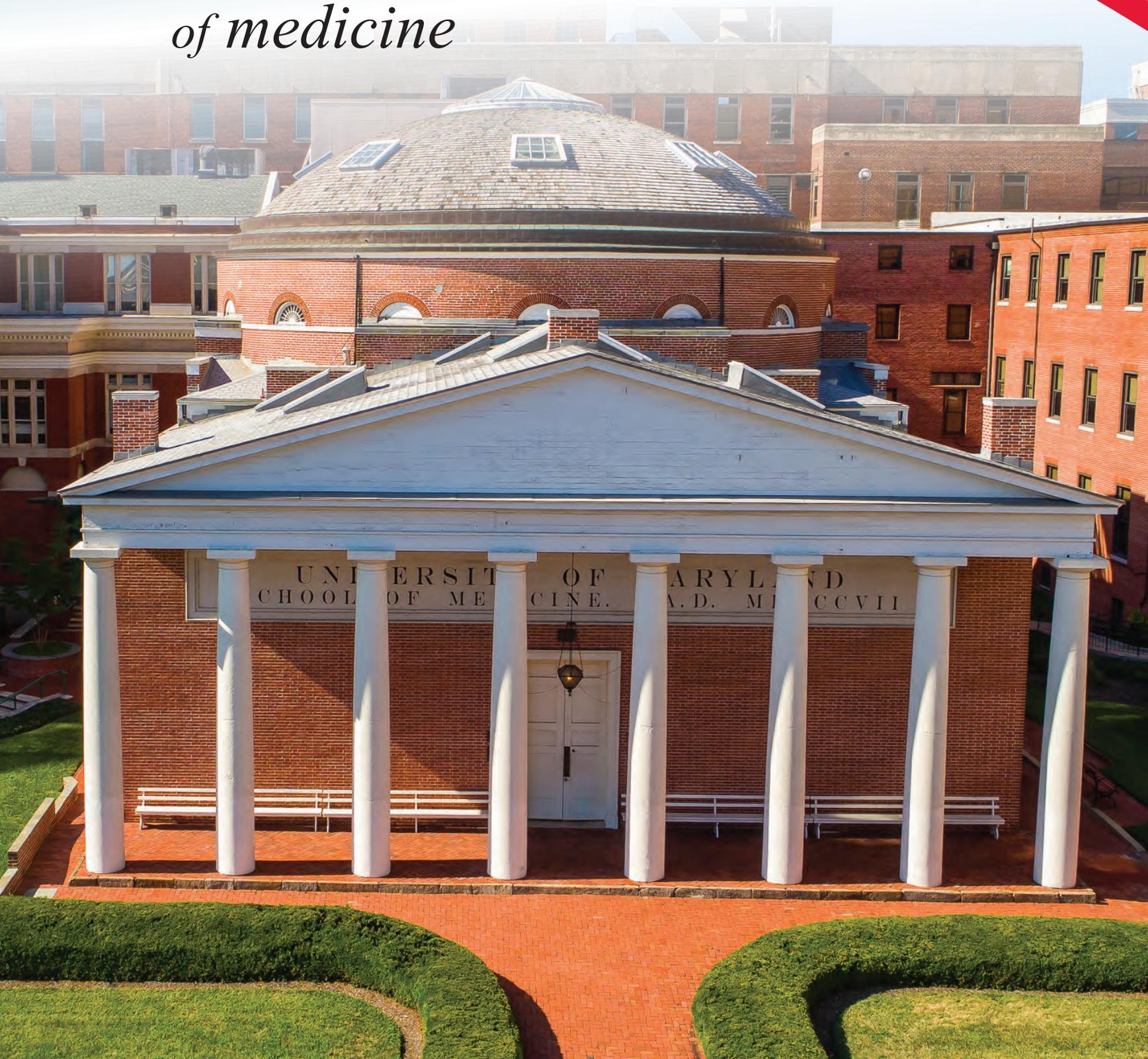


2017 State of the School Address



UNIVERSITY of MARYLAND
SCHOOL OF MEDICINE

CELEBRATING A THIRD CENTURY - 210 YEARS of
Transforming the *Trajectory*
of medicine





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HIGHLIGHT:

Anatomical Hall, located in our national historic landmark Davidge Hall, is where Marquis de Lafayette was awarded the first honorary doctorate from the University in 1824.



Third Century Reflections

It was December 28, 1807, when organizers gathered at the home of John Beale Davidge to chart out a plan for a new medical college. The legislation that had passed 10 days before to establish the college was no guarantee of its success. It was a series of events in early Baltimore and Maryland, and particularly the **dogged perseverance of its physicians**, that provided the essential building blocks for the new medical school.

The University of Maryland School of Medicine (UMSOM) was repeatedly challenged throughout its first two centuries. But, the UMSOM persevered and forged ahead. **Now, as we commemorate the School's 210th anniversary, we find ourselves standing on the shoulders of those giants who came before us. In particular, we recognize the strong leadership and stewardship of our three most recent deans, John H. Moxley, III, MD (1969-1973), MD, the late John M. Dennis, MD, (1973-1990) and Donald E. Wilson, MD, (1991-2006), who launched the UMSOM into its third century.**

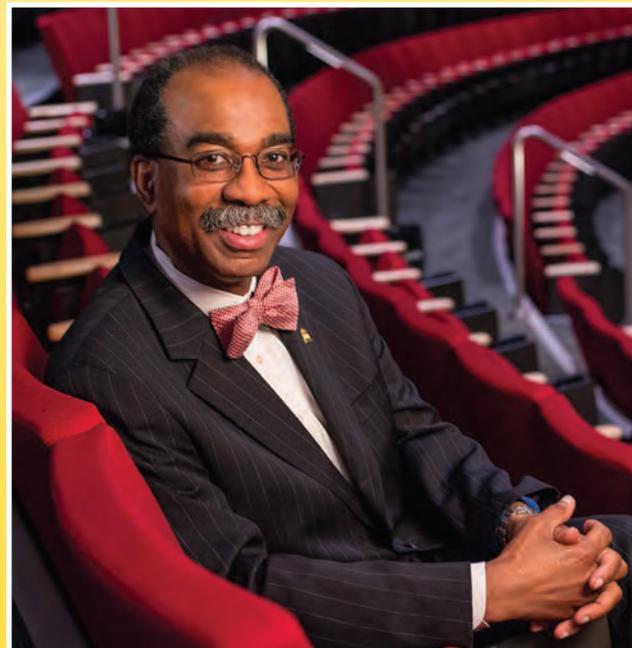
Building on their legacy, during the past 10 years, we have soared to even greater heights, with unprecedented growth and success in virtually every aspect of our key mission areas and our operations. We have become a global force in medicine and among the top echelon of biomedical research institutions. In the face of serious roadblocks along the way, we have consistently forged new pathways for growth through purposeful planning. We have engaged with leaders and key stakeholders in the UMSOM, the University of Maryland Medical System, University of Maryland, Baltimore and the University System of Maryland, along with board members, alumni, community leaders and friends.

No year has been more exemplary of our success than this past year: 2017. As you will see in the highlights of this past year, we have reached new levels across all measures of performance.

This year's State of the School Address, Transforming the Trajectory of Medicine, is noteworthy in several ways. As I deliver the address in our newly renovated Leadership Hall, I am grateful that we can celebrate

together the tremendous accomplishments of this past year. At the same time, we can reflect on our rich 210 years of history as an academic medical institution. **Facing every obstacle and challenge along the way, we have always remained undaunted in purpose and resilient in execution.**

Most importantly, this publication is a tribute to our academic community — our faculty, staff, students, residents, fellows, trainees, alumni, patients, donors — everyone who is part of the UMSOM community. As we now move forward together in our Third Century, you have always been — and will continue to be — the reason for our success!



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

E. Albert Reece, MD, PhD, MBA

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

2017: Year in Review



HIGHLIGHTS:

- Highest totals in research funding with a **12 percent increase over last year**. We have now made a full recovery from the sequestration downturn in 2013 and are on a new record-setting pace.
- Significantly **higher than last fiscal year in every measure of grants and contracts**, including an amazing 18 percent increase in grant submissions. The faculty is more productive than ever, and it is paying off.
- Launched our largest-ever recruitment initiative, with a goal of bringing in more top scientists and physician-scientists. Already, the initiative has yielded impressive results with **10 new highly-funded NIH investigators** (overall funding of \$30 million) — including national and international leaders in orthopaedics, neuroscience, diagnostic imaging, lung injury, and bioengineering.
- **Clinical revenues increased** for the 10th year in a row.
- Generated more than **\$52 million in total fundraising** in FY17. This year's total was particularly significant in that more than half of the amount raised (\$28.5 million) came from private philanthropy, with \$23.8 million coming from sponsored research.
- Worked closely throughout the year with the Liaison Committee on Medical Education (LCME), the U.S. Department of Education accrediting body for MD degree programs, on the **first phase of completing the accreditation process**.
- Our new research building, which will be **the largest academic facility in the entire University System of Maryland**, rose impressively toward the sky and is moving closer to completion.





With a complete top-to-bottom renovation, the UMSOM has dramatically transformed its 1970s-era Medical School Teaching Facility (MSTF) Auditorium into “Leadership Hall,” a bright, inviting and elegant space that will serve as UMSOM’s new signature venue for large events.

On May 15, 2017, Dean E. Albert Reece hosted a community-wide celebration to mark the reopening of the 8,000-square-foot facility, which now features a bright, contemporary design and seating for more than 700 people.



8,249

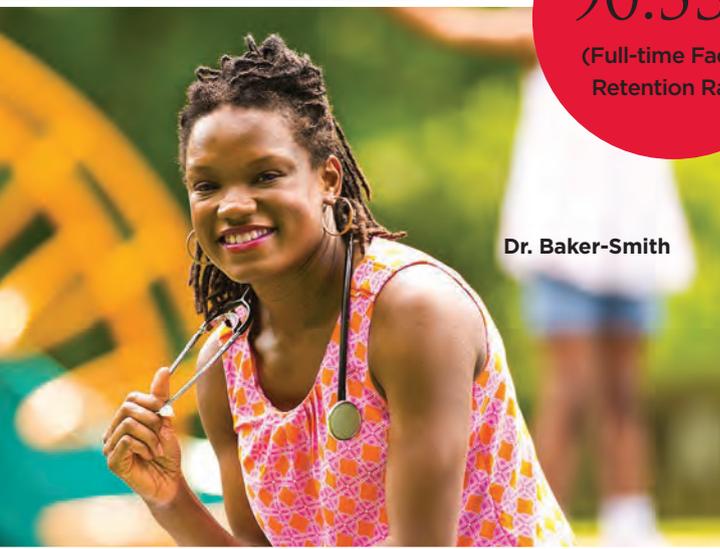
Total Workforce



Dr. Le

90.53%

(Full-time Faculty Retention Rate)



Dr. Baker-Smith

HIGHLIGHT:

Women are 40 Percent of our Full-time Faculty Workforce

2017: Year in Review

Workforce

The University of Maryland School of Medicine’s total workforce is 8,249 people and includes nearly 3,000 full-time, part-time and adjunct faculty and more than 3,100 staff members.

Of our 1,370 full-time faculty members, **40 percent are women and 11.24 percent are under-represented minorities. Our full-time faculty retention rate is 90.53 percent**, reflecting our continued commitment to providing a positive and productive work environment. Our workforce is also comprised of 521 clinical and research fellows and 657 residents.

The Chronicle of Higher Education listed University of Maryland, Baltimore, as one the **Great Colleges to Work For in 2017**. The School was listed under the following recognition categories: Collaborative Governance; Compensation & Benefits; and Confidence in Senior Leadership.

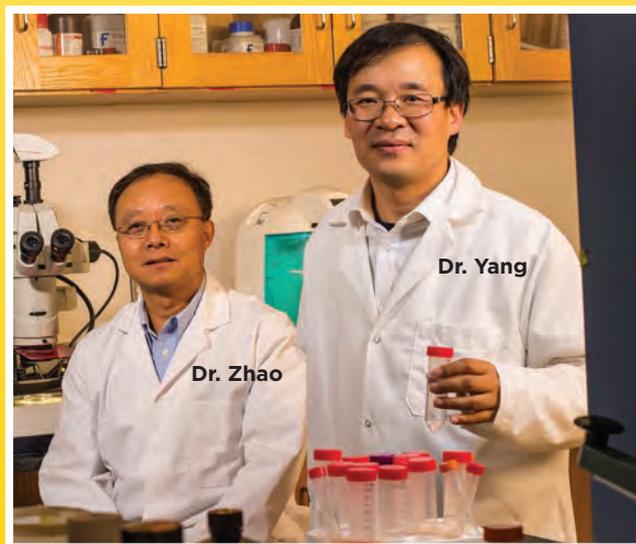
TOTAL FACULTY & STAFF	FY16	FY17
Full-time Faculty	1,342	1,370
Part-time Faculty	287	285
Adjunct Faculty	1,330	1,331
Post-Doctoral Fellows	566	521
• Research Fellows	355	288
• Clinical Fellows	211	233
Residents (trained by UMSOM faculty)	680	657
Staff (admin, research & clinical, includes FPI)	3,219	3,188

FACULTY DIVERSITY	FY16	FY17
Women	534	548
Under-represented Minorities	155	154

OUR STRUCTURE	FY16	FY17
Academic Departments	25	
Organized Research Centers	9	
Programs	7	
Institutes	4	

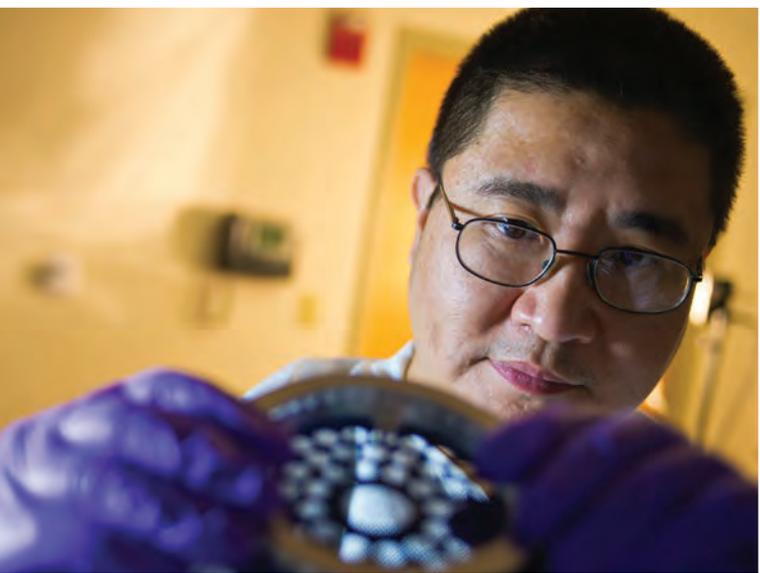


Dr. Barth, Dr. Hanish and Dr. LaMattina



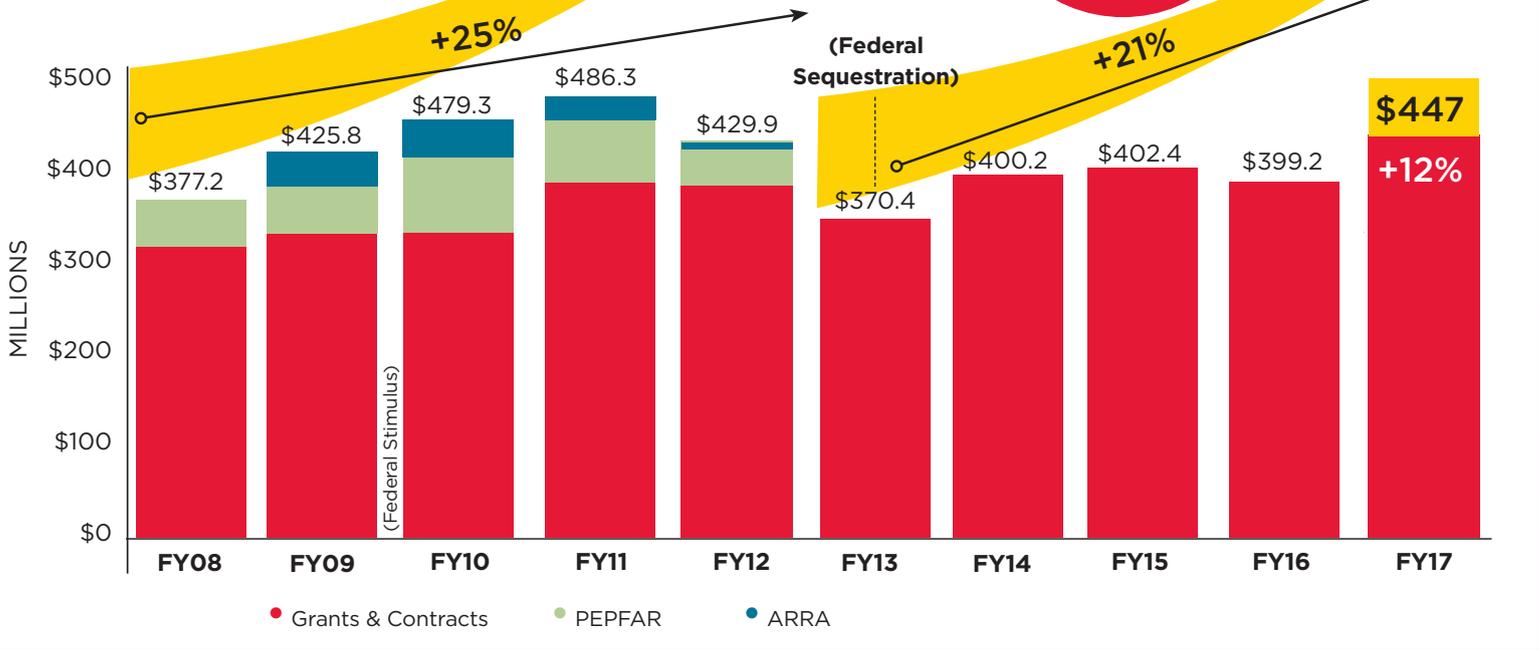
Dr. Zhao

Dr. Yang



21%
Increase Over the
Past Five Years in
Research Grants
& Contracts

RESEARCH: GROWTH OF GRANTS & CONTRACTS



2017: Year in Review

Research

In FY17, the University of Maryland School of Medicine faculty began to see the fruits of its labor, recording the most productive year in research funding in its history. Across every metric, the UMSOM surged past previous totals to reach record levels:

- NIH Grant Submissions +12%
- NIH Total Funding Submitted +20%
- All Grant Submissions +15%
- Number of NIH Awards Funded +25%
- NIH Total Funding +14%
- Other Federal Funding +46%

Our scientists and clinicians received \$447 million in grants & contracts in FY17, a 12 percent increase over FY16 and a 21 percent increase since the significant impact of sequestration in 2013.

“Under the strong leadership of our department chairs and directors, the UMSOM faculty has made a tremendous commitment to our research mission – and it is paying off,” Dean Reece said. *“We have great momentum as we begin a new academic year, and we look forward to continuing this unprecedented rate of growth in all of these categories.”*

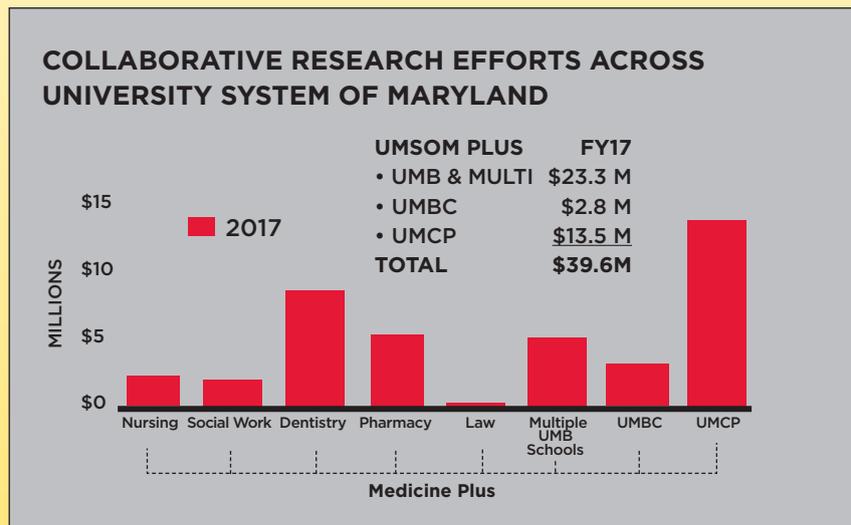
SYSTEM COLLABORATION IS KEY

One important factor in this success has been an increase in collaboration between research investigators. Interdisciplinary research teams, especially those that blend clinical and basic science, are having significant advantages when applying for large federal grants. One of the key priorities for the UMSOM has been fostering joint projects among the diverse groups of researchers at UMSOM and across the University System of Maryland.

At our first annual Festival of Science in 2014, UMSOM’s Scientific Advisory Council recommended the School continue its strong focus on collaborative research, and ensure that programs and policies are in place to encourage interdisciplinary research. As you can see in the chart above, we have taken that advice, with great success.

Our fourth annual **Festival of Science** was held on November 10, 2016. The keynote speaker was **Victoria Richon, PhD**, President

and Chief Scientific Officer, Ribbon Therapeutics and Former Chair of the American Association for Cancer Research. Faculty researchers presented to our esteemed Advisory Council on the topic of “Cancer Research: Translational Discoveries to Next Generation Treatments.”



MAJOR GRANTS AWARDED

To help speed the introduction of, and access to, new and more effective typhoid vaccines, the UMSOM’s **Center for Vaccine Development (CVD)** has received a grant of **\$36.9 million** from the Bill & Melinda Gates Foundation.

The project, known as **Typhoid Vaccine Acceleration Consortium (TyVAC)**, is a partnership with the Oxford Vaccine Group at the University of Oxford and PATH, an international nonprofit global health organization based in Seattle. TyVAC will focus on conjugate vaccines, which can trigger a stronger immune response in certain vulnerable populations, such as infants and children, than current typhoid vaccines.



\$36.9M
Grant for the TyVAC Vaccine



2017: Year in Review

INTERNATIONAL GRANTS AWARDED

The Institute of Human Virology (IHV) at the UMSOM announced in August 2016, a \$14.4 million grant from the National Institutes of Health's (NIH) National Institute of Allergy and Infectious Diseases (NIAID) to tackle a significant scientific global challenge in HIV vaccine research — the inability to produce long-lasting antibodies to protect against HIV infection.

IHV also announced in November 2016 more than \$138 million in multiple five-year grants awarded by the Centers for Disease Control and Prevention to combat HIV/AIDS in Kenya, Tanzania, Zambia and Nigeria.

The Institute for Global Health was awarded an International Center of Excellence for Malaria Research (ICEMR) grant by NIH's NIAID, one of seven ICEMRs awarded worldwide. **With funding of more than \$9 million over seven years**, the grant will be used to research and develop new tools to help eliminate drug-resistant malaria in Myanmar and neighboring countries in Southeast Asia.

GRANT TO IMPROVE CHILDREN'S HEALTH

The UMSOM received almost \$5 million from the Department of Agriculture to develop innovative ways to prevent childhood obesity by promoting healthy eating and exercise in city and state schools. The program takes a new approach, training teachers and students to improve their own health, then teaching them how to teach these same skills to others. This program is one of several, totaling nearly \$10 million in grants, run by the Maryland School Wellness Partnership. The lead scientist, Erin Hager, PhD, Associate Professor of Pediatrics at UMSOM, also runs another city school program, Healthiest Maryland Schools, providing specialized nutrition training to students to help them make healthier eating choices.



THE UMSOM RESEARCH ENGINE

The increasing scope of research conducted at the UMSOM would not be possible without the contributions of research fellows, trainees and students in the Graduate Program in Life Sciences (GPILS), who often serve as the “engine” that powers much of the research. For example, Dana Shaw, PhD, a Research Fellow in the laboratory of Joao Pedra, PhD, Professor of Microbiology and Immunology, is the lead author on a study examining how the tick immune system fights a myriad of microbes. Her discoveries are leading to an entirely new pathway to making ticks less vulnerable to infection by these microbes. If the ticks are not infected, they are not able to transmit these bacteria to humans. The most common tick-borne disease, Lyme disease, affects between 296,000 and 376,000 people each year in the U.S., causing fatigue, muscle pain, joint aches, memory loss, confusion headaches and neurological problems.

RESEARCH RANKINGS

There are a number of ways we can measure our academic scholarship, but funding is an objective, measurable benchmark. If you look at the Association for American Medical Colleges (AAMC) data, we continue to rank in the Top 10 (8th) among all public medical schools. (We are first among public medical schools in the Northeast Region). Among all 145 public and private medical schools nationwide, we rank number 26. These are very respectable numbers, but, as always, we continue to strive to do better.

NATIONAL RANKINGS

Public Schools, All Regions

AAMC RANK/SCHOOLS' GRANTS & CONTRACTS

- 1 / UWASH \$1,051,489,941
- 2 / UCSF \$1,006,714,082
- 3 / UCLA-GEFFEN \$646,758,162
- 4 / UCSD \$542,004,621
- 5 / MICHIGAN \$468,650,586
- 6 / COLORADO \$428,185,706
- 7 / NORTH CAROLINA \$424,938,453
- 8 / MARYLAND \$333,153,073**
- 9 / OREGON \$316,097,973
- 10 / UT SOUTHWESTERN \$304,748,176

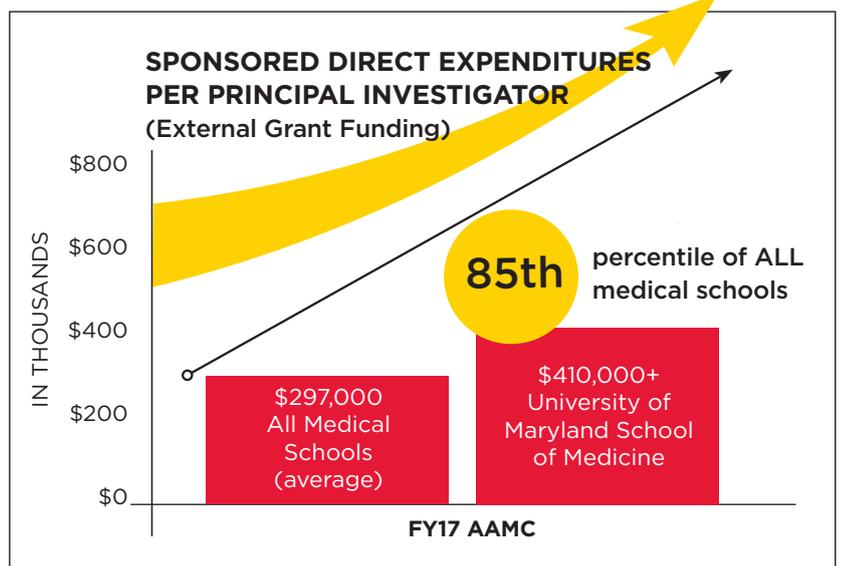
Public and Private Schools, All Regions

- 1 / HARVARD \$2,769,619,064
- 2 / U WASHINGTON \$1,051,489,941
- 3 / UC SAN FRANCISCO \$1,006,714,082
- 4 / PENNSYLVANIA-PERELMAN \$837,723,402
- 5 / DUKE \$769,980,915
- 6 / JOHNS HOPKINS \$744,575,530
- 7 / MOUNT SINAI-ICAHN \$675,209,646
- 8 / STANFORD \$657,464,868
- 9 / UCLA-GEFFEN \$646,758,162
- 10 / COLUMBIA \$642,349,652
- 11 / YALE \$627,739,917
- 12 / UC SAN DIEGO \$542,004,621
- 13 / PITTSBURGH \$522,742,239
- 14 / WASH U-ST. LOUIS \$500,823,327
- 15 / MICHIGAN \$468,650,586
- 16 / BAYLOR \$430,747,031
- 17 / COLORADO \$428,185,706
- 18 / NORTH CAROLINA \$424,938,453
- 19 / VANDERBILT \$422,082,050
- 20 / MAYO \$418,198,897
- 21 / CORNELL-WEILL \$391,318,952
- 22 / CASE WESTERN RESERVE \$390,713,506
- 23 / EMORY \$382,468,843
- 24 / NORTHWESTERN-FEINBERG \$376,414,843
- 25 / NEW YORK UNIVERSITY \$353,596,516
- 26 / MARYLAND \$333,153,073**
- 27 / OREGON \$316,097,973
- 28 / UT SOUTHWESTERN \$304,748,176

AAMC: Medical School Profile System, Institution-level Data Table, as of 7/18/2017. Institution-level Data Table last updated 6/27/2017.

RESEARCH PRODUCTIVITY

Looking at the productivity of our faculty, AAMC data show that our faculty has one of the highest levels of productivity in the United States. Across all schools, the mean funding per principal investigator is about \$297,000. **At the UMSOM, the mean funding per principal investigator is \$410,000** placing us in the 85th percentile of productivity of all medical schools.



\$10M

Total Grants Through the Maryland School Wellness Partnership

UMSOM and the Department of Agriculture are developing innovative ways to prevent childhood obesity by promoting healthy eating and exercise in city and state schools.



2017: Year in Review

GRANT WRITING COURSES

Helping achieve such productivity are initiatives such as our **Research Career Development Program**, which offers classes in grant writing, identifying funding sources, and professional development, particularly when it comes to scientific leadership. It helped more than 1,000 participants secure \$6 million in increased funding since 2016. **Since its inception in 2006, more than \$65 million in funding** has been awarded to students in the grant writing courses.

TRANSLATIONAL MEDICINE

We continue to grow in the important area of **technology transfer** by securing patents both foreign and domestic, licensing technology from our faculty inventions, and starting companies to market these discoveries.

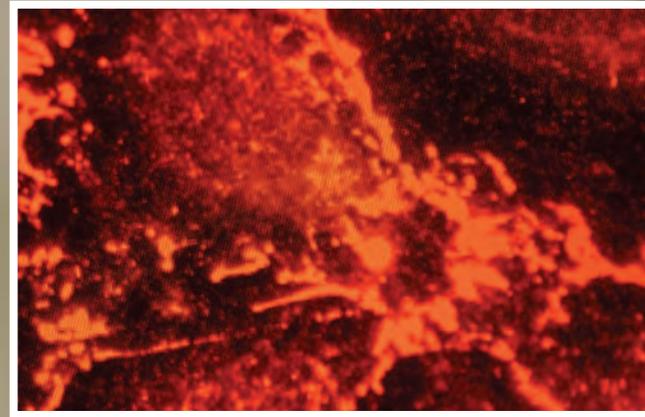
In a milestone that was years in the making, a vaccine to prevent cholera, invented and developed by researchers at the UMSOM's Center for Vaccine Development, was approved in June 2016 by the U.S. Food and Drug Administration (FDA). **The vaccine, Vaxchora, is the only approved vaccine in the U.S. for protection against cholera.** In May 2017, the Centers for Disease Control recommended Vaxchora for use as a protection for U.S. adults traveling to areas with cholera.

RECRUITING TOP SCIENTISTS

The UMSOM announced in February 2017 the successful recruitment of a broad slate of top scientists, as the first part of the School's bold new recruitment initiative called **"STRAP" (Special Trans-Disciplinary Recruitment Award Program)**. The Initiative, which was officially launched in late 2016, was recognized as a bold, new effort to recruit teams of some of the most talented physicians and scientists, **with the primary goal of significantly catalyzing UMSOM's focus on accelerating discoveries, cures and therapeutics for the most serious diseases that cause morbidity, mortality and disability.** STRAP specifies that the UMSOM will recruit scores of well-funded teams of scientists at all faculty ranks by the year 2020, as part of **Vision 2020, the shared strategic goals established by the UMSOM and the University of Maryland Medical System.**

The program is the most significant and ambitious effort to recruit scientists in the UMSOM's 210-year old history. It signifies an aggressive move by the School to advance further among the top echelon of leading biomedical research institutions in the nation. In particular, the UMSOM is targeting top researchers and physician scientists who will help to accelerate breakthrough discoveries in critical areas, including brain disorders, cancer, and cardiovascular-metabolic diseases.

TECHNOLOGY TRANSFER		FY13	FY14	FY15	FY16	FY17	5-Year Growth
U.S. Patents Issued		20	23	26	24	24	+4.7
Foreign Patents Issued		15	19	25	33	43	+30.1
Scientific Disclosures (Pre-Patent)		106	127	103	120	116	+2.3
Technology Inventions Licensed		26	23	35	40	41	+12.1
Start-Up Companies Formed		2	2	3	9	6	+31.6



Dr. Nguyen



Dr. Birukov

Dr. Birukova

**TOP UMSOM
PROGRAMS
BASED ON
NIH FUNDING**

- AIDS/HIV
- Aging
- Bioterrorism Defense
- Cardiovascular Disease
- Cancer
- Community Mental Health
- Diabetes
- Health Disparities
- Genomics
- Infectious Diseases
- Metabolic Disorders
- Schizophrenia
- Transplant

Under the Special Trans-Disciplinary Recruitment Award Program (STRAP):

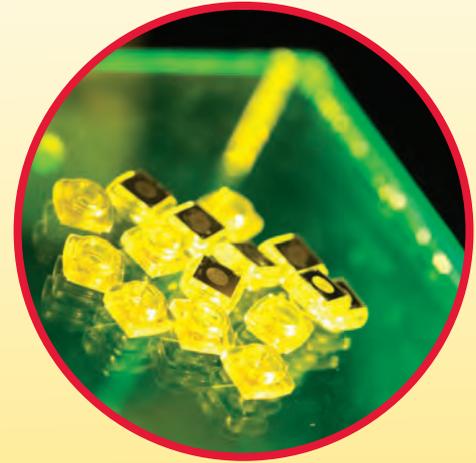
- Successfully recruited nine teams of well-funded senior scientists;
- Brought in a total of **\$30 million** in additional federal research funding;
- In negotiations recruiting an additional four to five teams;
- Some teams will have laboratory space in the new HSF III research building.

2017: Year in Review

Top Grant Awardees

This section features the outstanding work of many of our investigators, those who were able to secure very large and/or prestigious grants over the last year.

Featured here are investigators who received: the most lucrative NIH and non-NIH grants (>\$1.5 million); NIH “P” and “U” awardees; Center grant awardees; NIH Research Cooperative Agreement awardees; NIH R01 awardees; and recipients of three or more “NIH R” awards.



(1) Christopher Plowe, MD, MPH, the Frank M. Calia MD Professor of Medicine and Founding Director, Institute for Global Health, and
(2) Myaing Nyunt, MD, MPH, PhD, Assistant Professor of Medicine, Institute for Global Health, received a seven-year, **\$9,176,772** U19 Award from National Institute of Health’s National Institute of Allergy and Infectious Diseases for *“Myanmar Regional Center of Excellence for Malaria Research.”* The current year award is for \$1,395,966.

(3) James Kaper, PhD, Senior Associate Dean for Academic Affairs and Professor and Chair, Department of Microbiology & Immunology, and

(4) James Nataro, MD, PhD, Clinical Professor of Pediatrics, Medicine, and Microbiology & Immunology, Institute for Genome Sciences, received a five-year, **\$8 million** P01 from National Institute of Health’s National Institute of Allergy and Infectious Diseases for *“Pathogenesis of E. coli and Shigella infections in Human Enteroid Models.”* As part of this grant,

(5) Eileen Barry, PhD, Professor of Medicine, Center for Vaccine Development and Institute for Global Health, received five years of funding as PI of Project 2, and

(6) Marcela Pasetti, PhD, Professor of Pediatrics, Center for Vaccine Development and Institute for Global Health, received five years of funding as PI of the Immunology Core.

(7) Melissa McDiarmid, MD, MPH, DABT, Professor, Department of Medicine, was awarded a five-year, **\$7.9 million** grant from the Department of Defense Congressionally Directed Medical Research Program as the PI for *“Assessing Health Effects of Blast Injuries and Embedded Metal Fragments.”* Additional Department of Medicine faculty who received funding under this award include

(8) Joanna Gaitens, PhD, MSN/MPH, Assistant Professor, for the sub-project *“Biomarker Assessment of Kidney Injury From Metal Exposure in Embedded Fragment Registry Veterans,”* and

(9) Stella Hines, MD, MSPH, Assistant Professor, for the sub-project *“Respiratory Health in a Cohort of Embedded Fragment Registry Veterans Exposed to Blasts and Metals.”*

(10) Clayton Brown, PhD, Associate Professor, Department of Epidemiology & Public Health is the biostatistician for the project.

(11) Cynthia Bearer, MD, PhD, the Mary Gray Cobey Endowed Professor of Neonatology, Department of Pediatrics; **Margaret McCarthy, PhD**, Professor and Chair in the Department of Pharmacology; **Mary McKenna, PhD**, Professor of Pediatrics; **Jaylyn Waddell, PhD**, Assistant

Professor of Pediatrics; and **Maureen Kane, PhD**, Associate Professor, UM School of Pharmacy, has been awarded **\$7,718,381** over five years from National Institutes of Health and National Institute of Child Health and Human Development for *“Effects of Perinatal Hypoxia-Ischemia on the Developing Cerebellum With and Without Prior Inflammation.”*

(12) James Campbell, MD, MS, Professor of Pediatrics, Center for Vaccine Development (CVD) and the Institute for Global Health, received a six-year, **\$7,592,089** award to design and perform the clinical trial and laboratory assays for the protocol *“Phase 4 Trial to Evaluate the Efficacy of an Injectable-Free (All Oral) Delamanid-Containing Regimen for the Treatment of Multidrug-Resistant Pulmonary Tuberculosis.”* This is part of NIH’s National Institute of Allergy and Infectious Diseases (NIAID) contract awarded to

(13) Karen Kotloff, MD, Professor of Pediatrics, for a Vaccine Treatment and Evaluation Unit within CVD.



11



**PROGRAM PROJECT
AWARDEE TEAM**

Pictured left to right: Mary McKenna, PhD, Margaret McCarthy, PhD, Maureen Kane, PhD, Cynthia Bearer, MD, PhD, and Jaylyn Waddell, PhD

(14) Michael Terrin, MDCM, MPH, Professor, Department of Epidemiology & Public Health, and **(15) Rose Viscardi, MD**, Professor, Department of Pediatrics, received a seven-year, **\$6,904,762** award from the National Institutes of Health for a Progenitor Cell Translational Consortium Administrative Coordinating Center.

(16) J. Kathleen Tracy, PhD, Associate Professor, Department of Epidemiology & Public Health, received a three-year, **\$6,814,500** contract from the Maryland Department of Health and Mental Hygiene for *“Research and Evaluation for The Maryland Center of Excellence on Problem Gambling.”*

(17) Dudley Strickland, PhD, Professor of Surgery and Physiology, Director of the Center for Vascular and Inflammatory Diseases, and Associate Dean of Graduate and Postdoctoral Studies, received a seven-year, **\$5,405,872** new award from the National Institute of Health (NIH)/National Heart, Lung, and Blood Institute (NHLBI). This Outstanding Investigator Award

(R35 grant) is designed to promote scientific productivity and innovation by providing long-term support and increased flexibility to experienced principal investigators. This is the first time this prestigious award has been issued by NHLBI.

(18) Erin Hager, PhD, Assistant Professor, Department of Pediatrics, received a grant from the USDA National Institute of Food and Agriculture for almost **\$5 million** over five years for *“Approaches to Enhancing Wellness Policy Implementation in Schools to Promote Healthy Behaviors and Prevent Obesity.”*

The goal is to promote healthy behaviors and prevent obesity by working with elementary and middle schools to implement wellness policies and create health-promoting school environments. Co-investigators are

(19) Yan Wang, MD, DrPH, Assistant Professor, and **(20) Maureen Black, PhD**, the John A Scholl, MD, and Mary Louise Scholl Endowed Professor, both also from the Department of Pediatrics. Partners include the Maryland State

Department of Education and the Maryland Department of Health and Mental Hygiene. The three also received an R01 for almost **\$3 million** from the National Institute of Diabetes and Digestive and Kidney Diseases for *“Building Blocks for Healthy Preschoolers.”* The goal is to prevent health disparities by promoting healthy habits in childcare center staff, families, and children in four Maryland counties.

(5) Eileen Barry, PhD, Professor of Medicine, Center for Vaccine Development and the Institute for Global Health, received an R01 from NIAID for **\$3,681,288** over five years for *“Correlates of Vaccine-Induced, Tunable-Protection in an Outbred Tularemia Model.”*

(Continued)

12



13



14



15



16



17



18



19



20



2017: Year in Review

Top Grant Awardees

(21) Rebecca Brotman, PhD, MPH, Assistant Professor of Epidemiology & Public Health, Institute for Genome Sciences, received a five-year, **\$3,653,629** award from the National Institute of Health's National Institute of Allergy and Infectious Diseases for *"Lubricant Use and the Vaginal Microbiome."*

(22) Jacques Ravel, PhD, Professor of Microbiology & Immunology and Associate Director, Institute for Genome Sciences;

(23) Fauzia Vandermeer, MD, Assistant Professor, Department of Diagnostic Radiology & Nuclear Medicine; and

(24) Katrina Mark, MD, Instructor, Department of Obstetrics & Gynecology, all from the School of Medicine; and Xin He, PhD, Assistant Professor, Department of Biostatistics, University of Maryland, College Park, are co-investigators on this project.

(25) Myron Levine, MD, DTPH, the Simon and Bessie Grollman Distinguished Professor of Medicine and Associate Dean for Global Health, Vaccinology and Infectious Diseases received a three-year, **\$3,499,799** grant from the Bill and Melinda Gates Foundation for *"Current Prevalence of Chronic Typhoid Carriers and Residual Transmission of Typhoid Fever in Santiago, Chile."*

(26) Kathleen Neuzil, MD, MPH, Professor of Medicine and Director, Center for Vaccine Development, received a four-year, **\$3,221,926** grant from National Institute of Health/Vaccine and Treatment Evaluation Units for *"Vaccine and Treatment Evaluation Units (VTEU) Protocol Development, Implementation and Assays."*

(27) Amit Sawant, PhD, Associate Professor, Department of Radiation Oncology, has been awarded a National Cancer Institute (NCI)/NIH R01 award worth **\$2,939,617** for *"Investigating Radiation-Induced Injury to Airways and Pulmonary Vasculature in Lung SABR."* Dr. Sawant also received a second R01 in August, worth **\$1,752,497 million**, again from the National Cancer Institute, for *"Personalized Motion Management for Truly 4D Lung Stereotactic Body Radiotherapy."*

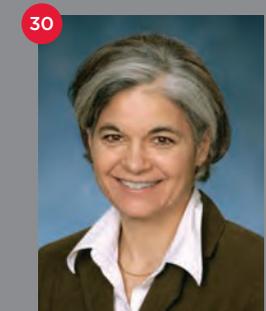
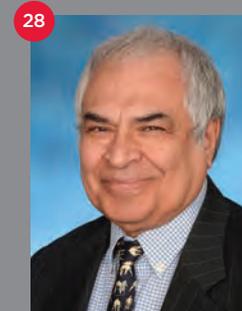
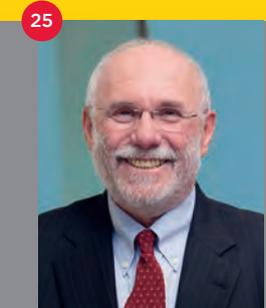
(6) Marcela Pasetti, PhD, Professor of Pediatrics, Center for Vaccine Development and the Institute for Global Health, received an R01 from National Institute of Health's National Institute of Allergy and Infectious Diseases for **\$2,842,827** over five years for *"Serological Assays to Predict Shigella Vaccine Efficacy."*



(28) Abdu Azad, PhD, MPH, Professor, Department of Microbiology & Immunology, has been awarded a five-year, **\$2,801,584** R01 from the National Institute of Health's National Institute of Allergy and Infectious Diseases for *"Rickettsia-Host Interface and Multiple Paths to Invasion."*

(29) Stefanie Vogel, PhD, Professor in the Department of Microbiology and Immunology, has been awarded a five-year, **\$2,727,307** NIH R01 grant for *"Macrophage Differentiation and Disease Outcome in Influenza infection."*

(30) Toni Antalis, PhD, Professor of Physiology, Center for Vascular and



Inflammatory Diseases, and

(31) Curt Civin, MD, Associate Dean for Research, Professor of Pediatrics, and Director, Center for Stem Cell Biology & Regenerative Medicine, have received a five-year, **\$2,501,301** competing renewal T32 training grant from the National Cancer Institute. This training grant will continue support for the Training Program in Cancer Biology, launched in 2011, and will provide support for pre-doctoral and post-doctoral trainees in basic, translational, and clinical research at the University of Maryland Marlene and Stewart Greenebaum Comprehensive Cancer Center.

(17) Dudley Strickland, PhD, Professor of Surgery and Physiology, Director of the Center for Vascular & Inflammatory Diseases, and Assistant Dean of Graduate and Postdoctoral Studies, and

(32) Sanjay Rajagopalan, MBBS, FACC, FAHA, the Melvin Sharoky Professor in Medicine and Assistant Chair of Translational Research, Department of Medicine, have been awarded a five-year, **\$2.48 million** T32 training grant from the National Institute of Health/National Heart, Lung, and Blood Institute for *“Interdisciplinary Training Program in Cardiovascular Disease (ITCVD-T32).”* This program is an amalgam of two exceptional T32 programs that have been in existence at UMSOM for more than 14 years: the Vascular Biology Training Program and the Training Program in Cardiovascular and Cell Biology.

(22) Jacques Ravel PhD, Professor of Microbiology & Immunology, and Associate Director, Genomics, Institute for Genome

Sciences, was awarded a five-year **\$2,489,438** grant from the National Institute of Nursing Research (NINR) for *“Elucidating Causes of Vaginal Symptoms Using a Multi-omics Approach.”*

(33) Thomas MacVittie, PhD, Professor, Department of Radiation Oncology, received a National Institute of Health’s National Institute of Allergy and Infectious Diseases contract worth **\$2,420,155** from SRI International for *“Assess The Efficacy of Filgrastim On: (A) Mitigating Myelosuppression/Mortality Associated With H-ARS When Administered in a Delayed Schedule and (B) Comorbidities and Mortality of Multi-Organ Injury Associated With Concurrent GI-ARS, Prolonged GI Injury and Delayed Effects to Lung And Kidney Characteristic of the DEARE in NHP Exposed to 10 Or 11 Gy.”*

(34) Gloria Reeves, MD, Associate Professor, Department of Psychiatry, is Principal Investigator on a newly awarded four-year, **\$2,372,859** RO1 grant from NIMH supporting *“A Community-Based, Family Navigator Intervention to Improve Cardiometabolic Health of Medicaid-Insured Youth Identified Through an Antipsychotic Medication Preauthorization Program.”*

(35) Sanford Stass, MD, Professor and Chair, Department of Pathology, was awarded a five-year, **\$2.25 million** U24 from the National Cancer Institute for *“University of Maryland, Baltimore Biomarker Reference Laboratory.”*

(36) Joseph Cheer, PhD, Associate Professor, Department of Anatomy & Neurobiology, was

awarded a five-year, **\$2.2 million** RO1 from the National Institute on Drug Abuse to examine *“The Long-Term Consequences of Ritalin and Marijuana Exposure in Adolescence.”*

(37) Isabel Jackson, PhD, received a **\$2,180,930** award from Chrysalis BioTherapeutics, Inc. — under a prime National Institute of Health’s National Institute of Allergy and Infectious Diseases award — for *“TP508: A Novel Nuclear Countermeasure Targeting Endothelial Cells and Stem Cells to Combat ARS and Delayed Multiple Organ Dysfunction.”*

(38) Bret Hassel, PhD, Associate Professor, Department of Microbiology & Immunology, received a five-year, **\$2.1 million** R25 Education grant from the National Cancer Institute (NCI) for the *“Nathan Schnaper Intern Program in Translational Cancer Research (NSIP).”* The program is named for the late University of Maryland Greenebaum Comprehensive Cancer Center (UMGCCC) psychiatrist and advocate for student-directed research, Dr. Nathan Schnaper. It provides integrated research, educational, and clinical components for high-caliber undergraduate interns from across the US. Prior to NCI funding, this program was supported by local benefactors and the UMGCCC for over 30 years, with more than 15 NSIP alumni matriculating to the UMSOM’s medical and graduate programs in the last decade alone.

(39) Vladimir Toshchakov, PhD, Assistant Professor, Department of Microbiology & Immunology, received a five-year, **\$1,954,825** grant from NIAID for *“Deciphering the Architecture of TLR Signaling Complexes.”*

(Continued)



2017: Year in Review

Top Grant Awardees

(40) Dirk Mayer, MD, Associate Professor, Department of Diagnostic Radiology and Nuclear Medicine, was awarded an R01 grant for **\$1,922,053** from the National Institute of Diabetes and Digestive and Kidney Diseases to study *“Metabolic Imaging of Nonalcoholic Fatty Liver Disease.”*

(41) Andrei Maiseyeu, PhD, Assistant Professor of Medicine, received a five-year, **\$1.9 million**, R01 grant from the National Institute of Health/National Heart, Lung and Blood Institute for *“Probing Cardiovascular Actions of GLP-1 Using Nanoparticles.”*

(42) Zeljko Vujaskovic, MD, PhD, Professor, and **(37) Isabel Jackson, PhD**, Assistant Professor, both from the Department of Radiation Oncology, received a RTOR 1002 worth **\$1,839,476** from the Biomedical Advanced Research and Development Authority for *“Establishment of a Rabbit Model of Ionizing Radiation-Induced Thrombocytopenia, Coagulopathies and Measures of Associated Vascular and Organ Injury.”*

(43) Matthew Laurens, MD, MPH, Associate Professor of Pediatrics, Center for Vaccine Development, received a two-year, **\$1,824,578** grant from the National Institute of Health/Vaccine and Treatment Evaluation Units for *“Safety, Tolerability, Immunogenicity And Protective Efficacy Against Naturally-Transmitted Malaria of Infectious, Cryopreserved Plasmodium Falciparum Sporozoites (Pfspsz Challenge) Administered by Direct Venous Inoculation*

Under Chloroquine Chemoprophylaxis (Pfspsz-Cvac), A Randomized, Double Blind, Placebo-Controlled Trial.”

(44) Hancal Dan, PhD, Assistant Professor of Pathology, University of Maryland Marlene and Stewart Greenebaum Comprehensive Cancer Center received a five-year year, **\$1.8 million** R01 from the National Cancer Institute for *“Inhibition of Castration Resistant Prostate Cancer by Targeting of the IKKbeta/AR Signaling.”*

(45) Jeff O’Connell, DPhil, Associate Professor of Medicine, Program in Personalized and Genomic Medicine, received a three-year, **\$1.7 million** U01 grant from the National Heart, Lung, And Blood Institute (NHLBI) for *“High-Performance Mixed Model Toolset for Integrative Omics Analysis of Big Data.”*

(46) Jianfei Qi, PhD, Assistant Professor of Biochemistry & Molecular Biology in the University of Maryland Marlene and Stewart Greenebaum Comprehensive Cancer Center, received a **\$1.7 million** R01 from NCI for *“Role of Histone Demethylase JMJD1A in the DNA Damage Response of Prostate Cancer Cells.”*

(47) Junfang Wu, BM, PhD, Associate Professor of Anesthesiology, Center for Shock, Trauma and Anesthesiology Research (STAR), along with Co-Investigators

(48) Marta Lipinski, PhD, Assistant Professor, and **(49) Eugene Koh, MD**, Assistant Professor, both from the Department of Orthopedics, received a five-year, **\$1,684,375**

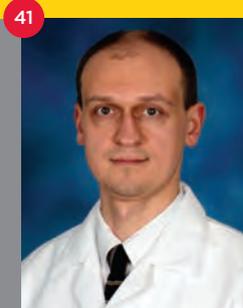
R01 grant from the National Institute of Neurological Disorders and Stroke for *“The Function and Mechanisms of Autophagy in Spinal Cord Injury.”*

(50) Shannon Takala Harrison, PhD, Associate Professor of Medicine in the Division of Malaria Research, Institute for Global Health, received a five-year, **\$1,632,515** R01 award for *“Identification and Validation of Molecular Markers of Piperazine Resistance.”*

(51) Marzena Pazgier, PhD, Assistant Professor of Biochemistry and Molecular Biology, Institute of Human Virology, received a four-year, **\$1.6 million** award from the National Institutes of Health for *“Structural Targeting of Potentially Protective gp120 Epitopes in the C1/C2 Region.”*

(52) Mark Rizzo, PhD, Associate Professor, and **(53) W. Gil Wier, PhD**, Professor, both from the Department of Physiology, received a four-year, **\$1,543,438** multi-PI award from the National Heart, Lung and Blood Institute (NHLBI) for *“Creation of Optical Biosensor Mice for Longitudinal Studies of Vascular Function.”*

(54) Taehoon Shin, PhD, Assistant Professor, Department of Diagnostic Radiology & Nuclear Medicine, was awarded a four year, **\$1.5 million** R01 grant from the National Heart, Lung and Blood Institute for *“Non-Contrast-Enhanced Peripheral MR Angiography.”*





50



51



52



53



54



Congratulations to All of Our Awardees!

2017: Year in Review



HSF III

The new facility provides both the laboratory space and new technology for the UMSOM to continue to advance scientific discovery and breakthroughs in addressing the most critical disease categories.

New Research Building

The new 428,970 square-foot, state-of-the-art research building, Health Sciences Facility III (HSF III) will:

- Accommodate the accelerated pace and scope of innovation and discovery at every level;
- House our most well-funded investigators working to answer “big science” research questions;
- Include, as one of the first collaborative program tenants, the Institute for Genome Sciences and the Program in Personalized and Genomic Medicine.





Dr. Pollak

Dr. Bennett

Mpower
 New Center for
 Sports Medicine,
 Health and Human
 Performance

HIGHLIGHT:
 The UMSOM Clinical
 Faculty Practices
 Have an 89 Percent
 Increase Over the
 Past 10 Years.



2017: Year in Review

Clinical Care

Our clinical success is a product of the outstanding partnership we share with the University of Maryland Medical System (UMMS). This strategic alliance enables us to achieve extraordinary outcomes as we strive to provide high-quality, integrated healthcare not only in Baltimore, but across all of Maryland through the UMMS Statewide Hospital Network and its affiliated practices.

Our faculty members deliver care through Faculty Physicians, Inc. (FPI). Our faculty practice, which generates clinical dollars to support school salaries and operations, continues to be successful in spite of the ongoing challenge of reduced reimbursements. Total patient volume, including office and inpatient and outpatient visits, increased 7.8 percent between FY16 and FY17.

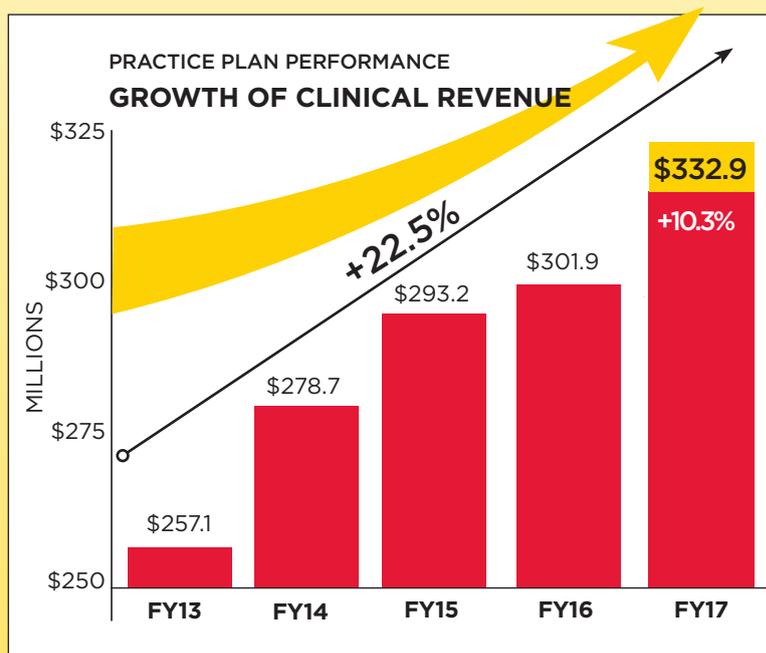
CONTINUED GROWTH IN CLINICAL REVENUE

Admissions to the University of Maryland Medical Center were consistent in FY16 and FY17. In-patient surgeries increased by 1.8 percent. Helping to balance overall volume was a 2.2 percent increase in outpatient surgeries.

In addition, we had improvements in two key indicators of practice plan performance. The number of days in accounts receivable went down from 39 to 34 days, while the number of accounts delinquent for greater than 90 days rose slightly to 19.4 percent.

FACULTY PRACTICE			
Patient Care Statistics	FY16	FY17	Change
Total Patient Volumes (includes office and inpatient/outpatient visits)	1,203,380	1,297,730	7.8%
Admissions (UMMC only, includes newborns and trauma)	28,871	28,882	0.0%
Inpatient Surgeries (UMMC only, GOR & STC)	15,441	15,717	1.8%
Outpatient Surgeries (UMMC only, GOR & STC)	7,583	7,750	2.2%
Key Indicators for Billing and Collections			Change
Days in Accounts Receivable	39	34	-5 Days
% of Accounts Receivable >90 Days	19.1%	19.4%	0.3%
Denial Rate (Initial Denials)	7.6%	6.7%	-0.9%
% of Credit Balances to AR	1.5%	1.8%	0.3%

Overall, growth in clinical revenue plays a critical role in maintaining our strong financial position, but also in supporting our research and educational programs. I am very pleased to report that, once again, we experienced steady growth, with a 10.3 percent increase in clinical revenue, generating \$332.9 million in total revenue in FY17.



PROGRAM IN SPORTS MEDICINE FOSTERS COLLABORATION

The UMSOM is creating a Program in Sports Medicine that will facilitate direct collaboration between multiple departments to improve patient care, education and research in the care of athletic conditions and injuries.

This effort supports the MPowering the State initiative to develop integrated programs between the University of Maryland, Baltimore (UMB) and the University of Maryland, College Park (UMCP). It links clinical care for a broad spectrum of athletes in College Park, developing a major clinical site for the faculty practices of the UMSOM, and building research partnerships between UMCP and UMB faculty in the areas of sports medicine, health and human performance.

2017: Year in Review

The purpose of the Program in Sports Medicine will be to improve the ability of specialists in the field of Sports Medicine to function in interdisciplinary fashion in the domains of clinical care, education and research while retaining close and relevant relationships with their core departments and sub-specialty services.

A PROVEN SOLUTION FOR SEVERE EPILEPSY PATIENTS

Peter Crino, MD, PhD, was recruited to become the Chair of the Department of Neurology in 2016, and he brought with him decades of experience in treating neurological disorders such as epilepsy. More than three million Americans are afflicted with this seizure-producing neurological disorder. Patients with intractable epilepsy that do not respond to anti-seizure medications can now take advantage of a **proven surgical solution at the Department of Neurology's Maryland Epilepsy Center**. Through a series of diagnostic tests and scans, UMSOM clinicians can localize the area of the brain that is the source of the patient's seizures and then surgically remove the abnormal brain cells that are the cause. **The Maryland Epilepsy Center has been accredited by the National Association of Epilepsy Centers as a Level 4 epilepsy center, the highest designation for clinical care in epilepsy.**



INNOVATIVE TREATMENT FOR BRAIN TUMORS

In the Department of Neurosurgery, promising new research studies are also underway. **Graeme Woodworth, MD, FACS**, Director of The Brain Tumor Treatment & Research Center, leads a multidisciplinary team of radiologists, medical oncologists, radiation oncologists, neurosurgeons, and pathologists in treating brain cancer patients. His current research focuses on **using ultrasound to target glioblastoma (GB), the most common and deadly primary brain cancer**, and then deliver anti-tumor drug therapies through the blood brain barrier directly to that cancer. Dr. Woodworth expects to begin human trials later this year.

USING TRANSPLANTS TO CURE DIABETIC PATIENTS

As director of the Division's pancreas and islet cell transplantation program, **Joseph Scalea, MD**, Assistant Professor, Department of Surgery, oversees an aggressive, multifaceted initiative to cure patients of insulin-dependent diabetes. **In the last year, his program's volume of pancreas transplants has grown by 120 percent.** *"We are now one of the busiest centers in the country and expect to maintain that pace,"* he notes. *"Our success in improving the number of whole organ pancreas transplants is due largely to a multidisciplinary effort involving surgeons, endocrinologists, and nephrologists."*

As a sizeable percentage of patients with diabetes eventually will suffer kidney failure as well, the program's volume of combined kidney-pancreas transplants is also growing. *"We offer patients a more comprehensive approach that involves kidney disease and diabetes management along with a kidney and pancreas transplant,"* says Dr. Scalea. *"An added benefit is that the waiting time for donor organs needed for this combined transplant is quite low — usually about six weeks."*



Dr. Jeng

OUTSTANDING GROWTH IN OPHTHALMOLOGY SERVICES

Bennie Jeng, MD, a distinguished National Institutes of Health (NIH)-funded physician-scientist, joined the UMSOM as Chair of the Department of Ophthalmology & Visual Sciences in 2013.

Since his arrival, the department has doubled the number of its clinical faculty members to now represent all ophthalmologic subspecialties. In addition, the department’s clinical network has grown from four to 13 sites that now serve all of central Maryland and even York County, Pa. As a result of these efforts, the department has built its patient volume from 13,000 patient visits in 2013 to **31,000 in 2017 – a 140 percent increase**. “And,” Dr. Jeng adds, “we still have room to grow.”

HELPING THE YOUNGEST HEARTS KEEP BEATING

A first-in-children randomized clinical study, medical researchers at the UMSOM and the Interdisciplinary Stem Cell Institute (ISCI) at the University of Miami Miller School of Medicine **tested to see whether adult stem cells derived from bone marrow benefit children with the congenital heart defect hypoplastic left heart syndrome (HLHS)**. UMSOM surgeons injected the cells into the babies’ hearts during open-heart operations at the University of Maryland Medical Center. ISCI supplied the stem cells for the procedures.

Even with extensive surgical treatments, HLHS babies still do not have optimal outcomes. The researchers hope the cells will increase the babies’ chances of survival as HLHS limits the heart’s ability to pump blood from the heart to the body. “*The premise of this clinical trial is to boost or regenerate the right ventricle, the only ventricle in these babies, to make it pump as strongly as a normal left ventricle,*” says lead researcher **Sunjay Kaushal, MD, PhD**, associate professor of surgery at UMSOM and director, pediatric cardiac surgery, University of Maryland Medical Center.



Dr. Kaushal

“We are hoping this therapy will be a game-changer for these patients,” says Dr. Kaushal. The first two patients, who were both four-months-old when the stem cells were injected, are so far doing well after their surgery.

2017: Year in Review

Education

Of the more than 54,000 applicants attempting to find spots in U.S. medical schools this year, 4,837 applied to the UMSOM. One hundred and sixty, ranging in age from 21 to 29, matriculated into the Class of 2021. Seventy-two percent of the students are Maryland residents. Twelve percent are underrepresented minorities in medicine. Fifty-nine percent are female. **The Class of 2021 came from 61 different colleges and universities, and they had an overall grade point average of 3.81 and an average MCAT score of 512 (32 under the old scoring method), both above the national average.**

STUDENT ENROLLMENT

Our 610 medical students comprise nearly half of the UMSOM total student enrollment of 1,275. Our student body also includes 49 Medical and Research Technology (BS/MS) students, 192 Physical Therapy students (DPT/PhD), as well as 301 graduate students (MS/PhD), 50 MD/PhD students, 51 students in the Masters of Public Health program, 16 in the Genetic Counseling (MGC) program, and 6 earning a Clinical Research Certificate.

DEGREES CONFERRED

We take great pride in our graduates. In FY17, we conferred degrees on 276 students, including 161 new physicians. Gina Kolata, the health and science editor from *The New York Times*, gave the keynote speech at

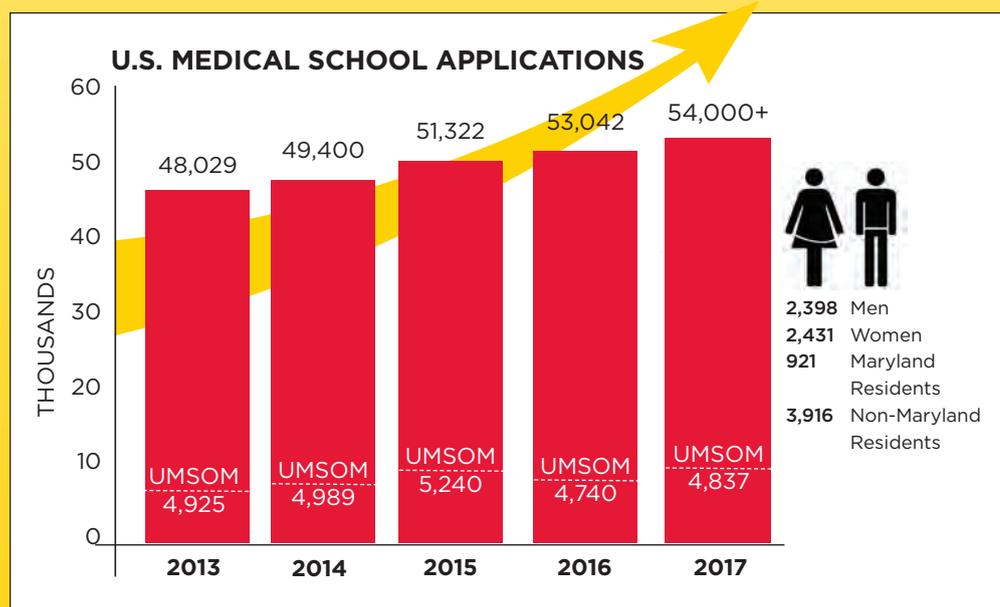
the hooding ceremony for our MD graduates. In our other programs, 56 graduated with Doctor of Physical Therapy degrees from our Department of Physical Therapy & Rehabilitation Science; 8 completed the Masters in Genetic Counseling degree; there were 18 Medical and Research Technology graduates; 14 earned Masters of Public Health degrees; 12 received MS degrees; and 4 earned MD/PhDs.

Students in our Graduate Program in Life Sciences (GPILS) appeared as authors in 79 publications last year, 21 of which had a GPILS student as first author. They had grants worth \$1,240,393 in funding. Among the 76 new MS and PhD students we welcomed, 60 percent were female and 13 percent were underrepresented minorities.

MATCH DAY

The UMSOM had 157 students who matched to residency programs this year with 39 members of the Class of 2017, staying in the state of Maryland for their residency training. **Our students this year matched at 68 different hospitals in 24 states, making it one of the most successful Match Day for UMSOM ever. Compared to a 94.3 percent national average, 98 percent of our students successfully matched. More significantly, 60 percent of our students matched in the top 50 academic medical centers in the United States.**

276
Total Graduates



TOTAL STUDENT ENROLLMENT & PERCENT DIVERSITY

Program	2016	2017	Diversity %
Medical (MD)	624	610	12%
MD/PhD	47	50	12%
Graduate (MS/PhD)	364	301	44.9%
Public Health (MPH)	69	51	33.3%
Physical Therapy (DPT/PhD)	182	192	9.9%
Genetic Counseling (MGC)	16	16	25%
Medical and Research Technology (BS/MS)	45	49	40.8%
Clinical Research Certificate	6	6	33.3%
Total	1,353	1,275	

TOTAL FY17 GRADUATES

MD	161
MD/PhD	4
Graduate (MS)	12
Public Health (MPH)	14
Physical Therapy (DPT/PhD)	56
Genetic Counseling (MGC)	8
Medical and Research Technology (BS/MS)	18
Clinical Research Certificate	3
Total	276

CLASS OF 2021 STATS

Total Students	160
Male	41%
Female	59%
Maryland Residents	72%
Non-Resident	28%
Age Range (Years)	21-29
Underrepresented in Medicine Colleges/Universities Represented	12%
Average GPA	Average MCAT
Overall 3.81	Old 32
Science 3.77	New 512



ENTREPRENEURSHIP

Third-year PhD students Camilo Vanegas and Elizabeth Weingartner were among the winners in the competitive Nanotechnology Startup Challenge in Cancer.

- An accelerator program that gives participants access to technology invented within the National Institutes of Health.
- Vanegas and Weingartner successfully launched their startup, Nanobionics, and are now commercializing a device that detects chronic myeloid leukemia.

UMSOM SHARK TANK

To encourage entrepreneurial leadership among its medical students, the UMSOM hosted the Lightbulb Moment Competition.

- Gives aspiring student entrepreneurs a chance to share product ideas, with winners receiving cash prizes and expert help.
- Four finalists competed before a panel of judges, including doctors, researchers and investors, using a format similar to the popular television program *Shark Tank*.



416

Baltimore Kids at
James McHenry
Elementary Benefit
From Our "Medical
Neighborhood"

2017: Year in Review

Community Impact

The University of Maryland School of Medicine/Faculty Physicians, Inc., in partnership with the University of Maryland Medical Center, is transforming our existing community of primary care and specialty practices into a fully integrated “**medical neighborhood**” to deliver the **best health care for the communities of West Baltimore, and thus promote the health and well-being of its citizens.** The goal is to dramatically improve the health of the Westside population, beginning with the most complex and vulnerable patients, through a high-quality, integrated delivery system that improves outcomes, reduces cost and enhances the patient experience.



Dr. Marcozzi

Under the new leadership of **David Marcozzi, MD, MHS-CL, FACEP**, Associate Professor of Emergency Medicine, educational outreach efforts will include expanded training programs for undergraduate and post-graduate physicians, as well as for residents of the community and community providers, as part of the UMSOM Program in Health Disparities and Population Health.

GLOBAL ENGAGEMENT

The UMSOM’s Institute for Global Health (IGH) continued its work in research, treatment and vaccine development around the world in 14 different countries in South America, Africa and Southeast Asia.

IGH and the Department of Malaria Research continued work on eliminating and ultimately eradicating malaria as well as understanding the impact the disease and others have on the immune system. Housed within the IGH is the Center for Vaccine Development (CVD). Our experts and faculty within CVD continued expansive work on vaccine development in a wide range of diseases such as cholera, typhoid, Ebola and Zika.

Our **Mini-Med School** Program, now in its 16th year, is going strong with community residents. This year they are learning about topics such as depression and dementia in older adults, adolescent brain development, the human microbiome, eye diseases, sickle cell disease and hearing loss. **Kids Mini-Med School** was held for the 11th time this past summer, and concluded with a visit here to campus for a lesson about the importance of vaccines, taught by **Kathleen Neuzil, MD, MPH**, Director of the Center for Vaccine Development.



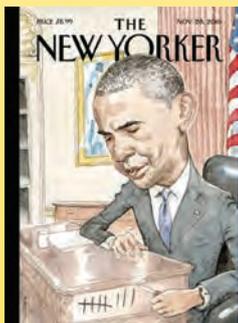
11TH
Year for Our Kids
Mini-Med School
Program

President **Jay Perman** leads UMB’s scholarly work on behalf of children and families in West Baltimore.

2017: Year in Review

Recognition & Visibility

The role the University of Maryland School of Medicine played in conducting the clinical trials for a Zika vaccine developed by National Institutes of Health, was one of the biggest stories of late 2016 and early 2017, generating news coverage in *The New York Times*, *The Washington Post*, *The Baltimore Sun*, *Reuters* and television news programs across the country. The vaccine tested was a DNA vaccine, an innovative approach that tricks the body into developing antibodies that can fight the disease if it arrives. The NIH's trial coordinators set up trial sites at more than 20 locations in Central and South America, as well as the site in Baltimore, which was led by **Monica McArthur, MD, PhD**, Assistant Professor of Pediatrics in the Center for Vaccine Development.



The New Yorker featured a story on **Samuel Tisherman, MD**, Professor of Surgery; **Thomas Scalea, MD**, The Honorable Francis X. Kelly Distinguished Professor in Trauma Surgery; and **Deborah Stein, MD**, the R Adams Cowley Professor in Trauma, discussing whether a novel hypothermia treatment

might be able to save gunshot victims. Known as EPR, for “emergency preservation and resuscitation,” it is the result of nearly thirty years of work by Dr. Tisherman and colleagues. It involves using therapeutic hypothermia — temporarily lowering body temperature to around 50 degrees to increase the odds that patients survive otherwise lethal injuries — to provide surgeons more time for life-saving surgery when every second counts. Dr. Tisherman is currently conducting a human clinical study of EPR.

Sunjay Kaushal, MD, PhD, Associate Professor of Surgery, received national broadcast media coverage for his groundbreaking clinical trial **using stem cells to treat babies born with a serious heart defect**. Children with a congenital heart defect called hypoplastic left heart syndrome (HLHS) are missing the left ventricle, the main pumping chamber that pushes oxygen-rich blood to the body. Other key structures on the heart’s left side are too small or malformed to work, as well. The trial is testing to see whether adult stem cells derived from bone marrow benefit these tiny patients if injected during the multiple open-heart operations they must undergo to repair this defect. The hope is that the cells will boost or regenerate the right ventricle, the only ventricle in these babies, to make it pump as strongly as a normal left ventricle.



Dr. Kaushal holding one of the first HLHS Stem Cell Trial patients.

WEB-BASED VISIBILITY

Faculty accomplishments were also highly visible on the new UMSOM website, which was relaunched last October with an attractive mobile-friendly design.

In 2016-2017, more than 200 news stories and videos about the faculty were published on the UMSOM website, which had more than 1.8 million visitors. More than 1,100 faculty have updated their online profiles, proving their colleagues and the public with valuable information about their research and clinical activities.





Dr. Neuzil



Dr. Chen



1.8 M+
Online Visitors to the
UMSOM Website

2,190+
Stories in
News Media

207 M+
Audience
Impressions



Dr. McArthur

The New York Times; The Washington Post; THE BALTIMORE SUN

2017: Year in Review

Finance & Philanthropy

Of our more than \$1 billion budget, only \$47.1 million comes from the state. We value that very much, and we are always grateful for the support that they give us. However, that number doesn't come anywhere close to the funds we need to operate, so we have to find other means of support. Tuition and fees only contributed \$30.5 million. As for the rest, \$447.1 million came from competitively securing grants; and \$510.7 million came from reimbursements from hospital contracts and physician services.

The additional funds needed must come to us from philanthropy. These private gifts are very important, because we need those discretionary funds to make up gaps in funding. Our philanthropy dollars are typically a combination of private, individual gifts and foundation grants. **We generated more than \$52 million in total fundraising in FY17.** This year's total was particularly significant in that more than half of the amount raised (\$28.5 million) came from private philanthropy, with \$23.8 million coming from sponsored research. **We thank you.**

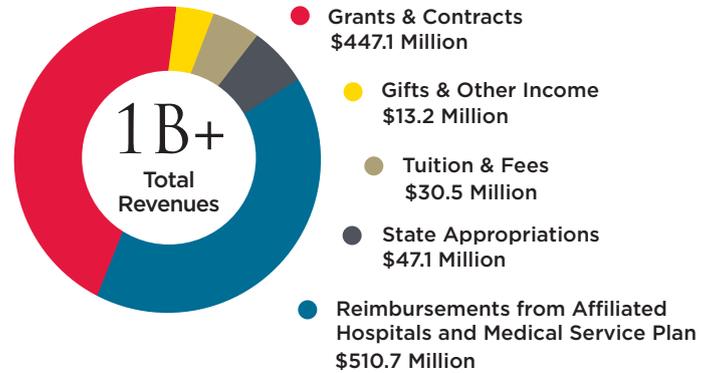
TOP PHILANTHROPIC GIFTS

(ANONYMOUS/BEQUEST)	\$3,000,000
MR. JEROME BESER	\$2,230,000
MARYLAND E-INNOVATION INITIATIVE FUND AUTHORITY	\$1,944,000
GRACE HOFSTETER, MD	\$1,567,636
MR. PETER G. ANGELOS	\$1,024,000
MR. STEWART J. GREENEBAUM/ MRS. MARLENE GREENEBAUM/ MR. MICHAEL I. GREENEBAUM/ STEWART & MARLENE GREENEBAUM FAMILY FOUNDATION	\$1,022,600
(ANONYMOUS/BEQUEST)	\$1,000,000
JAMES AND CAROLYN FRENKIL CHARITABLE FOUNDATION/ MS. CAROLYN B. FRENKIL	\$982,050
MRS. FRAN M. RIFKIN, RN/ SCOTT M. RIFKIN, MD	\$566,255
(ANONYMOUS/STUDENT SCHOLARSHIP)	\$537,262
MRS. CHRISTINE C. OSBORNE	\$501,895

TOTAL

\$14,375,698

OUR REVENUES



UMSOM ALUMNI \$1.5M GIFT ESTABLISHES NEW CENTER FOR HEALTH CARE INNOVATION

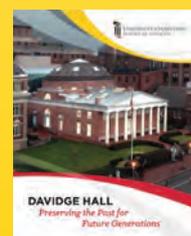
Richard Sherman, MD, UMSOM '72, and Jane Sherman, PhD, UMSOM '85, made a \$1.5 million gift to the University to establish a health care innovation center to be located in the Health Sciences & Human Services Library.



From left, University of Maryland School of Nursing Dean Jane M. Kirschling, Jane Sherman, Richard Sherman, and UMSOM Dean E. Albert Reece.

PRESERVING DAVIDGE HALL

During the year, the Medical Alumni Association, in conjunction with the UMSOM Office of Development, launched a \$5 million capital campaign specifically to raise much-needed funds to renovate Davidge Hall. For more information, visit www.medschool.umaryland.edu/development/Our-Medical-Advances/





INVESTITURES

George Lewis, PhD, and Robert Redfield, MD, are now the Robert C. Gallo, MD, Endowed Professors in Translational Medicine.

Elias Melhem, MD, is now the Dean John M. Dennis Chair in Radiology in the Department of Diagnostic Radiology and Nuclear Medicine.



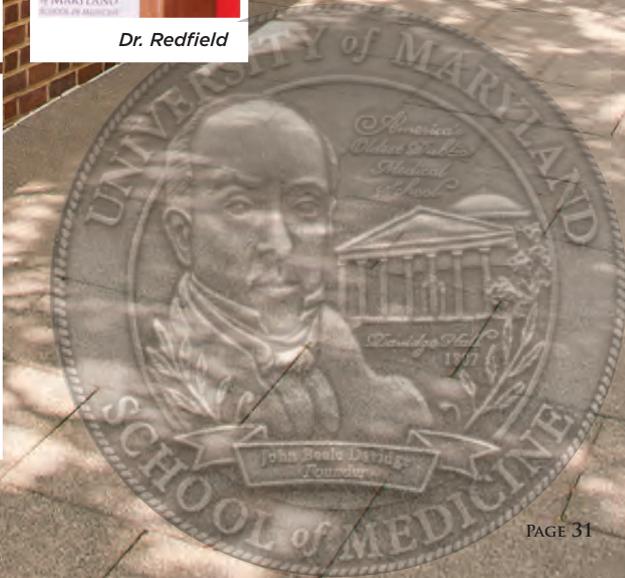
Dr. James Kaper, Dean Reece, Dr. Lewis and Dr. Gallo



Dr. Redfield



Dr. Melhem and Dean Reece



2017: Year in Review

Faculty & Leadership Highlights

1 • Greg Carey, PhD, Assistant Professor of Microbiology & Immunology, Center for Vascular and Inflammatory Diseases, and a member of the University of Maryland Marlene and Stewart Greenebaum Comprehensive Cancer Center, **received a 2017 Mentorship Award from the National Cancer Institute's Center to Reduce Cancer Health Disparities.** The award is given to a research scientist who has made an outstanding contribution to the field of lymphoma research, who has shown dedication to mentoring trainees and diversifying the biomedical research workforce, and who has demonstrated a long-standing commitment to eliminating cancer health disparities.

2 • Steven Czinn, MD, the Drs. Rouben and Violet Jiji Endowed Professor of Pediatrics and Chair of the Department of Pediatrics at the UMSOM, **has been appointed Director of the University of Maryland Children's Hospital.**

3 • Stephen Davis, MBBS, FRCP, MACP, the Theodore E. Woodward Endowed Chair and Professor, Department of Medicine; Director of the General Clinical Research Center and the Clinical Translational Science Institute; and Vice-President of Clinical Translational Science for the University of Maryland, Baltimore campus, **received the Mary Betty Stevens Award for Outstanding Clinical Research from the Maryland Chapter of the American College**

of Physicians in March. Dr. Davis was also awarded Mastership in the ACP, the national organization for internists.

4 • James Gammie, MD, Professor and Chief of Cardiac Surgery in the Department of Surgery, **tested a novel device to repair the mitral heart valve, Harpoon TSD-5, on which Dr. Gammie was a co-inventor.** The image-guided device is deployed through a tiny opening in a beating heart, avoids open-heart surgery, automates a key part of the valve repair process, simplifies the procedure and reduces operating room time. The result was 100 percent procedural success in a safety and performance study, the first such study done in humans.

5 • Mangla Gulati, MBBS, Assistant Professor in the Department of Medicine at the UMSOM, as well as Vice President for Patient Safety and Clinical Effectiveness and Associate Chief Medical Officer at the University of Maryland Medical Center, has been **elected Governor of the Maryland Chapter of the American College of Physicians**, starting in 2018.

6 • Thomas Hornyak, MD, PhD, Associate Professor, Department of Dermatology, and an internationally recognized physician-scientist in pigment cell biology, melanoma and skin cancer, was named the new **Chair of the Department of Dermatology** in February. He will also serve as Chief of Dermatology at the University of Maryland Medical Center.

7 • Zaineb Makhzoumi, MD, MPH, Assistant Professor of Dermatology and a skin cancer surgeon, has been named the Department of Dermatology **Chief of Clinical Services.**

8 • Wendy Lane, MD, MPH, Clinical Associate Professor, Departments of Epidemiology & Public Health and Pediatrics, who is a national leader in child abuse and neglect pediatrics, **received the 2017 Dean's Faculty Award for Diversity and Inclusion.** For years Dr. Lane has helped lead and evaluate the B'More for Healthy Babies program in Upton/Druid Heights, which connects expectant mothers in West Baltimore to necessary healthcare and psychosocial services.

9 • Miriam Laufer, MD, MPH, is the new **Director of the Division of Malaria Research** in the Institute for Global Health (IGH), replacing interim director Christopher Plowe, MD, MPH, the Frank M. Calia Professor of Medicine and Director of IGH.



10 • Myron Levine, MD, DTPH, the Simon and Bessie Grollman Distinguished Professor and Associate Dean for Global Health, Vaccinology and Infectious Disease, **has been awarded the Maxwell Finland Award for Scientific Achievement by the National Foundation for Infectious Diseases.**

11 • Ada Offurum, MD, Assistant Professor, Department of Medicine, **was named Hospitalist of the Year for 2017 by the Maryland Chapter of the American College of Physicians.**

12 • Sandra Quezada, MD, MS, Class of 2006, who is now an Assistant Professor in the Department of Medicine, as well as Assistant Dean for Admissions, **was awarded the inaugural Dean's Alumni Award for Diversity and Inclusion in February. Dr. Quezada was also named the new Assistant Dean for Academic and Multicultural Affairs.**

13 • William Regine, MD, FACR, FACRO, the Isadore & Fannie Schneider Foxman Endowed Chair and Professor in the Department of Radiation Oncology and Executive Director of the Maryland Proton Treatment Center (MPTC) **was awarded the 2016 Entrepreneur of the Year from the University of Maryland, Baltimore.** Dr. Regine was a crucial driving force behind the \$200 million MPTC, which began treating patients in February 2016.

14 • Mary-Claire Roghmann, MD, MS, Professor of Epidemiology and Public Health, and Associate Dean for Physician Scientist Training and Transdisciplinary Research Advancement, **was awarded the 2017 Alvan R. Feinstein Memorial Award from the American College of Physicians.**

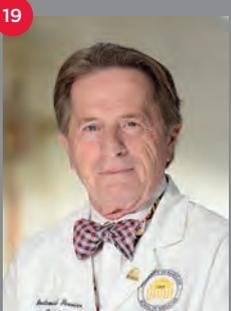
15 • Joseph Scalea, MD, Assistant Professor in the Department of Surgery, as well as Director of Pancreas and Islet Cell Transplantation in the Division of Transplantation, **received the American Surgical Association Foundation Fellowship.** This prestigious award supports gifted young surgeons who choose careers in investigation and academic surgery. It is given out annually to 1 to 3 surgeons, and is open to American surgeons who have been in practice for less than five years. Dr. Scalea is the first UMSOM surgeon to receive this award.

16 • Thomas Scalea, MD, the Honorable Francis X. Kelly Distinguished Professor in Trauma Surgery in the Department of Surgery, celebrated his **20th anniversary as Physician-in-Chief at the R Adams Kelly Shock Trauma Center (STC)** in January. STC now treats more than 8,000 critically ill and severely injured people per year and, remarkably, 97 percent of these patients survive. Dr. Scalea is also the Director of the Program in Trauma and System Chief for Critical Care Services for the University of Maryland Medical System.

17 • Charles Simone, II, MD, a nationally-recognized expert in proton therapy at the University of Pennsylvania, was named the **Medical Director of the Maryland Proton Treatment Center.** Dr. Simone was also appointed Associate Professor in the Department of Radiation Oncology.

18 • Samba Sow, MD, MSc, Director General of the Center for Vaccine Development in Mali (CVD-Mali), and Adjunct Professor of Medicine at UMSOM, was decorated as a **Knight of the Legion of Honor by the French government on Bastille Day (July 14) for his work fighting Ebola in Mali.** This is the highest honor bestowed by the French government. Dr. Sow was also named the Minister of Health for Mali in May 2017.

19 • Ronald Wade, Director of the Anatomical Services Division, UMSOM, Director of the Maryland State Anatomy Board Department of Health and Mental Hygiene and Director of the Anatomical Services Division, **was the 2017 recipient of the R. Benton Adkins Jr. Distinguished Service Award from the American Association of Clinical Anatomists.**



2017: Year in Review *In Memoriam*

ANGELA HARTLEY BRODIE, PHD

Faculty

*A*ngela Hartley Brodie, PhD, Professor Emeritus in the Department of Pharmacology at the University of Maryland School of Medicine, and an internationally recognized scientist whose groundbreaking cancer research is considered among the greatest advances in treating breast cancer, passed away at her home on June 7, 2017. She was 82. Dr. Brodie's research revolutionized the treatment of hormone-dependent breast cancer worldwide. She pioneered the development of aromatase inhibitors, which are now considered among the most important contributions toward treating estrogen-driven breast cancer, the most common form of breast cancer in postmenopausal women. Her work developing aromatase inhibitors was a paradigm-shifting effort that began in the 1970s and was designed to reduce the level of the estrogen in the body and thereby block the growth of cancer cells. Aromatase is an enzyme that plays a key role in the biosynthesis of the hormone estrogen, which fuels the growth of cancer cells.

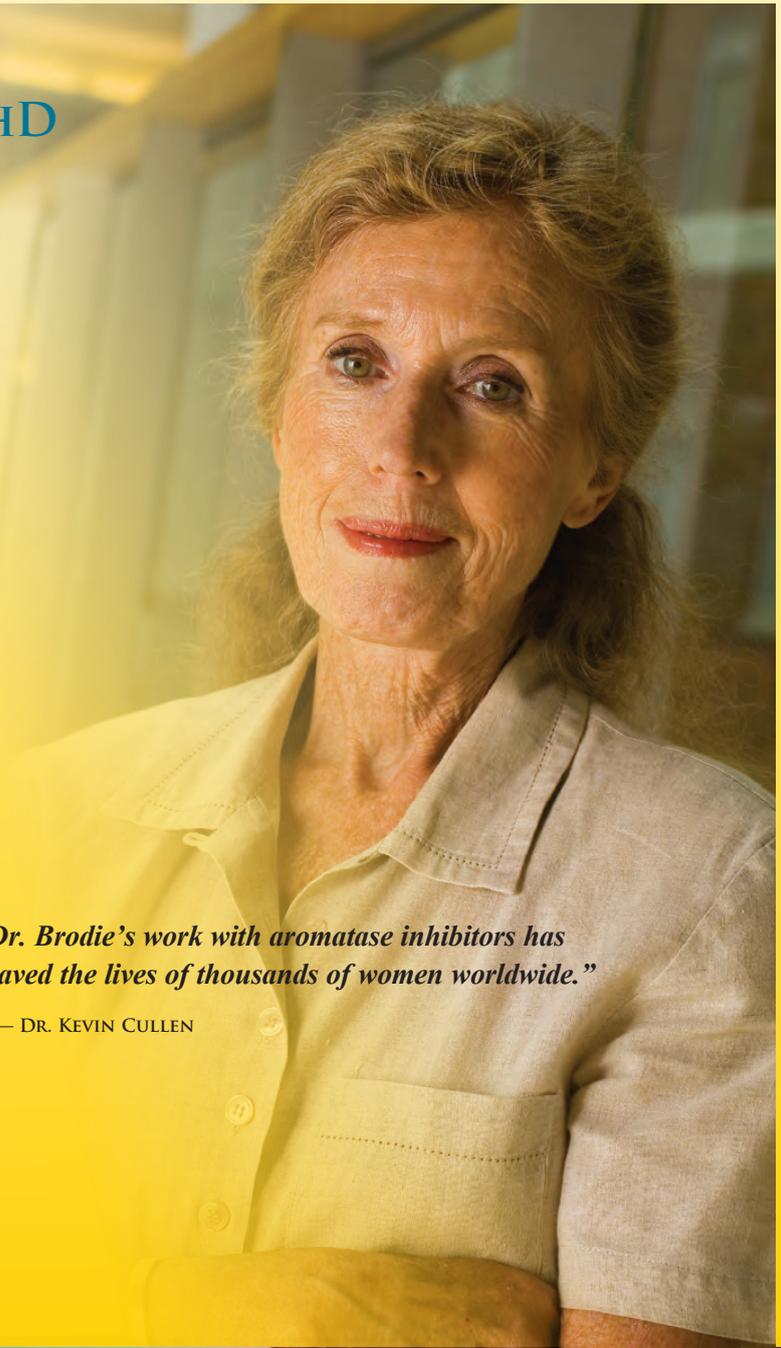
Dr. Brodie's research spanned decades and built upon her initial discoveries to create more powerful and specific aromatase inhibitors. "Dr. Brodie's pioneering research is equal to the greatest advances in treating breast cancer in the last 150 years," said Kevin J. Cullen, MD, the Marlene and Stewart Greenebaum Distinguished Professor of Oncology at the University of Maryland School of Medicine and Director of the University of Maryland Marlene and Stewart Greenebaum Comprehensive Cancer Center.

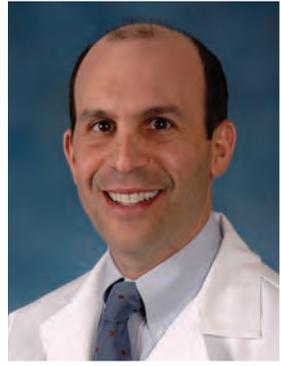
UMSOM established an endowed professorship in honor of Dr. Brodie's scientific achievements:

The Drs. Angela and Harry Brodie Distinguished Professorship in Translational Cancer Research

"Dr. Brodie's work with aromatase inhibitors has saved the lives of thousands of women worldwide."

— DR. KEVIN CULLEN





RICHARD HORENSTEIN, MD, JD

Faculty

An Associate Professor of Medicine, Dr. Horenstein passed away on March 23, 2017. He had extensive experience in clinical research, and had implemented several large translational studies examining the interaction between genes and environment, and between genes and a person's response to particular medicines. He focused especially on the interaction between genetics and cardiovascular medicines.

In his role at the University of Maryland Amish Research Clinic, he studied carriers of several rare gene variants. He did research into the effects of high fat diets, plant sterol supplements, and glucose, assessing the effect these had on different genetic variants. He constantly worked hard to translate his work from the lab to the clinic, where patients could benefit.



DAVID M. IBRAHIMI, MD

Faculty

A Clinical Assistant Professor, Department of Surgery, Dr. Ibrahimi passed away on July 19, 2017. He earned his medical degree from Virginia Commonwealth University School of Medicine and graduated with AOA honors. He then completed a neurosurgery residency at the University of Maryland Medical Center. After residency, prior to joining the University of Maryland, Dr. Ibrahimi completed a Combined Neurosurgical and Orthopedic Complex Spine and Spinal Deformity Fellowship at the University of Virginia. He was an expert in spinal diseases such as spinal tumors and spinal deformity.

THEY WILL BE GREATLY MISSED.



HAMISH OSBORNE

Philanthropist

Diagnosed with idiopathic pulmonary fibrosis, Mr. Osborne received a life-saving double-lung transplant at the University of Maryland. His vision and financial support led to the creation of the Program in Lung Healing and an endowed professorship in his name. The Hamish S. and Christine C. Osborne Distinguished Professorship in Advanced Pulmonary Care is currently held by Aldo Iacono, MD, from the Department of Medicine, Director of the Program in Lung Healing.



UNIVERSITY OF MARYLAND
SCHOOL OF MEDICINE
A.D. MDCXCVII



DAVIDIGE HALL

DAVIDIGE HALL, CONSTRUCTED IN 1812, IS NAMED FOR THE FIRST DEAN OF THE UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE, DR. JOHN B. DAVIDIGE. NOTED FOR ITS UNIQUE CLASSICAL APPEARANCE, IT IS THE OLDEST BUILDING IN THE COUNTRY USED CONTINUOUSLY FOR MEDICAL EDUCATION. THE MEDICAL SCHOOL, ESTABLISHED IN 1807 BY THE MARYLAND GENERAL ASSEMBLY, WAS THE FIFTH TO BE FOUNDED IN THE UNITED STATES. FOLLOWING MERGERS WITH BALTIMORE MEDICAL COLLEGE, 1913, AND COLLEGE OF PHYSICIANS AND SURGEONS, 1915, THE SCHOOL BECAME PART OF THE STATE UNIVERSITY SYSTEM IN 1920.

MARYLAND HISTORICAL SOCIETY



A LOOK BACK

HIGHLIGHTS FROM OUR THIRD CENTURY

TO PAY TRIBUTE TO OUR 210TH ANNIVERSARY THIS YEAR, WE ARE HIGHLIGHTING SEVERAL OF THE UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE'S ACCOMPLISHMENTS THAT HAVE ENABLED THE SCHOOL'S MOST RECENT INNOVATIONS AND LEADERSHIP IN CRITICAL AREAS OF MEDICINE.

THROUGH THE YEARS, THE UMSOM HAS CONTINUED TO MAKE SIGNIFICANT ADVANCES AS A RESULT OF A COLLECTIVE VISION AND STRATEGY, PURPOSEFUL ACTION, AND A RELENTLESS COMMITMENT TO AND PURSUIT OF EXCELLENCE.

ENJOY THE LOOK BACK ON OUR TREMENDOUS PROGRESS SINCE OUR BICENTENNIAL IN 2007.



A LOOK BACK

2016 HIGHLIGHTS



THE UMSOM CONTINUED TO OCCUPY THE WORLD STAGE WITH ITS CONTINUING LEADERSHIP IN VACCINE DEVELOPMENT — THIS TIME AS IT BEGAN TO TEST THE FIRST VACCINE FOR PREVENTION OF THE ZIKA VIRUS AND WITH THE DEVELOPMENT OF THE ONLY U.S. VACCINE TO PREVENT CHOLERA.

At the same time, Dean Reece launched the most ambitious effort in the School of Medicine’s history to recruit many teams of top scientists to the UMSOM. **A part of Vision 2020, the program, called the Special Trans-Disciplinary Recruitment Award Program, or “STRAP,” was announced with the goal of finding treatments and solutions to the world’s most complex and persistent diseases.** The initiative began strongly with new recruits in Orthopaedics and Pulmonary Medicine and several other top candidates in the pipeline, with potential for bringing tens of million in additional NIH research funding.

During the year, the UMSOM also rolled out a major initiative in its Office of Academic Affairs to significantly expand its Faculty Research Development Programs — **with a specific focus on developing women and minority faculty into top researchers and scientific investigators.**

In education, the UMSOM played a role in addressing the national doctor shortage by graduating its first class of students in the **new Primary Care Track (PCT)**. The program, founded by the departments of Family and Community Medicine, Medicine and Pediatrics, enables medical students to choose the Track and work directly in Maryland areas that have the greatest need for doctors. Since its inception, a total of 193 students have enrolled in the PCT. More than 75 percent of the PCT students who graduated in 2016 were planning to go into a primary care specialty.

In clinical care, the UMSOM completed work on the new Maryland Proton Treatment Center and opened its doors to the first patients. One of the first, 6-year old Phoebe Melling from Melbourne, Australia, was treated for a rare pediatric cancer. Following her treatment, she returned with her family to Australia, and remarkably, was back in school two weeks later.

On another front in helping cancer patients, the **University of Maryland Marlene and Stewart Greenebaum Cancer Center earned the highest level distinction when it was designated in 2016 by the National Cancer Institute (NCI) as a Comprehensive Cancer Center (UMGCCC)**. Following a rigorous review, the NCI reviewers gave the UMGCCC programs an “outstanding” rating.

As a result of the new designation, the Center’s federal grant will increase 50 percent to \$1.5 million a year for five years and the Center will be eligible for additional funding from the NCI and other public and private sources. **Maryland Governor Larry Hogan, who had been successfully treated as a patient at UMGCCC in 2015,** was instrumental in endorsing the Center for its new designation.

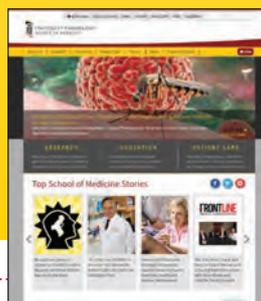
In other major developments, **the new Center for Sports Medicine, Health and Human Performance was officially launched at University of Maryland, College Park as part of plans to renovate the Cole Field House.** UMSOM faculty from Anesthesiology, Orthopaedics, Physical Therapy, Neurosurgery and Family & Community Medicine will work in collaboration with faculty on both UMB and UMCP campuses to study an array of complex topics, with a primary focus on traumatic brain injury and neuroinflammation. The new Center will also feature UMSOM clinical care facilities to treat both athletes and “weekend warriors” with a full range of sports-related injuries.

In research, the UMSOM continued to rebound in total grants and contracts, despite federal and state budget cuts. For the second year in a row UMSOM saw significant increases in grants and contracts. This exemplifies how undaunted our faculty members are in the face of new challenges.

In 2016, UMMC continued its national leadership in transplantation, both in research and surgical care. It was reported that UMMC’s Division of Transplantation performed more kidney transplants on African-American patients than any other medical center in the country. The 128 patients who received these transplanted kidneys represent just under half of the 270 total kidney transplants performed at UMMC during the year.

During the year, the UMSOM launched its newly-designed school-wide website, featuring bold graphics, images and video news segments depicting the groundbreaking research and clinical innovations of the UMSOM faculty. For prospective students, the site features a new Admissions section with easy navigation to each of the UMSOM academic programs.

Lastly, the UMSOM’s **MedSchool Maryland Productions produced a six part unscripted documentary TV series Shock Trauma: Edge of Life, being aired on the Discovery Life Channel.** Each episode portrays in dramatic detail the fight to save lives when every second counts.



As world leaders increasingly recognized the Zika virus as an international public health threat, **the Center for Vaccine Development at the UMSOM’s Institute for Global Health was chosen as one of three study sites in a human safety trial of a new Zika vaccine.**

The Office of Student Affairs started a **new House Mentoring Program**, which assigns students to one of four houses or “cohorts” — each named for outstanding UMSOM alumni. Within the house, students receive dedicated support and mentoring from core faculty.

The School of Medicine launched a **new bold, unprecedented faculty recruitment initiative called the Special Transdisciplinary Recruitment Award Program (STRAP)** to bring in top scientists.

The Department of Orthopaedics opened an outpatient **clinical practice at Camden Yards.**

The Maryland House of Delegates and **House Speaker Michael E. Busch presented Dean Reece and University of Maryland Medical System President and CEO Robert Chrencik with the “Speaker’s Medallion,”** the highest honor given to the public by the leader of the Maryland House of Delegates.

The Maryland Proton Treatment Center treated its **first patient.**

The School of Medicine launched its **new website** and expanded its internet and social media presence.

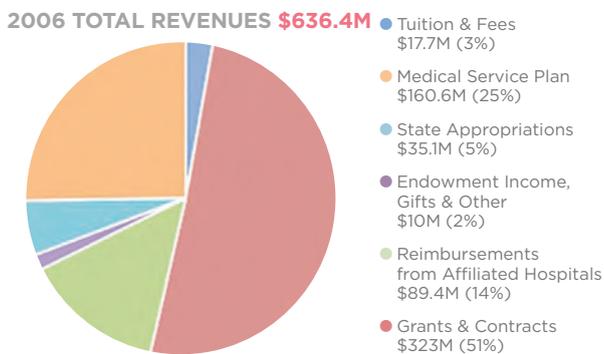
In a milestone that was years in the making, **a vaccine to prevent cholera, invented and developed by researchers at the UMSOM’s Center for Vaccine Development, was approved by the U.S. Food and Drug Administration.** The vaccine, Vaxchora, is the only approved vaccine in the U.S. for protection against cholera.

As medical schools continue to look for ways to address the severe shortage of primary care doctors in the U.S., the School of Medicine graduated its first class of students to go through the **Primary Care Track (PCT).**

This innovative program encourages medical students to become primary care doctors by letting them shadow primary care mentors in underserved areas one half-day a month during their first two years of medical school. They also work 80 hours with their mentors during the summer between first and second year.

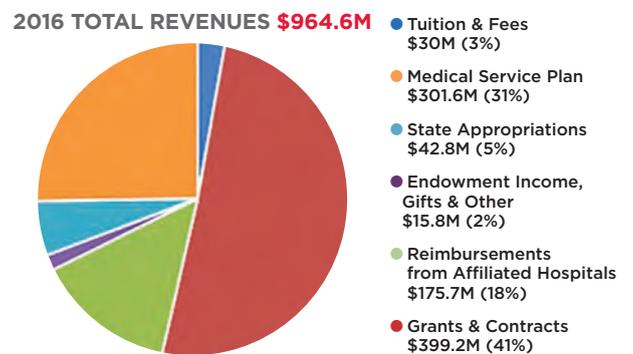


FIGHTING ZIKA AND CHOLERA



TOTAL REVENUES

2016	\$964.6M
2015	\$939.2M
2014	\$923.9M
2013	\$862.9M
2012	\$885M
2006	\$636.4M



“Within our Institutes and Centers we have continued to grow our global presence to 35 countries, making a powerful and lasting impact on world health.”

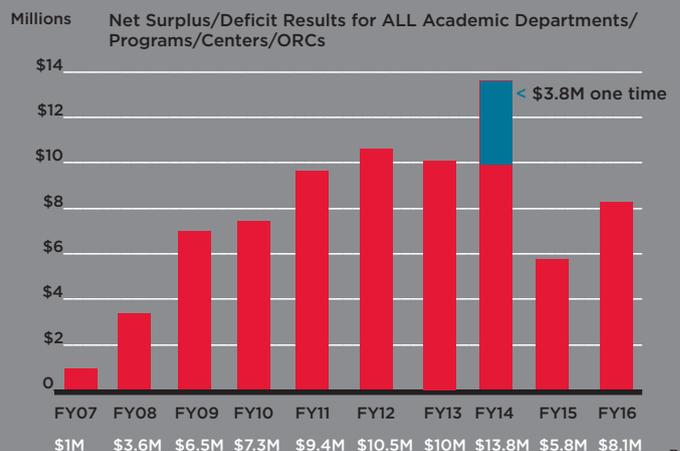
— DEAN REECE

More than 75% of the 2016 graduating PCT students matched into primary care residencies.

2016 FINANCIAL OVERVIEW

During the period 2007-2016, there was impressive financial growth across all key measures of fiscal performance. The financial health of the UMSOM is very strong as it enters 2017, as indicated in the charts showing significant growth over the past 10 years.

YEAR-END ALL-FUNDS RESULTS



A LOOK BACK

2015 HIGHLIGHTS



ACROSS ALL METRICS, THE YEAR WAS ONE OF STRONG GROWTH AND COMPELLING EXAMPLES OF SCIENTIFIC DISCOVERIES AND CLINICAL INNOVATION AS THE SCHOOL ELEVATED ITS PROFILE AS A NATIONAL AND INTERNATIONAL LEADER IN ACADEMIC MEDICINE.

In Education, a record 5,240 prospective students applied to the UMSOM. The entering class of 159 hailed from 67 different colleges and universities and included 75 percent Maryland residents, 9 percent underrepresented minorities, and came with an all-time high 3.76 average GPA and an average MCAT of 32, both well above the national average.

The UMSOM secured research grants and contracts worth more than \$402 million, up 9 percent since 2013. **A new Dean's Challenge Award was announced** to foster increased collaboration of senior scientists across departments, centers and institutes. Designed to provide the support needed for new and ambitious "big science" research projects, response to the program was tremendous! Nineteen interdisciplinary projects were submitted for funding consideration. **A final four was selected (based on NIH grants)**, with topics including "Role of TLR4 in Virus-Induced Allergic Hypersensitivity," "A Genomic Vaccinology Approach to Malaria Vaccine Development," "Pathogenic Role of HIV-1p17 Variants in AIDS-Associated Lymphoma," and "Metabolic Imaging and Sonodynamic Therapy for Invasive Brain Tumors Using 5-Amniocellulose." Many of the other research teams continued with their collaboration projects.

In research productivity, UMSOM faculty jumped ahead to **10th among all medical schools in the U.S.**, with \$400,000 per investigator. Helping achieve such productivity were initiatives such as the Research Career Development Program, which helped 1,000 participants secure \$6 million in increased funding during the year. Since its inception in 2006, more than \$56 million in funding has been awarded to students in the grant writing courses.

Robert Gallo, MD, and the Institute of Human Virology made a major announcement about clinical trials beginning for a new potential vaccine for HIV. On the heels of developing and testing an Ebola vaccine, the UMSOM once again made national and international headlines for its life-saving vaccine development work.

Clinical revenues increased 5.2 percent to \$293.3 million through the UMSOM's outstanding partnership with UMMS. The growth continued a consistent "stairstep up" growth chart beginning in 2007. While total patient volume increased 3.2 percent, notably, there was a 10.9 percent increase in outpatient surgeries, a trend that has continued.

During 2015, several "game-changing" clinical developments received widespread attention for the UMSOM. **First, construction was completed on the new Maryland Proton Treatment Center**, the most advanced form of pencil-beam cancer treatment and the first proton treatment center of its kind in the Baltimore-Washington area. Second, the UMSOM shone brightly with innovative and miraculous treatments for patients with essential tremor using new non-invasive technology called image-guided focused ultrasound.

Also at UMMC, the UMSOM community saw the unveiling of a beautiful **new Neonatal Intensive Care Unit**, named for benefactors, Drs. Rouben and Violet Jiji. During the year, UMSOM faculty and staff began to observe that the new UMSOM Research Building, which had been slowly rising out of the ground, was reaching its full, impressive height.

In philanthropy, the UMSOM community celebrated the most successful fundraising campaign ever with philanthropic gifts totaling more than \$450 million and 17,000 donors, supporting scholarships, global health and biomedical research. Dean Reece unveiled an illuminated "Wall of Honor" with top donor names to celebrate the milestone. Significantly, the capital campaign raised 89 percent more than the previous campaign, including 30 new endowed professorships and 52 new scholarships totaling more than \$11 million.

On the international front, **the UMSOM established a new Institute for Global Health (IGH), under the leadership of Christopher Plowe, MD, MPH, and newly recruited acclaimed vaccinologist Kathleen Neuzil, MD, MPH.** The IGH immediately began to impact the treatment of malaria in Myanmar while continuing its work on other vaccines, including the first tested in the U.S. for Ebola.

Back home, Dean Reece joined 100 volunteers on Thanksgiving Day to serve a hot holiday meal and health screenings to more than 400 less fortunate persons in West Baltimore. The annual program, "Project Feast" has been hosted by the UMSOM every year since 1989.

The UMSOM also expanded its **Mini-Med School** program to begin a similar outreach seminar series for senior citizens in Baltimore County. **The "Seniors Medical Institute,"** which features top UMSOM faculty speakers on the latest advances in health and medicine, is held in conjunction with the Community College of Baltimore County, and has also become an annual event.



On November 19, 2015 **Robert L. Caret, PhD,** was inaugurated as the system's fourth chancellor. Formerly President of the University of Massachusetts System, and President of Towson University from 2003-2011. Chancellor Caret pledged to continue strong support for the School of Medicine, and has already been engaged in some major UMSOM programs and activities.

Completed the **Maryland Proton Treatment Center**, which aims to deliver the most advanced form of pencil beam cancer treatment.

Focused Ultrasound first used in a clinical trial for the treatment of essential tremor.

UMSOM established a **new Institute for Global Health.**

Completed largest fundraising campaign in school history, raising more than **\$450M.**



17,000+ donors

IHV awarded **\$13M** to strengthen laboratory **services in Kenya** and **\$10M** to enhance biosecurity **infrastructure in Nigeria.**

UMSOM joined in a **\$11M** multi-institution effort by the U.S. Centers for Disease Control and Prevention to **prevent the spread of germs in hospitals.**

Established new Mesothelioma and Thoracic Oncology Treatment and Research Center.

The Institute of Human Virology (IHV) began **clinical trials** for a potential HIV vaccine.

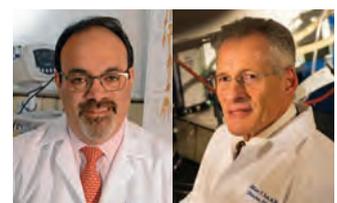
IHV received a five-year **\$24.5M** grant from the CDC to fight **Botswana's HIV/AIDS epidemic**, and a **\$50M** five-year grant from the President's Emergency Plan for AIDS Relief to combat HIV crisis in **Zambia.**

UM Children's Hospital, along with the UMSOM Department of Pediatrics, unveiled the **new 37,000 square-foot** Drs. Rouben and Violet Jiji **Neonatal Intensive Care Unit.**



UMSOM received a Grand Challenges Explorations grant funded by the **Bill & Melinda Gates Foundation** for research in global health and development

Under the leadership of **Andrew Pollak, MD,** and **Alan Faden, MD,** UMSOM has teamed up with the University of Maryland, College Park to create a new center to **study athletic performance and health.**

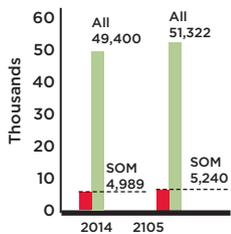




FOCUSED ULTRASOUND FOR TREATMENT OF ESSENTIAL TREMOR

Dr. Eisenberg

U.S. MEDICAL SCHOOL APPLICATIONS



Dr. Regine



“At the end of each day, each month and each year, we can reflect on the advances we are making in science and medicine.”

— DEAN REECE

The IGH's Malaria Initiative historically brought together opposing factions in Myanmar in an effort to fight the disease.



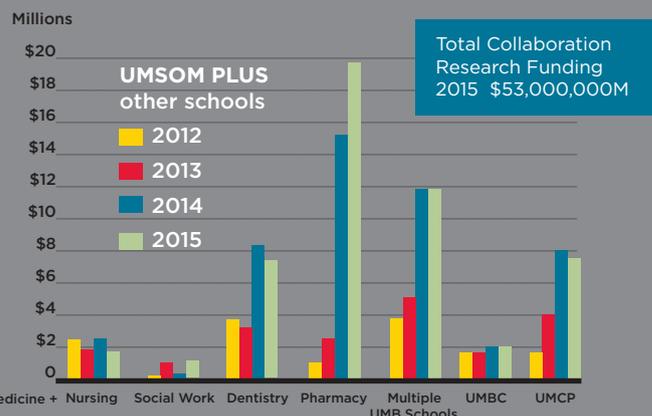
The Institute of Human Virology surpassed one million HIV patients treated around the globe.

Had the largest number of applications to the MD program in history (5,240).



The Maryland Psychiatric Research Center participated in a \$11M international grant to develop new tools for diagnosing and treating brain disorders.

COLLABORATIVE RESEARCH EFFORTS ACROSS THE UNIVERSITY SYSTEM OF MARYLAND



A LOOK BACK

2014 HIGHLIGHTS



WITH A CHARGE TO “ACCELERATE OUR PACE AND FACE THE CHALLENGES HEAD ON,” DEAN REECE COMPLETED HIS 2014 STATE OF THE SCHOOL ADDRESS, “VISION TO VENTURE.” IT WAS A FITTING TITLE, AS THE YEAR WAS MARKED BY A MAJOR UPDATE OF THE SHARED VISION STATEMENT BETWEEN UMSOM AND UMMS, ORIGINALLY DRAFTED BY DEAN REECE AND MR. ROBERT CHRENCIK IN 2008. THE NEW “SHARED VISION 2020,” PRESENTED JOINTLY FROM THE COMBINED ENTITY, “UNIVERSITY OF MARYLAND MEDICINE,” PLACED A SHARPER FOCUS ON SHARED GOALS AND ESTABLISHED NEW BENCHMARKS IN EACH OF THE KEY MISSION AREAS.

One major component of Vision 2020 in the area of Research was to increase the pace and scope of clinical and basic science research to have greater impact on improving human health and well-being. The initiative, referred to as “ACCEL-Med,” was specifically aimed at accelerating innovation and discovery in medicine. Launched in FY14, the initiative kicked off with the first Annual UMSOM Festival of Science, a full-day symposium highlighting breakthrough research being conducted by UMSOM faculty, held in November 2013. Topics covered included genomic medicine, neuropharmacology, oncopharmacology, stem cell treatments, and advances in transplant science. The presentations were evaluated by the School of Medicine’s newly-formed **Scientific Advisory Council (SAC), made up of distinguished scientists and leaders in academic medicine, including a Nobel Laureate. SAC council members included Philip Needleman, PhD; Rita Colwell, PhD; Carol Greider, PhD; Dean Reece; Ralph Snyderman, MD; (Current Chair) and Elias Zerhouni, MD.**

One of the major recommendations made by the SAC was that the UMSOM should continue its strong focus on collaborative research, and ensure that programs and policies are in place to encourage interdisciplinary research. To improve alignment of ongoing research in the basic and clinical departments, another part of the ACCEL-Med initiative included creating Research Consortia Units (RCU’s) to bring together senior basic and clinical faculty with the common goal of answering “Big Science” research questions. **The first RCU to be established was the Brain Science Research Consortium Unit.**

Federal grants rebounded after sequestration, rising back up to over **\$400M.**

Another integral part of ACCEL-Med was the official opening of the Center for Innovative Biomedical Resources (CIBR) on the same day as the Festival of Science. With NIH Director **Dr. Francis Collins** there to help cut the ribbon, the CIBR was launched as a new core resource.

The CIBR supports biomedical research, clinical practice and health care, not just for UMSOM faculty, but for the UMB campus, as well as the region and state of Maryland.

The new facilities would provide greater access to sophisticated instrumentation, and other state-of-the-art technology as well as a highly-trained technical staff to support faculty on a range of research needs — including experimental design, data analysis, and interpretation, as well as training for graduate and medical students, postdoctoral fellows and faculty.

The CIBR would become another major step forward for the School of Medicine in building the infrastructure required to be a leading biomedical research institution.

With the roll-out of ACCEL-Med, the year saw the UMSOM rebound strongly following the challenges of sequestration, moving once again past the \$400 million mark in total research and grants, up a full 8 percent over the previous year.

An important aspect of the success in research funding during the year was the collaborative research efforts across not just UMB, but the entire University System of Maryland. Joint seed programs netted \$778,636 in funding for UMB/UMCP (University of Maryland College Park) partnerships and \$390,000 for UMB/UMBC (University of Maryland, Baltimore County) partnerships. Total collaborative research funding in the University System of Maryland jumped an incredible 213 percent, from \$15,045,308 to \$47,107,735.

Metrics across the board continued to climb to record levels. Clinical revenue increased during the year by **8.4 percent to a record \$278.7 million** and philanthropic gifts to the “Transforming Medicine Beyond Imagination” campaign passed \$400 million.

At the same time, Dean Reece and President Jay Perman saw progress on the new UMSOM Research Building. When completed, the new building will house the most advanced laboratories and technology, a key attraction in recruiting top scientists.

During the year, the UMSOM saw two of its prominent scientists, Dr. Myron Levine and Dr. Robert Gallo in the spotlight. While Dr. Gallo commemorated the 30th anniversary of his co-discovery of HIV as the cause of AIDS, Dr. Levine was celebrating 40 years since co-founding the UMSOM Center for Vaccine Development. At the same time, he was leading global efforts to test a new Ebola vaccine, as the epidemic spread around the world.

The UMSOM SCIENTIFIC ADVISORY COUNCIL (SAC) was formed.

(l-r) Philip Needleman, PhD; Rita Colwell, PhD; Carol Greider, PhD; Dean Reece; Ralph Snyderman, MD; and Elias Zerhouni, MD.



EBOLA ERADICATORS



Dr. Schmaljohn

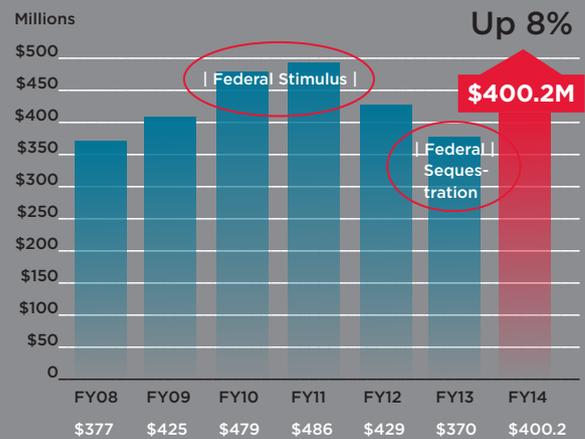


Dr. Levine and Dr. Lyke

"I could not be more pleased about the remarkable success we have enjoyed and have shared by being undaunted in purpose and resilient in execution."

— DEAN REECE

TOTAL RESEARCH GRANTS & CONTRACTS 2008-2014



Brain Science Research Consortium Unit (BSRCU) established as first UMSOM multidisciplinary unit to investigate "big science" questions.

UMSOM BSRCU:

1. Dr. Johnson
2. Dr. Belcher
3. Dr. McCarthy
4. Dr. Faden
5. Dr. Buchanan
6. Dr. Crino
7. Dr. Shipley
8. Dr. Thompson
9. Dr. Eisenberg
10. Dr. Melhem

UMSOM created an **Executive Health Program** to attract new concierge patients.

UMSOM became one of the first medical schools in the U.S. to offer genetics testing to all MD students, as part of an increased emphasis on medical data analysis in the MD curriculum.

Announced that a **new National Program in Lung Healing** would be established at UMSOM.

Selected by the World Health Organization to be the **only U.S. research group to participate in the testing of an Ebola vaccine candidate.**

NIH awarded a four-year, **\$3.7M** grant to UMSOM researchers to develop a **personalized program for genetic types of diabetes.**

Grew clinical revenue further to **\$278.7M.**



A LOOK BACK

2013 HIGHLIGHTS



WHILE CHALLENGES LOOMED – WITH NEW TERMS LIKE “SEQUESTRATION” AND “FISCAL CLIFF” — THE YEAR WAS BEST CHARACTERIZED BY DEAN REECE’S ASPIRATIONAL WORDS, “PURPOSEFUL ACTIONS, PROMISING RESULTS: RELENTLESSLY ADVANCING.”

Undaunted, the School of Medicine persisted and advanced:

- With support from the Maryland General Assembly, the UMSOM broke ground on the new UMSOM research building, which would serve as a magnet for attracting world-class researcher and further strengthen the School’s biomedical research infrastructure.
- The UMSOM celebrated the topping off of the new Maryland Proton Treatment Center, which would offer the world’s most advanced technology in radiation treatment for cancer.
- The UMSOM provided leadership for the establishment of state-wide Health Enterprise Zones in Maryland, supported with \$16 million of State appropriations.

Starting with the class entering in 2013, the UMSOM introduced to all students a new innovative course, called **Foundations in Research and Critical Thinking**. The course was designed to strengthen the curriculum’s focus on research and critical thinking by requiring each medical student to participate in lecture and small group programs, and create and execute a scholarly scientific research project.

In research, the UMSOM faculty continued to increase the impact of research and discovery on human health, with a focus on areas causing great disability, morbidity and mortality. **Global activities expanded to 34 countries worldwide**, with about \$90 million in research grants dedicate to international programs and projects.

In the midst of budget cuts for biomedical research, UMSOM faculty staged a rally for research funding sending a clear message: Research is imperative to patient care and patient health; Research is important for the economy; and Research is important for growing and developing the next generation of scientists and other leaders.

The School of Medicine also hosted a “**Research Transforming Medicine**” symposium, inviting legislators and other dignitaries to campus to find out more about UMSOM research and raise awareness of the importance of research funding.

In all, despite the sequestration, the UMSOM continued to persevere with \$370 million in grants and contracts over the course of the year.

An important part of the success was the collaborative research efforts across the UMB campus and the entire University System of Maryland. For example, collaborative research with College Park increased significantly, as did partnerships with other schools on the UMB Campus. Overall, the UMSOM had a 20 percent increase in collaborative growth and collaborative research.

Two significant centers moved forward in 2013. The new Center for Excellence on Problem Gambling was made possible by a \$5 million grant from the Department of Health and Mental Hygiene. The Center was established to focus on training individuals to help those who have addiction issues or are at risk for addiction due to enhanced gambling opportunities in Maryland. Second, the Center for Health Related Informatics and Bioimaging (CHIB) was established to harness the power of “big data” across the two campuses.

Helping grow research productivity was the establishment of the **Research Career Development Program**, offering classes in grant writing, identifying funding sources, and professional development. During the year, the program helped nearly 1,000 participants secure almost \$8 million in funding. Since the program’s inception, almost \$39 million in funding has been awarded to students in the grant writing courses.

Major capital projects advanced for the UMSOM/UMMS during the year. The topping off of the **\$200 million Proton Treatment Center** was a significant highlight, and the ribbon was cut on the **new Shock Trauma Tower**.

UMSOM clinical practices began to expand strategically located across the State of Maryland. A new faculty site was established in Columbia, Md., to become a multi-disciplinary practice. Another new practice was the optical center.

The University of Maryland Medical Center started a new program called the CCRU or the **Critical Care Resuscitation Unit**, as a way to employ the successful trauma model to treat critically ill patients patients with immediate evaluation and referral to appropriate care.

An additional center that was initiated during the year, the Center for Integration of Molecular Imaging and Therapeutics, spotlighted exciting new technology with the promise of non-invasive treatment for neurological disorders.

Another milestone for UMSOM faculty physicians was achieved during the year: a record **98 were named top doctors in Baltimore Magazine**.

Collaborated with UMMS CEO Robert Chrencik to launch updated Shared Vision 2020 for UMSOM.



Held first **Festival of Science**, with a keynote speech by NIH Director **Dr. Francis Collins**. Research presentations at the event were critiqued by the newly-established UMSOM **Scientific Advisory Council**, which includes internationally-acclaimed scientists and a Nobel laureate.

Total number of Mini-Med School participants reached 7,000.



Celebrated the groundbreaking of the new UMSOM Research Building.

Led effort to establish **Health Enterprise Zones** in Baltimore City.

Established **new Center for Health Related Informatics and Bioimaging** to mobilize data across UM campuses.



Opened the Center for Integration of Molecular Imaging and Therapeutics.



DEDICATED NEW SHOCK TRAUMA CRITICAL CARE TOWER



2012 FIRST-YEAR STUDENT STATISTICS

- 4,925 TOTAL APPLICATIONS FOR CLASS OF 160 STUDENTS
- 73 COLLEGES/UNIVERSITIES ARE REPRESENTED
- AGES RANGE FROM 21 TO 32 YEARS
- 73% ARE MARYLAND RESIDENTS; 27% ARE NON-RESIDENTS
- 11% ARE UNDERREPRESENTED IN MEDICINE
- 63% ARE FEMALE; 37% ARE MALE
- OVERALL AVERAGE GPA IS 3.76
(Above national Average)
- AVERAGE MCAT SCORE IS 32
(Above national Average)

“Within the School of Medicine and Medical System lies tenacity, dedication, a pioneering spirit and strength.”

— DEAN REECE

Launched new **Center for Innovative Biomedical Resources**, as a centralized resource for conducting laboratory research.

Started a new course for students in the MD program, **Foundations on Research and Critical Thinking**, to increase their interest and participation in basic research.

Established a new **clinical practice facility at Waterloo Crossing** in Columbia for outpatient services.

Dedicated new Shock Trauma Critical Care Tower, the first free-standing Trauma center in the world.

Opened innovative new **Critical Care Resuscitation Unit** at the R Adams Cowley Shock Trauma Center.



TOTAL STUDENT ENROLLMENT

Medical, Graduate, Allied Health and Public Health

STUDENTS	2012	2013
MEDICAL (MD)	642	647
MD/PHD	36	39
GRADUATE (MS/PHD)	340	357
PUBLIC HEALTH (MPH)	52	50
PHYSICAL THERAPY (DPT/PhD)	185	180
GENETIC COUNSELING (MS)	13	12
MEDICAL AND RESEARCH TECH (BS/MS)	70	59
TOTALS	1,338	1,344

STUDENT DIVERSITY

Percent of Minorities in the 2013 Programs*

MEDICAL (MD)	12%	
MD/PHD	15%	
GRADUATE (MS/PHD)	15%	<i>*Includes Native American, African American, Hispanic American and Multi-Racial Americans</i>
GENETIC COUNSELING	10%	
PUBLIC HEALTH	8%	
PHYSICAL THERAPY	33%	
MEDICAL & RES TECH	29%	

A LOOK BACK

2012 HIGHLIGHTS



MANY EXTERNAL CHALLENGES CONTINUED DURING THE YEAR, ALTHOUGH PASSAGE OF THE AFFORDABLE CARE ACT BROUGHT HOPE TO MANY UNINSURED PATIENTS. THE UNCERTAINTY OF A FEDERAL BUDGET CRISIS LOOMED OMINOUSLY OVER THE NIH BUDGET AND SERIOUSLY ENDANGERED RESOURCES NECESSARY TO TRAIN PHYSICIANS, SCIENTISTS AND ALLIED HEALTH PROFESSIONALS.

Still, the UMSOM was able to stay on course with its research and clinical enterprises by identifying new routes to success. *“We must continue to be nimble but at the same time be alert to the external forces,”* Dean Reece exclaimed in the 2012 State of the School address. *“We must at every turn, carefully examine all potential courses in these challenging times.”*

In 2012, the UMSOM research enterprise continued to grow and prosper, moving up to 6th among the 76 public medical schools nationwide and continuing in the top 10 percent. Of the 138 public and private medical schools across the nation, the UMSOM moved up from 17th to 16th. Technology transfer continued to expand with increases in U.S. patents issued, scientific disclosures (pre-patent) and technology inventions licensed.

Research accomplishments included breakthrough work in fighting children’s heart disease with surgical and stem-cell therapy. UMSOM faculty began pursuing research into obesity in children, particularly those in poverty, with the goal of understanding family stresses such as food insecurity and maternal depression and the impact on children’s health risks.

An additional metric emerged in 2012 that revealed the tremendous productivity of the UMSOM faculty. According to AAMC data, the average **direct expenditure per principal investigator was \$315,469, ranking the UMSOM faculty as the 8th most productive in the country.**

For the first time in UMSOM history, the research vision increased the impact of research and discovery on human health, not only in the region but around the world. Faculty and staff were doing research and service in 23 countries around the globe.

In clinical care, admissions and observations increased by 4.2 percent and surgeries increased 5.6 percent. Most significantly, there was a 7.6 percent increase in revenue in the clinical enterprise, generating \$244.2 million in total clinical revenue in 2012.

In all, the UMSOM clinical practices experienced a robust 26 percent growth since 2007. Total patient volume, including inpatient and outpatient visits, also increased 3.3 percent, while admissions to the UMMC increased 4.2 percent to 41,260.

Practice plan performance continued to show financial efficiency among the strongest in the nation, with 16.7 percent in accounts receivable and the number of accounts unpaid for longer than 90 days down to 20 percent. The year also saw the beginning of the transformation of our clinical space with the renovation of the UMSOM Professional Building.

Overall, the results moved the UMSOM even higher with continued breakthroughs and innovations in research and clinical care. **A team of UMSOM surgeons completed the most comprehensive successful face transplant in history, based on 10 years of research.** The 36-hour operation occurred at the R Adams Cowley Shock Trauma Center and involved a multi-disciplinary team of UMSOM faculty physicians and a team of over 150 nurses and professional staff. The family of one anonymous donor generously donated his face and also saved the five other lives through the heroic gift of organ donation. Four of the transplants took place over the course of two days at UMMC.

Philanthropy continued to close the gap of the UMSOM operating budget by growing 4.5 percent to a record \$69.1 million in private support, 50 percent from individuals and 50 percent from foundations. In reviewing the level of giving over the previous five years, it was reported that there had been a 41 percent increase in philanthropy over that period of time.

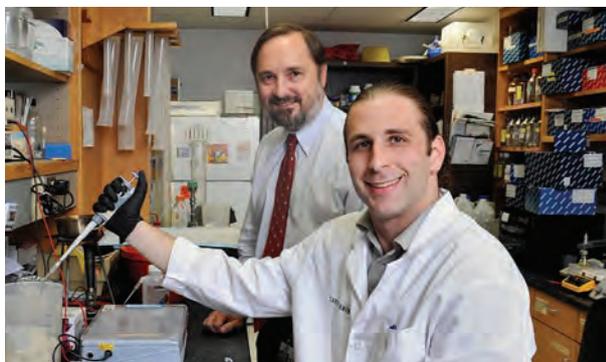
The UMSOM student body continued to diversify in 2012 with a significant 10 percent increase in underrepresented minorities in the Medical & Research Technology and the Master of Public Health Program.

Interest in other UMSOM academic programs continued to increase with 44 graduating with Doctor of Physical Therapy degrees from the Department of Physical Therapy & Rehabilitation Science; 6 completed the Masters in Genetic Counseling degree; there were 15 graduates in Medical & Research Technology; and 8 Masters of Public Health graduates.

The UMSOM continued to expand its activities around the world and embarked on new initiatives in Baltimore with **construction of the new Maryland Proton Treatment Center, and the launch of the new Maryland Center for Excellence on Problem Gambling**, a major statewide initiative that set a new standard in public education, counseling, and data collection of this growing problem.

Dean Reece chaired the Maryland Health Disparities Workgroup and Final Report.

Expanded research and service activities internationally, with School of Medicine faculty and students now working in **23 countries** around the globe.



Moved up to **6th** among all public and **16th** among all medical schools in **AAMC rankings of total research expenditures**, and up to 8th in the country in average direct expenditure per investigator.

Performed **most extensive full-face transplant** completed to date, a 36-hour operation based on ten years of organ transplantation research.

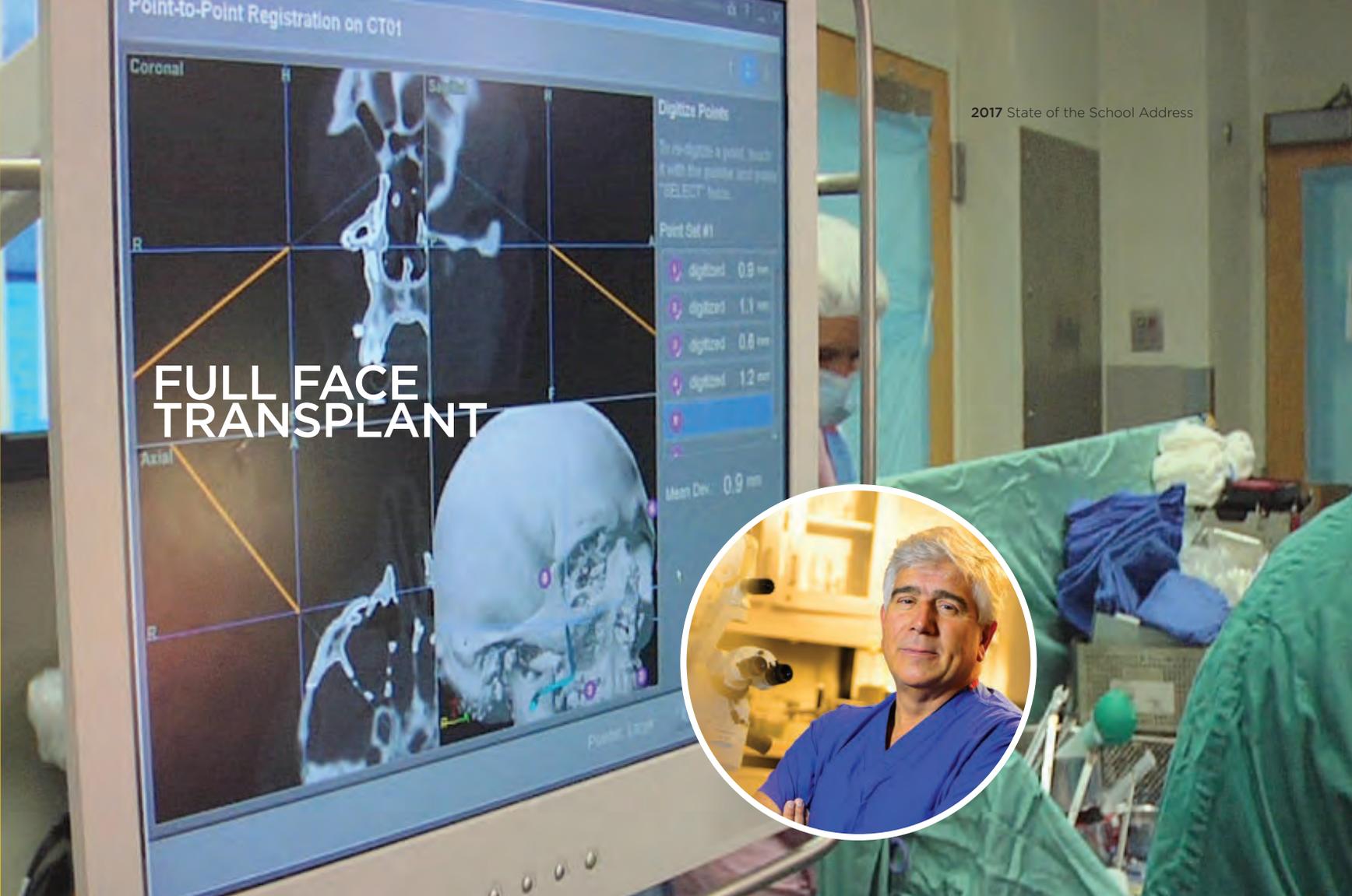
Selected as the location for the Maryland Department of Health and Mental Hygiene to establish **The Maryland Center of Excellence on Problem Gambling.**

Broke ground on a **\$200M Proton Treatment Center**, the first of its kind in the area.

Received a five-year, **\$877K** grant to establish a **Primary Care Track** to increase the number of students who choose primary care as a specialty.



FULL FACE TRANSPLANT



TOTAL GRANTS AND CONTRACTS DIRECT EXPENDITURES

Public Schools, All Regions

AAMC RANK/SCHOOLS' GRANTS & CONTRACTS

- 1 / UWASH \$784,611,376
- 2 / UCSF \$756,068,277
- 3 / UCLA-GEFFEN \$571,385,780
- 4 / UCSD \$405,171,492
- 5 / COLORADO \$352,590,697
- 6 / MARYLAND \$352,068,835**
- 7 / MICHIGAN \$344,089,855
- 8 / NORTH CAROLINA \$304,765,886
- 9 / ALABAMA \$255,373,364
- 10 / OREGON \$247,597,325

“The future of medicine depends on rapid translation of research and creating high-performing teams.”

— DEAN REECE

An all-time high of 98 University of Maryland doctors, all members of the School of Medicine faculty, were recognized as **“Top Doctors”** in *Baltimore Magazine*.



Davidge Hall, the founding building of University of Maryland turned **200 years old**.

Members of the Class of 2015 became an internet sensation on YouTube with a series of videos featuring UMSOM musical group **“The Hippocratic Notes.”**



TOTAL GRANTS AND CONTRACTS DIRECT EXPENDITURES

Public and Private Schools, All Regions

AAMC RANK/SCHOOLS' GRANTS & CONTRACTS

- 1 / HARVARD \$2,083,479,003
- 2 / U WASHINGTON \$784,611,376
- 3 / UC SAN FRANCISCO \$756,068,277
- 4 / DUKE \$617,933,462
- 5 / PENNSYLVANIA-PERELMAN \$602,168,184
- 6 / UCLA-GEFFEN \$571,385,780
- 7 / COLUMBIA \$566,653,318
- 8 / JOHNS HOPKINS \$545,205,979
- 9 / MOUNT SINAI \$482,376,272
- 10 / PITTSBURGH \$464,971,680
- 11 / YALE \$456,892,188
- 12 / WASH U-ST. LOUIS \$431,572,366
- 13 / STANFORD \$431,082,001
- 14 / UC SAN DIEGO \$405,171,492
- 15 / COLORADO \$352,590,697
- 16 / MARYLAND \$352,068,835**
- 17 / MICHIGAN \$344,809,855
- 18 / CASE WESTERN \$336,673,303
- 19 / Vanderbilt \$331,873,871
- 20 / Baylor \$318,823,725

A LOOK BACK

2011 HIGHLIGHTS



THE YEAR WAS ONE OF INNOVATION AND DISCOVERY AS THE SCHOOL OF MEDICINE BEGAN TO EXPAND ITS VISION TO INCREASE ITS IMPACT ON HUMAN HEALTH, NOT ONLY IN THE REGION, BUT AROUND THE WORLD.

In the U.S., continued economic uncertainty and a growing federal budget deficit greatly threatened NIH funding, clouding the future of biomedical research and academic medicine. At the state level, continuing budget reductions forced the UMSOM to master the art of doing more with less.

Despite these challenges, the School of Medicine pressed forward in new and exciting directions over the year, strategically and opportunistically, to grow the biomedical research enterprise. Simultaneously, the UMSOM continued to educate and train new generations of outstanding physicians, scientists, and allied health professionals in order to enhance the health and science workforce.

The year saw UMSOM graduates spreading out across the country. Now with 7,467 graduates, **UMSOM alumni were practicing in virtually every state**, with a concentration in California, Texas, Virginia, North Carolina and Florida.

The School of Medicine became one of only two universities to collaborate with IBM on groundbreaking artificial intelligence technology, as “Dr. Watson,” the famous computer came to campus as a “student” at the UMSOM.

During the year, it was reported that the UMSOM had secured almost **\$4 billion** in extramural funds since 2000, a measure of the tremendous and rapid growth of the UMSOM research enterprise. In 2011, total grants and contracts soared to \$486.3 million, a 12.5 percent increase, excluding the one-time stimulus funding added in 2010. **Overall, the UMSOM ranked 7th among the 76 public medical schools nationwide, putting the School of Medicine in the top 10 percent.** Of the 134 public and private medical schools across the nation, the UMSOM remained in the top 15 percent, ranking 17th.

However, during 2011, there was a realization that the School of Medicine was reaching capacity on its research space. Although the UMSOM was rated the 14th most efficient medical school with regard to grant funding per square foot, it became clear that if the UMSOM faculty were to expand its research programs, new facilities were needed.

As a result, Dean Reece reported that the construction of a new UMSOM research building (HSF III) was making significant strides to becoming a reality, with financial commitments from the Maryland General Assembly, the Governor’s Office, the UMB President Jay Perman and the USM Chancellor William Kirwan, PhD, who all recognized the need for a new research building.

The UMSOM also began to focus on another important measure: technology transfer. UMSOM faculty were increasingly making innovations and discoveries that resulted in scientific disclosures, technology licenses and start-up companies. Many of these were new therapies in Phase II or Phase III clinical trial stage, and focused on diseases with high morbidity, high mortality and high disability. In 2011, **U.S. patents issued to UMSOM faculty reached 24, up from 15 in 2010. Foreign patents issued soared from 29 to 65.**

In clinical affairs, the newly-cast FPI, Faculty Physicians, Inc. (formerly UPI), generated \$227 million in total revenue, a 7 percent increase. The faculty practice, which generates clinical dollars to support UMSOM salaries and operations, continued to be successful despite the ongoing challenge of reduced reimbursements. Total patient volume, including inpatient and outpatient visits increase 3.5 percent to 1.1 million, while admissions to the University of Maryland Medical Center increased 3.3 percent to 39,500. In addition, the clinical practices had very substantial and very respectable improvements in practice performance. The number of days in accounts receivable was reduced to 48 days. The number of accounts greater than 90 days was down to 20 percent and the initial denial rate was down to 6.2 percent.

The School of Medicine also advanced as a leader in cancer with plans for a new Proton Treatment Center and renewal of the University of Maryland Marlene and Stewart Greenebaum Cancer Center’s NCI designation.

During the year, the UMSOM expanded its visual identity as part of a campus wide initiative and established its new logo, while retaining its historic Davidge Hall dome symbol. University Physicians, Inc., officially became University of Maryland Faculty Physicians, Inc. and moved into a newly renovated professional building on Redwood Street.

Began collaboration with **IBM Watson Computer** for data analysis.



MPTC RENDERING

Began planning for the **Maryland Proton Treatment Center (MPTC)**, to offer the most advanced form of cancer treatment in the Baltimore/Washington area.

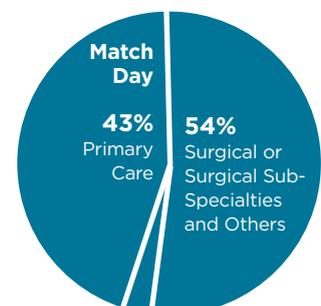
Increased private gifts to a record high **\$66.1M**.

The UM Marlene and Stewart Greenebaum Cancer Center received renewal of its **National Cancer Institute designation**, bringing with it **\$7.6M** in new federal funding for cancer research.

The Charles “McC” Mathias, Jr., **National Study Center** for Trauma and Emergency Medical Services marked its 25th anniversary.

For the first time, a malaria vaccine that used the entire malaria parasite was proven safe and showed promise to produce a strong immune response in a clinical trial conducted by School of Medicine researchers led by **Christopher Plowe, MD, MPH.**

More than 800 alumni — out of the nearly 8,000 practicing in every state in the U.S. — return to campus for the 136th Medical Alumni Association reunion.





IBM WATSON COMPUTER

TECHNOLOGY TRANSFER	FY11
U.S. Patents Issued	24
Foreign Patents Issued	65
Scientific Disclosures (Pre-Patent)	77
Technology Inventions Licensed	15
Start-Up Companies Formed	3



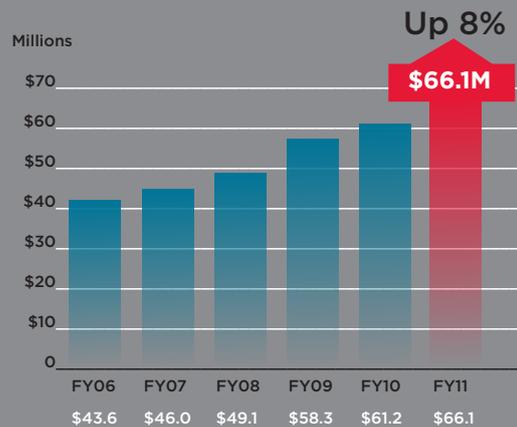
“The school has its own unique and inherent coding that guides its organizational functions, behaviors and actions.”

— DEAN REECE



Dr. Cullen

PRIVATE SUPPORT BY YEAR



A LOOK BACK

2010 HIGHLIGHTS



THE YEAR WAS PERFECTLY SUMMARIZED BY THE THEME OF DEAN REECE'S 2010 STATE OF THE SCHOOL ADDRESS: "WORKING TOGETHER: BRINGING OUT OUR BEST," AS THE SCHOOL OF MEDICINE COLLABORATED ACROSS MULTIPLE FRONTS.

UMSOM faculty members rushed to the aid of Haiti after an earthquake decimated the country, while back at home the Mini-Med School Program celebrated its 10th anniversary bringing free health classes to thousands of our neighbors in West Baltimore. Building on that success, the UMSOM ramped up its Mini-Med School for Kids which would go on to be a hallmark program for younger audiences in the community.

Growth continued at a record pace in research funding, student quality, and patient volume. With its standing as the leading Trauma program in the world, the UMSOM and UMMC began work to build the **nation's first** free-standing Shock Trauma Tower.

The UMSOM Admissions Office saw the most applications to the MD program in its history, with nearly 5,000 applications, an 8 percent increase over the previous year. Both average GPA (3.72) and average MCAT score (32) rose above the national average.

In education, it was a significant year in responding to the demand for joint-degree programs. **With nine joint-degree programs, two doctorate programs, seven MD/Masters Degree Programs and two additional programs** in development, the UMSOM celebrated accreditation of its new Masters of Public Health Program. Match Day was an exciting day for UMSOM graduates as 44 percent of students matched in primary care, and 56 percent matched in the surgical fields.

The University of Maryland Medical Alumni Association celebrated its **135th reunion** during the year with honors and awards to special alumni, including Elijah Saunders, MD, professor of Medicine who celebrated his 50th anniversary and received the highest alumni honors.

After significant growth in research grants and contracts in 2009, the UMSOM continued to surge with an unprecedented **\$479 million in total funding**, a 12.5 percent increase. The results moved the UMSOM up to 6th among public medical schools nationwide and in the top 20 among all public and private medical schools. In addition, on average nationally, **faculty expenditures on research per investigator ranked the School of Medicine as the 7th most productive medical school in America.**

2010 was also a strong year for the School of Medicine's clinical mission. Total patient volume rose by 4 percent to nearly 1.1 million in- and out-patient visits. Admissions to the UMMC and Shock Trauma Center increased 5 percent to more than 38,000 visits and in-patient surgeries at the UMMC rose by 4 percent to more than 14,000. Due to the economic crisis and a decrease in Medicaid reimbursements, the growth in clinical revenue was modest. However, UMSOM/UMMS introduced several new outpatient initiatives during the year. Several multi-specialty adult and pediatric practices were launched at Upper Chesapeake Medical Center in Bel Air. The orthopaedic site at Texas Station in Timonium transitioned into a multi-specialty practice, with new services in ENT, dermatology, pain management and other surgical specialties, beginning a long-term strategy of expanded UMSOM outpatient facilities.

The year saw the UMSOM further broadening its service and outreach to those in need. Lt. Gov. Anthony Brown commemorated the 10th Anniversary of Mini-Med School honoring the "impressive contributions of the state's public academic medical institution." UMSOM students held their 20th annual Project Feast with a record number of students serving up a Happy Thanksgiving to 400 homeless and disadvantaged people in West Baltimore.

As part of its growing presence around the world, over 500 health providers led by Dr. Robert Redfield, Dr. Tom Scalea, Dr. Andrew Pollak and Karen Doyle of the Shock Trauma Center, **spent a total of 2,289 aggregate days in Haiti following the devastating earthquake**, and developed education programs for Haitian physicians and nurses in infectious disease and orthopaedic trauma and nursing.

It was a banner year in philanthropy for the UMSOM, with a 14 percent increase in private gifts for a total of \$61 million, the best year ever, despite the continuing weak economic climate.

In summing up the year, Dean Reece remarked, "*Decades of hard work by dedicated faculty and staff and supporters have brought us to this point, and have now placed the University of Maryland School of Medicine among the top tier of medical schools in the nation and, indeed, in the world.*"



Pediatric gastroenterologist **Jay A. Perman, MD**, became the sixth president of the University of Maryland, Baltimore in July 2010.

GPA and MCAT scores in the entering MD class rose to above the national average for the first time.

The Center for Biomedical Engineering and Technology (BioMET) is created. It is a collaborative effort between the School of Medicine and the Fischell Department of Bioengineering at College Park.

BioMET brought together basic biomedical researchers with engineers to develop new strategies and new devices to enhance our ability to treat diseases.

Increased total research grants and contracts to all-time high of **\$479.1M**

Recognized as **4th** fastest growing research enterprise in the U.S.

Celebrated the **10th anniversary** of Mini-Med School, a free health-improvement program for local Baltimore residents. Meanwhile, Kids Mini-Med School welcomed its largest class ever, with nearly 50 children, ranging in age from 5 to 13.

500+ health professionals spent 2,289 days (aggregate) in Haiti following two devastating earthquakes there.



Private gifts increased 14% to **\$61M**.

UMMC named "**Top Hospital of the Decade**" for safety and quality.

UMSOM cardiac surgeons were the **first in the world** to use a surgical robot to help perform minimally invasive aortic valve bypass surgery.

Received NIH grant of **\$11.4M** to study the effectiveness of **gene-directed therapy** for cardiac patients.

Received **\$7.9M** from NIH for a **superconducting** research magnet.



BROUGHT THE NEXT GENERATION INTO MINI-MED SCHOOL



MINI-MED SUMMARY 2004-2010

MARYLAND REGION	04	05	06	07	08	09	2010
Baltimore	160	165	150	200	300	225	220
Baltimore-Elementary/Middle	35	40	75	55			
Baltimore-High School	20	105	85	100	75	75	
Eastern Shore	100	140	105	105	120	80	80
Western Maryland		180	150	140	154	132	
Montgomery County (in Spanish)		270					
Southern Maryland		15					
Bioethics (statewide)							510
TOTALS	260	790	510	565	714	587	940

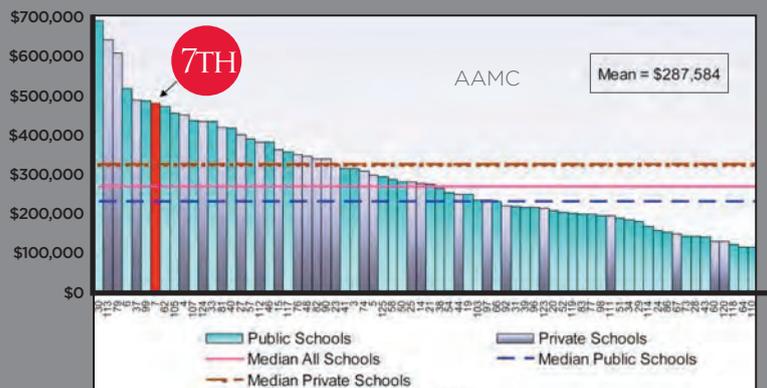
"We are improving the health and futures of the citizens of Maryland and the world."

— DEAN REECE

- The School of Medicine secured more than **\$60M** in stimulus grant funding.
- Held a groundbreaking ceremony for an expansion of Shock Trauma, the **first** free-standing Shock Trauma tower in the U.S.
- Received **\$12.3M** to renovate research laboratories.
- Total patient volume rose to **\$1.1M** and clinical revenues reached a record **\$212.7M**



RESEARCH PROGRAM'S DIRECT EXPENDITURE PER PRINCIPAL INVESTIGATOR



A LOOK BACK

2009 HIGHLIGHTS



THE YEAR BEGAN WITH SIGNIFICANT EXTERNAL CHALLENGES: THE FINANCIAL DOWNTURN THAT BEGAN IN 2008 HAD AN IMMEDIATE IMPACT ON THE SCHOOL OF MEDICINE'S FINANCIAL WELL-BEING. YET, IN THE FACE OF STATE BUDGET CUTS, SHRINKING ENDOWMENTS, FURLOUGHS, A HIRING FREEZE, FUNDRAISING CHALLENGES, INADEQUATE SCHOLARSHIP SUPPORT AND SPACE CONSTRAINTS, THE UMSOM WAS DETERMINED TO MAINTAIN ITS MOMENTUM. AS DEAN REECE PROCLAIMED IN THE 2008 STATE OF THE SCHOOL ADDRESS, "WE KEPT OUR EYES FIRMLY ON OUR GOALS, WE NAVIGATED CREATIVELY TO OVERCOME THE EXPECTED BARRIERS AND WE MADE SIGNIFICANT ADJUSTMENTS IN OUR PLANS."

Indeed, despite these challenges, the UMSOM was able to reach new heights during the year — **surpassing \$400 million in total grants and contracts for the first time in history.** Enrollment and diversity of the study body increased as the UMSOM expanded its offerings to include the MD/PhD Program and seven new MD/Master's Degree Programs. Private gifts to the institution grew as well. The UMSOM's Center for Vaccine Development continued on its course to become one of the leading centers of its kind in the world.

In education, the UMSOM's student enrollment reached nearly 1,300, with just under 50 percent of those medical degree students. The UMSOM community continued to diversify — with 14 percent underrepresented minorities and 56 percent women in the entering class. The faculty increased to 8 percent underrepresented minorities and 35 percent women.

In research, the School of Medicine overcame tremendous external challenges to have its best year ever, with an unprecedented 13 percent increase in research grants and contracts (even before stimulus grant funds were included).

In addition, the innovation and entrepreneurial spirit that Dean Reece had championed began to bear fruit. **During the year, 170 new patent applications were filed. Sixty-five percent of UMSOM's total portfolio was under development by industry in a translational manner and approximately 100 new innovations were added to the portfolio on an annual basis.**

One tremendous example was the UMSOM's Center for Vaccine Development serving as the lead center in the U.S. for the **first clinical trial** testing of the safety and efficacy of a vaccine to protect **against H1N1.**

In clinical care, faculty practices generated a record \$210 million in revenues, an 8 percent increase over the previous year, and a significant accomplishment in the year's difficult financial environment. Our faculty admitted nearly 36,000 patients to UMMC, while inpatient surgeries saw an increase of 3 percent. UMSOM faculty practices continued to beat all national benchmarks for accounts receivable and claims denial rate.

For the strong partnership between the UMSOM and UMMS, the results could not have been better:

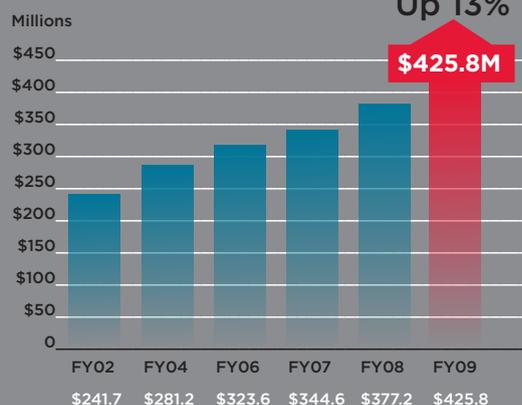
- The cancer, ear, nose and throat, kidney disease, urology and respiratory disease programs were ranked among the **50 best** in the country.
- For the second year, the University of Maryland Medical Center (UMMC) was rated one of the nation's **100 Top Hospitals** for cardiovascular care.
- For a third year in a row, the Leapfrog Group named the UMMC one of the nation's **best acute-care** hospitals for patient safety and quality of care.
- The UMMC achieved "**Magnet**" status by the American Nurses Credentialing Center, placing it among only 5 percent of hospitals nationwide.
- The UM Hospital for Children became the **first on the East Coast** to earn a prestigious "Gold Seal of Approval" from the Joint Commission for its pediatric asthma program. UMMC also won recertification as a Primary Stroke Center through the Joint Commission's "Disease-Specific" Centers Program.
- The UMMC Cardiac Care Unit received the **Beacon Award** for Critical Care Excellence from the American Association of Critical Care Nurses.
- The UMMC was the **only Maryland hospital** to receive Blue Cross and Blue Shield's Blue Distinction Centers for Specialty Care recognition in four areas: bariatric surgery, cardiac care, complex cancers and transplants.

The financial picture for the UMSOM was quite robust, despite a depressed economy. The School of Medicine's total revenues grew to \$818 million with more than half of the income coming from grants and contracts. The UMSOM's economic impact to the state was \$1.55 billion. When adding UMMC and UMMS system hospitals, the total economic impact on the State of Maryland was nearly \$5 billion.

In philanthropy, the UMSOM had **its best year ever**, despite the depressed economy, raising almost \$54 million, a 9.5 percent increase over the previous year.

The School of Medicine increased **student enrollment to 1,288** with its MD/PhD program and seven new Master's degree programs.

TOTAL RESEARCH GRANTS & CONTRACTS 2002-2009



Total research grants and contracts increased 13% to an all-time high of **\$425.8M.**

Filed 170 new patent applications and **obtained 40 worldwide patents.**

Moved up to **6th out of 76 public medical schools in total research expenditures** and up to **18th among all public and private medical schools.**

The Center for Vaccine Development emerged as a **leading center in the U.S. for clinical trial safety testing of an H1N1 vaccine.**

Revenue from clinical practices surpassed **\$200M**, and patient volume surpassed **\$1M.**

Cancer, Ear, Nose & Throat, Kidney Disease, Urology, and Respiratory Disease Programs at UMMC **among 50 best in U.S.** according to *U.S. News and World Report.*

Private gifts at **\$53.8M, up 9%** from the year before.

Total Revenue increased to **\$818.3M.**

H1N1 VACCINE



“We mapped the path to achieve our ambitious goals, realizing that we may need to make modifications and adjustments along the way.”

— DEAN REECE

Received a **\$30M grant** to fund a national consortium of stem cell experts.



UMSOM surgeons perform four-way kidney transplant surgery on patients from four different states.

Received more than **\$4.9M** in NIH stimulus funding to explore new strategies to address **health disparities** nationwide.



UMSOM Master’s of Public Health Program received five-year accreditation.

Received **\$11.2M** from NIH to establish a multi-center research initiative at UMSOM and three other centers to improve the treatment of chronic heart failure.

A LOOK BACK

2008 HIGHLIGHTS



DEAN REECE LAUNCHED TWO MAJOR INITIATIVES DURING THE YEAR THAT WOULD CONTINUE TO BUILD THE UMSOM A PROMISING FUTURE. IN HIS STATE OF THE SCHOOL ADDRESS, ENTITLED “MOVING HIGHER AND HIGHER: CREATING BUILDING BLOCKS FOR THE FUTURE,” HE RAISED THE BAR, STATING, “I BELIEVE WE CAN RISE TO AN EVEN GREATER LEVEL OF EXCELLENCE BY CONSTANTLY SETTING HIGHER AND HIGHER GOALS FOR OURSELVES WHILE AT THE SAME TIME DOING EVERYTHING POSSIBLE TO ATTAIN THOSE GOALS.”

To do so, he launched a \$500M campaign, the largest in UMSOM history, with specific funding priorities aligned with the strategic plan:

- **Putting Research into Practice to Improve Patient Care:** Developing new treatments and surgical techniques that are less invasive, more effective and make recovery time quicker, bringing better care to our patients.
- **Bringing New Hope Through Emerging Fields:** Investing in new areas, such as genomics, bioinformatics, and personalized medicine, that will revolutionize medicine and patient care in the future.
- **Educating the Leaders of Tomorrow:** Providing a unique combination of educational resources to prepare students for careers as exceptional physicians, biomedical researchers, and allied health professionals
- **Seizing New Opportunities to Advance Medicine:** Through established endowments, which provide a reservoir of unrestricted income for urgent or strategic needs, ensure that funding is readily available to advance research and fuel momentum for growth in our academic and clinical enterprise.
- **Fighting Deadly Viruses and Protecting Against Global Health Threats:** UMSOM research centers and programs, staffed by leading molecular biologists, immunologists, physicians, and others, are preventing the spread of infectious diseases and protecting people against the effects of global health threats.

As part of his commitment to create the strongest possible partnership with the University of Maryland Medical System (UMMS) and University of Maryland Medical Center (UMMC), Dean Reece worked with newly-appointed UMMS President & CEO Robert Chrencik, MBA, CPA, to **create a shared vision that laid out their shared goals over the next decade.**

Launched the \$500M **Transforming Medicine Beyond Imagination Campaign**, the largest fundraising effort in the UMSOM's history.

In the Shared Vision Statement, the two leaders outlined their goals. “Keep UMMS and UMSOM at the vanguard of quality clinical care while maintaining our economic vitality, culture of discovery and innovation, and producing the future physicians of Maryland as our highest priority.”

During the year, growing evidence of the strength of the partnership between the two institutions as an “academic medical center,” began to emerge. The prestigious Leapfrog Group, an independent patient advocacy organization, rated UMMC — and its UMSOM doctors — as one of the top 50 acute care hospitals in the nation for quality care and patient safety. The Marlene and Stewart Greenebaum Cancer center was named as one of only 64 National Cancer Institute-designated cancer centers. Growth in clinical revenue continued at an even higher rate, with an 11 percent increase over 2007 and almost one million patients seen in our clinical practices. The partnership began to produce greater financial efficiency with a 99 percent net collection rate and a reduction of days in Accounts Receiving from 57 to 53, and a decrease of 2.5 percent in claims denials.

The year also saw the beginning of UMSOM’s global expansion, with research programs and life-saving care operating in 23 countries around the world. In Malawi, a country where 40 percent of the population was HIV positive, the IHV provided assistance to their African counterparts in areas such as patient care, infection prevention, and disease surveillance in the population.

Important investments were made by the UMSOM in areas that extend and improve patient quality of life, including minimally-invasive surgery, genomic sciences, vaccine development and stem cell biology and therapy, and personalized medicine.

Two new innovative research programs were established in 2008: **the Program in Personalized and Genomic Medicine under the leadership of Alan Shuldiner, MD, and the Center for Biomolecular Therapeutics led by David Weber, PhD.**

In education, the UMSOM increased its emphasis on professionalism and ethics in the curriculum. The School of Medicine also saw an increase in the number of graduate students. It initiated new programs to help develop grant writing skills for students and fellows — resulting in the highest number of NIH grant applications submitted in UMSOM history. As outlined in the strategic plan, the UMSOM expanded joint degree programs, with an increasing number of medical and graduate students showing interest in diverse areas such as law, business, policy, and administration.

The year showed continued growth in key metrics, reaching record levels of research funding and the highest research rankings in the School of Medicine’s history.

One of the most exciting events of the year was the successful reaccreditation of the medical school with a full eight-year extension of its LCME Accreditation by the Liaison Committee on Medical Education.



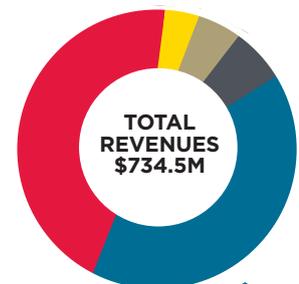
Partnered with UMMS CEO Robert Chrencik to prepare the **first Shared Vision**, establishing joint goals between the School of Medicine and Medical System.

Generous alumni Carolyn Pass, MD, and Richard Susel, MD, a husband and wife team from the Class of 1966, established an **Academy of Educational Excellence** at the School of Medicine. The goal of the Academy was to create an environment that enhances the status of medical educators and promotes and rewards superlative teaching.

The **Research Career Development Program** was established to offer workshops, classes and seminars in subjects that are critical to an academic research career, including Grant Writing, Publishing Your Research, and Identifying Funding Sources for Your Research.

Increased total research grants and contracts to **\$377.2M**; ranked 7th out of the 76 public medical schools and 19th out of the 129 public/private medical schools.

Increased clinical revenue by 11% to **\$194.5M**, with total revenue increasing to **\$734.5M**.



\$194.5M
Clinical Revenue up 11%



Robert Chrencik

A SHARED VISION FOR THE FUTURE



“We realized that we could not merely rest on our laurels, but needed to adapt, modify and allow room for strategic disruptive innovations to continue our trajectory of success.”

— DEAN REECE

In an effort to further basic, translational and clinical studies in injury research, the UMSOM announced that its Charles “McC” Mathias Jr., National Study Center for Trauma and Emergency Medical Systems would become part of a **new Organized Research Center.**

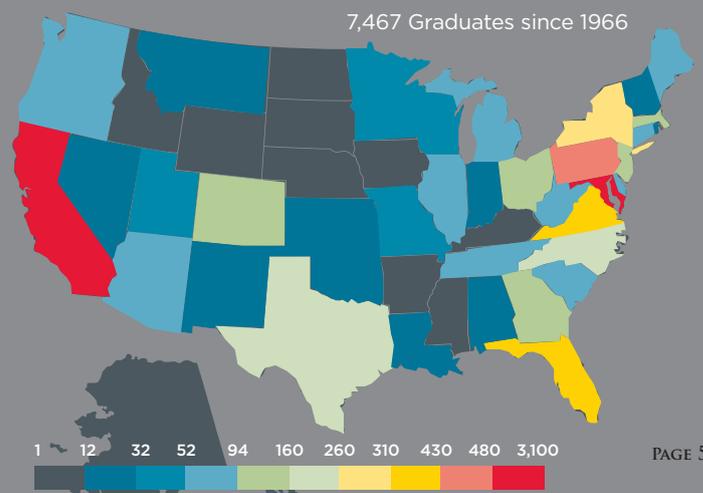
The Center for Shock, Trauma and Anesthesiology Research is a world-class, multi-disciplinary research and educational center focusing on brain injuries, critical care and organ support, resuscitation, surgical outcomes, patient safety, and injury prevention.

The University of Maryland Marlene and Stewart Greenebaum Cancer Center was selected as a National Cancer Institute-designated cancer center, a distinction shared by only 63 other centers across the country.

Dean Reece named chair of the **Council of Deans** of the Association of American Medical Colleges.

ALUMNI POST-RESIDENCY LOCATIONS

7,467 Graduates since 1966



A LOOK BACK

2007 HIGHLIGHTS



THE 200TH ANNIVERSARY BROUGHT WITH IT A SERIES OF BICENTENNIAL CELEBRATIONS ACROSS THE CAMPUS TO SHOWCASE THE SCHOOL OF MEDICINE'S RICH HISTORY AND UNLIMITED POTENTIAL, UNDER THE THEME, "THE ENDURING POWER OF LEADERSHIP." WITH A NEW BICENTENNIAL LOGO FEATURING HISTORIC DAVIDGE HALL, THE CELEBRATIONS INCLUDED BROAD PARTICIPATION OF STAKEHOLDERS: FACULTY, STUDENT ORGANIZATIONS, THE BOARD OF VISITORS, THE MEDICAL ALUMNI ASSOCIATION, INDIVIDUALS IN EVERY CLINICAL, RESEARCH AND ALLIED HEALTH DEPARTMENT, LEGISLATORS, DONORS AND FRIENDS.

In January, the University of Maryland Medical Alumni Association published a 200-year retrospective commemorative book, detailing the achievements of our graduates and faculty. In addition, the *Journal of the American Medical Association* published an article on the UMSOM 200-year history, and our many accomplishments.

A series of festive and engaging events were held to commemorate the occasion, beginning with the UMSOM's first Student Service Day. More than 600 medical, allied health and graduate students fanned out across Baltimore to build houses, give seminars and workshops and scientific presentations to the local community. Symposia were also held, featuring prominent legislators, scientists and even celebrities such as **Cal Ripken, Jr.**, of the Baltimore Orioles.

The year also marked the first of several major recruitment efforts that would significantly elevate the School of Medicine's biomedical research profile and leadership. Two world-renown scientists, **Robert Gallo, MD**, and **Claire Fraser, PhD**, joined the School of Medicine faculty and were charged with leading the first major scientific institutes at the School of Medicine: Dr. Gallo as the founding director of the **Institute of Human Virology**, and Dr. Fraser as the founding director of the **Institute for Genome Sciences**.

Dr. Gallo, who was internationally known for his co-discovery of the HIV virus as the cause of AIDS, brought with him to the UMSOM 300 employees, 50 faculty members, and total research funding of \$64.2 million.

Launched a major celebration to mark the **School of Medicine's bicentennial**, including a series of health-related lectures, special events, and proclamations.

The **Institute of Human Virology** was the first in the United States — perhaps the world — to combine the disciplines of basic research, epidemiology, and clinical research in a concerted effort to speed the discovery of diagnostics and therapeutics for a wide variety of chronic and deadly viral and immune disorders — most notably HIV/AIDS.

Dr. Fraser, also world renowned as a leader in the study of comparative genomics, was recruited from The Institute for Genomic Research to become the founding director of a **new Institute for Genome Sciences** at UMSOM. The Institute would be dedicated to the application of genome sciences for the advancement of human health, with a goal of having 10-20 faculty members with an estimated funding base of \$20 million. Currently, the Institute has 120 faculty and staff and an annual NIH funding of nearly \$100 million.

By the end of the year, a pattern of growth was beginning to emerge, with metrics rising across the board. In extramural research funding, the UMSOM had a very strong year. Even without the additional funding from the two new institutes, total grants and contracts increased 6.2 percent, despite reductions in NIH funding. Total clinical revenue advanced upward as well, with 9.4 percent growth, and patient volume increased 9 percent as the UMSOM began to focus on patient-centered care and expanding clinical magnet programs.

In philanthropy, private gifts reached an all-time high of \$46 million, a 5.5 percent increase over 2006. At the same time, the UMSOM endowment experienced significant growth of nearly 19 percent up to \$166 million. The School of Medicine's engagement with the local community also expanded with faculty, students, and staff providing over 400,000 volunteer hours each year to more than 250 community organizations. Through its various educational programs in the community, the UMSOM had educated nearly 2,500 people statewide on health issues such as diabetes, nutrition, asthma, heart disease, and HIV/AIDS, among many others.

In reporting on the School of Medicine's significant accomplishments during the year, Dean Reece aptly titled his State of the School Address, "**Soaring to Greater Heights, Together.**" He closed the address with a visionary charge for the UMSOM Community:

"Today is a new beginning for the University of Maryland School of Medicine as we look toward a third century of excellence. The UMSOM will take advantage of its challenges to elevate the school to even greater heights. We will work tougher, we will become stronger, and we will remain focused on our grave sense of purpose. Together we will use our past to create a School of Medicine that is ready for the future, but, most importantly, we will soar to greater and greater heights, together."

Four UMSOM Deans came together for the bicentennial. Joining Dean Reece were (l-r) Dean Donald E. Wilson, MD, MACP, Dean John M. Dennis, MD, and Dean John H. Moxley, MD.

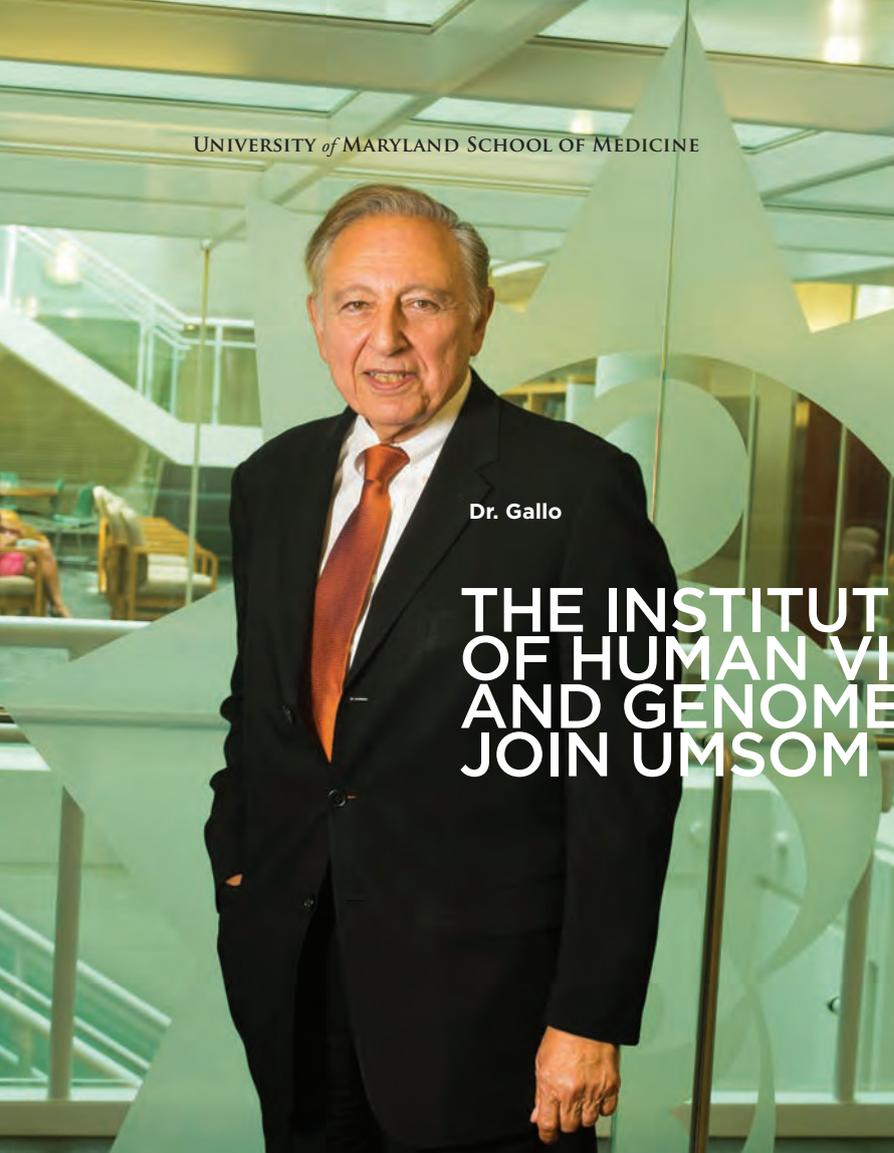
Increased private gifts to the School of Medicine to **\$46M**.

Completed first economic impact study, showing total School of Medicine revenue of **\$676.3M** and an estimated economic impact of **\$1.5B**.

World-renown scientist and virologist **Robert Gallo, MD**, moved the **Institute of Human Virology**, which he directs, into the **School of Medicine**, formalizing a relationship that began when the institute was founded in 1996. It is the first Institute to be established at the UMSOM.

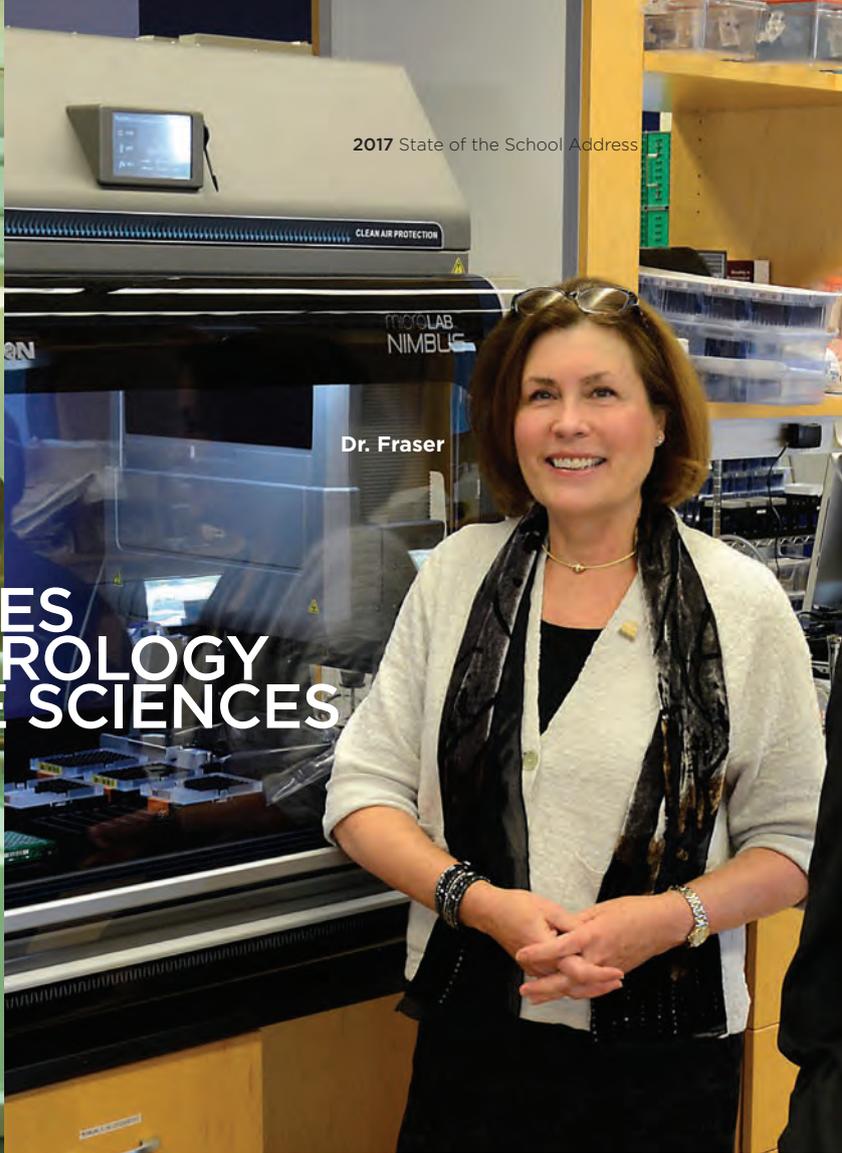
Received **\$43M federal grant** for the Institute of Human Virology to further IHV's AIDS Care and Treatment in Nigeria (ACTION) project. IHV also received a **\$15M grant** from the Bill & Melinda Gates Foundation to support research at IHV to further develop a promising HIV/AIDS vaccine candidate.





Dr. Gallo

THE INSTITUTES OF HUMAN VIROLOGY AND GENOME SCIENCES JOIN UMSOM



Dr. Fraser




UNIVERSITY of MARYLAND SCHOOL of MEDICINE
bicentennial
1807-2007

PRIVATE GIFTS 2003-2007



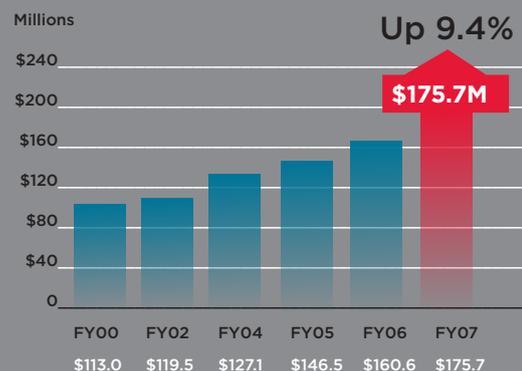
“We are moving higher and higher; creating building blocks for the future.”

— DEAN REECE

- Recruited leading genomics researcher **Claire Fraser, PhD**, to the School of Medicine and established the Institute for Genome Sciences.
- Began discussion of a new **UMSOM Research Building**, initially designated as HSF III.
- Increased number of patients receiving care from UMSOM faculty to over 1 million. Total clinical revenues increased again, as well, to **\$175.7M**.

- Held **first Legislative Day**, where students and faculty met with key state legislators in Annapolis to discuss topics of importance to UMSOM.
- The Center of Vaccine Development** received a **\$23.7M** National Institute of Allergy and Infectious Diseases grant for testing potential vaccines, and a **\$5.6M** grant from the Bill & Melinda Gates Foundation to develop a faster and more precise molecular test to diagnose the causes of diarrheal disease in developing countries.

CLINICAL REVENUE 2000-2007



A LOOK BACK

Laying the Foundation

FOR OUR

THIRD CENTURY

THE UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE WAS REPEATEDLY CHALLENGED THROUGHOUT ITS FIRST TWO CENTURIES. DESPITE THESE CHALLENGES, IT PERSEVERED, FORGED AHEAD AND THRIVED UNDER THE STEWARDSHIP OF HIGHLY EFFECTIVE LEADERSHIP.

IT IS FITTING, IN THIS RETROSPECTIVE PUBLICATION, TO ACKNOWLEDGE ALL OF OUR 30 DEANS — INCLUDING THESE THREE WHO LAID THE FOUNDATION FOR THE SUCCESS IN OUR THIRD CENTURY.



UMSOM DEANS

FIRST CENTURY DEANS

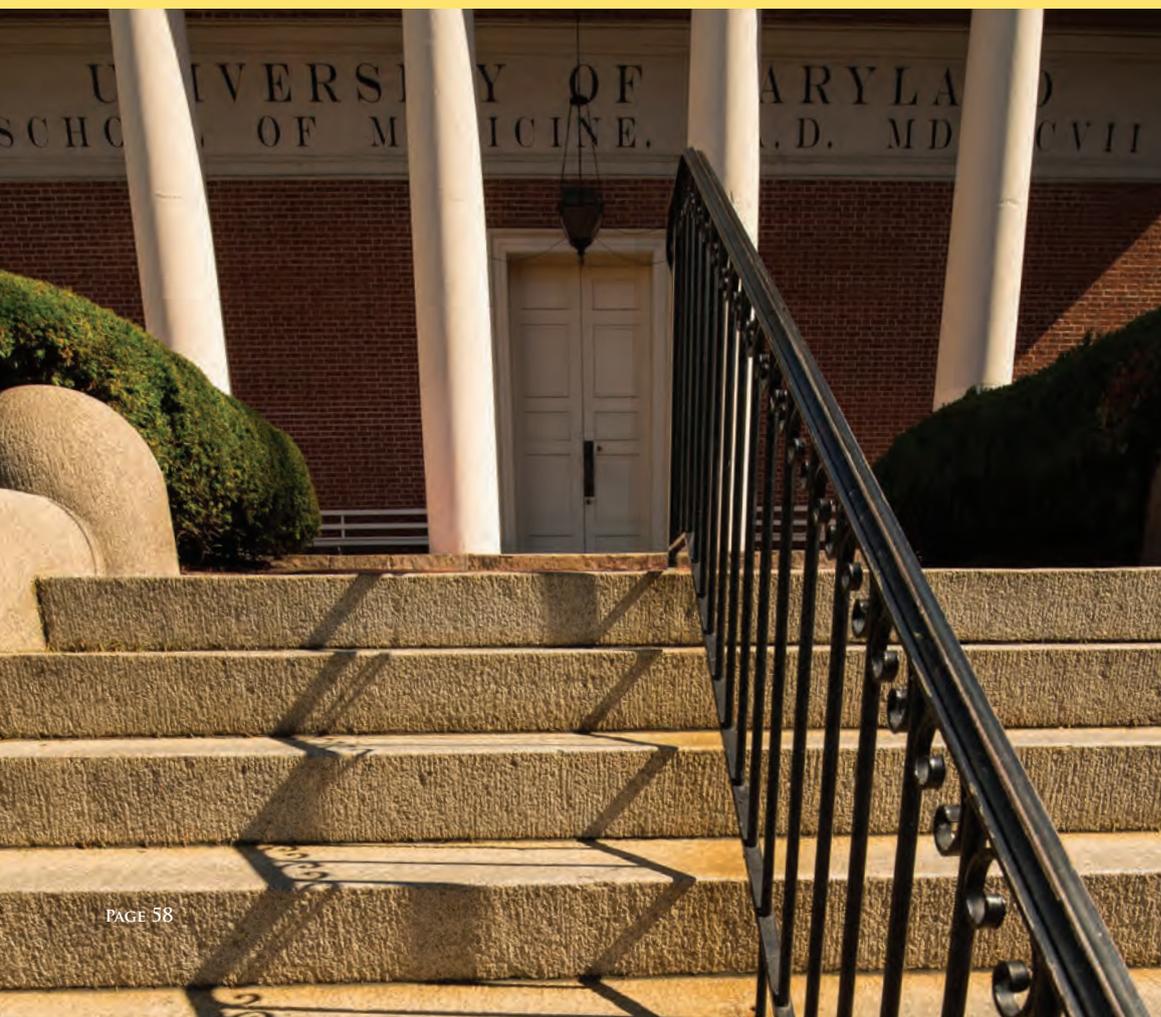
- 1) John Beale Davidge
- 2) Nathaniel Potter
- 3) Elisha DeButts
- 4) William Gibson
- 5) Richard Wilmot Hall
- 6) Maxwell McDowell
- 7) Granville Sharp Pattison
- 8) Nathan Ryno Smith
- 9) Samuel Baker
- 10) Eli Geddings
- 11) Robley Dungleison
- 12) Samuel George Baker
- 13) William E.A. Aikin
- 14) Samuel Chew
- 15) George Warner Miltenberger
- 16) Julian John Chisolm
- 17) Samuel Claggett Chew
- 18) Louis McLane Tiffany
- 19) Jacob Edwin Michael
- 20) Isaac Edmondson Atkinson

SECOND CENTURY DEANS

- 21) Robert Dorsey Coale
- 22) Charles Wellman Mitchell
- 23) James M.H. Rowland
- 24) Robert Urie Patterson
- 25) H. Boyd Wylie
- 26) William Spencer Stone
- 27) John H. Moxley III
- 28) John Murray Dennis
- 29) Donald E. Wilson

THIRD CENTURY DEAN

- 30) E. Albert Reece





Dr. John H. Moxley (1969-1973)

With the UMSOM beginning to expand after the second World War, the School needed a Dean with both the medical knowledge and management experience to take on new challenges. John H. Moxley, III, MD, was the right leader for the job.

A highly-respected physician in Internal Medicine and a seasoned leader and administrator in higher education, Dr. Moxley served as Dean until 1973. He presided over continuing expansion of the UMSOM — doubling the size of the incoming class size from 100 to 200. Dr. Moxley's tenure would begin a succession of highly dynamic and successful deans who would transform the UMSOM in more ways than anyone could have ever imagined.



Dr. John M. Dennis (1973-1990)

In 1973, the UMSOM appointed one of its own as the 28th Dean: John M. Dennis, MD. A graduate of the University of Maryland, College Park, and a graduate of the UMSOM, Dr. Dennis became the medical school's first full-time Chair of the Department of Radiology before accepting the deanship. During his tenure as Dean, the UMSOM developed into a major research institution, with considerable growth in faculty and research support. He also stewarded the development of a new Veteran's Administration Medical Center on Maryland's campus, which opened in 1991.

Dean Dennis was also instrumental in developing the Area Health Education Centers to expose students to rural medical practice. When Dr. Dennis retired from the Deanship in 1990, he had completed 17 years as dean and nearly 50 years of continuous service to the UMSOM.



Dr. Donald E. Wilson (1991-2006)

As the 1990s roared in, a wave of new technology, dramatic changes in health care, and the further establishment of the University of Maryland Medical System brought a new set of challenges. A new leader was selected to lead the charge: Donald E. Wilson, MD.

A graduate of Harvard University and Tufts School of Medicine, he became the nation's first African American dean of a non-minority medical school. During his 15-year tenure — the second longest ever for a medical school dean — Dean Wilson created one of the most diverse student bodies and faculties in the country. His leadership promoted the values of cultural and gender diversity, and created an all-inclusive atmosphere at the medical school.

During his tenure at UMSOM, he increased grant and contract awards from \$77 to \$350 million; philanthropic support for the School rose from \$1.7 to \$37 million; and the research capacity was significantly strengthened with the construction of Health Sciences Facilities I and II. He also reformed the curriculum, providing students with a broad correlation of basic science and clinical medicine at the outset of their medical education.

“From John Beale Davidge to Donald E. Wilson and all the other Deans in between who built the foundation for our school, I thank you.”

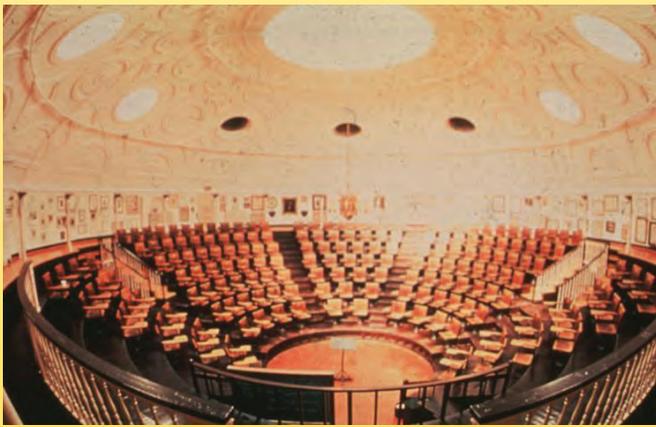
— DEAN REECE

To learn more about all the Deans at the UMSOM, visit our website and view our online publication, *Centuries of Leadership: Deans of the University of Maryland School of Medicine*.

A PHOTO GALLERY of

Our first

LOOK FOR OUR NEW BOOK ON THE UMSOM'S RECENT MILESTONES AND VISIT OUR WEBSITE FOR THE SCHOOL'S COMPLETE HISTORY.



TWO CENTURIES



Details of our first two centuries can be found on the UMSOM website at medschool.umaryland.edu, as well as in the forthcoming book.



Working in collaboration, Dean Reece and University of Maryland Medical System President and CEO Robert Chrencik, MBA, CPA, initiated a unifying *University of Maryland Medicine*, representing shared goals with its clinical partner and practices.



HIGHLIGHT:

- 14 Hospitals
- 150 Physician Practice Sites
- 32,000+ employees
- 5.4 billion combined budget

Combined
Economic
Impact:
\$15.9B



Summary of Key Goals

Strategic Planning: 2016-2020

The University of Maryland School of Medicine launched its new Strategic Plan, *“Forging New Pathways for the Future,”* during the 2016/2017 academic year. This was a community-wide effort that began with a community-wide planning retreat attended by more than 300 faculty, staff, students, residents and fellows.

Although the future is not guaranteed, we have now scripted ourselves a solid foundation on which to build. We now move forward with undaunted purpose to reach new milestones in research, education, clinical care and community impact. As has been our hallmark over the past 10 years, we will collaborate to achieve our goals.

In Education, our overall goal is to champion excellence in teaching and scholarship.

We will accomplish this by:

- Achieving educational and curricular innovation;
- Prioritizing recruitment and retention of an outstanding, highly qualified and diverse body of faculty and students;
- Valuing, recognizing and rewarding teaching activities to better encourage and inspire our educators.

In Clinical Care, our overall goal is to promote excellence in healthcare, centered on local and global needs.

We will accomplish this by:

- Promoting patient-centered care and excellence at every point of care in all faculty practices and hospital settings.
- Enhancing and expanding our clinical destination programs in cancer treatment, transplantation, trauma and critical care, heart and vascular medicine, and neurological care, which attract patients from across the region and around the world;
 - Establishing new clinical destination programs, reflecting our expertise and the needs of our community;
 - Growing our ambulatory care capacity across the region, in response to a shift in care delivery to more outpatient and satellite patient care facilities;

- Establishing a strong population health program in West Baltimore, in partnership with the University of Maryland Medical Center, to understand and positively affect the health of our neighbors.

In Research, our overall goal is to develop innovative medical discoveries and breakthroughs.

We will accomplish this by:

- Enhancing research collaboration across all academic units: departments, centers, institutes and programs;
- Promoting the growth and advancement of existing and emerging centers of clinical-translational research excellence;
- Enhancing the productivity of existing senior and junior faculty and prioritizing recruitment of new well-funded investigators;
- Enhancing the visibility of School of Medicine research and increasing philanthropic support;
- Managing the regulatory burden to reduce institutional costs and protect investigator time by developing efficient management systems;
- Identifying aspirational research goals that focus on state-of-the-art basic and clinical research, and develop new and effective interventions and therapies based on those goals.

In Community Engagement and Impact, our overall goal is to partner to influence health at home and abroad.

We will accomplish this by:

- Strengthening evidence-based initiatives that address community health needs;
- Supporting our faculty members in conducting translational, community-based research that improves health outcomes and enhances the UMSOM's reputation as a national academic leader in population health;
- Enhancing the UMSOM's impact on health policy at all levels, from local to international, based on sound science.

Into the Future

Looking Ahead

As our work continues, the world changes at an unprecedented pace.

We must continuously adapt to new challenges and formulate new goals.

We must continue to lead the way in taking on the most significant challenges, the neediest patients, the most debilitating diseases, the most urgent cases.

We have made tremendous advances in the past 10 years; but now the need for academic medical schools is greater than ever.

Consider: Of the 56.4 million deaths worldwide in 2015, more than half (54 percent) were due to the top 10 causes:

- Ischemic heart disease
- Stroke
- Lower respiratory infections
- Chronic obstructive pulmonary disease
- Lung cancer
- Diabetes
- Alzheimer's disease
- Diarrheal disease
- Tuberculosis, and
- Road-related injuries.

Reducing the burden of these infectious diseases and chronic conditions have posed particular challenges to the biomedical community. For example, viruses, bacteria, and fungi can now **spread around the world with greater effectiveness and speed than ever before**, as evidenced by the 2014 Ebola virus outbreak. Increases in travel, trade and connectivity, urbanization, pervasive poverty and a warming climate all will contribute to fueling more disease outbreak around the world in the future.

Academic medical centers have long been at the forefront of providing the very best health care because they focus on a **tripartite mission of research, education and clinical care, all for the benefit of patients**. The scholarship and discovery promoted at medical schools and teaching hospitals brought about the vaccine against polio, the first successful organ transplants, gene therapy, and in utero fetal surgery. In addition, because academic medical centers are often located in urban areas, they are a crucial source of services for underserved populations, and provide vital treatments for trauma and critical care patients.

The UMSOM has **consistently and relentlessly persisted, against all odds, to advance solutions to the toughest problems** — from cancer, to heart disease, to HIV/AIDS, to opioid addiction, to drug-resistant infectious diseases, to health disparities.

At a time of most urgent need, the UMSOM will continue to lead the way in answering this call.

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



E. Albert Reece, MD, PhD, MBA

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

A photograph of a classical building with white columns and a red brick wall. A young tree is in the foreground, and a black fence is visible at the bottom. The sky is clear blue.

To learn more visit us at medschool.umaryland.edu

The University of Maryland School of Medicine, now in its third century, planted a new English Elm, honoring our past, signifying our future.



UNIVERSITY of MARYLAND SCHOOL OF MEDICINE

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OUR MISSION: The University of Maryland School of Medicine 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.