

MEDICAL SYSTEM AND SCHOOL OF MEDICINE

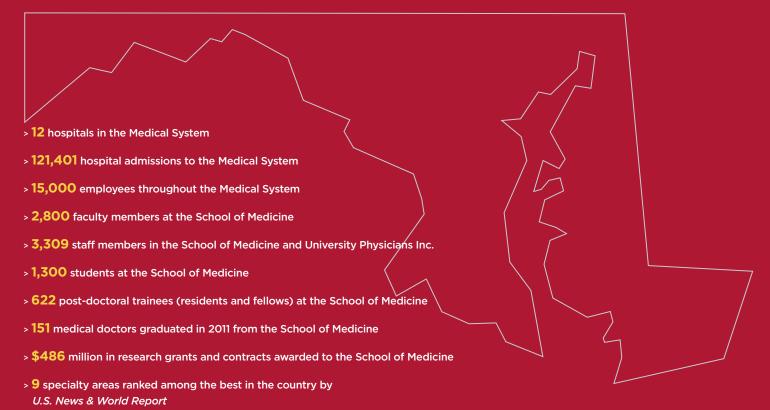
emsforming MEDICINE





THE POWER OF PARTNERSHIP: IN NUMBERS

University of Maryland Medical System and School of Medicine



Transformative CONTENTS

Letter from the Leadership: A Shared Vision

Features

- > Together We Are Building
- > Power Partners
- > Viral Impact
- > Computer-Assisted Medicine
- > New Name, Nationally Ranked Care
- > ExpressCare: Going the Distance
- > Bridging the Gap Between Research and Practice
- > Maryland Learning Collaborative
- > Ahead of the Country by Leaps and Bounds
- > Community of Experts

28 School of Medicine Highlights

Health Sciences Facility III Update

Groundbreaking Genomic Research

Milk and Malnutrition

Excessive Drinking Genes

Preparing for Terrorism

Faculty Practice Expansion

The Pursuit of Excellence

Graduate Program and Allied Health Achievement

Addressing Health Disparities

Students Help Those in Need

A Decade and Counting for Mini-Med School

20th Anniversary for the Center for Integrative Medicine

New Associate Dean for Personalized and Genomic Medicine

Endowed Professorships

Medical System Member Hospital Highlights

Baltimore Washington Medical Center

Chester River Health System

Civista Health System

Kernan Hospital

Maryland General Hospital

Mt. Washington Pediatric Hospital

Shore Health System

- > Dorchester General Hospital
- > Memorial Hospital at Easton
- > Queen Anne's County Emergency Center

University of Maryland Medical Center

University Specialty Hospital

Upper Chesapeake Health

- > Harford Memorial Hospital
- > Upper Chesapeake Medical Center

40 School of Medicine Financial Report

Medical System Financial Report

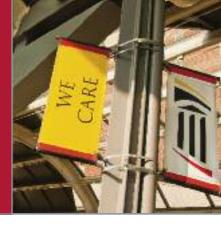
42 Leadership



A SHARED Disson

The extraordinary partnership between the University of Maryland Medical System and University of Maryland School of Medicine is transforming medicine in Maryland and beyond. Together, we are delivering the highest quality patient-centered care. Together, we are continually breaking new ground in research to ensure continuous innovation for decades to come. Together, we are training the next generation of health care leaders to carry on this mission.

A LETTER FROM CEO ROBERT A. CHRENCIK AND DEAN E. ALBERT REECE



LEADING THE WAY IN UNISON

Our strength as partners comes from aligning what each of us does best. UMMS is a private, not-for-profit network of 12 academic, community and specialty hospitals throughout Maryland. The Medical System's flagship hospital — the University of Maryland Medical Center (UMMC) — is a world-renowned academic medical center that offers the best in clinical care and serves as a ready resource and referral center for physicians and patients throughout the Mid-Atlantic region. Our hospitals offer convenient access for patients to get the excellent care they need and deserve. UMMS employs 15,000 people and has more than 2,300 licensed beds. Our hospitals recorded a total of 121,401 patient admissions in FY2011 — more than any other health care provider in Maryland.

The School of Medicine, founded in 1807, is a preeminent biomedical research institution with 2,800 faculty members dedicated to training the next generation of physicians, scientists and allied health professionals. According to the Association of American Medical Colleges, the University of Maryland School of Medicine is the fourth fastest-growing research enterprise in the country. Research grants and contracts increased 12.5 percent over the previous year (excluding one-time stimulus funding). Among all 76 public medical schools nationwide, the School of Medicine ranks seventh in research grant and contract expenditures. Among all 134 public and private medical schools nationwide, we rank 17th. Together, the School of Medicine and UMMS train more than half of Maryland's medical professionals. Our continuing medical education programs serve more than 5,000 physicians and other health professionals each year. Because SOM is one of six professional schools on the campus of the University of Maryland, faculty members have extensive opportunities for interdisciplinary collaboration.

THE BEST IN PATIENT CARE

The School of Medicine and the Medical System continue to garner recognition from independent organizations that evaluate and report the best health care available nationwide.

UMMC was recognized by the prestigious Leapfrog Group as a Top Hospital of the Decade — one of just two hospitals nationwide to make the annual Leapfrog Group Top Hospitals list every year since its inception. Each year, Leapfrog recognizes hospitals based on patient care outcomes, use of best practices and patient safety initiatives.

In addition, UMMC and the School of Medicine clinical faculty are nationally ranked this year in nine specialty areas in the U.S. News & World Report Best Hospital rankings. We were recognized for excellence in Cancer; Diabetes and Endocrinology; Ear, Nose and Throat; Geriatrics; Cardiology and Heart Surgery; Kidney Disorders; Orthopaedics; Pulmonology; and Urology.

All of the physicians who practice or conduct clinical research at UMMC are on the SOM faculty. Faculty physicians provide compassionate, world-class care at several system hospitals in addition to the Medical Center and offer specialty services at more than 20 different locations throughout the state. Faculty physicians accommodate more than a million patient visits per year, making life better for the residents of Maryland and drawing patients from around the world.

CRITICAL RESEARCH ADVANCES HELPING PEOPLE AROUND THE GLOBE

Transforming medicine through basic science and clinical research will always be at the heart of our joint mission. It is a mission we carry out not only in Maryland, but around the world. The Institute of Human Virology (IHV), which specializes in the treatment of HIV and other chronic viral diseases, provides education and treatment services to more than 500,000 patients in Africa, China and the Caribbean. The IHV will receive \$23.4 million from a consortium of funding sources to support the next phase of research into a promising HIV/AIDS preventive vaccine candidate. The Center for Vaccine Development (CVD) has earned

an international reputation for creating and testing vaccines against cholera, typhoid, malaria and other infectious diseases. CVD researchers have discovered that by vaccinating cows, antibody-rich milk can be provided to malnourished children to help prevent sepsis. The CVD conducts clinical studies in Mali, West Africa; Malawi, Southern Africa; and in Santiago, Chile, among other sites. These are but a few examples of our worldwide reach. Faculty are conducting research and training activities in many countries, while providing emergency care abroad when needed.

ADDRESSING PHYSICIAN SHORTAGES AND BECOMING A VITAL COMMUNITY PRESENCE

Working together, we are dedicating energy and resources to identify and address physician staffing shortages. Residents throughout Maryland now have greater access to world-renowned transplant specialists, neurosurgeons, cardiologists and pediatricians. We have a transplant clinic in Easton, for example, and a cancer center in Howard County. In emergency care, we've expanded our network to include more facilities, more transport vehicles and more specialists throughout the state. Our hospital-to-hospital transfers for patients needing a higher level of care have increased 84 percent over the past eight years.

EXPANDING ELECTRONIC CAPABILITY AND REVOLUTIONIZING THE BUSINESS OF MEDICINE

The accessibility of excellent clinical care is transforming the very business of medicine. We're able to accomplish more collectively than we ever could individually, through group purchasing and consolidating debt, and by using information technology to more efficiently streamline processes and safeguard patient data. We can also use that same electronic capability to make patient data more rapidly available and transferrable when the need arises.

STRONG FINANCIAL PERFORMANCE

The financial environment remained a difficult one in FY2011. Both UMMS and the SOM continued to demonstrate strong financial performance driven by quality and excellence in all mission areas. We did this by working together toward excellence and by making good stewardship a part of our shared mission. In doing so, we contributed to the economic health of our communities. The Medical System generated \$2.5 billion in annual revenue and nearly \$3.5 million in economic activity. With almost \$900 million in additional revenue derived by the SOM, our combined organizations produced more than \$5 billion in economic activity for our region. The Medical System also maintains an "A" bond rating from Moody's Investors Service, Fitch Ratings and Standard & Poor's.

CHANGING THE WORLD

In the end, our goal is to offer the best in patient care and to provide the critical research and necessary resources to do so more effectively and more efficiently. Patients from the Eastern Shore to downtown Baltimore, in urban or rural areas, all need access to the latest in science and medicine. Many of our best and brightest are taking these transformative practices all over the world — treating the sickest, training the brightest, addressing community needs and looking forward to a healthier future. This vital and vibrant exchange results in the greatest benefit to the patients we serve and the world we live in. Thank you all for your support in this critical endeavor. It wouldn't be possible without you.

In gratitude, we remain sincerely yours,

E. Albert Reece, MD, PhD, MBA
Vice President for Medical Affairs, University of Maryland & Dean, University of Maryland School of Medicine

Robert A. Chrencik, MBA, CPA President and Chief Executive Officer University of Maryland Medical System UNIVERSITY OF MARYLAND MEDICAL SYSTEM

BOARD OF DIRECTORS

Stephen A. Burch, Esq. Chair

Georges C. Benjamin, MD House Speaker Michael E. Busch John P. Coale, Esq. Atwood "Woody" Collins, III Gilberto de Jesus, Esq. John W. Dillon Alan H. Fleischmann Wayne L. Gardner, Sr. Louise Michaux Gonzales, Esq. Orlan M. Johnson, Esq. Senator Edward J. Kasemeyer Senator Francis X. Kelly Melvin Kelly Belkis Leong-Hong Kevin B. O'Connor Robert L. Pevenstein Stephen B. Phillips Senator Catherine E. Pugh Walter A. Tilley, Jr. Senator Joseph D. Tydings W. Moorhead Vermilye

Ex-Officio: William E. "Brit" Kirwan, PhD Robert A. Chrencik, MBA, CPA Jay Perman, MD E. Albert Reece, MD, PhD, MBA Stephen Bartlett, MD Lisa Rowen, DNSc, RN, FAAN





f As we enter a new era of health care, the University of Maryland Medical System is health care for patients across the state and around the world.

Together, the University of Maryland School of Medicine and Medical System are on the forefront of a revolution in biomedical research and personalized, patient-centered care. New treatments and cures are moving from the laboratory to the clinical setting in record time, thanks to an extraordinary level of collaboration between our scientists and physicians. With the help of technological breakthroughs in genomics and bioinformatics, we will soon see treatments and cures tailored to a patient's unique genetic make-up. At the University of Maryland, we are truly transforming medicine.

- Michael Cryor, Chair, SOM Board of Visitors

University of Maryland School of Medicine

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE

BOARD OF VISITORS

Michael E. Cryor Chair

Peter G. Angelos, Esq. Emeritus Kenneth R. Banks Morton D. Bogdonoff, MD Jocelyn Cheryl Bramble Tamara Lipman Burgunder, MD** Ex-Officio Frank C. Carlucci, III William M. Davidow, Jr., Esq.* Robert C. Embry, Jr. Robert E. Fischell, ScD Stewart J. Greenebaum Willard Hackerman Jeffrey L. Hargrave John R. Kelly Harry C. Knipp, MD, FACR** Patrick McCuan Carolyn B. McGuire-Frenkil Otha Myles, MD** Ex-Officio Edward Magruder Passano, Jr. Timothy J. Regan Melvin Sharoky, MD**

- Richard L. Taylor, MD, FAAN** **University of Maryland
- * University of Maryland School of Law Alumnus



The Shock Trauma Critical Care Tower







An artist's rendering of the finished tower







the total \$160 million needed to fund the Shock Trauma expansion. The project has garnered investment from the State of Maryland, as well as support at federal and local levels. Last year, Congressman C. A. Dutch Ruppersberger announced \$2.4 million in funding from the U.S. Air Force. Since 2001, Air Force medics, military doctors and nurses have been training at Shock Trauma just before they deploy to care for troops around the world. The Shock Trauma expansion includes a new National Training and Simulation Center to educate both civilian and military health care professionals.



BUILDING

The sound of a chopper and the sight of a rooftop landing have long reassured residents and travelers throughout the state of Maryland that they will get the best trauma care in the world.

More than 150,000 patients have been given a second chance at life after entering the doors of the R Adams Cowley Shock Trauma Center at the University of Maryland Medical Center. Last year, 8,300 people — 60 percent of whom were injured in motor vehicle crashes — arrived in need of lifesaving, time-sensitive care. An amazing 97 percent survived.

The Shock Trauma Center is the worldwide leader in trauma care and the heart of Maryland's unparalleled Emergency Medical Services System. It was the **first** of its kind, creating an **international** model that signifies the very best in coordinated trauma care, starting with the first responders and continuing to outpatient follow-up and rehabilitation. Fifty years after its doors first opened, its push for excellence continues.

The building that opened 22 years ago is once again expanding to meet the needs of the community it serves — caring for patients, training professionals and leading cutting-edge research. The Shock Trauma team remains committed to ensuring the very best care available anywhere in the world — right here in Maryland.

'Injury is a disease, an unscheduled tragedy that has nighty is a disease, an discribeduled tragedy that has no age, gender, social, economic or racial boundaries. The need for critical care grows exponentially each year, and so does the need for space and equipment to provide that care," says Thomas M. Scalea, MD, the Francis X. Kelly Professor in Trauma Surgery and physician-in-chief of the R Adams Cowley Shock

The center currently serves more than 8,300 patients annually. Its current building, which opened 22 years ago, was designed for 3,500.



The Shock Trauma Critical Care Tower









An artist's rendering of the finished tower





The Shock Trauma Critical Care Tower, located at the corner of Lombard and Penn streets, will open in 2013 with 64 new and updated critical care beds, 10 new operating rooms and expanded adult and pediatric emergency departments — a total of 140,000 square feet. The new nine-floor facility will offer the most technologically advanced care in the world.



"Injury is a disease, an unscheduled tragedy that has no age, gender, social, economic or racial boundaries. The need for critical care grows exponentially each year, and so does the need for space and equipment to provide that care," says Thomas M. Scalea, MD, the Francis X. Kelly Professor in Trauma Surgery and physician-in-chief of the R Adams Cowley Shock Trauma Center.

The center currently serves more than 8,300 patients annually. Its current building, which opened 22 years ago, was designed for 3,500.











Community partnerships include Baltimore Washington Medical Center's Tate Cancer Center and University of Maryland Oncology Associates, both in Glen Burnie.

Additionally, the University of Maryland and Johns Hopkins Medicine have joined forces to provide a wide range of outpatient radiation oncology services in Howard County. The partnership gives local residents convenient access to two prestigious academic medical centers.



Posser PARTNERS

National Expertise and Personalized Care

Greenebaum Cancer Center (UMGCC) is a National Cancer Institute-designated cancer

Angela H. Brodie, PhD, professor of pharmacology

The cancer center's director, Kevin J. Cullen, MD,

The University of Maryland Greenebaum Cancer Center is recognized as one of the Top Cancer Centers by U.S. News & World Report and treats tens of thousands of patients each year.

Kevin J. Cullen, MD, professor of medicine, has served as the center's director since 2004. He serves on the National Cancer Advisory Board and the national board of the American Cancer Society, and has been named a Top Doctor in Baltimore and Washingtonian magazines.



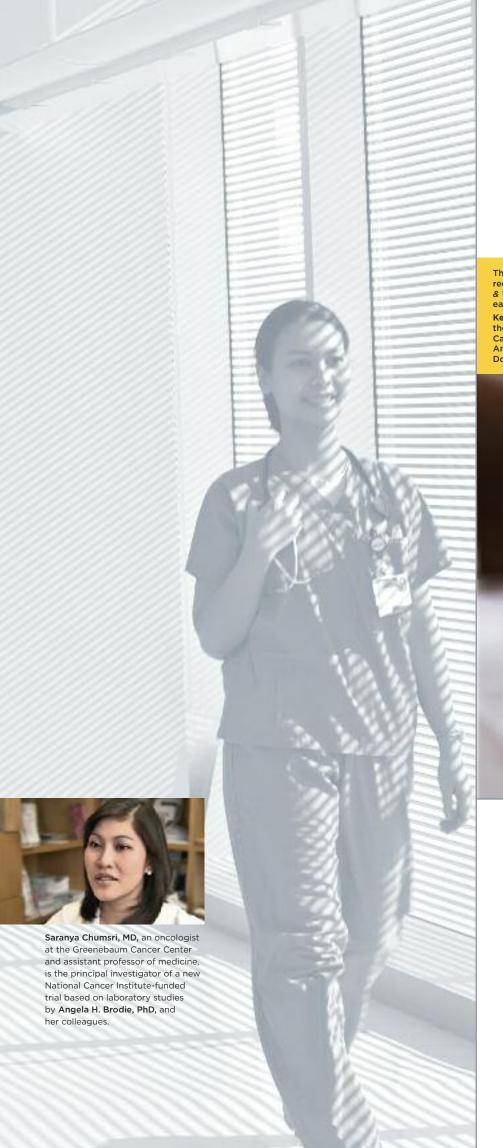


Researchers at the University of Maryland have identified new drug combinations that appear to overcome tumor resistance to aromatase inhibitors, which block estrogen production, slowing the growth of cancers.

Angela H. Brodie, PhD, professor of pharmacology and experimental therapeutics, pioneered the development of aromatase inhibitors. Her work earned her the 2005 Kettering Prize from the General Motors Cancer Research Foundation and the 2006 Dorothy P. Landon-AACR Prize for Translational Cancer Research.







The University of Maryland Greenebaum Cancer Center is recognized as one of the Top Cancer Centers by *U.S. News & World Report* and treats tens of thousands of patients each year.

Kevin J. Cullen, MD, professor of medicine, has served as the center's director since 2004. He serves on the National Cancer Advisory Board and the national board of the American Cancer Society, and has been named a Top Doctor in Baltimore and Washingtonian magazines.

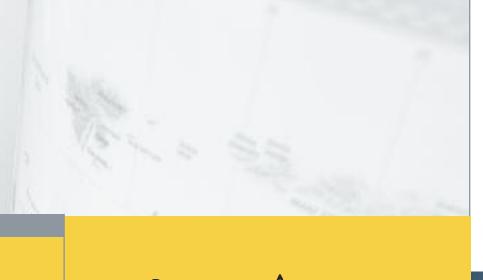






Governor Martin O'Malley announces that the Institute of Human Virology has received \$23 million from private and federal sources to develop a promising potential vaccine. Seated behind him are (left to right) Sanjay Gurunathan, MD, of Sanofi Pasteur; Col. Peter Weina, PhD, MD, of Walter Reed Army Institute of Research; Robert C. Gallo, MD, professor of medicine and founder and director of the IHV; William E. Kirwan, PhD, chancellor of the University System of Maryland; Jay Perman, MD, president of the University of Maryland; and E. Albert Reece, MD, PhD, MBA, dean of the UM School of Medicine.





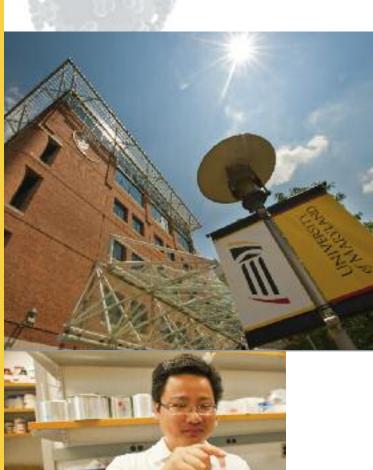
Immediate and Far Reaching

For the millions living with the virus that causes AIDS, the University of Maryland School of Medicine offers a ray of hope. Housed under the roof of its Institute of Human Virology (IHV) is a team of the world's leading HIV/AIDS researchers.

Led by world-renowned Robert C. Gallo, MD, co-discoverer of the virus that causes AIDS and professor of medicine, the team is forging ahead with a promising vaccine candidate that recently received more than \$23 million in funding from the Bill & Melinda Gates Foundation, the U.S. Army's Military HIV Research Program and the National Institutes of Health, among others.

The Institute has a worldwide presence, with affiliates and partners in eight African nations, two Caribbean nations, China and numerous other countries. Although much of the IHV's work is done within its laboratories in Baltimore, the staff also supports local health care teams in these countries to improve the care of those living with the disease. Its promise is to save the lives of children and adults around the world.

University of Maryland School of Medicine Dean E. Albert Reece, MD, PhD, MBA, credits the IHV with extending the boundaries of biomedical knowledge and discovery and taking its science directly to the communities that need it most.



The Institute of Human Virology is the first research institute in the U.S. to link basic science, population studies and clinical trials in an effort to develop new vaccines and improve patient care. In addition to its local impact, the Institute serves more than 500,000 patients in Africa, China and the Caribbean.



The Institute of Human Virology combines the disciplines of basic science, epidemiology and clinical research in a concerted effort to discover diagnostics and therapeutics for a wide variety of chronic and deadly viral and immune disorders — most notably HIV, the cause of AIDS.

Robert C. Gallo, MD, founded the Institute and serves as its director. Although best known for his codiscovery of HIV, Dr. Gallo and his team pioneered the development of the HIV blood test to enable rapid diagnosis and screening. His research also helped physicians develop therapies to prolong the lives of those infected with the virus.

Profectus Biosciences, a spinoff company from IHV, will lead the preclinical development of a new vaccine candidate, along with Sanofi Aventis.

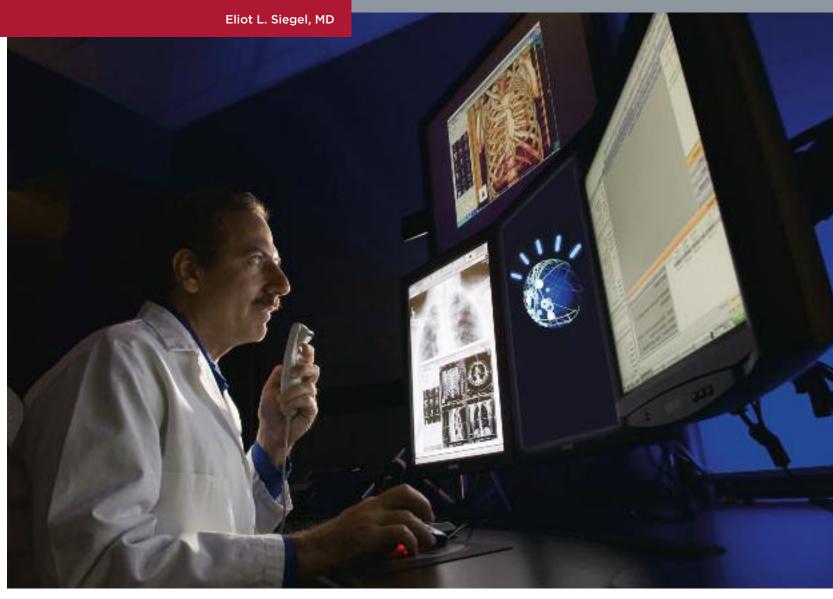




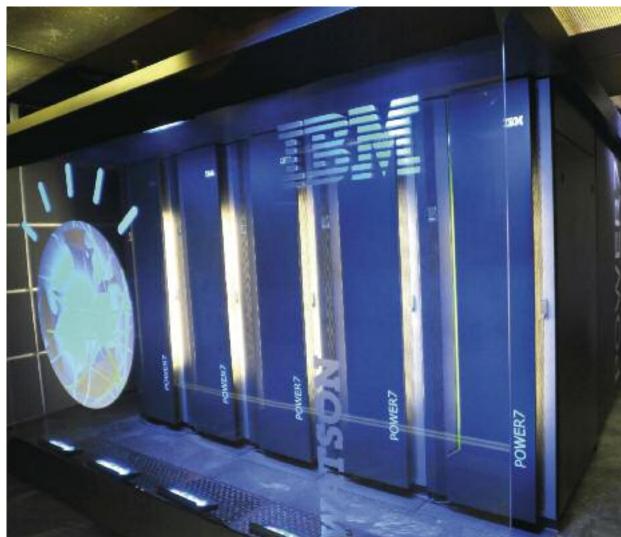




The Institute of Human Virology is the first research institute in the U.S. to link basic science, population studies and clinical trials in an effort to develop new vaccines and improve patient care. In addition to its local impact, the Institute serves more than 500,000 patients in Africa, China and the Caribbean.



Eliot L. Siegel, MD, leads the IBM collaboration at University of Maryland. Watson, powered by IBM POWER7, can answer questions posed in conversational language.





Jeopardy! Winner Joins the Team

Watson wowed the world when the now-famous IBM

The University of Maryland School of Medicine is working with IBM to test the advanced analytics of

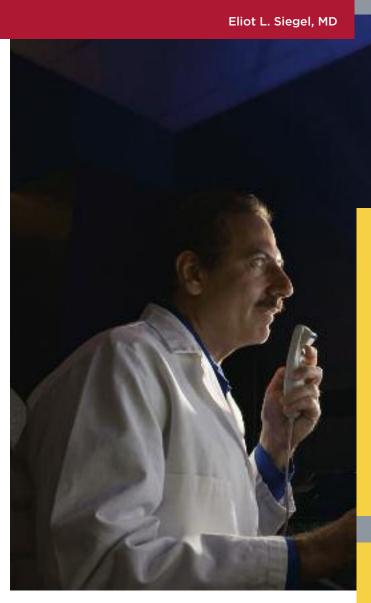
The electronic bedside companion of the future

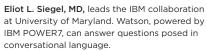


Watson beat Jeopardy!'s two most successful and celebrated contestants.











Eliot L. Siegel, MD, professor and associate vice chair of diagnostic radiology and nuclear medicine and chief of imaging at the VA Maryland Health Care System, directs the Maryland Imaging Research Technologies Laboratory and leads the IBM collaboration at the University of Maryland.

Dr. Siegel says the Watson technology could become another useful component in medical data mining and critical decision-making, a tool that can quickly synthesize medical informatics and augment existing electronic tools.

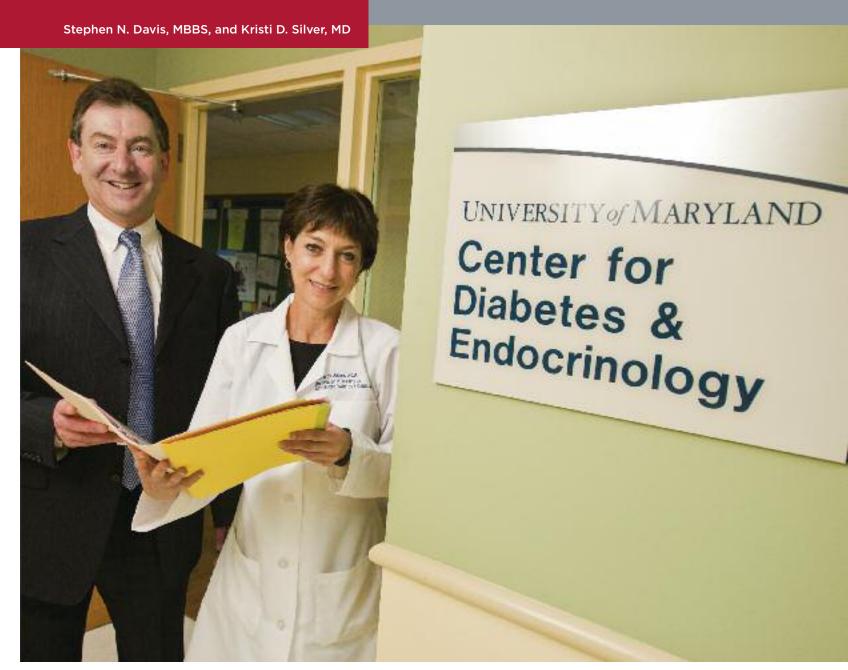




Watson beat Jeopardy!'s two most successful and celebrated contestants.









James Russell, MD, professor of neurology and director of the Peripheral Neuropathy Center, recently authored new guidelines that update the most effective treatments for people with diabetic neuropathy. The guidelines were published in Neurology and will help patients who suffer from numbness, tingling and pain from diabetic neuropathy.

Nearly 26 million Americans are living with diabetes and nearly one-quarter don't know they have the disease. Complications from diabetes include heart disease, stroke, blindness and kidney failure. The University of Maryland Center for Diabetes and Endocrinology has been recognized by the National Committee for Quality Assurance for providing high-quality care.



NAME **Nationally Ranked Care**

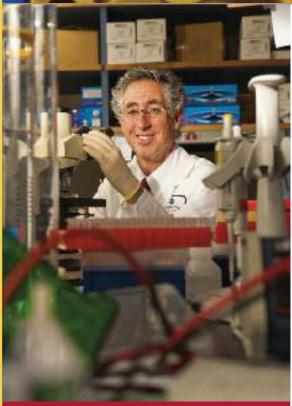
If you've been a patient at the University of Maryland Center for Diabetes and Endocrinology, you know you're in capable hands. Ranked as one of the top centers in the nation by U.S. News & World Report, the center last year changed its name to reflect the full scope of the patient care, health education and clinical research that it provides.

N6W100

The faculty and staff are improving treatment for patients and working to reverse the epidemic of diabetes. This new name makes a stronger connection between the University of Maryland and the wider network that includes other prestigious specialties within the campus community, as well as the broader University of Maryland Medical System. This partnership brings together some of the most prominent leaders in the field of diabetes and has already shed new light on how it might be managed or prevented. For example, **UM researchers have** discovered a hormone, called omentin, that may be tied to abdominal fat and diabetes and are studying the genetic factors that affect insulin production.

In addition to the Baltimore campus, the systemwide care network includes sites at Maryland General Hospital, Upper Chesapeake Medical Center, Baltimore Washington Medical Center and Shore Health at Memorial Hospital in Easton. As a result of the growth, patients have access to an unparalleled level of innovation in comprehensive diabetes and endocrinology care that comes about through multidisciplinary collaboration and pioneering research.





Alan Shuldiner, MD, professor of medicine and physiology, heads the University of Maryland School of Medicine's Division of Endocrinology, Diabetes and Nutrition and is also associate dean for Personalized and Genomic Medicine. He and other University of Maryland researchers work to identify genes that cause diabetes and obesity.





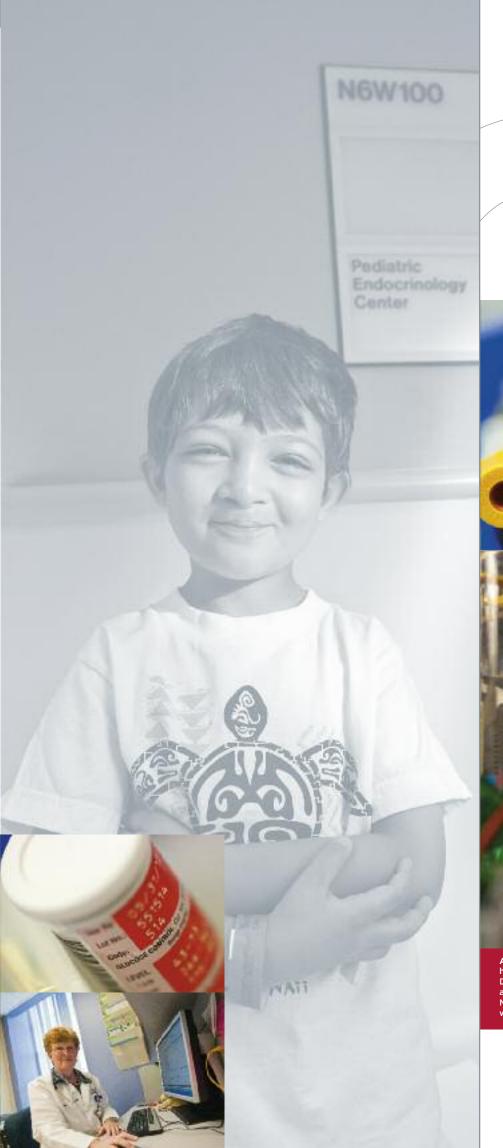
James Russell, MD, professor of neurology and director of the Peripheral Neuropathy Center, recently authored new guidelines that update the most effective treatments for people with diabetic neuropathy. The guidelines were published in Neurology and will help patients who suffer from numbness, tingling and pain from diabetic neuropathy.

Stephen N. Davis, MBBS, the Theodore Woodward Professor and Chair of the Department of Medicine at the University of Maryland School of Medicine and chief of medicine at University of Maryland Medical Center, is an internationally recognized endocrinologist and research scientist.

LIMINEDCITY OF MADVIAND

Dr. Davis is a recipient of the prestigious Novartis Award for Diabetes Research. His research spotlights mechanisms that defend against hypoglycemia as well as those that cause increased heart attacks and strokes in diabetic patients.

Kristi D. Silver, MD, associate professor of medicine, serves as the acting director of the University of Maryland Center for Diabetes and Endocrinology.







Alan Shuldiner, MD, professor of medicine and physiology, heads the University of Maryland School of Medicine's Division of Endocrinology, Diabetes and Nutrition and is also associate dean for Personalized and Genomic Medicine. He and other University of Maryland researchers work to identify genes that cause diabetes and obesity.













the DISTANCE

For Patients Statewide

possible. Regardless of where patients live, some will need the resources and expertise of the **University of Maryland Medical Center and the** faculty of the UM School of Medicine.

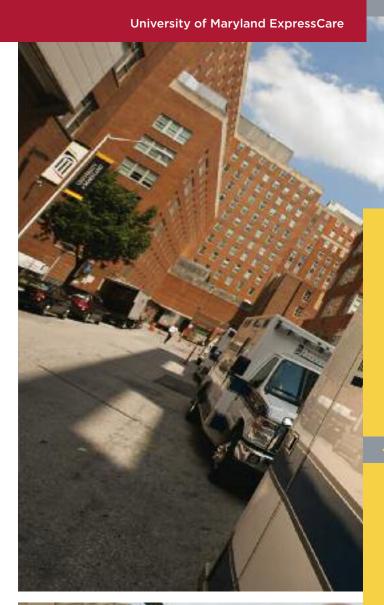


The University of Maryland Medical System's goal is to be where patients need us and to expedite the transfer process when patients need a higher level of care

This commitment has resulted in new initiatives, such as the Queen Anne's County Emergency Center, the first freestanding emergency center for residents of the

When time is of the essence — regardless of beach traffic and bridge backups — ExpressCare transport connects the facility to Shore Health System or the University of Maryland Medical Center.







ExpressCare relies on two components: physician communication and transport. The system effectively connects community physicians with academic medical center specialists and transfers patients in need of specialty care.

University of Maryland ExpressCare, in partnership with Upper Chesapeake Health, established a new ExpressCare satellite service in Bel Air on the campus of Upper Chesapeake Medical Center. This provides timely access for patients who need transport.

The University of Maryland Medical Center is a phone call away and patients are quickly transported by air or ground ambulance when the need arises. This new ExpressCare satellite was modeled after the satellite service established more than 10 years ago in Easton in partnership with Shore Health.





The University of Maryland Medical System's goal is to be where patients need us and to expedite the transfer process when patients need a higher level of care.

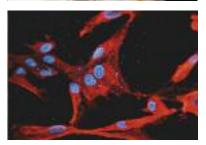
This commitment has resulted in new initiatives, such as the Queen Anne's County Emergency Center, the first freestanding emergency center for residents of the Eastern Shore.

When time is of the essence — regardless of beach traffic and bridge backups — ExpressCare transport connects the facility to Shore Health System or the University of Maryland Medical Center.









Taste-receptor cells in the lung







Between Research and Practice

Medical breakthroughs have their origins in the research laboratory, but sometimes face years of testing before they can be incorporated into patient care. At the University of Maryland School of Medicine, some of the brightest minds in biomedical research aggressively pursue discoveries and mysteries that may lead to safer and more effective treatments and ultimately save lives.

With scientific forays into genomics, stem-cell biology and the chemistry of metabolic disorders, researchers at the University of Maryland are pushing scientific boundaries for the benefit of patients with high blood pressure, heart disease, asthma and many other diseases.

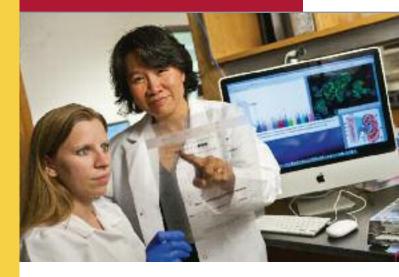
They're identifying the specific genes that make patients more susceptible to certain diseases and the genes that make them more likely to succeed on different treatment regimens. Just as each individual is distinctly different, personalized medicine means that treatment regimens may one day be tailored to those differences.



Christy Chang, PhD, associate professor of medicine, discovered a gene linked to high blood pressure. The STK39 gene is one of the first hypertension susceptibility genes uncovered through a new technique called a genome-wide association study.

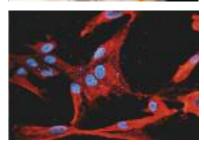
University of Maryland researchers identified the link after scanning approximately 100,000 genetic markers for variants linked to blood pressure. This gene produces a protein that helps regulate how the kidneys process salt, which plays a key role in determining blood pressure

Dr. Chang is currently conducting a clinical study to determine whether STK39 can lead to tailored therapy. In her laboratory, Dr. Chang mentors students such as Sarah Dorff, who studies molecular medicine in the Graduate Program in Life Sciences.









Taste-receptor cells in the lung



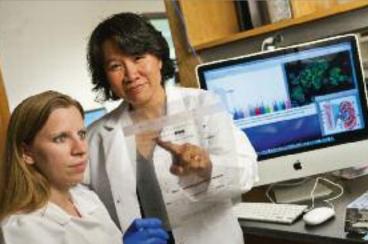


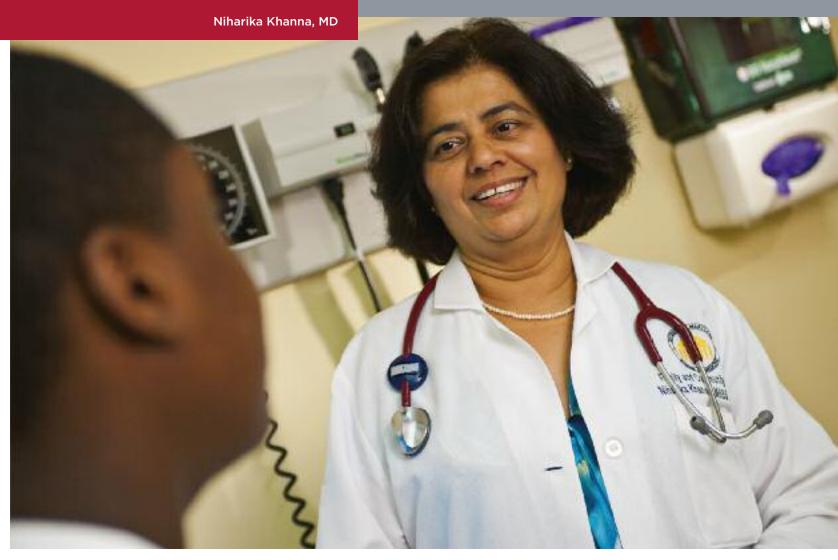


Christy Chang, PhD, associate professor of medicine, discovered a gene linked to high blood pressure. The STK39 gene is one of the first hypertension susceptibility genes uncovered through a new technique called a genome-wide association study.

University of Maryland researchers identified the link after scanning approximately 100,000 genetic markers for variants linked to blood pressure. This gene produces a protein that helps regulate how the kidneys process salt, which plays a key role in determining blood pressure.

Dr. Chang is currently conducting a clinical study to determine whether STK39 can lead to tailored therapy. In her laboratory, Dr. Chang mentors students such as Sarah Dorff, who studies molecular medicine in the Graduate Program in Life Sciences.

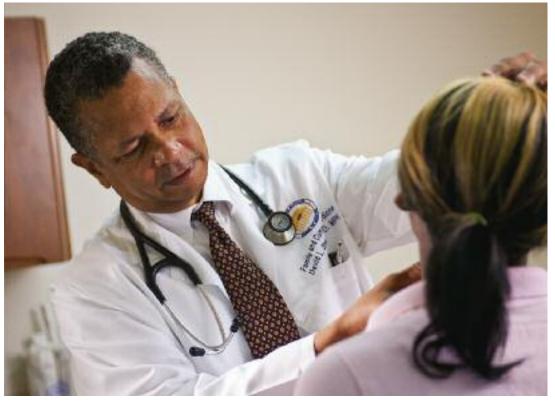








The Maryland Learning Collaborative promotes peer learning and exchange, practice transforma-tion coaching and expert consultation when needed. Specially trained practice-transformation coaches and collaborators travel to primary care offices throughout Maryland to help them implement best practices and transform into patientcentered medical homes. Training is also available onsite, at regional meetings, via online webinars and through online and telephone consultations.



David Stewart, MD, associate professor and chair of the Department of Family and Community Medicine, sees patients in the Baltimore centers participating in the Maryland Learning Collaborative.

Learning COLLABORATIVE

The Future of Advanced Primary Care

What if every patient could turn to one trusted source for all medical concerns? That's the vision of a new statewide initiative led by the University of Maryland School of Medicine Department of Family and Community Medicine.

With health care reform initiatives, a new horizon appears. With improved efficiencies and reduced health care costs, patient needs truly can come first. Sounds idealistic, but representatives from the University of Maryland, Johns Hopkins University, the Maryland Health Care Commission and more than 50 primary care practices across the state are forging ahead with a more streamlined patient care system that utilizes the latest technology for electronic health records, prescribing, follow-up care and preventive care.

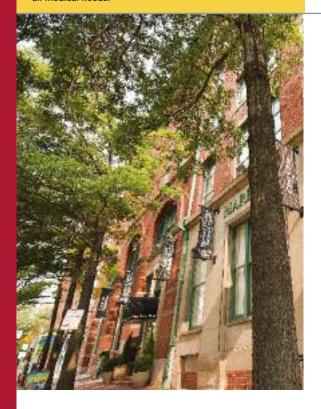
Streamlining the process will make it easier for patients to navigate the system, while accreditation from the National Committee for Quality Assurance ensures the most rigorous and comprehensive reviews of patient-centered medical homes. In the end, however, great patient care relies on a time-tested relationship of trust between patient and health care provider.

We are honored to spearhead the Maryland Patient-Centered Medical Home Program — specifically, the Maryland Learning Collaborative — in partnership with the University of Maryland School of Nursing and the participating Family and Community Medicine. Internal Medicine and Pediatric practices.



For patients Karen Jones and her son Chann and daughter Tyeshia, the Maryland Patient-Centered Medical Home Program offers greater accessibility to the Medical System as well as more comprehensive and coordinated care.

Patients benefit from streamlined care, expanded clinic hours and personalized communication via phone and email. Patients will have one primary point of contact for all medical needs.









The Maryland Learning Collaborative promotes peer learning and exchange, practice transformation coaching and expert consultation when needed. Specially trained practice-transformation coaches and collaborators travel to primary care offices throughout Maryland to help them implement best practices and transform into patientcentered medical homes. Training is also available onsite, at regional meetings, via online webinars and through online and telephone consultations.



Niharika Khanna, MD, associate professor of Family and Community Medicine, serves as project director of the Maryland Learning Collaborative, a subcomponent of the Patient-Centered Medical Home program that educates, advises and consults with participating primary care offices throughout the state. She says response has been overwhelming from a diverse array of primary care practice staff, primary care physicians and other clinicians.

There is a universal desire to increase practice efficiency, to enhance the quality of patient care, and to join the wave of health care reform that is clinician-led, academia-based, and includes support from the State of Maryland as well as the insurance community. There are opportunities for cutting-edge innovations to develop new models of primary care in Maryland.





For patients Karen Jones and her son Chann and daughter Tyeshia, the Maryland Patient-Centered Medical Home Program offers greater accessibility to the Medical System as well as more comprehensive and coordinated care.

Patients benefit from streamlined care, expanded clinic hours and personalized communication via phone and email. Patients will have one primary point of contact for all medical needs.







Haji Iqbal, UMMC security officer, is often the first person to greet patients at the Medical Center's main entrance on Greene Street, making sure all patients and visitors who come through the door can quickly find their way.

UMMC respiratory therapists are important members of the patient care team.



Nurses and patient care technicians on the Surgical Intensive Care Unit who care for patients immediately after complex operations are proud of the award.





Ahead of the COUNTRY

By Leaps and Bounds

Patients want a hospital they can trust — for the best care and the highest level of safety.

For five years in a row, The Leapfrog Group has selected the University of Maryland Medical Center as one of the nation's best hospitals for patient safety and quality of care. UMMC is one of only two medical centers nationwide to have met Leapfrog's criteria each year since 2006. Leapfrog created a new honor in 2010 — Hospital of the Decade — to recognize this consistent excellence.

Being named a Hospital of the Decade is no small feat. It took hard work and dedication by staff at all levels, consistently, year after year. What sets UMMC apart? The Leapfrog Hospital Survey, which was launched in 2001, focuses on three critical areas of patient safety and quality:

- How patients fare after common high-risk surgeries and procedures;
- Resources used to care for patients, measured by length of stay and readmission rates; and
- Management practices that promote safety and quality, such as computerized medication orders and optimum staffing of intensive care units with intensivists and other specially trained members of the health care team.

UMMC has been recognized for its unwavering focus on and commitment to overall patient safety and quality of care.



In the Medical Intensive Care Unit, a more intensive staff-to-patient ratio resulted in survival rates that are 15 to 20 percent higher and helped patients get off ventilators more quickly, according to first-of-its-kind research by Giora Netzer, MD, MSCE, assistant professor of medicine, (above left) and Carl Shanholtz, MD, associate professor of medicine, (second from right). They work as a team with nurse manager Kerry Sue Mueller, BSN, MBA, RN, CCRN, and respiratory therapist Robin Smith, RRT (right).



Among the Shock Trauma staff members who worked tirelessly to eliminate bloodstream infections are (left to right) Jacqueline Cousins, RN, Jay Menaker, MD, associate professor of surgery and medical director for Neuro-Trauma Intermediate Care, Sarah Saccoccio, RN, and Christie Collins, RN, BSN, CCRN.





Leapfrog's "Top Hospital" award is recognized as the gold standard for measuring and reporting hospital performance in safety, quality and efficiency. According to Leapfrog research, if its recommendations were implemented in all urban hospitals, these measures could save more than 57,000 lives, prevent as many as 3 million serious medication errors and save \$12 billion annually.

The Top Hospital of the Decade award from Leapfrog made the rounds to several UMMC units to recognize all staff members for their part in providing safe, highquality care every day.

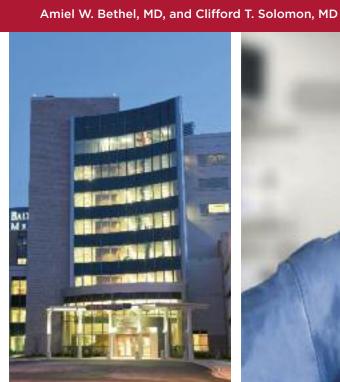




In the Medical Intensive Care Unit, a more intensive staff-to-patient ratio resulted in survival rates that are 15 to 20 percent higher and helped patients get off ventilators more quickly, according to first-of-its-kind research by Giora Netzer, MD, MSCE, assistant professor of medicine, (above left) and Carl Shanholtz, MD, associate professor of medicine, (second from right). They work as a team with nurse manager Kerry Sue Mueller, BSN, MBA, RN, CCRN, and respiratory therapist Robin Smith, RRT (right).



Among the Shock Trauma staff members who worked tirelessly to eliminate bloodstream infections are (left to right) Jacqueline Cousins, RN, Jay Menaker, MD, associate professor of surgery and medical director for Neuro-Trauma Intermediate Care, Sarah Saccoccio, RN, and Christie Collins, RN, BSN, CCRN.











Michael Drossner, MD, advises cardiothoracic surgery resident
Zachary Kon, MD, at Upper
Chesapeake Medical Center.





ommunity of EXPERTS

of Maryland School of Medicine often see patients at the community hospitals within the University of Maryland Medical System, whether on a regular



Physician leaders with broader roles for the system hospitals ensure collaboration. For example, Stephen Bartlett, MD, the Peter Angelos Distinguished Professor and chairman of the Department of Surgery at the University of Maryland School of Medicine, is also the system surgeon-in-chief for UMMS.

Mohan Suntha, MD, professor and vice chair of radiation oncology, is UMMS vice president for system program development and associate director of clinical affairs for the Marlene and Stewart Greenebaum Cancer Center.



Amiel W. Bethel, MD, and Clifford T. Solomon, MD







Michael Drossner, MD, advises cardiothoracic surgery resident Zachary Kon, MD, at Upper Chesapeake Medical Center.

Amiel W. Bethel, MD, and Clifford T. Solomon, MD, are based at the Baltimore Washington Spine and Neurosciences Center at Baltimore Washington Medical Center. Both doctors also are clinical assistant professors of neurosurgery at the University of Maryland School of Medicine.

Michael Drossner, MD, medical director of the Cardiac Catheterization Laboratory at Upper Chesapeake Medical Center, consults with Zachary Kon, MD, a cardiothoracic surgery resident from University of Maryland Medical Center. Drossner, as a clinical assistant professor of medicine at the University of Maryland School of Medicine, treats patients and trains the next generation of heart specialists at Upper Chesapeake Medical Center and the University of Maryland Medical Center.





Physician leaders with broader roles for the system hospitals ensure collaboration. For example, Stephen Bartlett, MD, the Peter Angelos Distinguished Professor and chairman of the Department of Surgery at the University of Maryland School of Medicine, is also the system surgeon-in-chief for UMMS.

Mohan Suntha, MD, professor and vice chair of radiation oncology, is UMMS vice president for system program development and associate director of clinical affairs for the Marlene and Stewart Greenebaum Cancer Center.







NE Highlights

The HSF III Research Building is expected to generate \$146 million in annual economic activity and almost 1,300 new jobs.

This past year, the School of
Medicine continued to push the
boundaries of research innovation in our efforts to transform
health care in Maryland and
around the world. We continued
to matriculate the highest
caliber of medical, allied health
and graduate students while
expanding our clinical reach into
the community at large. In addition, we awarded new endowed
professorships, marked an
important milestone at one of



our research centers and

launched the Personalized and

Genomic Medicine initiative.

Research

Health Sciences Facility III Update

We're on our way! The Maryland General Assembly approved \$4 million in matching funds for the preliminary design of the Health Sciences Facility III (HSF III) Research Building, which will transform medicine by supporting "bench to bedside" translational research initiatives that will make new and more effective treatments available to patients more quickly.

The 332,000-square-foot, \$284 million facility will allow for the expansion of innovative research programs in such cutting-edge fields as genome sciences, personalized medicine, cancer, cardiovascular science and stem-cell biology. HSF III will also help the School of Medicine to attract new grants and contracts and recruit and retain top scientists. In addition, it will spur research collaboration across the University of Maryland campus and beyond. When completed, HSF III is expected to generate \$146 million in annual economic activity and almost 1,300 new jobs.



Researchers at the Institute for Genome Sciences (IGS) — with collaborators in the federal government — have published the first scientific paper detailing their pivotal role in the investigation of the anthrax attacks of 2001. The paper, published in *Proceedings of the National Academy of Sciences*, describes the IGS's groundbreaking use of genomics and microbiology in a criminal investigation.

The paper details how IGS faculty and collaborators from the FBI found that the anthrax samples used in all the attacks were





newly published paper describes the work that the FBI assigned to IGS faculty members — including senior author

Jacques Ravel, PhD, associate

genetically identical. The

professor of microbiology and immunology, first author

David Rasko, PhD, assistant professor of microbiology and immunology, and the Institute's director, Claire Fraser-Liggett, PhD, professor of medicine and microbiology



Milk and Malnutrition

Researchers at the Center for Vaccine Development discovered a clever and costeffective way to help malnourished children

and immunology.



in developing countries who are susceptible to sepsis, a potentially deadly infection.

Alan Cross, MD, professor of medicine, has developed a

successful vaccine against the sepsis toxin.

Instead of vaccinating children, Dr. Cross and Zeil Rosenberg, MD, MPH, of Bali Medical Inc., came up with the novel idea of vaccinating pregnant cows. The cows then produce antibody-rich colostrum, the first milk a cow makes after giving birth to a calf.







The colostrum would be given to malnourished children as a nutritional supplement.

More than 3 million children die of malnutrition every year. The interior walls of the intestines break down, allowing bacteria to move from the gut into the bloodstream. The hope is that the colostrum will prevent this breakdown and changes in the immune system so that malnourished children can better fight infections. The colostrum should cost far less than conventional vaccine shots or intravenous treatment, making it less of a financial burden for developing nations. Dr. Cross recently received a Maryland Proof of Concept Alliance grant to conduct his experiments.

Excessive Drinking Genes

School of Medicine researchers have identified two genes associated with binge



drinking, a discovery that may open doors to new, more effective treatments for this excessive form of alcohol consumption. Harry June,

PhD, professor of psychiatry and pharma-



cology and experimental therapeutics, and Laure Aurelian, PhD, professor of pharmacology and experimental therapeutics and

microbiology and immunology, discovered that by manipulating two genes in mice the GABA receptor and Toll-like receptor 4 (TLR4) — they could curb binge drinking.

GABA receptors react to alcohol, giving drinkers a calm and euphoric feeling and reinforcing excessive drinking behavior. TLR4's role in binge drinking was previously unknown.

The researchers also found that when they artificially stimulated the GABA receptors and TLR4 in order to simulate the "good feelings" binge drinkers feel when drinking alcohol, the laboratory mice lost interest in alcohol for up to two weeks after the procedure. About 30 percent of Americans who drink do so excessively, and about 75,000 people die each year from the effects of binge drinking.

Preparing for Terrorism

The School of Medicine continues to lead a major research initiative aimed at protecting the public from the threat of accidental or purposeful radiation exposure.



A team led by Thomas MacVittie, PhD, professor of radiation oncology, is investigating new treatments for potentially fatal

lung injuries that might result from excessive radiation exposure.

The research group most recently received a five-year \$51 million contract through the U.S. Department of Health and Human Services, one of the largest single grants ever received by the School of Medicine.



Michael Garofalo, MD, assistant professor of radiation oncology, will lead the development and testing of a new medication that would

reduce radiation-induced inflammation. If approved by the FDA, the drug would be given as part of a treatment regimen in the event of a radioactive accident or attack.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE







Clinical Care

Faculty Practice Expansion

The School of Medicine's clinical practices continue to expand access to its high-quality, patient-centered care in the community through University Physicians Inc. (UPI), which offers specialty services at more than 20 locations throughout Maryland.

In the past year, UPI has opened two new satellite practices: a new pediatric specialty care site at Baltimore Washington Medical Center and a larger multi-specialty site at Upper Chesapeake Health. In addition, UPI has launched a \$10 million renovation of its downtown professional building on Redwood Street to make it even more patient-friendly.

UPI is using technology to improve the patient experience. EPIC, a nationally recognized electronic medical records system, is being implemented at faculty practices, along with a new, coordinated campuswide registration system. Together, these systems will improve efficiency, patient care, safety and convenience.



In an effort to maintain the highest level of patient satisfaction, UPI is conducting patient satisfaction surveys to identify key areas of success and best practices that can be employed at all faculty practice locations. This high quality of service was reflected in total clinical revenues, which increased 6.8 percent to a record high of \$227.2 million, and by total patient visits, which increased 3.5 percent.

Education

The Pursuit of Excellence

Thanks to the efforts of our faculty and the extraordinary clinical experience provided through our partnership with the University of Maryland Medical System, our medical school graduates went on to nationally acclaimed residency programs from coast to coast, such as Yale, Stanford, Duke and the University of Maryland Medical Center (UMMC).

This year's class produced the third female student ever to match to UMMC's residency program in neurosurgery. In dermatology — a specialty where residency positions are scarce — all six of our students applying for dermatology residencies

Department of Medical and Research Technology students received prestigious awards, as well as job offers in a clinical laboratory setting. The department is chaired by professor Sanford Stass, MD.

Rasheeda Johnson, BS, MA, second-year gerontology PhD student specializing in health disparities in the Department of Epidemiology and Public Health, is studying oral health in the aging population.







were immediately accepted into training programs. Of our graduates, 43 percent entered primary care specialties, such as pediatrics, family practice, internal medicine and obstetrics and gynecology. The remainder went into the surgical specialties. Residency program surveys have consistently demonstrated that our graduates are among the top performers in their specialty areas.

Graduate Program and Allied Health Achievement

It was a banner year for graduate students pursuing careers in allied health and public health. U.S. News & World Report ranked the School of Medicine's Department of Physical Therapy and Rehabilitation Science (PTRS) 15th out of 204 programs in the country.



Under the outstanding leadership of Mary Rodgers, PT, PhD, professor and chair, the department reached the milestone of having gradu-

ated more than 2,000 students since 1956.

Graduates of the Department of Medical and Research Technology (DMRT), chaired by professor Sanford Stass, MD, received a host of prestigious awards, as well as job offers in a clinical laboratory setting.



Two DMRT students were inducted in the Phi Kappa Phi honor society, an honor conferred upon students who rank in the top 10 percent of all graduating students in the nation.

The Master of Public Health Program has added a global health concentration that addresses maternal and child health, nutrition, disparities in health care and the economic impact of disease.

The Graduate Program in Life Sciences (GPILS), under the leadership of Margaret



McCarthy, PhD, professor and interim chair of pharmacology and experimental therapeutics and associate dean for graduate studies,

had an outstanding recruitment year while continuing to improve the educational experience for its students.

The program admitted 122 students, including 59 PhD students, seven of whom are under-represented minorities funded by the nationally renowned Meyerhoff Training Program.

GPILS also helped the University to obtain or retain 21 National Institutes of Health-sponsored training programs

by improving data collection and administrative support to faculty in the application process.

Community Engagement

Addressing Health Disparities



School of Medicine Dean E. Albert Reece, MD, PhD, MBA, has been appointed by Governor Martin O'Malley and Lieutenant Governor

Anthony Brown to lead a special work group of the Maryland Health Quality and Cost Council.

The work group is designing strategies and initiatives to address disparities inside the health care system and focus on programs, policies and legislation that will have the broadest, most immediate and sustained impact. The program is creating new outreach efforts such as the "barbershop engagement" program, which provides free health screenings to shop patrons.

Jay Perman, MD, (left) president of the University of Maryland, attended a ribbon-cutting to launch a capital campion to mark the 20th anniversary of the Center for Integrative Medicine.







School of Medicine Students Help Those in Need

Community service remains a cornerstone of the student experience at the School of Medicine, and this year was no exception.

For the 21st consecutive year, our medical students organized Project Feast to feed hundreds of Baltimore's homeless and needy families on Thanksgiving Day. Students, faculty, staff and friends gathered at Booker T. Washington Middle School in Baltimore to help prepare and serve a hot Thanksgiving meal and accept donations to help the needy.

Other community outreach events included the Student Sight Savers Project, which offered glaucoma screenings at Lexington Market. The Student National Medical Association (SNMA) was especially active in the community, with members providing health education and screening, collecting coats and blankets for the homeless and providing school supplies and Christmas gifts for children in need. In recognition of their outreach efforts, the SNMA was named national chapter of the year.

A Decade and Counting for Mini-Med School

The 10th anniversary edition of Mini-Med School featured nine new topics to



improve the health of Baltimore-area residents, plus two very special graduation guests. Lieutenant Governor **Anthony Brown** attended the final session to congratulate

the graduates and thank the School of Medicine for providing this important public service to the residents of Maryland.



The graduation speaker was Yusuf Ali, a Baltimore resident who first participated in Mini-Med School in 2005 as a college sophomore. Inspired by the experience, Ali is now enrolled at the School of Medicine and is planning a career in child psychiatry.

The School of Medicine also sponsors Mini-Med School programs on the Eastern Shore, in Western and Southern Maryland, and at Baltimore-area high schools.

Milestones

20th Anniversary for the Center for **Integrative Medicine**

The School's Center for Integrative Medicine kicked off its 20th anniversary by announcing a \$20 million fundraising campaign and cutting the ribbon on new office space.

The fundraising campaign features a grant from an anonymous donor who will match up to \$7.5 million in donations.

Among the dignitaries and special guests at



the ceremony were U.S. Senator Barbara Mikulski and Ryan Major, a soldier wounded in Iraq, who benefited from integrative therapies he received while a patient at the

University of Maryland R Adams Cowley Shock Trauma Center.

Stephen Bartlett, MD, Sharon Henry, MD, FACS, Thomas Scalea, MD, and Dean Reece at Dr. Henry's investiture ceremony.

Dean Reece, former Chair of Anesthesiology Martin A. Helrich, MD, Vice Chairs Mary Njoku, MD, and Gary Fiskum, PhD, and Chair Peter Rock, MD, MBA





At its inception, the Center for Integrative Medicine was the first program in the country based at a medical school to conduct research into complementary and alternative medicine therapies.



The founder and director of the center is **Brian** Berman, MD, professor of family and community medicine. Under his

leadership, the center has become an international leader for research, patient care, and education and training in complementary medicine.

New Associate Dean for Personalized and Genomic Medicine



Alan R. Shuldiner, MD, the John L. Whitehurst Professor of Medicine, is the new associate dean and director of the Program in

Personalized and Genomic Medicine.

The appointment reflects a joint commitment by the School of Medicine and the University of Maryland Medical Center to create a top-tier Program in Personalized and Genomic Medicine. Dr. Shuldiner will develop innovative educational, research and clinical programs that will ultimately lead to individualized treatments based on

a patient's unique genetic make-up, environment and lifestyle. In addition, he will continue to serve as head of the Division of Endocrinology, Diabetes and Nutrition.

Dr. Shuldiner's major research interests are in the molecular basis and genetics of type-2 diabetes, obesity and insulin resistance. He has published more than 200 peer-reviewed articles and has obtained more than \$38 million in total extramural research funding.

Endowed Professorships

In the past year, the School of Medicine awarded three endowed professorships during two special investiture ceremonies.

The endowed chair or professorship is one of the highest honors that can be bestowed upon a faculty member and recognizes exceptional performance, reputation and prestige of the faculty member who occupies the position. The endowed professorship is also a powerful recruitment and retention tool.

Sharon M. Henry, MD, FACS, was awarded the Anne Scalea Professorship in Trauma. The professorship was established in honor of Anne Scalea, mother of Thomas M. Scalea, MD, the Francis X. Kelly Professor in Trauma Surgery, director of the Program in Trauma and Physician-in-Chief of the University of Maryland R Adams Cowley Shock Trauma Center. This en-

dowed professorship represents a living legacy to honor Mrs. Scalea for her guidance and inspiration.

In a first-of-its-kind investiture ceremony, the School of Medicine awarded two endowed professorships funded by one donor — the late M. Jane Matjasko, MD, who chaired the Department of Anesthesiology in outstanding fashion from 1986 to 2005. Peter Rock, MD, MBA, the Martin A. Helrich Professor and Chair of Anesthesiolgy, was on hand to name Vice Chair Gary Fiskum, PhD, the Matjasko Professor for Research in Anesthesiology and Vice Chair Mary Njoku, MD, the Matjasko Professor for Education in Anesthesiology.

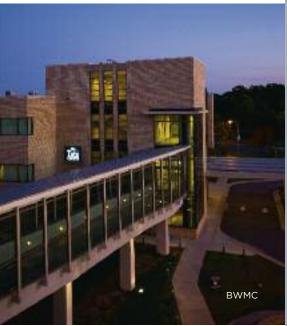
The School of Medicine has now awarded 52 endowed professorships.

UNIVERSITY OF MARYLAND MEDICAL SYSTEM

Three new state-of-the-art operating rooms opened

The University of Maryland Medical System has had an extraordinary year. In a word, transformative. Not always easy, sometimes difficult, but always worthwhile. We are in the midst of an exciting transition as we continue to align strategically with partners and patients throughout the state. We are extremely pleased at the pace of progress and the benefits this has for our patient community.





Baltimore Washington Medical Center

Baltimore Washington Medical Center (BWMC) is a 321-bed comprehensive medical center serving families in and around the Baltimore-Washington corridor. Located in Anne Arundel County in one of Maryland's fastest-growing suburban communities, the center operates with more than 2,600 employees and 650 physicians and is implementing a \$30 million expansion of its surgical services. The center recently added University of Maryland School of Medicine-affiliated neurosurgeons and vascular surgeons.

Founded in 1965, BWMC is a comprehensive health care provider with centers of excellence that include the Aiello Breast Center, Tate Cancer Center, Maryland Vascular Center, Joint Replacement Center and the Baltimore Washington Spine and Neurosciences Center. BWMC's Emergency Department is one of the busiest in the state, with more than 100,000 patients treated annually.

The hospital provides comprehensive diabetes care through the University of Maryland Center for Diabetes and Endocrinology. The Joint Replacement Center provides complete care before, during and after surgery, while the Baltimore Washington Spine and Neurosciences Center uses minimally invasive techniques and pain management therapies to provide comprehensive spine care. The Maryland Vascular Center combines the most advanced diagnostic capabilities with a full range of treatment options.

BWMC reaches close to 390,000 people a year through its community outreach programs, including lectures, health fairs, walking programs, screenings and other events held throughout the region.



Chester River Health System

Chester River Health System was formed in 1997 to offer state-of-the-art health care to the residents of Kent and Queen Anne's counties and portions of Caroline and Cecil counties. The system includes three key components — a hospital, a home care and hospice facility and a comprehensive rehabilitation facility. Working closely with Shore Health System, Chester River provides care to the residents of the Mid-Shore area.

Chester River Hospital Center, serving the region for 75 years, is an acute care hospital with more than 500 employees, 200 volunteers and 100 physicians who provide inpatient/medical services, 24-hour emergency care, surgical services, outpatient diagnostic services, laboratory services, rehabilitation services, maternity/birthing suites and oncology services.

Chester River Home Care & Hospice provides care for patients in their own homes and provides skilled nursing, physical therapy, speech therapy, occupational therapy, intravenous therapy, personal care, medical social work, hospice and outreach services.

Chester River Manor is a 98-bed facility that employs a staff of 100 and offers a full range of services and therapies designed to help residents reach and maintain the highest level of well-being and quality of life. Chester Chester River Home Care & Hospice nurses such as Jeanette Walton, RN-ONC, have patient medical records at their fingertips during home visits, through new laptops that also allow them to show instructional videos to help patients manage their conditions at home.

Civista has successfully recruited a number of physicians to Charles County, an area underserved in terms of physicians relative to population







River Manor is a comprehensive health care facility licensed by the Maryland Department of Health and Mental Hygiene that provides skilled and intermediate care and rehabilitation services.

This year, the Chester River Hospital Center launched a number of new wellness initiatives that include a healthier cafeteria menu, clinics that help patients monitor and manage their prescription medications, partnerships with local health departments and support for local initiatives such as Kent on the Move and Get Healthy Kent through health screenings and free lab work.

Civista Health System

The newest addition to the University of Maryland Medical System, Civista Health System is a regional, not-for-profit, integrated health system serving patients in Charles County and Southern Maryland. Following the completion of a two-year management agreement, Civista Health announced that, effective July 1, 2011, it has become a member of the Medical System.

Civista has increased the size of its campus through several land and building acquisitions, growing by 40 percent over the past two years. Civista constantly reinvests resources in the community with innovative technology, community health education and care for the poor. A new building — the Eva Irene Davis Pavilion — as well as a major investment in new technology and a renewed commitment to exceptional care make Civista the starting point for quality medical care in Southern Maryland.

Through its partnership with UMMS and the University of Maryland School of Medicine, Civista has successfully recruited a number of physicians to Charles County, an area underserved in terms of physicians relative to population. Civista Health's largest component is the 124-bed Civista Medical Center. Civista Health System is now among the leaders throughout the University of Maryland Medical System for nationally recognized indicators of quality clinical care.

Kernan Hospital

Kernan Hospital is committed to a patientfocused, results-oriented philosophy of care in orthopaedic surgery and rehabilitation. The largest inpatient rehabilitation hospital and provider of rehabilitation services in the state, it has been serving the communities of Central Maryland for more than 100 years.

Kernan reigns as Maryland's original orthopaedic hospital with a staff that consists of orthopaedic physician assistants and dedicated nurses in the Post Anesthesia Care Unit and the Medical/Surgical Unit, guaranteeing the highest quality of care in the acute hospital setting. Exemplifying leadership that transforms lives, Kernan brings experience, innovation and fast, positive results to our patients.

Kernan has been part of UMMS since 1986, allowing its patients to access the continuity of care and extensive resources that characterize a university teaching hospital. While maintaining a pleasant and healing atmosphere, it has evolved to offer innovative, interdisciplinary orthopaedic and rehabilitation services for both children and adults.

In 1989, the State of Maryland selected Kernan as one of only five centers with licensed rehabilitation beds. Then, in 1996, Montebello Rehabilitation Hospital merged with Kernan. Kernan is now accredited by The Joint Commission and Commission on the Accreditation of Rehabilitation Facilities, with specialty accreditation in Brain Injury, Spinal Cord System of Care, and Comprehensive Integrated Inpatient Rehabilitation Program.

Kernan is now accredited by The Joint Commission and Commission on the Accreditation of Rehabilitation Facilities with specialty accreditation.



Dedicated to reaching out to the community and providing personalized care to patients, Kernan continues to be committed to excellence in the areas of patient care and medical education through training programs for orthopaedic residents, physiatry residents and medical and physical therapy students. As the designated orthopaedic hospital of the Medical System, Kernan has kept pace with the changing environment in health care by blending a multidisciplinary staff of specialists to meet a variety of patient needs.



Maryland General Hospital (MGH) is a 197-bed urban, community teaching hospital that has served the health care needs of the Baltimore community for 130 years. The hospital's ongoing commitment and initiatives designed to focus on providing the highest quality of care paid dividends in 2011. The hospital was among five in Maryland with the lowest rates of hospital-acquired conditions. Core measures are specific clinical interventions put in place to ensure patient safety and recovery in the

areas of pneumonia, heart failure, acute myocardial infarction and specific surgical care interventions.

Building on the momentum of the completion of construction of a new building that includes state-of-the-art operating rooms, surgical support areas and a new intensive care unit, the hospital has experienced significant growth in the number of surgical procedures: an unprecedented 12.6 percent volume growth compared to the previous fiscal year. This growth was made possible by partnering with University of Maryland School of Medicine Shock Trauma orthopaedic surgeons who perform select follow-up surgery cases at Maryland General, as well as other SOM surgeons from UMMC who are performing surgical procedures at MGH.

Maryland General also continued its longstanding mission to improve community health through outreach by offering a range of free screenings and health education at community events, health fairs, churches, schools, local businesses and government offices and other venues that make it easy and convenient for members of the community to access these services.







MGH continues its longstanding mission to improve community health through outreach by





In Annapolis, members of the General Assembly recognized Mt. Washington Pediatric Hospital for its 90th Anniversary



Mt. Washington Pediatric Hospital

Since 1922, Mt. Washington Pediatric Hospital (MWPH) has provided specialty care for the young. Today, Mt. Washington Pediatric Hospital is a joint affiliation between UMMS and Johns Hopkins Health and serves more than 6,500 patients a year.

The hospital offers both inpatient and outpatient care for infants and children with rehabilitation and other complex medical needs and offers community educational outreach opportunities to help children reach their full potential not just in the facility but in their homes, schools and communities. Dedicated to maximizing the health and independence of children, MWPH welcomes referrals from throughout the region and stays abreast of the ever-changing needs of children while offering a caring, nurturing and familycentered environment for all.

Mt. Washington's comprehensive care includes treatment for developmental disorders, traumatic brain injury (including concussion), premature birth, feeding disorders, asthma, pulmonary issues, sleep disorders, neurological disorders, behavioral disorders, psychological issues, rehabilitation, physical trauma, cerebral palsy, childhood obesity, diabetes, nutrition and lead poisoning.

The Center for Neonatal Transitional

Care serves infants who are born with high-risk conditions, usually due to premature birth, and is the only facility of its kind in the Mid-Atlantic region providing transitional care to children under age 2. The center is currently undergoing an expansion to meet local needs. Enhancements will accommodate more children, improve efficiency of space and introduce state-of-the-art technology.

Because research shows that hospital stays are shorter and re-admissions are less frequent when parents are involved in a child's care and receive education and support, Mt. Washington's clinical staff works closely with families, teaching them how to manage complicated equipment such as ventilators, tracheostomy tubes and feeding tubes, and how best to respond to the constant demands of an infant with special needs.

Shore Health System

Shore Health System, along with Chester River Health, is the primary provider of health care for the more than 170,000 residents of Maryland's Mid-Shore region.

For more than 100 years, the staff at the Memorial Hospital at Easton and Dorchester General Hospital in Cambridge have cared for their friends and neighbors through all the cycles of life. The Shore Health System outpatient network takes health care into the community where people live and work, providing services from primary care and physician specialists, diagnostic and imaging services, a regional cancer center and comprehensive physical, occupational and speech rehabilitation therapy.

With the opening of the Queen Anne's County Emergency Center in October 2010, county residents no longer need to travel more than 20 miles one way on congested roadways for emergency medical treatment. Open 24 hours a day, every day of the year, the new center is a resource close to home for people of all ages. The center began as a partnership between Queen Anne's County government, the University of Maryland Medical System, the University of Maryland School of Medicine faculty and Shore Health System. One of only three freestanding emergency centers in Maryland and the only one located in a

The Queen Anne's County Emergency Center staff has exceeded expectations by treating nearly 10,000 people in the first year.









rural area, the 16,000-square-foot facility
offers 13 treatment rooms, including special pediatric and trauma areas, and onsite
diagnostic imaging and laboratory services.
The Emergency Center exceeded expecta-

The Emergency Center exceeded expectations by treating nearly 10,000 people in the first year.

The Shore Health System Medical Pavil-

ion, scheduled to open in December 2011, will further expand the medical services Shore Health System offers to Queen Anne's County residents. The facility will house Maryland Primary Care Physicians and specialists in urology, general surgery, neurology, endocrinology, otolaryngology, orthopaedics, gastroenterology and cardiology. Diagnostic and imaging services at the Medical Pavilion will include digital X-rays, mammography, MRI scans and lab testing. The new pavilion will provide outpatient physical, occupational and speech therapy and a sleep disorders center.

University of Maryland Medical Center

The University of Maryland Medical Center (UMMC) is the flagship hospital of the University of Maryland Medical System.

With 779 licensed beds and the most intensive care beds of any hospital in Maryland, UMMC provides the full range of health care for people throughout the Mid-Atlantic. Patient admissions to

UMMC have been growing steadily — with more than 39,000 last year — as have emergency transports and transfers from throughout Maryland. The Medical Center has 6,800 employees and more than 1,000 attending physicians who are faculty at the University of Maryland School of Medicine.

The Medical Center's national profile continues to rise. As one of only two medical centers to make the Leapfrog Group's list of Top Hospitals for patient safety and quality for five consecutive years, UMMC was named a Leapfrog Top Hospital of the Decade in 2010. U.S. News & World Report ranked UMMC among the top hospitals in the country in nine specialty areas: Cancer; Diabetes and Endocrinology; Ear, Nose and Throat; Cardiology and Heart Surgery; Geriatrics; Kidney Disorders; Orthopaedics; Pulmonology; and Urology.

UMMC's world-renowned R Adams
Cowley Shock Trauma Center is in the
midst of a \$160 million expansion that will
boost its capacity to take on the most critically injured and ill patients. The center
maintains a 97 percent survival rate and
serves as a model for programs around
the world.

UMMC continues to be a leading organ transplantation center nationwide, performing the majority of all organ transplants in Maryland. In the past year, 222 patients each received a new kidney and 53 received a new liver. The kidney transplant program is a national leader in innovation and technical and surgical excellence, and is among the top five centers nationally for the number of kidney transplants performed. UMMC has the second-largest program in the country for performing isolated pancreas transplantation. In November 2010, surgeons performed a rare heart-lung transplant on a young man from Georgia who had congenital heart disease that caused his

The leadership at UMMC is proud of the The Leapfrog Group's Top Hospital of the Decade award.



liver to scar. His local cardiologist reached out to UMMC's heart team, which arranged a transfer and treatment until a suitable donor heart and lung became avail-

able. He had been near death before com-

ing to UMMC; the transplant cured him.

The Marlene and Stewart Greenebaum Cancer Center contributes major advances to cancer research, such as in the development of cancer vaccines, novel cancer-fighting agents and promising combination therapies. Since the cancer center first received National Cancer Institute designation in 2008, its total research funding has increased 55 percent, to a current level of \$74.2 million. The staff has expanded as well, employing 215 scientists and physicians, all of whom are on the faculty of the School of Medicine. The staff also includes faculty at three University of Maryland professional schools in Baltimore, and at two other campuses in Catonsville and College Park.

University Specialty Hospital

University Specialty Hospital (USH) provides a continuum of services for people with a variety of injuries and illnesses that require chronic care management and community reintegration.

The hospital offers a large comprehensive pulmonary ventilator program, a coma emergence program, traumatic brain injury program and complex medical care services.

Upper Chesapeake Health emergency departments now partner with ExpressCare.



The four-story, 250,000-square-foot hospital is located in Baltimore's Inner Harbor area, just one mile from the University of Maryland Medical Center.

USH focuses on the needs of chronically ill patients, helping them return to society with maximum independence. Many of its patients suffer from brain injuries and respiratory failure. The hospital works to manage these patients' chronic conditions and to attain the highest level of independent function possible through rehabilitation, wound care, respiratory care, pulmonary outpatient rehabilitation and infectious disease management. In addition to weaning patients from mechanical ventilators and enabling them to breathe on their own again, the ventilator unit offers physical rehabilitation to help patients gain mobility skills and improve activities of daily living.

Of the patients discharged last year after recovering from brain injury, 75 percent were able to re-establish residence within the community. The patient care team includes primary care hospitalists, University-affiliated pulmonary and infectious disease specialists, therapists, nurses and other allied health professionals.

Upper Chesapeake Health System

Upper Chesapeake Health (UCH) was founded in 1984 and comprises Harford Memorial Hospital, Upper Chesapeake

Medical Center and the Upper Chesapeake Health Foundation. It is the leading health system and largest non-governmental employer in Harford County, serving residents of Harford County, western Cecil County and parts of northern Baltimore County. The 3,000-member staff, 600 physicians and 800 volunteers care for 136,000 patients annually, including 22,000 patients who are admitted.

Since its strategic affiliation with UMMS in July 2009, UCH has welcomed new physician specialists and has expanded services in emergency care and clinical programs such as oncology, cardiovascular services, pulmonary medicine, surgery and women's and children's services. In July 2010, the University of Maryland Express-Care program partnered with the UCH emergency departments and now serves Harford County and western Cecil County for specialty care transports.

Planning is underway to build a multidisciplinary, comprehensive cancer center at Upper Chesapeake Medical Center in Bel Air by the end of 2013. The center will be affiliated with the University of Maryland Marlene and Stewart Greenebaum Cancer Center (UMGCC), affording access to services not otherwise available in the community, such as multidisciplinary care from medical oncologists, radiation oncologists and surgical oncologists consulting as a team with the goal of timely treatment plans that ensure optimal outcomes. Currently, UCH participates in regular tumorboard conferences with UMGCC in which team members confer on oncology cases to make sure that patients living with cancer are receiving the best care possible.





FACULTY 2,800

- 1,296 Full-time
- 248 Part-time
- 1,256 Adjunct

STAFF 3,309

• Full-time Administrative, Research & Clinical Staff, including University Physicians Inc.

STUDENTS 1,282

- 625 Medical (MD)
- 35 MD/PhD
- 333 Graduate (MS/PhD)
- 12 Genetic Counseling (MS);
- 55 Medical & Research Technology (BS, MS)
- 168 Physical Therapy (DPT, PhD)
- 54 Public Health (MPH)

POST-DOCTORAL FELLOWS 545

- 209 Clinical
- 336 Research

RESIDENTS 577

• Trained by SOM Faculty

TOTAL 8,513

OUR INCOME		
Tuition and Fees	\$	23,576,000
State Appropriation		29,575,000
Total Grants and Contracts		486,333,000
Gifts, Endowments and Other Expenses		11,286,000
Medical Service Plan		227,200,000
Reimbursements from Affiliated Hospitals		140,621,000
TOTAL	\$918,591,000	
OUR EXPENSES		
Instruction/Training	\$	84,923,000
Research	428,828,000	
Clinical Service	371,790,000	
General and Administrative		33,050,000
TOTAL	\$918,591,000	

OUR INCOME	
From services to inpatients	\$ 1,649,435,000
From services to outpatients	833,741,000
These services produced total gross revenue of	\$2,483,176,000
Less amounts we had to deduct for contractual allowances to third party payors	(213,810,000)
Less the cost of charity care for persons without the ability to pay for their care	
and for uncollectible accounts	(175,963,000)
Therefore, our net revenue from patient care services was	2,093,403,000
In addition, our other revenue from operations, including state support, was	73,788,000
Thus, our total revenue from operations was	\$2,167,191,000
OUR EXPENSES	
For salaries, wages and fringe benefits to our employees	\$ 1,041,344,000
For medical supplies, pharmaceuticals and purchased services	873,352,000
For depreciation on our buildings and equipment	129,012,000
For interest costs on our outstanding bonds	53,085,000
All of these operating expenses totaled	\$2,096,793,000
OUR NET RESULTS	
Net income from operations	70,398,000
Plus non-operating revenue net of expenses	23,808,000
Plus change in fair market value of financial instruments	64,561,000
Net income	\$ 158,767,000

OPERATING EARNINGS BEFORE INTEREST, DEPRECIATION AND AMORTIZATION AVAILABLE FOR REINVESTMENT IN OUR FACILITIES AND PROGRAMS \$ 252,495,000

*Fiscal Year 2011 figures are unaudited and do not include Upper Chesapeake Health or Civista Health.



UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE

DFAN

E. Albert Reece, MD, PhD, MBA Vice President for Medical Affairs, University of Maryland and Dean, School of Medicine

VICE DEANS

Bruce Jarrell, MD, FACS Excecutive Vice Dean

Frank Calia, MD, MACP Vice Dean, Clinical Affairs

ASSOCIATE DEANS

John W. Ashworth III Associate Dean, Hospital Networks

Claudia Baquet, MD, MPH Associate Dean, Policy and Planning

Jerry Carr, JD

Associate Dean, Business Development Senior Advisor to the Dean and University Physicians, Inc.

Curt I. Civin, MD

Associate Dean, Research

Milford Foxwell, Jr., MD Associate Dean, Admissions

Stephen Liggett, MD

Associate Dean, Interdisciplinary Research

Nancy Ryan Lowitt, MD, EDM, **FACP**

Associate Dean, Faculty Affairs and Professional Development

David Mallott, MD

Associate Dean, Medical Education

Margaret McCarthy, PhD

Associate Dean, Graduate Studies

James McNamee, PhD

Associate Dean, Information Services and Chief Information Officer

Dennis Narango, MA

Associate Dean, Development

Donna Parker, MD

Associate Dean, Student Affairs

Louisa Peartree, MBA

Associate Dean, Finance and Business Affairs and Chief Financial Officer

Gregory Robinson, DMin, MA

Associate Dean, Academic Administration and Resource Management

Alan R. Shuldiner, MD

Associate Dean, Personalized and Genomic Medicine

Dorothy Snow, MD

Associate Dean, Veterans Affairs

Jordan Warnick, PhD

Associate Dean, Student Research Development

ASSISTANT DEANS

Sharon Bowser, MBA

Assistant Dean, Information Services

Susan Buskirk, MBA

Assistant Dean, Human Research Integrity and Compliance

Andrew Dunsmore

Assistant Dean, Development

Joseph Martinez, MD

Assistant Dean, Student Affairs

Mandeep Mehra, MBBS

Assistant Dean, Clinical Services

Wendy Sanders, MA

Assistant Dean, Research Career Development

UNIVERSITY PHYSICIANS, INC.

William Tucker, MBA, CPA

Assistant Dean, Practice Plan Affairs Chief Corporate Officer, University Physicians, Inc.

DEPARTMENT CHAIRS

Stephen Bartlett, MD

Chair, Surgery

Brian Browne, MD

Chair, Emergency Medicine

Steven Czinn, MD

Chair, Pediatrics

Stephen Davis, MBBS

Chair, Medicine

Richard L. Eckert, PhD, MS

Chair, Biochemistry and Molecular Biology

Howard Eisenberg, MD

Chair, Neurosurgery

Anthony Gaspari, MD

Chair, Dermatology

Christopher Harman, MD

Interim Chair, Obstetrics, Gynecology and Reproductive Sciences

James B. Kaper, PhD

Chair, Microbiology and Immunology

Anthony Lehman, MD, MSPH

Chair, Psychiatry

Robert Liss, MD

Interim Chair, Ophthalmology and Visual

Jay Magaziner, PhD, MS

Chair, Epidemiology and Public Health

Margaret McCarthy, PhD

Interim Chair, Pharmacology and Experimental Therapeutics

Vincent D. Pellegrini, MD

Chair, Orthopaedics

William F. Regine, MD

Chair, Radiation Oncology Interim Chair, Diagnostic Radiology and Nuclear Medicine

Peter Rock, MD, MBA

Chair, Anesthesiology

Mary Rodgers, PT, PhD

Chair, Physical Therapy and Rehabilitation Science

Michael Shipley, PhD

Chair, Anatomy and Neurobiology

Sanford A. Stass, MD

Chair, Medical and Research Technology Chair, Pathology

David Stewart, MD

Chair, Family and Community Medicine

Scott E. Strome, MD

Chair, Otorhinolaryngology – Head and Neck Surgery

Scott Thompson, PhD

Interim Chair, Physiology

William Weiner, MD

Chair, Neurology

PROGRAM DIRECTORS

Claudia Baquet, MD, MPH

Director, Program in Minority Health and Health Disparities Education and Research

Kevin Cullen, MD

Director, Program in Oncology

Louis DeTolla Jr., MD

Director, Program in Comparative Medicine

Thomas M. Scalea, MD

Director, Program in Trauma

Michael Shipley, PhD

Director, Program in Neuroscience

Alan Shuldiner, MD

Director, Program in Personalized and Genomic Medicine

CENTER DIRECTORS

Claudia Baquet, MD, MPH

Director, Health Policy and Health Services Research

Brian Berman, MD

Director, Center for Integrative Medicine

Curt I. Civin, MD

Director, Center for Stem Cell Biology and Regenerative Medicine

Alan Faden, MD

Director, Center for Shock, Trauma and Anesthesiology Research (STAR)

Alessio Fasano, MD

Director, Center for Mucosal Biology

Andrew Goldberg, MD

Co-Director, Center for Research on Aging

Myron Levine, MD, DPTH

Director, Center for Vaccine Development

Jay Magaziner, MD

Co-Director, Center for Research on Aging

Dudley Strickland, PhD

Director, Center for Vascular and Inflammatory Diseases

INSTITUTE DIRECTORS:

Robert Gallo, MD

Director, Institute of Human Virology

Claire Fraser-Liggett, PhD

Director, Institute for Genome Sciences

UNIVERSITY OF MARYLAND MEDICAL SYSTEM

Robert A. Chrencik

President and Chief Executive Officer

Henry J. Franey

Executive Vice President and Chief Financial Officer

Megan M. Arthur

Senior Vice President, Legal Affairs and General Counsel

John W. Ashworth III

Senior Vice President, System Network Development

Stephen Bartlett, MD

System Surgeon-in-Chief

Alison Brown

Senior Vice President, Business Development and System Strategy

Jon P. Burns

Senior Vice President and Chief Information Officer

Mary Lynn Carver

Senior Vice President, Communications and Public Affairs

Rick E. Dunning

Senior Vice President, Facilities Planning and Construction

Donna L. Jacobs

Senior Vice President, Government and Regulatory Affairs

Mark Kelemen, MD

Senior Vice President and Chief Medical Informatics Officer

Glenn F. Robbins, MD

Senior Vice President and Chief Medical Officer

Mark L. Wasserman

Senior Vice President, External Affairs

Jerry Wollman

Senior Vice President, Corporate Operations

Christine Bachrach

Vice President and Chief Compliance Officer

Gary Kane

Vice President, Supply Chain Management

Mohan Suntha, MD

Vice President, System Program Development

MEMBER HOSPITALS

Baltimore Washington Medical Center

Melvin L. Kelly Board Chair

Karen Olscamp, FACHE President and Chief Executive Officer

Chester River Health System

Wayne Gardner, Sr. Board Chair

James Ross, FACHE President and Chief Executive Officer

Civista Health System

Sara Middleton Board Chair

Noel Cervino

President and Chief Executive Officer

Kernan Orthopaedic and **Rehabilitation Hospital**

Davis V.R. Sherman, Esq. Board Chair

Michael Jablonover, MD, MBA, **FACP**

President and Chief Executive Officer

Maryland General Hospital

Marilyn Carp Board Chair

Sylvia Smith Johnson, MBA President and Chief Executive Officer Mt. Washington Pediatric Hospital

Lawrence Pakula, MD Board Chair

Sheldon J. Stein President and Chief Executive Officer

Shore Health System

John Dillon Board Chair

Joseph P. Ross, MHSA President and Chief Executive Officer

University of Maryland Medical Center

Stephen A. Burch, Esq. Board Chair

Jeffrey A. Rivest, FACHE President and Chief Executive Officer

University Specialty Hospital

Jeffrey A. Rivest, FACHE Board Chair

James Warner Vice President

Upper Chesapeake Health System

Roger Schneider, MD Board Chair

Lyle E. Sheldon, FACHE President and Chief Executive Officer



Credits

Published internally by the University of Maryland Medical System and School of Medicine

EDITORIAL DIRECTION School of Medicine Jerry Carr Larry Roberts

Medical System Mary Lynn Carver Anne Haddad Jerry Wollman

DESIGN Linda Praley Kris Rifkin

COPY

PRIMARY PHOTOGRAPHY Stephen Spartana

PRINTING Schmitz Press

University of Maryland Medical System 250 W. Pratt Street • 24th Floor Baltimore, Maryland 21201 www.umms.org

University of Maryland School of Medicine 655 W. Baltimore Street Baltimore, Maryland 21201 www.medschool.umaryland.edu