 1974.

1950
John Sheldon starts an allergy clinic at U-M that was instrumental in creating the early foundation for the Allergy Division.

1953
The Veterans Administration Hospital is dedicated. An important source of expanded clinical experience for students in the U-M Medical School, the 500-bed VA Hospital’s affiliation with U-M, as with other such affiliations around the country, also helps improve medical care for the nation’s veterans. More than 65,000 veterans living in a 15-county area of Michigan and northwest Ohio will utilize the VA Ann Arbor Healthcare System in 2015.

1954
The U-M Hepatology Program is founded by Keith Henley (GI). Henley was the first to describe alanine aminotransferase in serum, which is used throughout the world as a diagnostic tool for liver injury. Along with Jeremiah Turcotte from the Department of Surgery, he will establish the Liver Transplant Program in 1985. Today, the Hepatology Program is led by Anna Lok (GI). It is one of the oldest liver programs in the country and has trained the majority of transplant hepatologists practicing in Michigan.

1957
William Beierwaltes (MEND & Nuclear Med) is among the first to use radioiodine (131-I) for the diagnosis and treatment of thyroid cancer and becomes a national authority for this technique. Following the 1957 publication of “Clinical Use of Radioisotopes,” the first book on clinical nuclear medicine practice, co-authored by Beierwaltes, the treatment of thyroid cancer with 131-I will become widely adopted. It remains the standard of care worldwide.

1941
The Human Heredity Clinic is established to collect data and provide genetic counseling regarding hereditary disease, one of the first human genetics programs in the country connected to a university hospital.

The division’s leadership in the care of TB patients continues to this day. Dana Kessler (PCCM) currently oversees the Washtenaw County TB program.

1947
The Human Heredity Clinic is established to collect data and provide genetic counseling regarding hereditary disease, one of the first human genetics programs in the country connected to a university hospital.

1947
Sibley W. Hoobler (CVM) forms a special unit whose main thrust is research and patient care in hypertension. This is the second unit of its kind in the nation. He will direct the hypertension unit from 1947 to 1974.

1954
The U-M Hepatology Program is founded by Keith Henley (GI). Henley was the first to describe alanine aminotransferase in serum, which is used throughout the world as a diagnostic tool for liver injury. Along with Jeremiah Turcotte from the Department of Surgery, he will establish the Liver Transplant Program in 1985. Today, the Hepatology Program is led by Anna Lok (GI). It is one of the oldest liver programs in the country and has trained the majority of transplant hepatologists practicing in Michigan.

1957
William Beierwaltes (MEND & Nuclear Med) is among the first to use radioiodine (131-I) for the diagnosis and treatment of thyroid cancer and becomes a national authority for this technique. Following the 1957 publication of “Clinical Use of Radioisotopes,” the first book on clinical nuclear medicine practice, co-authored by Beierwaltes, the treatment of thyroid cancer with 131-I will become widely adopted. It remains the standard of care worldwide.
1960s–1980s

1961
Josef Smith (PCCM) is hired to develop the pulmonary function laboratory. The first “modern” pulmonary function lab will be established in the early ‘60s, and considered state-of-the-art at the time. Today, the division operates PFT labs at five sites, and performs more than 100 pulmonary function studies daily.

1963
U-M establishes the first transplant center in Michigan. The Multi-Organ Transplant Program will come to include kidney, heart, liver, pancreas, heart-lung, artificial heart, bone marrow and cornea grafting for infants, children and adults, becoming one of the most comprehensive and longest-running transplant programs in the country.

1964
The Division of Nephrology is established at U-M and is part of the care team involved in the first organ transplant (kidney) in the state of Michigan.

1970s
Cardiologist Bertram Pitt (CVM), one of the best-known designers of large-scale clinical trials in cardiovascular medicine, jointly develops the first nitroglycerin patch to be approved by the Food and Drug Administration. These patches are used to prevent episodes of angina (chest pain) in people who have coronary artery disease.

1979
William Ensminger (Hem/Onc) oversees the first implantation of an Infusaid pump for the targeted delivery of chemotherapy drugs. Pump devices will be used increasingly for administering drugs to specific areas, sparing healthy tissue.

1980
U-M’s Heart Rhythm Center (Arrhythmia Program), first led by Fred Morady (CVM) and now Hakan Oral (CVM), develops new catheter technology to terminate irregular heartbeats by electrically isolating tiny fiber strands of muscle that go up the sleeve of the pulmonary veins. The center will become an international leader in the treatment of arrhythmias.

1981
Timothy Nostrant (GI) is the first person at U-M to emphasize the importance of endoscopy, and is instrumental in establishing one of the world’s most sophisticated and well-equipped medical procedure units. The MPU will become one of the most successful clinical units in UMHS. There are now more than 35,000 procedures performed each year.

1982
The GI Division performs the first endoscopic sphincterotomy in Michigan. This diagnostic tool first used for biopsies will quickly evolve into a therapeutic tool that is used to remove gallstones from the bile duct.

1982
The Interstitial Lung Disease Program is started by Joseph P. Lynch III (PCCM) with an emphasis on sarcoidosis and idiopathic pulmonary fibrosis. The program participates in multiple NIH- and industry-sponsored trials, providing new therapeutic options for many patients and becomes designated as one of only nine Pulmonary Fibrosis Foundation Care Center Network sites nationwide. It is now directed by Kevin Flaherty.

1984
The first Geriatric Clinic is created at U-M to provide comprehensive interdisciplinary geriatric assessment and ongoing primary care for elderly patients.

1985
Richard Swartz (Neph) establishes one of the nation’s first large academic peritoneal dialysis treatment centers at U-M.
1986
After 10 years of planning and at a cost of $285 million, a new 11-story, 848-bed University Hospital replaces 61-year-old Old Main. The adjacent A. Alfred Taubman Health Care Center, with 120 outpatient clinics, also opens, reflecting the increasing trend of outpatient care.

1986
The U-M Cancer Center is established under the leadership of Max Wicha (Hem/Onc); its collaborative approach will lead to an array of significant breakthroughs, garnering a reputation over the next decade as one of the top cancer centers in the U.S. In 1988, it will receive official designation as a Comprehensive Cancer Center from the National Cancer Institute.

1986
In response to the need to contain medical costs, the University of Michigan establishes M-CARE, only the second university in the U.S. to design its own managed care program. The non-profit corporation will grow to become one of the state’s leading health care companies, serving 180,000 members in 19 counties.

1986
Advances in the diagnosis and treatment of cystic fibrosis result in extended life expectancy of patients beyond childhood and teens. The Pulmonary Division starts an Adult Cystic Fibrosis Program at Michigan. Richard Simon will be named director in 1994, a position he holds to this day. The program now cares for more than 250 patients and has emerged as one of the top CF centers regionally and nationally.

1986
With the recognition that the nation was facing a shortage of primary care physicians, the field of internal medicine began to embrace the concept of general medicine as a discrete subspecialty. Former Chair Bill Kelley launched one of the early divisions of general medicine in 1976 with Jeffrey Stross, MD, as its founding chief. He also started a clinician-scholar track to provide tenure-track appointments for those with a heavy clinical emphasis who were also clinical or education scholars. Many on this track would become leaders of the medical school’s innovative education and training programs.

Kelley also helped the division carve out its own research identity by supporting the development of health services research, recruiting Lawrence McMahon, MD, and Joel Howell, MD, PhD, future directors of the Robert Wood Johnson Clinical Scholars Program, and Rodney Hayward, MD, future director of the VA Center for Clinical Management Research. McMahon and Hayward would help build health services research groups that are now world leaders in this arena. McMahon also went on to grow the Division of General Medicine to more than eight times its original size — from 26 to 225-plus faculty members — since he began serving as division chief in 1988, making it one of the largest Divisions of General Medicine in the United States.
1980s–2000s

1987
The Geriatrics Center is founded. Under the directorship of Jeffrey Halter (GPM), the center is an effort among 14 schools and institutes and 244 faculty from 27 medical school departments. The center is one of the first in the country to be organized with a collaborative multidisciplinary clinic model involving many specialties and an emphasis on social work programs for the older population.

1991
Clinical programs focused on chronic obstructive pulmonary disease are developed by Fernando Martinez and Galen Toews (PCCM) as a component of the dyspnea program. In addition to providing state-of-the-art clinical care, the COPD clinical program will become closely integrated into the lung transplantation and pulmonary rehabilitation programs.

1992
The GI Division is the first in the state of Michigan and among only a handful in the country to offer endoscopic ultrasound, a procedure where ultrasound pictures are taken on the end of the endoscope to examine the internal lining of the gut and through its wall. Fine needle aspiration can also be done during this procedure to conduct sampling of adjacent structures. This new tool allows for definitive early diagnosis of pancreatic cancer.

1993
Eduardo Schteingart (MEND) founds the Millie Schembechler Adrenal Cancer Program. It will grow to be the top adrenal cancer program in the world and is now led by Gary Hammer (MEND). Part of the U-M Destination Center for Endocrine Oncology, people now come to Michigan from all over the world for adrenal cancer treatment.

1994
The Dyspnea Program is introduced by the Pulmonary and Critical Care Division to care for patients with breathing disorders such as end-stage lung disease including interstitial lung disease and chronic obstructive pulmonary disease.

1995
William Chey (GI) joins the faculty at U-M and becomes co-director of the Michigan Bowel Control Program, one of the first multidisciplinary programs that specializes in the diagnosis and treatment of defeca-tion, posterior pelvic floor and neurogenic bowel disorders.

1996
Kim Eagle and Mauro Moscucci (CVM) create the Blue Cross Blue Shield of Michigan Cardiovascular Consortium-Percutaneous Coronary Intervention (BMC2-PCI), one of the very first Collaborative Quality Initiatives to assess outcomes following angioplasty procedures.

1997
U-M moves its cancer and geriatrics clinical and research programs into the new $88 million Cancer Center and Geriatrics Center Building.

1998
ACO and POM ACO, putting UMHS at the forefront of health care reform. Today, FGP is called the U-M Medical Group and includes more than 1,800 physicians (plus other health care professionals) in 20 clinical departments.
1997
Given the key role health systems now play in America’s academic research institutions, the regents create the position of executive vice president for medical affairs, forming — with the positions of provost and vice president for financial operations — a triumvirate of leadership to support the president. Gilbert S. Omenn (MMG) is chosen to fill the position. The medical school dean, the hospitals’ executive director and the president of M-CARE report to him. He will serve in this position until 2002.

1997
Ariel Barkan (MEND) begins efforts to improve the treatment of patients with acromegaly, or gigantism, a condition of chronic, excessive growth hormone secretion by a benign pituitary tumor. He will go on to study gene expression and hormone secretion patterns, test important drugs and issue patient communication guidelines to improve the care experience and health outcomes.

1998
Steven Gruber (MMG) is recruited to build U-M’s Cancer Genetics Program, which will become one of the top programs in the country. It includes the Cancer Genetics Clinic, which works with patients to determine if their families are at a higher-than-average risk of developing cancer. Today, the clinic is run by Elena Stoffel (GI).

2000
U-M becomes one of the first GI Divisions in the country to use capsule and deep enteroscopy, a procedure involving patients swallowing a capsule that takes pictures as it travels through the small bowel, an internal area doctors had previously not been able to access or view.

2000
The Adult Diabetes Education Program is established. Currently run by Jennifer Wyckoff (MEND), this program will continue to expand in response to the growing population of adults facing a diagnosis of type 1, type 2 or gestational diabetes. It is one of a select number of programs certified by the American Diabetes Association, and offers more programs and services for adults with type 1 diabetes than anywhere else in Michigan and the surrounding region.

2002
The Division of Cardiovascular Medicine establishes the Pulmonary Hypertension Program for patients with high blood pressure in the pulmonary arteries of the lungs. It will quickly become the largest and most experienced program in the country.

2002
The work of Bill Armstrong (CVM) helps U-M become a leader in contrast echocardiography, a technique for improving echocardiographic resolution and providing real-time assessment of intracardiac blood flow.
2003
Scott Flanders (Gen) is named director of U-M’s new Hospitalist Program, overseeing inpatient care on non-academic medical services. He will eventually grow the program to more than 70 faculty and staff accommodating over 50 percent of all medical inpatient care at both the University Hospital and the Ann Arbor VA Medical Center. In 2010, he will become the program director for the Michigan Hospital Medicine Safety Consortium, a Blue Cross and Blue Shield of Michigan Collaborative Quality Initiative created to improve the quality of care for hospitalized medical patients who are at risk for adverse events.

2004
To address the growing public health issue of food allergies, a Food Allergy Service is created with Marc McMorris (Allergy) as director.

2004
UMHS becomes one of the nation’s first to have a Hospital Intensive Insulin Program. Created by Roma Gianchandani (MEND), the program manages patients with elevated blood glucose levels. Those patients whose blood sugar is controlled leave the hospital earlier and healthier on average. Many hospitals in Michigan will use this program as a model to develop similar efforts.

2005
The Michigan Comprehensive Diabetes Center is founded by the MEND Division to offer complete outpatient services, including diagnostic services, individualized care from a team of health professionals, an outpatient education program, clinical research participation opportunities, intensive insulin therapy programs and the care of the complications that can occur with diabetes.

2005
Sanjay Saint (Gen) creates the Ann Arbor VA Medical Center/U-M Patient Safety Enhancement Program, designed to improve the quality of patient care by conducting research that focuses on methods of avoiding or preventing adverse patient outcomes or injuries arising from health care processes, leading to the creation of national patient-safety guidelines. The results of his research will be adopted internationally.
2006
The MEND Division starts the very first podiatry clinic at U-M. In 2009, it relocates into a 23,000-square-foot facility at Domino’s Farms. Today the program has five faculty. It is one of the few academic clinical programs centered around diabetic foot management, with an emphasis on ulceration/wound care and limb preservation.

2006
Leo Greenstone (Gen) becomes associate chief of staff for ambulatory care at the Ann Arbor VA Healthcare System, ushering in a new approach to outpatient care management.

2007
A new Allergy Specialty & Food Allergy Clinic opens at Domino’s Farms, which includes space devoted specifically to the Food Allergy Service that is now seeing thousands of patients each year.

2007
The U-M Lupus Program is established to facilitate advances in the treatment of lupus by fostering the development of an interdisciplinary group of physicians and physician-scientist researchers focused on the disease. The program is directed by W. Joseph McCune (Rheum), a physician who developed a treatment for lupus in 1988 that is currently used around the world.

2007
The Center for Healthcare Research & Transformation is formed as a joint venture between U-M and Blue Cross Blue Shield of Michigan. The partnership is the result of the sale of the University of Michigan’s M-CARE health plan to BCBSM and its HMO subsidiary Blue Care Network. John Billi (Gen), the associate vice president for medical affairs, is chair of CHRT’s board of directors. At U-M, he leads the Michigan Quality System, UMHS’ business strategy to transform clinical and administrative operations. He also co-chairs the Michigan Quality Improvement Consortium, which endorses common evidence-based guidelines across 14 Michigan health plans.

2007
The U-M Cardiovascular Center opens its doors. This state-of-the-art facility serves as a central location for coordinated, top-quality clinical care, research and teaching activities, focusing on the entire spectrum of cardiovascular disease. CVM faculty David Pinsky and Kim Eagle are two of the center’s five founding directors. In 2013, the center will be renamed in honor of Samuel and Jean Frankel, whose foundation provided early support of the CVC’s innovative model of care.

2008
The U-M Asthma Program (Allergy) is one of three programs nationwide to receive the U.S. Environmental Protection Agency’s 2008 National Environmental Leadership Award in Asthma Management.

2009
The introduction of new modes of long-term positive-pressure ventilation, including BiPAP, spurs the creation of the Assisted Ventilation Program. This multidisciplinary clinic involving Respiratory Therapy, Physical Medicine and Rehabilitation, Neurology and Pulmonary Medicine was created and directed by Robert Sitrin (PCCM). The program now cares for nearly 500 patients with various forms of chronic respiratory failure.
2000s–2010s

2009
Milagros D. Samaniego-Picota (Neph) establishes the Kidney Desensitization Program to help patients who have been turned down by other transplant centers because they are “sensitized” (have high amounts of antibodies circulating in the blood that can result in rejection of a donor kidney).

2009
Amy Rothberg (MEND) becomes the director of the new Investigational Weight Management Clinic, focused on identifying strategies that will result in long-term weight management for obese individuals, utilizing the latest research and clinical strategies. It is one of the few clinical weight-loss programs in the U.S. directly linked to a research program.

2009
The Division of Geriatric Medicine provides leadership and organizational oversight to a newly-structured Palliative Care Service—a collaborative initiative of the Departments of Internal Medicine, Family Medicine and the University Hospital—which includes adult outpatient palliative care in the Geriatrics Center Clinics and community care in affiliation with Arbor Hospice. In 2011, newly appointed Division Chief Raymond Yung will change the name of the division to the Division of Geriatric and Palliative Medicine to better reflect its leadership in palliative care.

2011
The Allergy & Immunology Division develops the University of Michigan Mary H. Weiser Food Allergy Center to provide comprehensive food-allergy-related patient care and expand research, education and community services to help accelerate the discovery of food allergy treatments and advance research for a cure.

2011
The U-M Frankel Cardiovascular Center becomes a national leader in replacing aortic valves via catheters through the Transcatheter Aortic Valve Replacement Program led by interventional cardiologists Stanley Chetcuti and Paul Michael Grossman (CVM). The program will perform its 500th TAVR in 2015. This minimally invasive procedure is transforming aortic valve care for elderly adults.

2011
Helena Schotland (PCCM) becomes the first sleep-trained pulmonologist to join the Sleep Program, which has historically been directed and staffed by sleep-trained neurologists.

2012
The state of Michigan becomes the epicenter of a spinal meningitis outbreak due to a steroid preparation that was contaminated during the compounding process by the manufacturer. Carol Kauffman (ID) provides national guidelines and recommendations on the diagnosis and treatment of these patients.

2012
Connie Standiford (Gen) is named executive medical director of UMHS’ ambulatory care services.

2012
Matthew Greenhawt (Allergy) is part of a multicenter trial demonstrating that children with severe egg allergies can safely receive a single dose of the seasonal influenza vaccine. Their finding causes the CDC to modify its vaccination guidelines.
2013
CVM faculty James Corbett and Venkatesh Murthy introduce attenuation correction as a way to reduce artifacts in nuclear heart scans. First used at U-M, this approach will be adopted all over the world. U-M also becomes the first institution to use PET radiotracers to trace flow in the heart to understand inflammation of the heart tissue and valves.

2013
The U-M Health System and St. Joseph Mercy Ann Arbor open an Acute Care for Elders (ACE) Unit designed specifically for senior patients. Karen Hall (GPM) is the medical director.

2013
The U-M Health System and St. Joseph Mercy Ann Arbor open an Acute Care for Elders (ACE) Unit designed specifically for senior patients. Karen Hall (GPM) is the medical director.

2014
A new Transcatheter Aortic Valve Replacement Unit, led by Paul Michael Grossman (CVM), opens at the VA Ann Arbor Healthcare System.

2014
The Metabolic Bone Disease Clinic launches after Greg Clines is recruited. He is the first person with a primary appointment in MEND who focuses on bone and mineral metabolism, allowing the division to offer complex care in bone and mineral disease.

2014
The Metabolic Bone Disease Clinic launches after Greg Clines is recruited. He is the first person with a primary appointment in MEND who focuses on bone and mineral metabolism, allowing the division to offer complex care in bone and mineral disease.

2015
Marschall S. Runge (CVM) becomes U-M’s new executive vice president for medical affairs.

2015
The Department of Internal Medicine opens a 22-bed Short-Stay Unit staffed by the Hospitalist Program. This new unit provides care for adults who need one or two days in the hospital before going home or to another care setting.

2016
David Spahlinger (Gen) is named the first president of the University of Michigan Clinical Enterprise, overseeing all clinical programs and facilities at the university.

Sources: Department of Internal Medicine division histories, division chief and faculty interviews and the U-M Medical School historical timeline.
AMERICAN SOCIETY FOR CLINICAL INVESTIGATION MEMBERS

Peter Arvan, MD, PhD
David Aronoff, MD
John Z. Ayanian, MD, MPP
Ariel Barkan, MD
Ernesto Bernal-Mizrachi, MD
George Brewer, MD
Ronald Buckanovich, MD, PhD
John Carethers, MD
C. William Castor, Jr., MD
Yuqing Eugene Chen, MD, PhD
Kathleen Cho, MD
Kathleen Collins, MD, PhD
Daniel Eitzman, MD
Eric Fearon, MD, PhD
David Fox, MD
Thomas Gelehrter, MD
David Ginsburg, MD
Thomas Glaser, MD, PhD
Stephen Gruber, MD, PhD
Hitinder Gurm, MD*
Jeffrey Halter, MD
Gary Hammer, MD, PhD
Joel Howell, MD, PhD
Patrick Hu, MD, PhD
H. David Humes, MD
Ken Inoki, MD, PhD
Mariana Kaplan, MD
Eve Kerr, MD, MPH
John Y. Kao, MD
Alisa Koch, MD
Ronald Koenig, MD, PhD
Matthias Kretzler, MD
Vibha Lama, MD, MS
Kenneth M. Langa, MD, PhD
Ivan Maillard, MD, PhD
Sami Malek, MD*
Benjamin Margolis, MD
David Markovitz, MD
Laurence McMahon, Jr., MD, MPH
Juanita Merchant, MD, PhD
David Miller, MD, PhD
Fred Morady, MD
Martin Myers, MD, PhD
Akinlolu Ojo, MD, PhD
M. Bishr Omary, MD, PhD
John Williams, MD, PhD
Chung Owyang, MD
Marc Peters-Golden, MD
Kenneth Pienta, MD
David Pinsky, MD
Bertram Pitt, MD
Pavan Reddy, MD
Bruce Richardson, MD, PhD
Theodora Ross, MD, PhD
Marschall Runge, MD
Sanjay Saint, MD, MPH
Alan Saltiel, PhD
Amr H. Sawalha, MD*
Mark S. Schissel, MD, PhD
Jim Shayman, MD
Elizabeth Speliotes, MD, PhD, MPH
Robert Sitrin, MD
Theodore Standiford, MD
Andrea Todisco, MD
Thomas Wang, MD, PhD
Stephen Weiss, MD
Max Wicha, MD
Roger Wiggins, MB, BChir
John Williams, MD, PhD
Xiaochun Yu, MD, PhD

*New member in 2015-2016

ASSOCIATION OF AMERICAN PHYSICIANS MEMBERS

Peter Arvan, MD, PhD
John Z. Ayanian, MD, MPP
Charles Burant, MD*
John Carethers, MD
C. William Castor Jr., MD
Kathleen Cho, MD
Kathleen Collins, MD, PhD
Eric Fearon, MD, PhD
David Fox, MD
Thomas Gelehrter, MD
David Ginsburg, MD
Gary Hammer, MD, PhD
Daniel Hayes, MD
Rodney Hayward, MD
H. David Humes, MD
Jose Jalife, MD
Stevo Julius, MD
Alisa Koch, MD
Ronald Koenig, MD, PhD
Anna Lok, MBBS, MD
Malcolm Low, MD
Benjamin Margolis, MD

*New member in 2015-2016

David Markovitz, MD
Juanita Merchant, MD, PhD
Fred Morady, MD
Martin Myers, MD, PhD
Akinlolu Ojo, MD, PhD
M. Bishr Omary, MD, PhD
Gilbert Omenn, MD, PhD
Chung Owyang, MD
Marc Peters-Golden, MD
David Pinsky, MD
Bertram Pitt, MD
Marschall Runge, MD
Mark S. Schissel, MD, PhD
Jim Shayman, MD
Theodore Standiford, MD
Galen Toews, MD
Joel Weinberg, MD
Stephen Weiss, MD
Max Wicha, MD
Roger Wiggins, MB, BChir
John Williams, MD, PhD
National Academy of Medicine** Members

John Z. Ayanian, MD, MPP
John Carethers, MD
Eric Fearon, MD, PhD
A. Mark Fendrick, MD
David Ginsburg, MD
Juanita Merchant, MD, PhD
Gilbert Omenn, MD, PhD
Alan Saltiel, PhD
Stephen Weiss, MD
James O. Woolliscroft, MD

For more information about the University of Michigan Department of Internal Medicine, go to:

med.umich.edu/intmed

For detailed information about individual divisions, please visit their websites:

Allergy and Clinical Immunology ........... med.umich.edu/intmed/allergy
Cardiovascular Medicine .................... med.umich.edu/cvc
Gastroenterology ............................. med.umich.edu/gi
General Medicine ........................... med.umich.edu/intmed/genmed
Geriatric and Palliative Medicine ........... med.umich.edu/geriatrics
Hematology/Oncology ....................... med.umich.edu/intmed/hem onc
Infectious Diseases ......................... med.umich.edu/intmed/infectious
Metabolism, Endocrinology & Diabetes ... med.umich.edu/intmed/endocrinology
Molecular Medicine & Genetics ............ med.umich.edu/intmed/mmg
Nephrology .................................... med.umich.edu/intmed/nephrology
Pulmonary & Critical Care Medicine ...... med.umich.edu/intmed/pulmonary
Rheumatology ................................. med.umich.edu/intmed/rheumatology

University of Michigan
Department of Internal Medicine
3110 Taubman Center, SPC 3568
1500 East Medical Center Drive
Ann Arbor, MI 48109
(734) 936-4340

**Formerly the Institute of Medicine
EXECUTIVE OFFICERS — UNIVERSITY OF MICHIGAN HEALTH SYSTEM
Marschall S. Runge, M.D., Ph.D., Executive Vice President for Medical Affairs, Dean, University of Michigan Medical School;
David A. Spahlinger, M.D., Executive Vice Dean of Clinical Affairs, President, Clinical Enterprise; Kathleen Potempa, Ph.D., Dean, School of Nursing.

UNIVERSITY OF MICHIGAN BOARD OF REGENTS
Michael J. Behm, Mark J. Bernstein, Laurence B. Deitch, Shauna Ryder Diggs, Denise Ilitch, Andrea Fischer Newman, Andrew C. Richner, Katherine E. White, Mark S. Schlissel, ex officio.

NONDISCRIMINATION POLICY STATEMENT
The University of Michigan, as an equal opportunity/affirmative action employer, complies with all applicable federal and state laws regarding nondiscrimination and affirmative action. The University of Michigan is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, national origin, age, marital status, sex, sexual orientation, gender identity, gender expression, disability, religion, height, weight, or veteran status in employment, educational programs and activities, and admissions. Inquiries or complaints may be addressed to the Senior Director for Institutional Equity, and Title IX/Section 504/ADA Coordinator, Office for Institutional Equity, 2072 Administrative Services Building, Ann Arbor, Michigan 48109-1432, 734-763-0235, TTY 734-647-1388, institutional.equity@umich.edu. For other University of Michigan information call 734-764-1817.

© 2016 The Regents of the University of Michigan, Ann Arbor, Michigan, 48109
The Department of Internal Medicine funds this publication. No donor funds are used to produce this report.

Research, writing, design and production of the report were provided by Michigan Creative in collaboration with editorial consultant Aimee Balfe.
Department of Internal Medicine historical consultation was provided by Joel Howell, MD.
The medical school class of 1901 in front of the Medical School building.

Back translucent cover: Medical School building, circa 1890.