



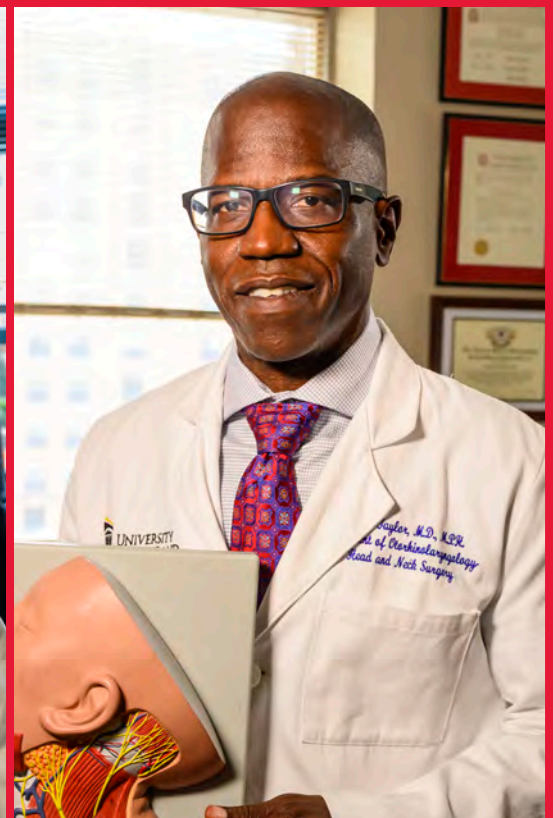
VISIONARY VANGUARDS

Transforming Our Culture
While Shaping the Future



UNIVERSITY of MARYLAND
SCHOOL OF MEDICINE

2019 STATE OF THE SCHOOL



Transforming Our Culture *While Shaping the Future*

OUR MISSION

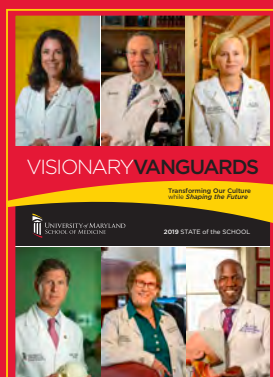
The University of Maryland School of Medicine (UMSOM) is dedicated to providing excellence in biomedical education, basic and clinical research, quality patient care, and service to improve the health of the citizens of Maryland and beyond.

The School of Medicine is committed to the education and training of MD, MD/PhD, Graduate (MS, MPH, PhD), Physical Therapy and Rehabilitation Science, and Medical and Research Technology students.

We recruit and develop faculty to serve as exemplary role models for our students.

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ON THE COVER:
The UMSOM recruited and appointed three new department chairs and three new interim chairs. These six Visionary Vanguards will help lead UMSOM into the future.

Clockwise:
Victoria Marchese, PhD, PT
Chair, Department of Physical Therapy and Rehabilitation Science

Asaf Keller, PhD
Interim Chair, Department of Anatomy and Neurobiology

Christine Lau, MD, MBA
Chair, Department of Surgery

Rodney J. Taylor, MD, MPH
Chair, Department of Otorhinolaryngology-Head & Neck Surgery

Jill RachBeisel, MD
Interim Chair, Department of Psychiatry

Graeme F. Woodworth, MD
Interim Chair, Department of Neurosurgery



VISIONARY VANGUARD DEAN REECE

Fiscal Year 2019 was truly a transformative year for the UMSOM. As we continued our focus on achieving growth and success in each of our core mission areas, we also recognized a critical need to engage our entire community in a thorough reflection and examination of our culture, diversity, and work environment.

Inspired by our “Visionary Vanguards,” the UMSOM came together as a community to recognize and address our challenges, take advantage of opportunities with innovative new programs, and reached new heights in each of our key mission areas.

WORKFORCE/CULTURE

- In collaboration with University of Maryland, Baltimore (UMB) President, **Jay Perman, MD**, and University of Maryland Medical Center (UMMC) President and CEO, **Mohan Suntha, MD, MBA**, the UMSOM launched a historic, school-wide **Culture Transformation Initiative (CTI)**, dedicated to ensuring that we have a respectful, professional, inclusive, and diverse environment for everyone.
- As part of a management restructuring, we promoted several women to key senior leadership positions in the UMSOM.

*We have the **first woman** to serve as:*

- Chair, Department of Surgery;
- UMSOM Chief Operating Officer;
- Head of Medical Student Admissions; and
- Head of Undergraduate Medical Education.

- Women now make up **45 percent** of the Dean’s Executive Leadership Team.

EDUCATION

- We began an inclusive and thorough review and renewal of our **MD curriculum** with the goal of preparing our graduates to be successful and skilled clinicians, scientists, academicians, and leaders of tomorrow.
- Our recent graduating class of MD students continued a trend of about **1/3** of the class choosing **primary care specialties**. We have had 179 students participate in the Primary Care Track since 2016, and 60 percent of those have chosen a primary care residency.

- We had another highly successful Match Day this year with **99 percent** of our students matching and exceeding the national average of 94 percent.

CLINICAL CARE

- We treated **over 1.6 million patients** this past year (up from 1.5M in FY18) across 60 locations around the state.
- We performed more than **30,000 surgeries** for our patients.
- In UMMC alone, we cared for nearly **26,000 hospitalized patients**, including some of the most complex and challenging cases in the U.S., based on the National Case-Mix Index Data.
- Our clinical revenues continued to rise, with **21 percent growth** since FY15.

RESEARCH & DISCOVERY

- We developed an unmanned aircraft to carry human organs, and became the **first ever to successfully transplant a kidney delivered to surgeons by drone**.
- Researchers in our Institute of Human Virology are collaborating with scientists at the National Institutes of Health to **test an experimental drug to curb opioid cravings**.
- We submitted more than **2,000 grants**, worth over **\$2 billion** dollars.
- We were awarded nearly **2,000 total grants** and contracts, with **\$542 million in total funding**, another new record (a **35.5 percent increase** over the past five years).
- In new ventures, we once again surpassed **100 scientific discovery disclosures (pre-patent)** in FY19.

COMMUNITY IMPACT

- We took on the **opioid crisis** with initiatives on multiple fronts, including telemedicine, community partnerships, public education programs, and aggressive medicine-assisted treatment programs.
- We addressed infant mortality through our close involvement in **B-more for Healthy Babies**, now celebrating its fifth year with **zero sleep-related infant deaths**.

As we look ahead to the next five years and establish new goals for 2025, I believe we are more unified as an academic community, and more relentless than ever in our determination to excel at every level of our organization.

It is with my heartfelt thanks and sincere gratitude that I submit this report of the past year. Our success would not be possible without the contributions of each and every one of you, as valued members of the UMSOM community.

In the relentless pursuit of excellence,
I am sincerely yours,

E. Albert Reece, MD, PhD, MBA

Executive Vice President for Medical Affairs, UM Baltimore
John Z. and Akiko K. Bowers Distinguished Professor and
Dean, University of Maryland School of Medicine

OUR ORGANIZATION

During FY19, the University of Maryland School of Medicine saw significant changes in the leadership and diversity of its workforce. New department chairs were appointed, and the number of women and underrepresented minorities continued to increase throughout the organization. Following a series of Town Hall Meetings, a new Culture Transformation Initiative was launched to ensure a professional, respectful, inclusive and diverse environment for all.

A GROWING WORKFORCE

The UMSOM organization is 8,634 persons and includes nearly 3,000 full-time, part-time, and adjunct faculty and 3,190 staff members.

Of our 1,431 full-time faculty members, 40.2 percent are women and nearly 11 percent are underrepresented minorities. Our full-time faculty retention rate is 91 percent, reflecting our continued commitment to providing a positive and productive work environment. Our workforce is also composed of 521 clinical and research fellows and 716 residents.

TOTAL FACULTY, STAFF & STUDENTS			
	FY18	FY19	
Full-time Faculty	1,404	1,431	
Part-time Faculty	302	296	
Adjunct Faculty	1,264	1,245	
Post-Doctoral Fellows	490	521	
(Research)	267	267	
(Clinical)	223	254	
Residents (trained by UMSOM faculty)	711	716	
Students	1,261	1,235	
Staff (admin, research & clinical, includes FPI)	3,058	3,190	
TOTAL	7,490	8,634	

FACULTY DIVERSITY			
	FY18	FY19	%
Women	569	575	40.2
Underrepresented Minorities	154	152	10.6

CULTURE TRANSFORMATION INITIATIVE

In FY18-19, Dean Reece launched an innovative Culture Transformation Initiative (CTI). This school-wide program is a collaboration between the UMSOM, University of Maryland Medical Center (UMMC), and the University of Maryland, Baltimore (UMB).

CTI GOALS:

- Create a diverse, inclusive, respectful, and professional environment at UMSOM.
- Ensure there is diverse, effective, and accountable leadership that is unambiguous about its commitment to reducing and eliminating harassment, discrimination, and retaliation.
- Improve transparency and accountability.
- Monitor impact of the CTI.
- Commit to CTI Academic Scholarship.

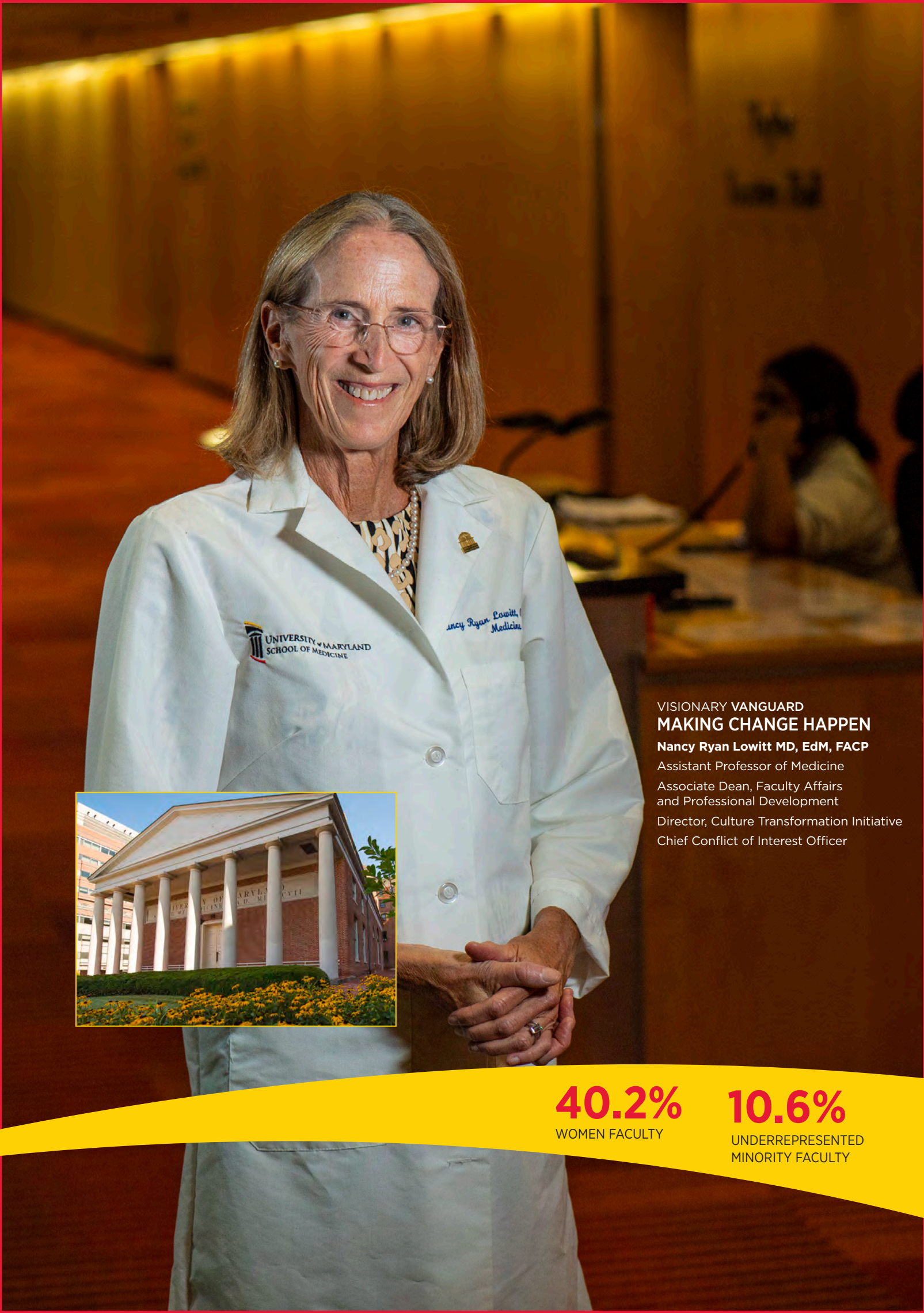
THROUGH A DETAILED ACTION PLAN, CTI HAS COMPLETED THE FOLLOWING IN FY19:

- Developed immediate policies on sexual relationships and disruptive behaviors in the workplace.
- Prioritized key leadership promotions, including several women to senior positions. The Dean's Executive Leadership Team is now 45 percent women.
- Increased Unconscious Bias Training, and partnered with UMB to increase Title IX training and resources, including Bystander Training.
- Launched CTI Committees, including nearly 100 students, faculty, staff, and trainees.
- Launched a CTI website to provide ongoing updates, links, and interactive tools.

In addition, CTI initiatives underway include a Faculty Salary Equity Study and a "Diversity Dashboard" to assess progress using an on-line platform.

UMSOM-WIMS CREATED

CTI also supported the launch of UMSOM Women in Medicine and Science (WIMS) to ensure and advance the full and successful participation and inclusion of women within academic medicine at UMSOM by addressing gender equity, recruitment and retention, awards and recognition, and career advancement.



VISIONARY VANGUARD
MAKING CHANGE HAPPEN
Nancy Ryan Lowitt MD, EdM, FACP
Assistant Professor of Medicine
Associate Dean, Faculty Affairs
and Professional Development
Director, Culture Transformation Initiative
Chief Conflict of Interest Officer

40.2%
WOMEN FACULTY

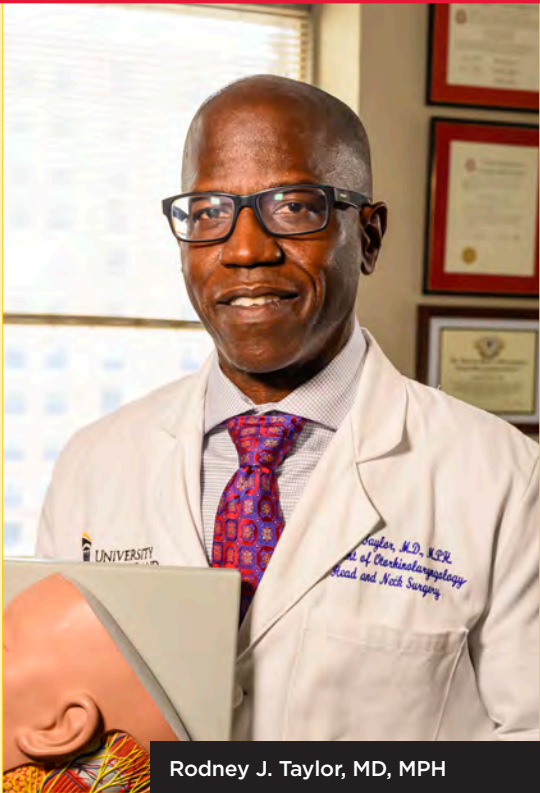
10.6%
UNDERREPRESENTED
MINORITY FACULTY



Christine Lau, MD, MBA



Victoria Marchese, PhD, PT



Rodney J. Taylor, MD, MPH

NEW ACADEMIC DEPARTMENT LEADERSHIP

In order to grow and flourish throughout UMSOM's third century, the UMSOM must continue to ensure that there is diverse, effective, and accountable leadership across the organization. During the past year, several new chairs and interim chairs were announced in key academic departments.

SURGERY

Christine Lau, MD, MBA, a nationally renowned surgeon scientist with expertise in thoracic and lung transplant surgery, was recruited from the University of Virginia to become the next Chair of the Department of Surgery at the UMSOM, and the Chief of Surgery at the University of Maryland Medical Center, beginning December 1, 2019.

Dr. Lau is a federally funded scientist and an expert clinician who is widely acclaimed for her work in improving outcomes for lung transplant patients. Dr. Lau's selection followed an extensive nationwide search in which nearly 100 candidates were nominated for this coveted position. Her appointment makes Dr. Lau the first woman to chair the Department of Surgery at the UMSOM — and one of only a small number of women throughout the U.S. to lead a major Department of Surgery.

PHYSICAL THERAPY AND REHABILITATION SCIENCE

Victoria Marchese, PhD, PT, Associate Professor and Interim Vice Chair for Academic Affairs in the UMSOM's Department of Physical Therapy and Rehabilitation Science, has been selected to be the next Chair of the Department. She began her new role on August 15, 2019, taking the reins from Andrew Pollak, MD, the James Lawrence Kernan Professor and Chair in the Department of Orthopaedics, who served as Acting Chair of the Department since June 2018.

Dr. Marchese, who joined the UMSOM faculty in 2014, is an award-winning scholar and clinical expert in the rehabilitation of children diagnosed with cancer. She has authored numerous book chapters and peer-reviewed articles in the area of assessment and physical therapy intervention for children with acute lymphoblastic leukemia and lower-extremity sarcoma.

OTORHINOLARYNGOLOGY-HEAD & NECK SURGERY

Rodney J. Taylor, MD, MPH, Professor in the UMSOM Department of Otorhinolaryngology-Head & Neck Surgery, a distinguished physician-scientist and head and neck surgeon, was named the next Chair of the Department, effective September 1, 2019. In addition, he serves as the Chief of Otorhinolaryngology for the University of Maryland Medical Center.

Dr. Taylor has been consistently named a Top Doctor for Ear, Nose and Throat (ENT) by *U.S. News and World Report*, *Baltimore Magazine*, and *Black Enterprise* magazine. He led the Department of Otorhinolaryngology initially as Vice Chair and was named Interim Chair in October 2018, following the departure of Scott Strome, MD, FACS, who became Vice Chancellor for Health Affairs and Executive Dean of the College of Medicine at the University of Tennessee Health Science Center.



ENT IS #1 IN MARYLAND, #10 IN THE NATION

The University of Maryland Medical Center (UMMC) is ranked #1 in Maryland and #10 in the nation in caring for patients with ear, nose and throat (ENT) conditions and #16 in cancer care, according to the 2019-20 *U.S. News & World Report's* Best Hospitals specialty rankings. UMMC moved up 29 places in the ENT rankings and 16 places in the rankings for cancer compared to the 2018-19 *U.S. News & World Report* Best Hospitals specialties list.

NEUROSURGERY

Graeme F. Woodworth, MD, Professor of Neurosurgery, was appointed by Dean Reece to serve as the Interim Chair of the Department of Neurosurgery, beginning July 1, 2019.

As the founding Director of the Brain Tumor Treatment and Research Center at the Greenebaum Comprehensive Cancer Center, Dr. Woodworth has brought together experts within the University of Maryland, helped to recruit new key team members, and raised with his team over \$10 million in extramural funding and contracts to support clinical and research programs. Within this role, Dr. Woodworth provides leadership and surgical care within a multidisciplinary group of radiologists, medical oncologists, radiation oncologists, neurosurgeons, and pathologists, treating brain cancer patients.

PSYCHIATRY

Jill RachBeisel, MD, Associate Professor of Psychiatry, who previously served in the Department of Psychiatry as Vice Chair for Clinical Affairs and as Acting Chair, assumed the role of Interim Chair of the Department of Psychiatry on March 15, 2019.

A faculty member in the Department since 1989, Dr. RachBeisel began her career in the field of acute psychiatric care, emergency psychiatric interventions, and quality management in the hospital setting. During her career at UMSOM, she has held numerous leadership positions in the Department's Institute of Psychiatry and Human Behavior, which administers outpatient clinics for adult, geriatric and child/adolescent psychiatry, an Adult Day Hospital, and a Methadone Maintenance Program. She also served as the Division Director for Community Psychiatry, overseeing 200 staff and physicians providing a range of community mental health services. In addition to her Division responsibilities, Dr. RachBeisel has been Chief of Clinical Services for the Department of Psychiatry since 2014, providing oversight of program development, performance improvement, and all clinical services in the Department.

ANATOMY AND NEUROBIOLOGY

Asaf Keller, PhD, Professor of Anatomy and Neurobiology, was named by Dean Reece as Interim Chair of the Department of Anatomy and Neurobiology, beginning July 25, 2019.

Dr. Keller, who is a leading scientist in addiction, chronic pain, and affective disorders, joined the UMSOM faculty in 1995. He received his PhD degree in Neuroscience from Ben Gurion University of the Negev in Israel.

Dr. Keller's lab, which receives funding from the National Institutes of Health with multiple grants totaling nearly \$5 million, focuses on sensory perception, delving into questions such as how the brain perceives objects and events and how to optimize a person's ability to detect and discriminate. He and his research team are also examining what mechanisms go awry when perceptions are altered by chronic pain or drug abuse. His team takes an integrative approach, focusing on cellular, networking, computational, and behavioral aspects of information processing by the brain's neurons.



Graeme F. Woodworth, MD



Jill RachBeisel, MD



Asaf Keller, PhD

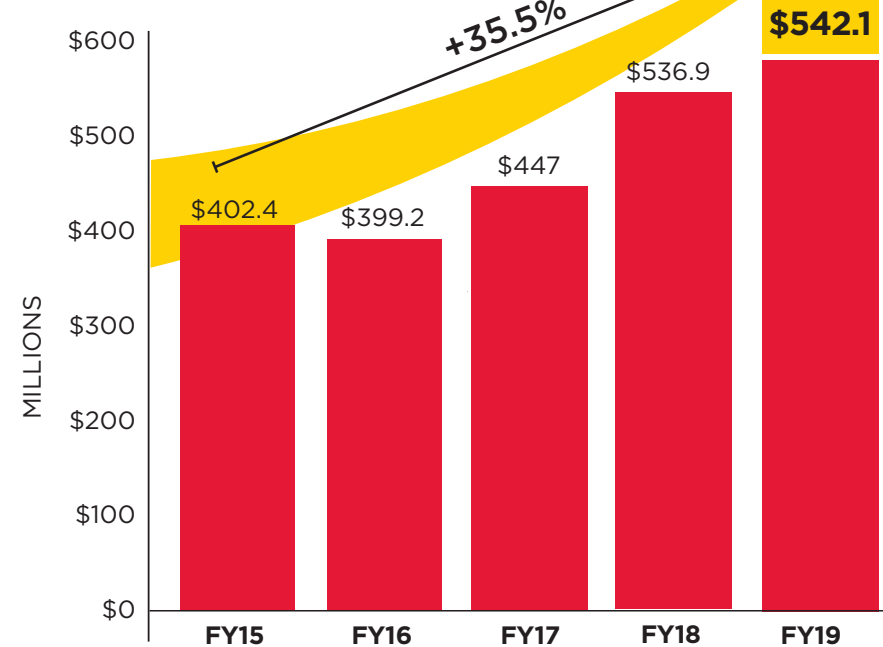
RESEARCH

The University of Maryland School of Medicine's expanding research portfolio produced another banner year in FY19, with several large grants and contracts, and higher rankings in NIH funding. The UMSOM also recruited more top federally-funded scientists from around the country, and bolstered its central research cores with new investments in technology and resources. Major research projects included the first use of a drone to transport a donor kidney to a transplant patient, and the launch of a national study of the adolescent brain. New UMSOM research and technology ventures were successful in securing new rounds of funding and exclusive licensing arrangements for companies treating lung disease, stroke, and cancer.

RECORD GRANTS AND CONTRACTS

The UMSOM continued to reach new heights in total research grants and contracts during FY19. Based on the most recent data, extramural research funding for FY19 reached \$542.1 million, a new record, and furthered UMSOM's standing among the highest echelon of research-intensive medical schools. In addition, all grant funds submitted grew by six percent, indicating a strong pipeline for continued growth in funding in the future.

GROWTH OF RESEARCH GRANTS & CONTRACTS



STRONG FY19 RESULTS

NIH Dollars Awarded	+5%
Other Federal Dollars Awarded	+17%
All Research Dollars Awarded	+9%
All Grant Dollars Submitted	+6%

\$200M+

CONTRACT AWARDED TO CVD

UMSOM's Center for Vaccine Development and Global Health (CVD) was awarded a landmark contract from the National Institute of Allergy and Infectious Diseases, to develop a universal vaccine for influenza. UMSOM will receive total funding of more than \$200 million over seven years if all contract options are exercised. This research contract, one of the largest ever awarded to UMSOM, includes an initial award of approximately \$2.5 million to conduct clinical testing of influenza vaccines. **The seven-year contract will be led by Kathleen Neuzil, MD, MPH, Professor of Medicine and Pediatrics and CVD Director.** Dr. Neuzil is one of the world's preeminent research scientists and advocates in the area of vaccine development and policy.



VISIONARY VANGUARD PROTECTING MILLIONS AGAINST EMERGING INFLUENZA STRAINS

Kathleen Neuzil, MD, MPH, FIDSA
Professor of Medicine and Pediatrics
Director, Center for Vaccine
Development and Global Health



7-YEAR

NIH CONTRACT FOR INFLUENZA RESEARCH



OTHER MAJOR COMPETITIVE GRANTS > \$10M
\$40M

IHV RECEIVES MAJOR AWARD FROM CDC

Man Charurat, MD, Professor of Medicine; Director, Center for International Health, Education, and Biosecurity; and Director, Division of Epidemiology and Prevention, Institute of Human Virology (IHV) at the UMSOM, has been awarded a five-year grant from the U.S. Centers for Disease Control and Prevention (CDC) to conduct HIV population-based impact assessments worldwide to measure progress towards the control of the HIV epidemic. The UMSOM will receive \$40 million in the first year.



Administrative Core Director for the grant, which is titled, “A Genomics Based Investigation of the Determinants of Polymicrobial Infectious Disease Outcomes,” is **David Rasko, PhD**, Professor of Microbiology and Immunology and Scientist at IGS. Other Principal Investigators are **Claire M. Fraser, PhD**, the Dean’s Endowed Professor of Medicine, Microbiology and Immunology, and Director of IGS, and **Owen R. White, PhD**, Professor of Epidemiology and Public Health, Director of Bioinformatics and Associate Director of IGS.



\$20M

CVD AWARDED GATES FOUNDATION GRANT

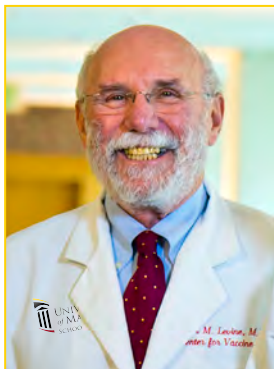
Karen Kotloff, MD, Professor of Pediatrics and Head of the Division of Infectious Disease and Tropical Pediatrics, and Associate Director of Clinical Studies at the Center for Vaccine Development and Global Health (CVD), was awarded a \$20 million grant by the Bill and Melinda Gates Foundation to assess the impact of azithromycin on pregnant women and infants. The research will determine whether mass administration of the antibiotic azithromycin to pregnant women can reduce infant mortality and ultimately, deaths among children under the age of five. The research is being conducted in Mali in collaboration with the CVD-Mali, and is expected to include up to 33,600 pregnant women and their infants.



\$12.5M

CVD AWARDED NIH GRANT

A \$12.5 million U19 Grant was awarded by the National Institutes of Health to CVD’s **Myron M. Levine, MD, DTPH**, the Simon and Bessie Grollman Distinguished Professor of Medicine, and Associate Dean for Global Health, Vaccinology and Infectious Diseases, to study active vaccination and passive antibody strategies to prevent diseases caused by multi-drug resistant pathogens.



\$14M

MPRC RECEIVES MENTAL HEALTH GRANT

A \$14M grant from the National Institute of Mental Health will continue the work of **Robert Schwarcz, PhD**, Professor of Psychiatry at the UMSOM’s Maryland Psychiatric Research Center (MPRC). Dr. Schwarcz believes cognitive deficits affecting people with schizophrenia are due to an increase in the brain levels of kynurenic acid, a major product of L-tryptophan.



\$17.5M

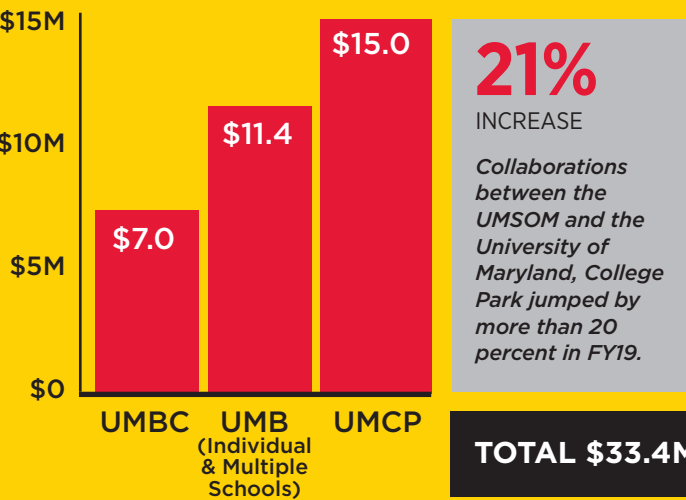
IGS’S GCID IS FUNDED FOR FIVE MORE YEARS

The Institute for Genome Sciences (IGS) at the UMSOM was awarded \$17.5 million from the National Institute of Allergy and Infectious Diseases to fund the IGS Genome Center for Infectious Diseases (GCID) for another five years. The Principal Investigator and

WHERE RESEARCH COLLABORATION DRIVES DISCOVERY

Throughout the UMSOM and across the University System of Maryland, researchers from a diverse range of fields are encouraged to collaborate on joint projects. By leveraging their collective strengths, these interdisciplinary teams are finding greater success in securing major federal grants, especially when the projects merge clinical and basic science.

UMSOM PLUS



RECRUITING TOP SCIENTISTS

The UMSOM continued its successful “STRAP” initiative (Special Trans-Disciplinary Recruitment Award Program), recruiting teams of top scientists from leading medical schools and academic medical centers across the country.

STRAP RECRUITS

- Anna Birukova, MD
- Konstantin Birukov, MD, PhD
- Linda Chang, MD, MS
- Thomas Ernst, PhD
- Tracy L. Bale, PhD
- Masahiro Iwamoto, PhD
- Motomi Ewomoto-Iwamoto, DDS, PhD
- Li Qun Zhang, PhD
- Xuefang Cao, PhD
- Zhongjun Jon Wu
- Charles C. Hong, MD, PhD
- Raymond Regan, MD
- Yang Liu, PhD
- Pan Zheng, MD, PhD
- Liqing Justin Yu, MD, PhD
- Allan Doctor, MD
- Eli Bar, PhD
- Roger Bannister, PhD
- Zhe Han, PhD
- Christine Lau, MD, MBA

\$60M

The STRAP teams of scientists have brought an additional \$60 million in total research funding to the UMSOM.

NEW UMSOM BLOOD RESEARCH CENTER

New STRAP scientist **Allan Doctor, MD**, Professor of Pediatrics, will establish a new center for blood oxygen transport and hemostasis in the UMSOM Department of Pediatrics. The new center will help advance the development of an artificial blood product for use in trauma settings like battlefields or rural areas without easy access to donated blood for transfusions.



6TH ANNUAL FESTIVAL OF SCIENCE FILLS LEADERSHIP HALL

UMSOM held its 6th Annual Festival of Science, “Omics Biology: Basic, Translational, and Clinical Applications,” exploring the intersection of genomics and medicine. Featured Keynote Speaker was **Huntington Willard, PhD**, Director, Geisinger National Precision Health.

Session presentations included:

- Omics and Infectious Disease;
- Omics and Precision Medicine; and
- Omics and the Microbiome.

The largest Festival of Science audience to date!



HIGHER RESEARCH RANKINGS

The recently released annual Blue Ridge Ranking for FY19, which compares NIH funding by academic department across U.S. medical schools, shows the UMSOM with half of its departments (12) now ranked in the Top 25 of all medical schools, and nearly two-thirds ranked in the Top 20 of all public medical schools.

Total research funding is an objective, measurable means of benchmarking academic scholarship. According to the Association for American Medical Colleges (AAMC) profile data, UMSOM continues to rank in the Top 10 (8th) among all public medical schools. Among all 151 public and private medical schools nationwide, the UMSOM ranks 26th.

RESEARCH PRODUCTIVITY

AAMC data also revealed that our UMSOM faculty continues to have one of the highest levels of productivity in America. Across all U.S. schools, the average of mean funding per principal investigator is \$322,117. At the UMSOM, that average jumps to \$488,520, placing us in the 85th percentile of all medical schools.

BLUE RIDGE RANKINGS BY DEPARTMENT
NIH GRANTS ONLY

All U.S. Public Schools		
Public Health (Epidemiology)	1	Top 20
Anesthesiology	6	
Otolaryngology	7	
OB-GYN	10	
Orthopaedics	7	
Neurosurgery	8	
Psychiatry	9	
Emergency Medicine	13	
Physiology	11	
Surgery	13	
Anatomy	10	Top 25
Radiology	10	
Internal Medicine	15	
Pediatrics	15	
Microbiology	18	
Biochemistry	18	
Family Medicine	19	

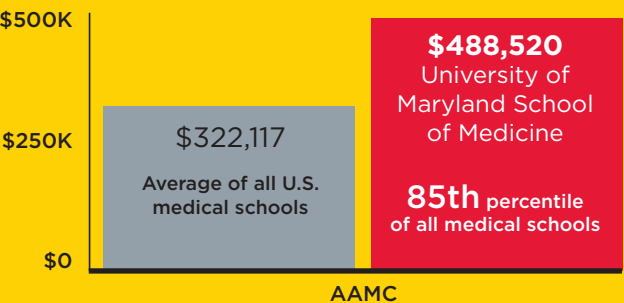
All U.S. Public and Private Schools		
Public Health (Epidemiology)	4	Top 25
Anesthesiology	11	
Otolaryngology	14	
OB-GYN	15	
Orthopaedics	16	
Neurosurgery	18	
Psychiatry	18	
Emergency Medicine	20	
Physiology	21	
Surgery	24	
Anatomy	25	25
Radiology	25	

NATIONAL AAMC PROFILE RANKINGS
TOTAL GRANTS & CONTRACTS

All U.S. Public Schools	
U Washington	\$1,244,096,936
UC San Francisco	\$1,135,631,814
UCLA-Geffen	\$676,696,645
UC San Diego	\$598,691,951
Michigan	\$539,714,442
Colorado	\$476,684,136
North Carolina	\$454,599,476
MARYLAND	\$421,340,017
Oregon	\$362,866,092
Alabama	\$345,102,877

All U.S. Public and Private Schools	
Harvard	\$3,045,084,051
U Washington	\$1,244,096,936
UC San Francisco	\$1,135,631,814
Pennsylvania-Perelman	\$966,576,547
Duke	\$843,378,527
Columbia-Vagelos	\$819,616,948
Johns Hopkins	\$794,837,349
Stanford	\$721,241,336
Yale	\$707,440,953
UCLA-Geffen	\$676,696,645
UC San Diego	\$598,691,951
Pittsburgh	\$585,909,702
Washington U St Louis	\$580,821,904
Vanderbilt	\$562,901,434
Michigan	\$539,714,442
Mount Sinai-Icahn	\$538,711,898
Baylor	\$504,480,121
Mayo-Alix	\$477,023,985
Colorado	\$476,684,136
New York University	\$466,599,605
Cornell-Weill	\$459,253,763
North Carolina	\$454,599,476
Emory	\$432,183,058
Northwestern-Feinberg	\$431,580,167
Case Western Reserve	\$425,590,038
MARYLAND	\$421,340,017
Southern Cal-Keck	\$371,197,845
Oregon	\$362,866,092

SPONSORED DIRECT EXPENDITURES PER
PRINCIPAL INVESTIGATOR (External Grant Funding)



Source: AAMC: Medical School Profile System, Institutional Data Table, as of 6/25/2019. Institutional Data Table last updated 6/25/2019.



MAJOR RESEARCH DEVELOPMENTS
HISTORIC DRONE TESTING

In a first-ever advance in human medicine and transplantation, an unmanned aircraft delivered a donor kidney to surgeons for successful transplantation into a patient with kidney failure. Transplant physicians and researchers at the UMSOM and UMMC in Baltimore joined aviation and engineering experts at the Unmanned Aircraft Systems Test Site, part of the A. James Clark School of Engineering at the University of Maryland, College Park, to complete this landmark flight.

STUDY OF THE ADOLESCENT BRAIN
The new Center for Advanced Imaging Research (CAIR) in Health Sciences Research Facility III is part of a multi-site clinical research project, the Adolescent Brain Cognitive Development (ABCD) study, to understand the development of the adolescent brain. The CAIR's researchers have enrolled more than 600 children, who will complete activities and interviews, have brain imaging performed, and have biospecimens collected every other year from age nine through 19. With this data and results from more than 11,000 participants across the country, the researchers will gain critical insight into how genetics, culture, and environment influence neurocognition, mental health, social behavior, and emotional function.



CENTER FOR INNOVATIVE
BIOMEDICAL RESOURCES (CIBR)

INTEGRATION AND CO-LOCATION OF
MOST OF UMSOM RESEARCH CORES

CIBR GROWTH

The CIBR made significant investments over the past year in new resources in order to provide the most effective support possible for UMSOM investigators conducting basic, pre-clinical, and translational research.

THE TWO NEWEST ADDITIONS ARE:

- A FEI Talos Cryoelectron Microscope, which will advance structural studies of large macromolecular complexes and drug development initiatives.
- A Nikon Q1 Spinning Disk Confocal Microscope, which enables multicolor imaging of live samples. The new confocal microscope setup also includes a Hamamatsu sCMOS camera for capturing high-resolution images and software for performing automated image reconstruction. Additional equipment and upgrades to existing equipment are pending through National Institutes of Health (NIH) shared instrumentation grants. These include a new Seahorse System for measuring cellular metabolism and upgrades to a confocal microscope.

NEW SERVICES INCLUDE:

- A new CRISPR service for gene editing will initially be provided through the Translational Core Laboratory and may develop into a stand-alone core as demand for this service grows. Tami Kingsbury, PhD, Assistant Professor of Physiology, directs the CRISPR service.
- A new Virus Vector Core is currently under review. This core, directed by Ramesh Chandra, PhD, Research Associate in Anatomy and Neurobiology, will provide stock viruses, custom vectors, expression validation, and shRNA screening, among other services related to the use of viruses as vectors.

CIBR METRICS OF SUCCESS

\$123M: Total value of research supported by CIBR Cores (direct & indirect costs combined);

350 publications utilized the CIBR Cores, with 14 percent of these publications using more than one Core over an 18-month period;

365 different PI Labs, with 20 percent more labs using CIBR Cores;

465 different sponsored grants/contracts invested funds at CIBR Cores.

TECHNOLOGY ADVANCEMENTS

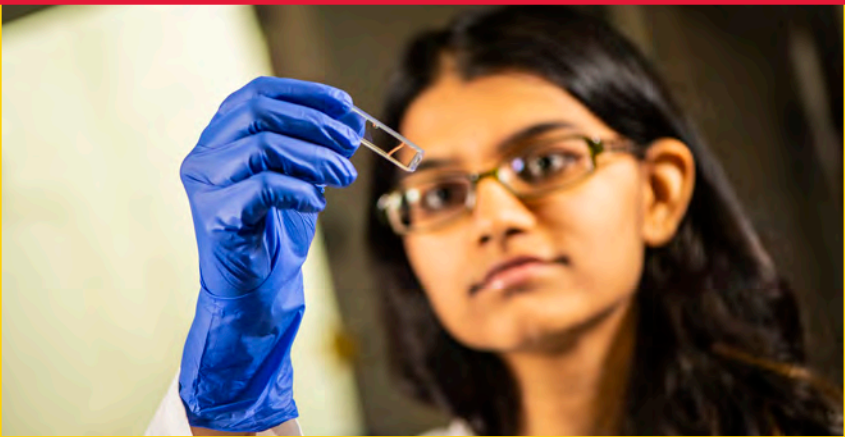
UMSOM has had significant activity in commercializing discoveries and creating economic impact through new business ventures and technology transfer over the past five years.

TECHNOLOGY TRANSFER

	FY15-FY19
Scientific Disclosures (UMSOM Lead Investigator)	553
U.S. Patents Issued	123
Foreign Patents Issued	217
Technology Inventions Licensed	203
License Agreements	71
New Start-Up Companies Formed	30

NEW FUNDING FOR ARTIFICIAL LUNG SYSTEM

Baltimore-based medical device startup Breethe, Inc., raised \$6 million in funding in FY19, in a round that could be worth up to \$8 million. Overall, the company has raised more than \$16 million since 2015 through six separate offerings. The company was co-founded by UMSOM's Bartley P. Griffith, MD, Thomas E. and Alice Marie Hales Distinguished Professor in Transplant Surgery and Director of the Cardiac and Lung Transplant Programs. Breethe is developing a wearable artificial lung system that patients can take home with them from the hospital, called the OXY-1 System. UM Ventures, UMB's research and technology commercialization arm, licensed the technology to Breethe in 2015. Dr. Griffith has been working on the technology for more than 20 years.



INVENTION TO TREAT ACUTE LUNG INJURY

GEN1E Lifesciences Inc. (GEN1E), a pre-clinical stage biopharmaceutical company, entered into an exclusive option agreement with the University of Maryland, Baltimore, to license a patent application for an invention targeted at the treatment of acute lung injury/acute respiratory distress syndrome (ALI/ARDS). The inventors are Paul S. Shapiro, PhD, and Alexander D. MacKerell Jr., PhD, of the University of Maryland School of Pharmacy, and UMSOM's Jeffrey D. Hasday, MD, Professor of Medicine.



NEW FUNDING FOR NEXTSTEP ROBOTICS

Baltimore startup NextStep Robotics closed a \$600,000 funding round (provided in part by UM Ventures) to further develop its stroke rehabilitation device. The company's robotic device is designed to treat foot drop, which is a common challenge encountered by stroke survivors that inhibits them from lifting a toe while walking. This limits mobility and presents a risk of falling. Worn by patients, the device itself has software that is designed to personalize the physical therapy that can help regain mobility. NextStep's technology is based on 10 years of research at the UMSOM and the Baltimore VA Center for Excellence in Exercise and Robotics for Neurological Disorders. NextStep is led by director Richard Macko, MD, professor of Neurology, Medicine, and Physical Therapy & Rehabilitation Science. Dr. Macko first developed and field tested the alpha prototype of the robotic device.



FDA CLEARS FIRST ULTRASOUND-BASED SYSTEM FOR PLACING FEEDING TUBES

CoapTech LLC received FDA 510(k) clearance for its PUMA-G System in early April. The PUMA-G System, which is the world's first and only ultrasound-based system for placing enteral feeding tubes, allows physicians to place gastrostomy tubes at the point of care. The technology was developed by UMSOM's Steven P. Tropello, MD, MS, Assistant Professor in Emergency Medicine. UM Ventures participated in CoapTech's initial financing seed round last year.



EXCLUSIVE LICENSE FOR NOVEL CANCER TREATMENT

UM Ventures granted Educational & Scientific, LLC (ESL) an exclusive license for a novel cancer treatment involving the development of Galeterone, a molecule with the potential to inhibit prostate cancer growth in patients with castration-resistant prostate cancer. The molecule was developed as a potential therapeutic agent by UMSOM's Vincent C.O. Njar, PhD, Professor of Pharmacology and head of the Medicinal Chemistry Section, Center for Biomolecular Therapeutics in the Institute for Bioscience and Biotechnology Research, and the late Angela Brodie, PhD, Professor Emeritus in the Department of Pharmacology.



TOP UMSOM SCIENTISTS RECEIVE PRESTIGIOUS APPOINTMENTS

UMSOM genomics scientist Claire M. Fraser, PhD, the Dean's Endowed Professor, Department of Medicine, and Director of the Institute for Genome Sciences (IGS) was appointed President-Elect of the American Association for the Advancement of Science (AAAS). AAAS is the world's largest multidisciplinary scientific society and a leading publisher of cutting-edge research through its Science family of journals.



Kathleen Neuzil, MD, MPH, Professor of Medicine and Pediatrics and Director of the Center for Vaccine Development and Global Health at UMSOM, was named to the World Health Organization's Strategic Advisory Group of Experts on Immunization. Dr. Neuzil was also elected as a member of the prestigious National Academy of Medicine, in recognition of her pivotal research that has informed and shaped global vaccine and public health policy. Membership in the Academy is considered one of the highest honors for individuals who have made major contributions to the advancement of the medical sciences, health care, and public health. Dr. Neuzil becomes the eighth elected from the UMSOM.



CLINICAL CARE



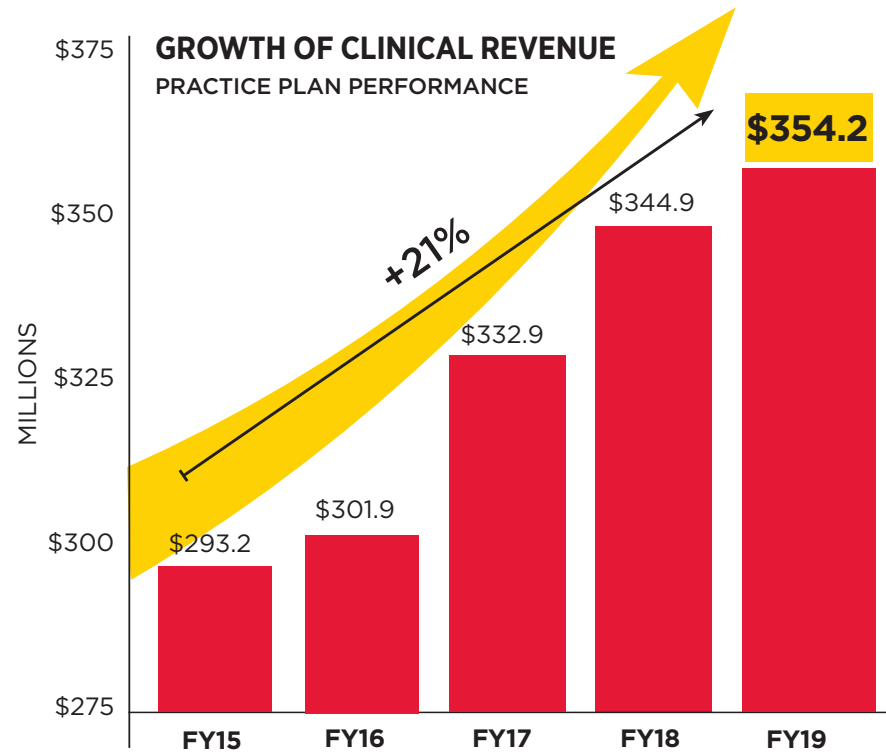
UMSOM Dean Reece and University of Maryland Medical Center President and CEO Mohan Suntha, MD, MBA, work collaboratively as partners in providing discovery-based medicine and providing expert care for patients, while leading fundamental and clinical research, and educating a large percentage of physicians in Maryland.

Steady increases in clinical revenue are essential to maintaining strong financial footing while promoting research and educational programs. The UMSOM strengthened its position in FY19 with a 2.7 percent increase in clinical revenue, a 21 percent increase over the past five years.

FY19 saw a range of new developments in Clinical Care, as the UMSOM continued its strong partnership with UMMC. Many clinical programs were recognized nationally for their leadership and excellence.

Patient volumes continued to increase during FY19 along with clinical revenues. Surgical volumes reflected growing trend of outpatient surgeries vs. inpatient surgeries. Accounts Receivables continued strong and mostly stable compared to FY18.

As a result of the ongoing close partnership between the UMSOM and the University of Maryland Medical System (UMMS), the region's premier clinical healthcare system, the UMSOM has continued to expand its clinical practices across the state, with more than 60 sites — most located near the 14 hospitals within UMMS. The UMSOM clinical practices achieved a total revenue in FY19 of \$354.2 million. This growth ensures that UMSOM and UMMS offers the highest standard of excellence in quality-driven, patient-centered care.



15,089
TOTAL INPATIENT SURGERIES

VISIONARY VANGUARD
**PERFORMS THE MOST
COMPLEX SURGERIES**
Sunjay Kaushal, MD, PhD
Professor of Surgery and
Chief, Pediatric Cardiac Surgery

UMSOM FACULTY PRACTICE PERFORMANCE

Patient Care Statistics	FY18	FY19	Change
Total Patient Volumes (includes office, ASC, and inpatient/outpatient visits)	1,479,097	1,633,795	+10.5%
Admissions (UMMC only, includes newborns and trauma)	29,316	25,900	-11.7%
Inpatient Surgeries (UMMC only, GOR & STC)	15,598	15,089	-3.3%
Outpatient Surgeries (UMMC only, GOR & STC)	7,336	7,724	+5.6%
Key Indicators for Billing and Collections			
Days in Accounts Receivable	33	33	0
% of Accounts Receivable>90 Days	16.9%	15.5%	-1.4%
Denial Rate (Initial Denials)	5.8%	5.77%	-0.03%
% of Credit Balances to AR	1.9%	1.3%	-0.6%

TOP RANKINGS, TRAINING, AND AWARDS
TOP 50 IN THE NATION
The Children’s Heart Program at the University of Maryland Children’s Hospital (UMCH) is once again ranked among the nation’s top 50 Pediatric Cardiology and Heart Surgery Centers, according to the 2019-20 edition of the *U.S. News & World Report* Best Children’s Hospitals. There are nearly 200 qualified pediatric centers in the country. Among children’s hospitals nationally, the Children’s Heart Program at **UMCH** ranks **32nd, moving up nine positions** from last year, when the program was ranked 41st in the nation.

“It is an honor for our Children’s Heart Program to be recognized a second time as being among the very best in the nation,” says **Steven J. Czinn, MD**, Chair of the Department of Pediatrics at UMSOM and Director of UMCH.



INNOVATIVE SIMULATION TRAINING TO IMPROVE MATERNAL AND INFANT CARE
The R Adams Cowley Shock Trauma Center hosted the **first simulation training course in the mid-Atlantic region** for health care professionals to prepare them for a **Cesarean section delivery of a baby from a woman experiencing a heart attack**. The simulation training program was developed and administered by **Samuel M. Galvagno Jr., DO, PhD, MS, FCCM**, Professor of Anesthesiology and Deputy Director, Shock Trauma Go-Team.

TOP DOCS
More than 70 faculty were named as 2018 “Top Docs” by *Baltimore Magazine*.

CENTER OF EXCELLENCE
The Hypertrophic Cardiomyopathy Program at the **University of Maryland Heart & Vascular Center** was designated as a **Center of Excellence** by the Hypertrophic Cardiomyopathy Association (HCMA) — one of about 30 Centers of Excellence nationwide and the only HCMA-recognized center in Maryland.

MARS TEAM WINS UMB ENTREPRENEURSHIP AWARD
UMSOM’s **Steven I. Hanish, MD**, Visiting Associate Professor of Surgery, **Thomas M. Scalea, MD, FACS, FCCM**, The Honorable Francis X. Kelly Distinguished Professor in Trauma Surgery, and **Deborah Stein, MD, MPH, FACS, FCCM**, formerly the R Adams Cowley, MD Professor in Shock and Trauma, were all named “Entrepreneurs of the Year” by the University of Maryland, Baltimore (UMB) for their liver dialysis device called the **Molecular Absorbent Recirculating System (MARS)**.



PREVENTING NICU STAPH INFECTIONS
UMSOM’s Center for Vaccine Development and Global Health researchers completed a clinical trial involving multiple sites that tested the effectiveness of applying a **topical antibiotic known as mupirocin for prevention of Staphylococcus aureus infection** in babies in the Neonatal Intensive Care Unit.



VISIONARY VANGUARD TOP DOC
Kimberly M. Lumpkins, MD
Assistant Professor, Department of Surgery
Associate Program Director, General Surgery Residency
President of UMSOM-WIMS

NEW CLINICAL PROGRAM DEVELOPMENTS
A NEW FIRST FOR PROTON CENTER
The Maryland Proton Treatment Center (MPTC) became the **only center in the world to offer deep-tissue external thermal therapy in combination with high-precision proton-beam radiotherapy** as a potential way to boost survival chances for certain cancer patients. **Robert C. Miller, MD, MBA, FASTRO**, was appointed as the MPTC’s new Medical Director and as a Professor in the UMSOM Department of Radiation Oncology.



PALLIATIVE MEDICINE
UMSOM’s Department of Medicine established a **new Division of Palliative Medicine, providing specialized patient care** for those living with a serious illness.

NEW BEHAVIORAL HEALTH UNIT MEETS COMMUNITY NEEDS



The University of Maryland Medical Center-Midtown Campus debuted its new 24,000 square-foot adult inpatient behavioral health unit. The new facility will set a new standard for optimizing patient experience, safety and comfort in a state-of-the-art environment designed specifically for these patients. **The new unit is led by Stephanie R. Knight, MD**, Assistant Professor of Psychiatry at the UMSOM, and Chief of Psychiatry, University of Maryland Medical Center-Midtown Campus.



“TOMORROW”
The UMSOM Department of Surgery and the Division of Vascular Surgery launched “Tomorrow,” a new clinical initiative designed to provide faster access to care for patients suffering from vascular problems.

NEW LEADERSHIP FOR PATIENT COMMUNICATION PROGRAM

Joseph Martinez, MD, FACEP, FAAEM, Associate Professor of Emergency Medicine, was appointed as Lead Physician for the **Program for Excellence in Patient-Centered Communication (PEP)**, replacing David Schwartz, MD, who retired.



EDUCATION

In 2019, of the 52,777 MD applicants attempting to gain admission in U.S. medical schools, 5,185, nearly 10 percent, applied to the University of Maryland School of Medicine. A total of 148, ranging in age from 21 to 35, matriculated into the Class of 2023. Sixty-one percent of the students are Maryland residents. The Class of 2023 came from 68 different colleges and universities, boasting an overall grade point average of 3.82 and an average MCAT score of 514, both above the national average.

Women were once again the majority of incoming MD students, comprising 60 percent of the incoming class. The UMSOM maintained last year's increase in underrepresented minorities, with 13 percent in the Class of 2023.

While the number of MD students at UMSOM comprises nearly half of the total student enrollment of 1,235, the student body also includes 22 Medical and Research Technology (BS) students, 192 Physical Therapy (DPT) and 234 Doctor of Philosophy (PhD) students, 122 Master's degree students, and 8 earning a clinical research certificate.

DEGREES CONFERRED

In FY19, UMSOM conferred degrees on 345 students, including 163 new physicians, 7 of whom received dual degrees. NIH Official Diana Bianchi, MD, Director of the Eunice Kennedy Shriver National Institute of Child Health and Human Development, delivered the UMSOM Graduation Keynote Address to the 210th Graduating Class on May 19, 2019.

Dr. Bianchi received the Dean's Distinguished Gold Medal, along with longtime Associate Dean for Admissions Mickey Foxwell, MD, and distinguished alumnus Morton Mower, MD, Class of 1959, an esteemed physician, physicist, and inventor. In the other UMSOM programs, 61 graduated with Doctor of Physical Therapy degrees from the Department of Physical Therapy & Rehabilitation Science; 9 completed the Masters in Genetic Counseling degree; there were 11 Medical and Research Technology graduates; 23 earned Master of Public Health degrees; 31 received MS degrees; and 46 earned PhDs.

TOTAL STUDENT ENROLLMENT

Program	2019	Diversity
MD	603	14.4%
MD/PhD	54	20.4%
PhD	234	17.9%
Graduate (MS)	63	17.5%
Public Health (MPH)	41	24.4%
Physical Therapy (DPT)	192	14.1%
Genetic Counseling (MGC)	15	0%
Medical and Research Technology (MS)	3	100%
Medical and Research Technology (BS)	22	36.4%
Clinical Research Certificate	8	12.5%
Total	1,235	16.2%

MD CLASS OF 2023 STATISTICS

Total Students	148
Female	60%
Male	40%
Maryland Residents	61%
Non-Resident	39%
Age Range (Years)	21-35
Students of Color (Self Reported)	54%
Underrepresented Minorities	13%
Colleges/Universities Represented	68
Average Overall GPA	3.82
Average MCAT	514

2019 GRADUATES

MD	156
MD/PhD	7
PhD	46
Graduate (MS)	31
Public Health (MPH)	23
Physical Therapy (DPT/PhD)	61
Genetic Counseling (MGC)	9
Medical and Research Technology (MS)	10
Medical and Research Technology (BS)	1
Clinical Research Certificate	1
Total	345



VISIONARY VANGUARD
FROM NIGERIA
Ololade 'Lola' Sanusi
MD Class of 2020

5,185
UMSOM MD APPLICANTS



GRADUATE PROGRAM IN LIFE SCIENCES

Students in our Graduate Program in Life Sciences (GPILS) appeared as authors in 270 publications last year, 110 of which had a GPILS student as first author. They had grants worth \$850,275 in funding. Among the 58 new MS and PhD students, 55 percent were female, and 17 percent were underrepresented minorities.



STEM OUTREACH RECOGNIZED

Michelle Giglio, PhD, an Associate Professor in the Department of Medicine and senior scientist in the Institute for Genome Sciences at UMSOM, was chosen as University of Maryland, Baltimore 2019 Public Servant of the Year, for her passion in promoting STEM (science, technology, engineering, and math) education to underserved students in Baltimore.

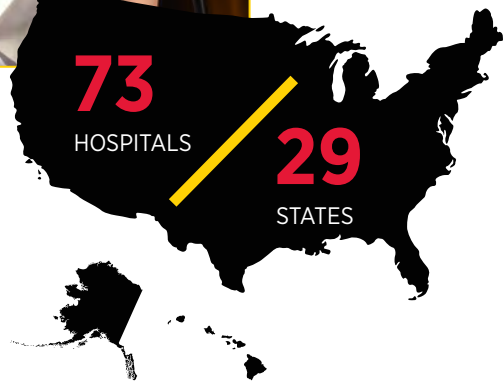


MATCH DAY

This year's Match Day was another overwhelming success, with 162 students matching at 73 different hospitals in 29 states. Significantly, out of 162 members of the class of 2019 who matched, 43 matched at UMMC with 57 staying in Maryland. The total UMSOM match rate was 99 percent, compared to the national rate of 94 percent.



99%
UMSOM MATCH RATE



MD CURRICLUM RENEWAL

A major MD curriculum renewal is underway. A planning session was held in January 2019 with a specific renewal recommendation planned for 2020. The retreat was attended by nearly 100 UMSOM faculty, students, and staff, broadly representing multiple disciplines as well as both basic and clinical sciences.

THE DISCUSSIONS FOCUSED ON FOUR KEY THEMES:

- 1. Core Values;
- 2. Gaps and Longitudinal Themes;
- 3. Innovative Education Strategies; and
- 4. Program Challenges.

The goal of the renewed medical school curriculum is to prepare our graduates to be “Renaissance Physicians” — outstanding clinicians, scientists, academicians, and leaders of tomorrow who will use their medical school education as a platform for life-long learning throughout their careers. The redesigned curriculum will employ an integrated, system-based learning approach that will align with the way students and physicians process information to evaluate optimal patient care. The new “Renaissance Curriculum” will be implemented beginning in the fall of 2020 with the class of 2024.



\$4 MILLION

DIRECT SUPPORT TO UMSOM STUDENTS

During the 2018-19 academic year, the UMSOM awarded more than \$4 million in direct support to our students. Of that total, almost \$2 million was awarded in the form of diversity scholarships to 65 medical students.

ACADEMIC LEADERSHIP TRANSITIONS

Leadership changes were announced in both the Office of Admissions and Student Affairs, elevating women to senior positions.

Donna Parker, MD, who was Associate Dean for Student Affairs, was promoted to Senior Associate Dean for Undergraduate Medical Education. Dr. Parker now oversees the Office of Student Affairs, the Office of Medical Education, the Office of Admissions, and the Office of Student Research for the UMSOM.



Sandra Quezada, MD, MS, who was Interim Associate Dean for Admissions, was promoted to Associate Dean for Medical School Admissions and serves as the Senior Admissions Officer for the UMSOM.



Elizabeth Lamos, MD, was promoted to Assistant Dean for Student Affairs. She serves on the staff of the Office of Student Affairs, providing counseling and mentoring to medical students for the UMSOM.



COMMUNITY IMPACT

The University of Maryland School of Medicine has long realized its responsibility to serve the healthcare needs of its West Baltimore community neighbors and the State of Maryland. To meet this need, the UMSOM has launched several initiatives to address some of the most critical public health issues in our community.

NEW RURAL RESIDENCY PROGRAM

UMSOM Dean Reece and David Stewart, MD, Associate Professor and Chair of the Department of Family and Community Medicine, jointly announced that the Health Resources and Services Administration (HRSA) awarded a \$750,000 grant to establish a residency program in Maryland's rural Eastern shore communities. This grant is part of a larger \$20 million multi-year initiative by HRSA to expand the physician workforce in rural areas by developing new, sustainable residency programs in family medicine, internal medicine, and psychiatry. Jason Ramirez, MD, Assistant Professor of Family Medicine, is director of the program.



NEW CENTER HELPING PATIENTS

Top officials gathered for the Grand Opening of the JACQUES Initiative Journey Center, a program of UMSOM's Institute of Human Virology to help those in need with HIV and Hepatitis-C. The event highlighted the importance of supporting Baltimore's most vulnerable citizens who are living with these diseases.



EASTERN SHORE OPIOID CRISIS MOBILE SYSTEM

In Denton, MD, health and addiction treatment officials from the Caroline County Health Department, the Maryland Department of Health, the Maryland Opioid Operational Command Center, and UMSOM, launched the Eastern Shore Mobile Care Collaborative, a mobile system designed to provide state-of-the-art treatment for opioid disorders to those in need.

READING ON THE BRAIN

Baltimore City Mayor Bernard C. "Jack" Young joined 4th and 5th grade students at Callaway Elementary School to paint a mural. It was part of Reading on the Brain, an UMSOM program to teach young students about the importance of reading and how reading can stimulate brain development and inspire success. Tracy Bale, PhD, Professor of Pharmacology, is leading the pilot program.



12TH ANNUAL MINI-MED SCHOOL FOR KIDS

For five consecutive weeks in the summer, students learned about heart health, bleeding emergencies, nutrition, substance abuse, physical activity, safety, concussions, and seatbelt safety, through kid-friendly interactive sessions during UMSOM's Mini-Med School for Kids program.



600+

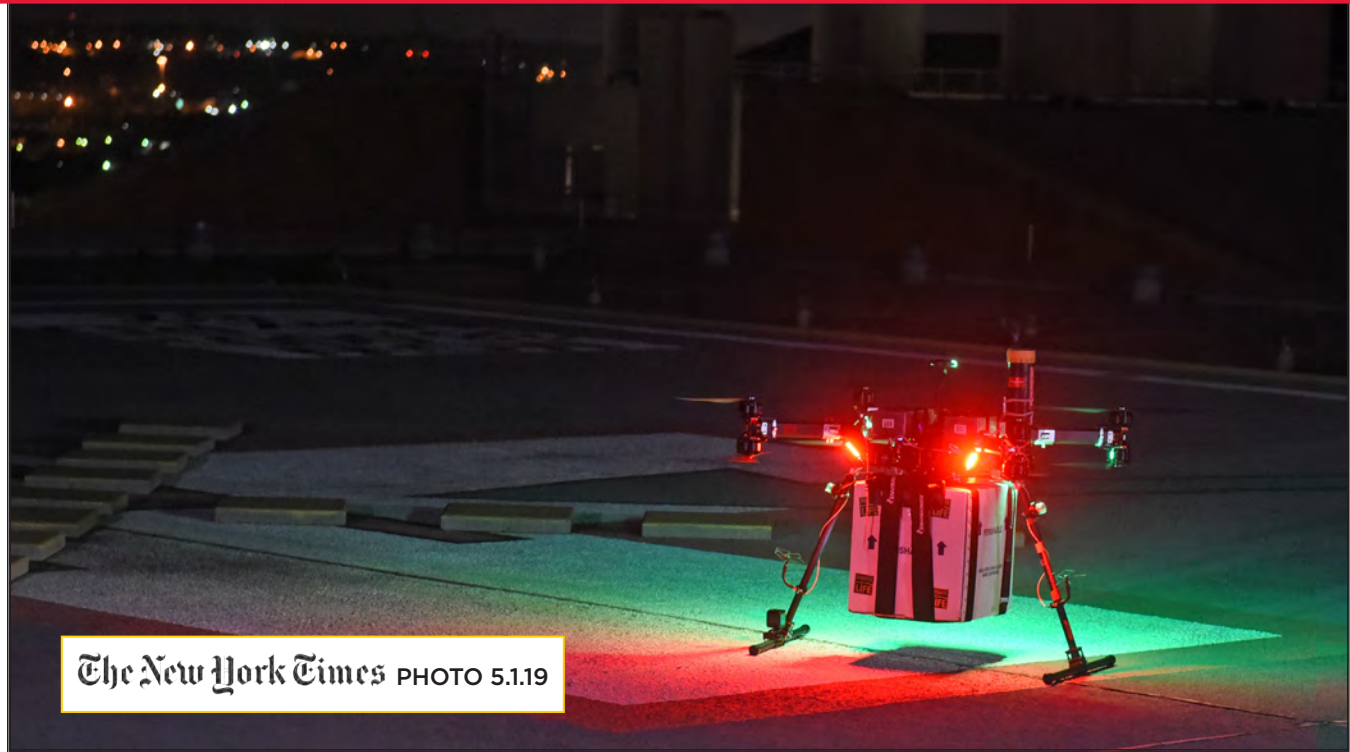
BENEFITED FROM MINI-MED SCHOOL FOR KIDS

VISIONARY VANGUARDS OF THE FUTURE

Kaylee Washington and Christopher Griffin
Baltimore City Students



RECOGNITION & VISIBILITY



The New York Times PHOTO 5.1.19

The University of Maryland School of Medicine reached new levels of visibility and recognition by communicating its compelling stories across a broad range of digital and traditional media platforms.

Overall, during FY19, the UMSOM, its faculty, programs, and activities were covered in nearly 5,000 news stories, reaching a total audience of more than 200 million worldwide.

4,944 **200M+**
TOTAL STORIES TOTAL AUDIENCE
WORLDWIDE

f FACEBOOK +9%
LINKEDIn +8%
TWITTER +13%

MAJOR UMSOM NEWS STORIES DURING FY19 DROVE THESE RECORD TOTALS:

- **UMSOM FIRST TO USE UNMANNED AIRCRAFT TO DELIVER KIDNEY FOR TRANSPLANT** received unprecedented international media coverage reaching millions of people:
 - *New York Times*
 - *CNN International*
 - *Fox News Channel*
 - *CBS News*
 - *U.S. News & World Report*
 - *USA Today*
 - Hundreds of media outlets in Japan, Africa, the UK and across Europe
- **CVD RECEIVES \$200M CONTRACT TO DEVELOP AND TEST A UNIVERSAL VACCINE FOR INFLUENZA** reached total audience of 112.3 million in one day alone. Major media coverage included:
 - *Washington Post*
 - National Public Radio
 - *U.S. News & World Report*
 - *Baltimore Sun*
 - Local TV news affiliates across the U.S.
- **UMSOM HELPS ADDRESS OPIOID CRISIS** received considerable media attention both regionally and nationally, including local television news stations in Baltimore and across Maryland and nationally via the *Associated Press*.



VISIONARY VANGUARD
LANDED IT!
Joseph Scalea, MD
Assistant Professor of Surgery

994
TOTAL UMSOM DRONE
STORIES WORLDWIDE

FINANCE & PHILANTHROPY

NEWLY ENDOWED PROFESSORS

Konstantin G. Birukov, MD, PhD, The Anesthesiology Endowed Professor in Entrepreneurial Research

Michael P. Grant, MD, PhD, The Paul N. Manson Distinguished Professor in Plastic and Reconstructive Surgery

James B. Kaper, PhD, The James and Carolyn Frenkil Distinguished Dean's Professor

Wei Chao, MD, PhD, FAHA, The Anesthesiology Endowed Professor in Translational Research

Margaret M. McCarthy, PhD, The James and Carolyn Frenkil Endowed Dean's Professor

J. Marc Simard, MD, PhD, The Dr. Bizhan Aarabi Professor in Neurotrauma

Terry J. Watnick, MD, The Joan B. & John H. Sadler, MD Professor in Nephrology

Of the University of Maryland School of Medicine's \$1.2 billion budget, only \$45.9 million comes from the state. While this support is essential, it is significantly less than the annual revenue needed to operate. As a result, the UMSOM must seek additional means of support. Tuition and fees contribute \$33.9 million. As for the rest, \$542.1 million comes from competitively secured grants, and \$535.4 million comes from reimbursements from hospital contracts and physician services.

UMSOM relies on private philanthropy to provide the discretionary funds needed to make up gaps in funding. Our philanthropy dollars are typically a combination of private, individual gifts, and foundation grants.

WE SECURED GIFTS AND COMMITMENTS OF \$52.8 MILLION IN FY19, WHICH WAS SIGNIFICANT IN MANY WAYS:

- The second highest fundraising total in five years.
- Good balance of private philanthropy (\$23.6M) and non-government research funding (\$29.2M).
- Included funding of two new endowed professorships and two new endowed distinguished professorships.
- More than \$3M in new gifts for the Dean's Academic Development Fund.
- \$1M for the interior restoration of Davidge Hall.

We are very grateful to all of our donors.

TOP PHILANTHROPIC GIFTS

\$14,966,524	Bill & Melinda Gates Foundation*
\$3,832,512	PCORI*
\$2,629,500	Maryland E-Innovation Initiative Fund Authority
\$2,500,000	Mr. Leonard L. Topper
\$2,208,000	University of Maryland Faculty Physicians, Inc.
\$1,806,440	University of Maryland Pediatric Associates, PA
\$1,765,274	Associated Black Charities*
\$1,500,000	Anonymous (Bequest)
\$1,154,900	Whiting-Turner Contracting Company
\$1,022,665	University of Maryland Medical System
\$620,000	Gilead Sciences, Inc.
\$599,429	American Heart Association*
\$510,365	Maurice N. Reid, MD
\$504,213	American Cancer Society*

*Sponsored Research Donor



2019 GALA - VITAL SIGNS, VITAL VICTORIES

More than 1,000 business and community leaders, donors, faculty, staff, students, and other distinguished guests gathered May 4, 2019 to celebrate the school's many victories in medicine through the extraordinary power of collaboration in our world-class achievements.

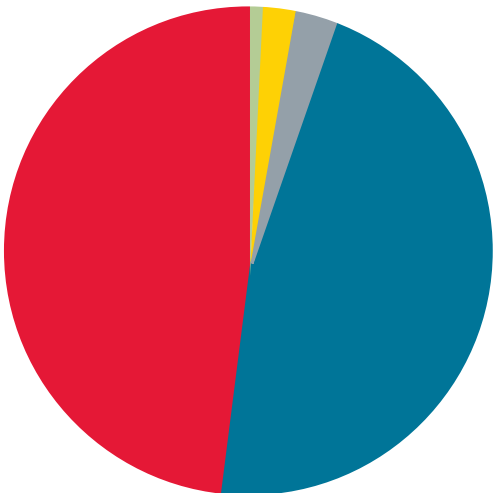
Honorary Gala co-chairs were Scott Rifkin, MD, CEO and co-founder of Mid-Atlantic Health Care, LLS, and his wife, Frances Rifkin, RN. "I have personally benefited from the vital victories for which the School of Medicine is widely known," said Dr. Rifkin, who shared a compelling story about his life-saving surgery, performed by UMSOM legendary surgeon R Adams Cowley, that altered the trajectory of his life.

Dean Reece highlighted the impact donors have had on advancing the work of the School and in the recruitment of students. The proceeds of this year's event support endowed scholarships. Class of 2019 President, Katy Eslami, shared her personal story of the invaluable opportunity created for her by receiving scholarship support when her family immigrated to the U.S. Katy is beginning her residency training in pediatrics at the University of Maryland Medical Center.



\$14,966,524

TOP PHILANTHROPIC GIFT



FY19 TOTAL REVENUE

\$542.1M	46.3%	Total Grants & Contracts
\$535.4M	45.7%	Reimbursements from Affiliated Hospitals & Medical Services Plan
\$45.9M	3.9%	State Appropriations
\$33.9M	3%	Tuition & Fees
\$13.2M	1%	Gifts, Endowments & Other Income

\$1.2 BILLION

PHILANTHROPIC VANGUARDS

Recognizing the outstanding work of select UMSOM faculty who have collaborated with the Office of Development to secure private funding in FY19.



Donna L. Parker, MD, FACP
Associate Dean for Student Affairs
Senior Associate Dean for Undergraduate Medical Education

\$500K pledge from Maurice N. Reid, MD '99 for **The Maurice Reid, MD Classroom Fund**, which provides current-use support for the renovation and maintenance of classrooms that will promote team-based learning, and

\$200K pledge from Carolyn J. Pass, MD '66 and Richard Susel, MD '66 to establish **The Carolyn J. Pass, MD '66 and Richard M. Susel, MD '66 Leadership Training and Innovation Fund**, which will provide endowed support for a faculty **"Train the Trainer"** program and a repository/reference library of teaching resources such as instructional videos and other teaching aids.



Margaret M. McCarthy, PhD
James & Carolyn Frenkil Endowed Dean's Professor
Chair, Pharmacology

James B. Kaper, PhD
James & Carolyn Frenkil Distinguished Dean's Professor
Vice Dean for Academic Affairs
Chair, Microbiology & Immunology



\$1.5M grant from Maryland E-Nnovation Initiative Fund Authority to establish the **James and Carolyn Frenkil Dean's Professorship Endowment**.



Graeme F. Woodworth, MD
Professor, Neurosurgery
Interim Chair, Neurosurgery

\$1.1M grant from Maryland E-Nnovation Initiative Fund Authority, and

\$1.0M gift from an anonymous donor to establish the **Howard M. Eisenberg, MD Distinguished Professorship in Neurosurgery**.



Bennie H. Jeng, MD
Professor and Chair, Ophthalmology & Visual Sciences

\$1.5M bequest pledge from an anonymous donor to establish an **endowed Professorship in Ophthalmology**.



Roger W. Voigt, MB, ChB, FRACS
Assistant Professor, Surgery
Division Head, Pediatric Surgery

Eric D. Strauch, MD
Associate Professor, Surgery



\$2.5M bequest pledge from Mr. Leonard L. Topper to establish the **Leonard Topper Distinguished Professorship in Pediatric Surgery**.



TRANSITIONS IN LEADERSHIP

Even as the UMSOM moves forward into its third century of excellence, we must pause to recognize and express our deep appreciation for these distinguished physician-scientists and academic leaders who have enabled our School, its faculty, and students to achieve so much. At the same time, we are extremely fortunate that a new generation of highly talented leaders are stepping into their roles, providing the added momentum to take our institution to even greater heights.



Michael Shipley, PhD
Leaves a Legacy as Anatomy and Neurobiology Chair

Dr. Shipley, the Donald E. Wilson, MD, MACP Distinguished Professor, the longtime Chair of the Department of Anatomy and Neurobiology, and the Founding Director of the UMSOM Program in Neuroscience, **stepped down after 25 years from his role as Department Chair and Program Director on July 31, 2019.** He will continue as a member of the faculty in the Department of Anatomy and Neurobiology.

Dr. Shipley, who joined the UMSOM faculty as Chair in 1994, is one of the world's leading experts on the neural organization of the region of the brain, called the olfactory bulb, that processes information about odors. **He currently has nearly \$5 million in grants from the National Institutes of Health.** Dr. Shipley recruited 27 tenure/tenure-track faculty members, all of whom achieved NIH R01 funding. The Department received more than \$9 million for FY18 and more than \$10 million in NIH grant funding for FY19.



Former UMSOM Dean Donald Wilson, MD, and Dean Reece congratulate Dr. Shipley on his career accomplishments.



Howard M. Eisenberg, MD
Continues on Faculty After Serving as Longtime Neurosurgery Chair

Dr. Eisenberg, a nationally recognized neurosurgeon, **stepped down after 23 years as Chair of the Department of Neurosurgery.** He returns to the full-time faculty of the UMSOM Department of Neurosurgery, retaining his title as the R.K. Thompson Professor of Neurosurgery while continuing his research in advancing surgical techniques, including gamma knife radiosurgery and image-guided focused ultrasound.

Dr. Eisenberg is recognized as one of the nation's top neurosurgeons and pre-eminent experts on traumatic brain injury and the blood brain barrier. As Chair of Neurosurgery, he has led a group of neurosurgeons and scientists in providing innovative programs that result in safer, less intrusive and more effective treatments.

Most recently, Dr. Eisenberg has been principal investigator for a pivotal study of Parkinson's disease. **This work has resulted in groundbreaking research and a clinical trial on focused ultrasound to treat essential tremor and Parkinson's disease, which has received extensive national and international attention.**



Dr. Eisenberg and his wife, Doris, enjoyed a special celebration in his honor.



Milford "Mickey" Foxwell, Jr., MD
Leaves Position as "Consummate" Associate Dean for Admissions

Dr. Foxwell, who served as Associate Dean for Admissions since 1990, **stepped down from his position to transition to a new consulting role in UMSOM Admissions.** Dr. Foxwell, a well-known and highly respected medical school admissions leader, has built a legacy that few in his field can match. In virtually every measure of admissions success — in particular, the quality and diversity of students — the UMSOM has risen to its highest levels in history during his tenure. **He was the 'face of UMSOM' to every student who applied to and/or matriculated into the MD Program at UMSOM over the past three decades and was the most influential administrator in the School in selecting the students who would become future physicians.**

"These three individuals deserve the heartfelt thanks from all of us at the UMSOM for their exemplary leadership and service. Drs. Howard Eisenberg and Michael Shipley have left an outstanding legacy in their respective departments as quintessential scientists and academic chairs. As a consummate Associate Dean for Admissions, Dr. Mickey Foxwell set the highest standards of excellence in serving as an outstanding representative for our institution."

– Dean Reece



Dr. Foxwell received applause and the Dean's Distinguished Gold Medal at graduation for his dedication to the UMSOM.

IN MEMORIAM

Michael E. Busch
Speaker of the Maryland House of Delegates



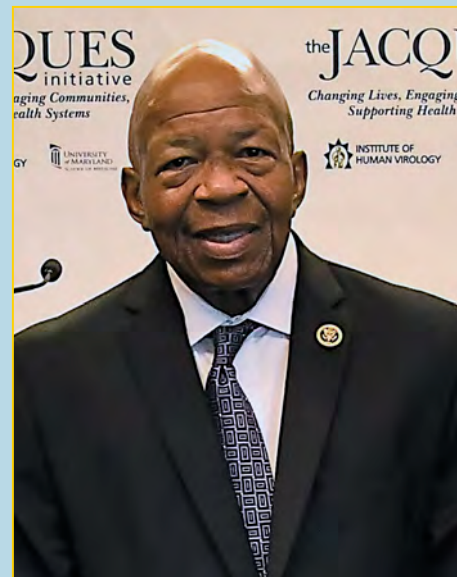
Michael E. Busch, the longest-serving House of Delegates speaker in Maryland history, and a tireless advocate for educational opportunity, passed away on April 7, 2019. A history teacher and varsity sports coach at St. Mary's High School in Annapolis before transitioning to government work, the Democratic Anne Arundel County delegate was selected as speaker by his peers in 2003. Under Speaker Busch's leadership, the University of Maryland, Baltimore (UMB) received a \$4 million grant to build a new Community Engagement Center to expand enriching programs and services in the neighborhoods near campus.

Following a successful 2017 liver transplant from his sister through the Living Donor Transplant Program at the University of Maryland Medical Center, Speaker Busch worked legislatively to improve transplant care and make it easier for living donors to donate an organ without incurring economic hardship.

"Speaker Busch was a champion for the healthcare industry across Maryland, and held an amazing knowledge of facts and figures and of policy decisions across our industry. He was a passionate advocate for the aligned missions of the School of Medicine and the Medical System, and his expertise, insights, and assistance were integral to the success of the academically centered health care system for the State of Maryland." – Dean Reece

The Honorable Elijah E. Cummings, JD '76
U.S. House of Representatives

A lifelong Baltimorean and a member of the U.S. House of Representatives representing Maryland's 7th District, the Honorable Elijah E. Cummings, JD '76, passed away on October 17, 2019. Congressman Cummings, who was in his 13th term representing Maryland in Congress, began his career in public service in the Maryland House of Delegates, where he served for 14 years and became the first African American in Maryland history to be named Speaker Pro Tem. In Congress, he notably served as the Chairman of the U.S. Committee on Oversight and Reform. He was also a longstanding member of the Board of Advisors to UMSOM's Institute of Human Virology (IHV). He most recently spoke at the grand opening of IHV's JACQUES Initiative Journey Center, which offers a wide range of free testing and services for HIV and Hepatitis-C patients. In addition, he championed such UMB-based educational enrichment programs as the Summer BioScience Internship Program.



"We have lost one of our dearest friends and most passionate advocates with the passing of Congressman Elijah Cummings. He dedicated his entire life to serving his community. He cared greatly and fought tirelessly for the things that mattered most — healthcare, education, clean air and water, and a strong economy. We will never forget the unwavering support he provided his entire career for biomedical research, and for providing access to health care for the neediest patients in our community" – Dean Reece

Message from Jay A. Perman, MD
President, University of Maryland, Baltimore



"Not only did Speaker Busch support UMB and our education mission broadly, he also played a major role in the development and success of MPowering the State. Through our partnership with the University of Maryland, College Park, MPower continues to stimulate joint academic and research programs that improve the human condition, just as Speaker Busch hoped it would. We also lost one of the University's greatest allies, staunchest advocates, and dearest friends. Representative Elijah Cummings was a hero to many, and I know legions will eulogize his extraordinary leadership in Congress; his long fight for racial, social, and economic justice; his life in service of the American people; and his unyielding work to improve our nation and our democracy." – Dr. Perman

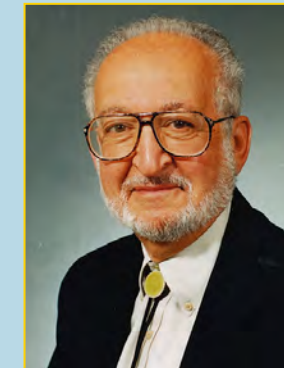


Conan So was a 4th year medical student who passed away on September 12, 2019.



Deirdre DeSantis Parsons, MS, MT (ASCP) SBB
Faculty

An Assistant Professor and Program Director of the Medical Laboratory Science Program in the Department of Medical and Research Technology, Ms. Deirdre DeSantis Parsons passed away on February 10, 2019. Ms. Parsons enjoyed a long and distinguished career at UMSOM as a medical laboratory scientist and educator while working as the program director of the UMSOM Medical Laboratory Science Program, the largest of four programs in the State of Maryland and one of the two largest in the Mid-Atlantic region. She also served as the Course Coordinator for undergraduate courses, including Immunohematology (Blood Banking), Professional Development, and the Comprehensive Review Course, which includes oversight of student clinical practicums in Chemistry, Hematology, Microbiology, and Immunohematology.



Edmund M. Glaser, PhD
Faculty

A Professor in the Department of Physiology of the University of Maryland School of Medicine from 1972 until his retirement in 1995, Dr. Glaser passed away on May 16, 2019. Following his service in WWII, he became attracted to the new fields of computers, information theory, and artificial intelligence. In 1963, while studying the complex morphology of the brain's cerebral cortex, he and a collaborating neuroanatomist at Johns Hopkins, Dr. Hendrik Van der Loos, formulated the design and the construction of the first computer microscope. Dr. Glaser went on to invent the Image Combining Computer Microscope, which combined all the aspects of computer microscopy in a single instrument, and which he subsequently patented in the U.S. In the 1980s Dr. Glaser formed the corporation MicroBrightField with his son, Jack Glaser.

THE GLASER PRIZE
In his honor, the Department of Physiology conducts a contest among its graduate students for the most artistic microscopic image. The winner receives "The Glaser Prize."



Thomas S. Monahan III, MD
Faculty

Dr. Monahan, a practicing vascular surgeon who worked to bring surgical care to the poor, to veterans, and to underserved parts of the community, passed away on September 12, 2019. Dr. Monahan graduated from the University of Massachusetts Medical School in 2001. While pursuing his medical degree, he began research in cardiovascular physiology. Upon completion of his degree, he trained in general surgery at the Beth Israel Deaconess Medical Center in Boston, Massachusetts, and matriculated to the University of California, San Francisco for a vascular surgery fellowship. He came to the Baltimore VA Medical Center and UMSOM in 2010.

THEY ALL WILL BE GREATLY MISSED.

LOOKING AHEAD: REACHING NEW HEIGHTS

As we continue to transform our culture and shape the future in new and dynamic ways, the UMSOM is poised more than ever to move forward with undaunted purpose to reach even greater heights. As in the past, we will work collaboratively and relentlessly to achieve a new set of milestones that will further accelerate our leadership trajectory for the future.

RESEARCH

- Elevate UMSOM to the top 10 percent of all U.S. medical schools;
- Continue to deepen and broaden research into areas of highest morbidity, mortality, and disability;
- Achieve transformational discovery and development of major diagnostics, therapeutics, and cures;
- Continue strong trajectory of securing robust federal grants and contracts.

EDUCATION

- Deliver exceptional medical education that fosters innovation and discovery, enhanced by the new “Renaissance Curriculum;”
- Produce 1/3 graduates with joint degrees;
- Produce 1/3 graduates trained as physician-scientists;
- Train all graduates competitively to be excellent clinicians, scientists, and leaders in medicine and science.



CLINICAL CARE

- Become the #1 destination of choice for advanced/complex diseases:
 - Cancer
 - Trauma and Critical Care
 - Neuroscience
 - Cardiovascular Medicine and Surgery
 - Transplantation
- Reduce the burden of infectious diseases:
 - HIV/AIDS
 - Malaria
 - Influenza
 - Zika Virus

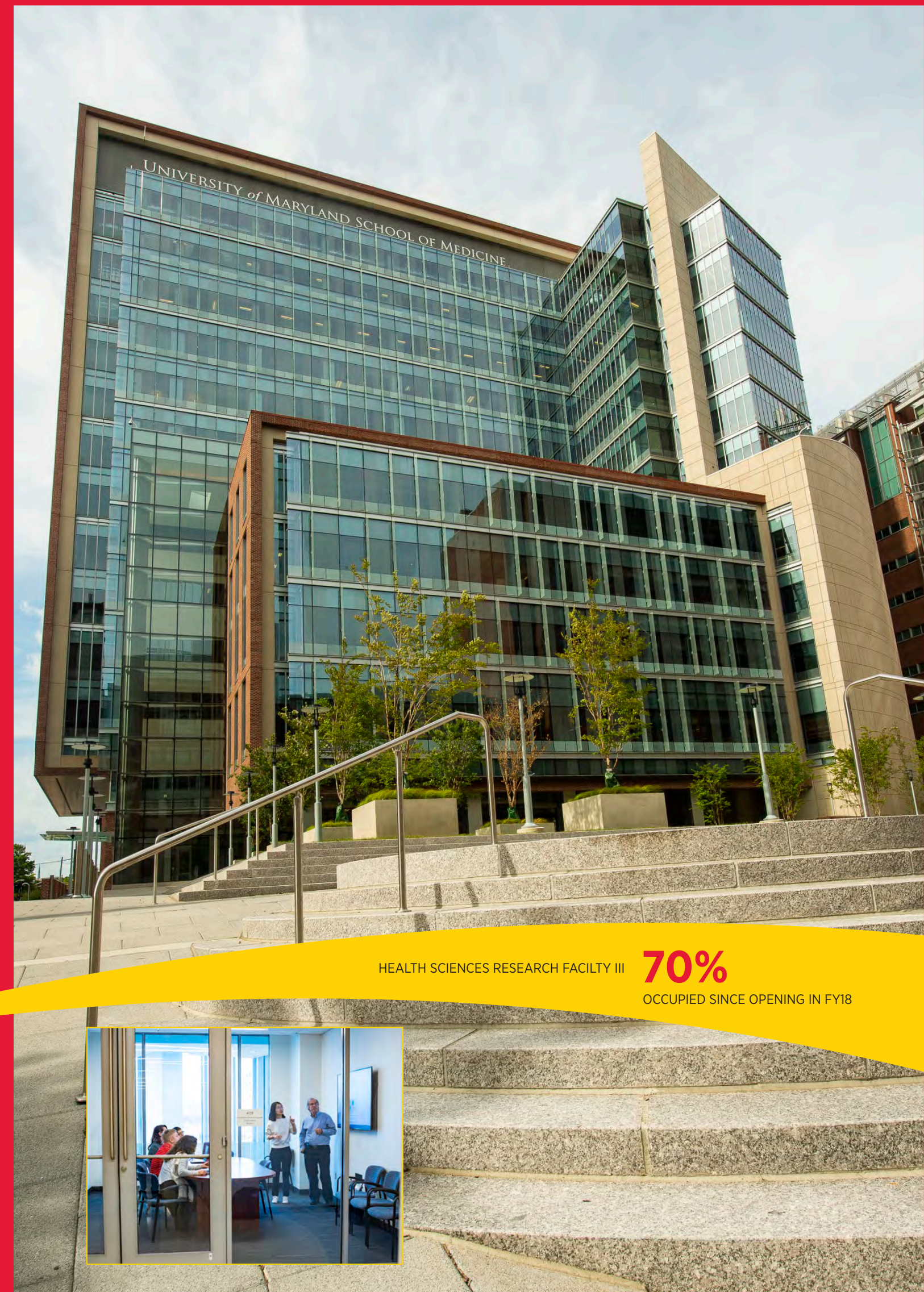
LEADERSHIP IN DIVERSITY, PROFESSIONALISM, AND COMMUNITY IMPACT

- Attain recognition as a premier institution that invests, promotes, and embraces diversity, inclusion, professionalism, and respect among faculty, staff, and students;
- Be at the forefront of combating health disparities;
- Continue to make significant and measurable impact by taking on the most challenging local and global health issues.

As we look ahead to 2020, all of us have a critical role to play in transforming our culture and reaching new heights — as Visionary Vanguarders for the UMSOM.

In the relentless pursuit of excellence,
I am sincerely yours,

E. Albert Reece, MD, PhD, MBA
Executive Vice President for Medical Affairs, UM Baltimore
John Z. and Akiko K. Bowers Distinguished Professor and
Dean, University of Maryland School of Medicine



HEALTH SCIENCES RESEARCH FACILITY III

70%

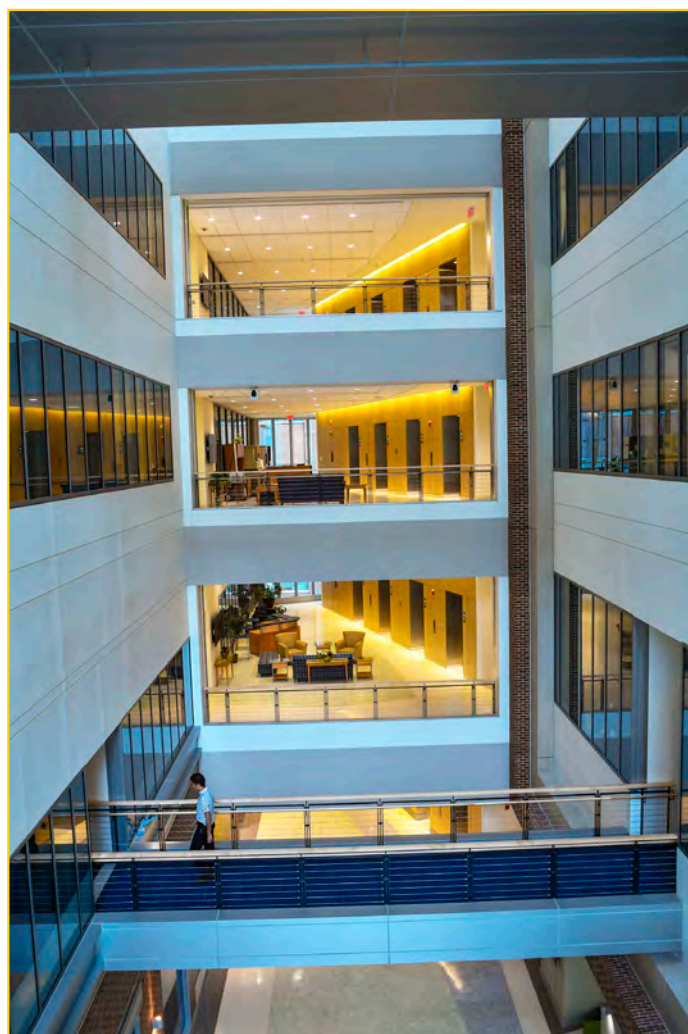
OCCUPIED SINCE OPENING IN FY18



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