

# DEAN'S QUARTERLY



## ACCELERATING SCIENCE – ADVANCING MEDICINE

### Our Local and Global Impact on Heart Disease

Cardiovascular disease (CVD) kills approximately 800,000 Americans each year—more than cancer, accidents, and HIV combined—and is the leading cause of death worldwide. At Mount Sinai, our world-class clinicians and scientists are dedicated to advancing cardiac care and promoting heart health. Already, they are dramatically changing the way we diagnose, treat, and think about CVD.

Valentin Fuster, MD, PhD, Director of Mount Sinai Heart, was awarded \$25 million from the National Heart, Lung, and Blood Institute to study patients with diabetes and multi-vessel coronary disease. Known as the FREEDOM trial, the global multicenter study is expected to determine the best clinical practice for this patient population: balloon angioplasty with drug-eluting stenting or coronary artery bypass graft surgery.

The federally supported Stroke Prevention in Atrial Fibrillation clinical trials addressed the value of using warfarin, aspirin, and their combination for preventing stroke in patients with this arrhythmia disorder. The principal cardiologist responsible for the design and execution of these trials was Jonathan L. Halperin, MD, the Robert and Harriet Heilbrunn Professor of Medicine (Cardiology). Dr. Halperin also directed the well-known SPORTIF trials, which evaluated the first oral direct thrombin

inhibitor for prevention of stroke in patients with atrial fibrillation.

Long-term use of mechanical circulatory support devices helped prolong life in end-stage heart disease patients unable to undergo heart transplantation. REMATCH, the definitive trial led by Eric Rose, MD, Mount Sinai Heart's Associate Director of Clinical Outcomes and also Chairman of the Department of Health Evidence and Policy at Mount Sinai School of Medicine, was the first study to provide the conclusive data.

The clinical trials and innovative programs pursued by these physicians and other recruits have made Mount Sinai a world-class destination in the prevention and treatment of cardiovascular disease.

Advances in medical technology and therapeutics hold the promise of reducing death and disability caused by CVD and could extend and enhance millions of lives around the world.



Dennis S. Charney, MD  
Anne and Joel Ehrenkranz Dean,  
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To learn more, visit  
[www.mountsinai.org/Charney](http://www.mountsinai.org/Charney).

## DISTINGUISHED BY SERVICE

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This year, David Muller, MD, the Dean for Medical Education at Mount Sinai School of Medicine, became one of only four physicians in the United States to receive the American Medical Association (AMA) Foundation's Pride in the Profession Award.

This selective accolade recognizes physicians who reflect the highest ideals of medical service, as well as those who demonstrate altruism, compassion, and leadership.

In 1995, after completing his residency in Internal Medicine at Mount Sinai, Dr. Muller co-founded and directed what is now the largest academic physician home-visiting program in the country—the Mount Sinai Visiting Doctors Program—enabling physician volunteers to bring medical care to 1,000 homebound patients in East and Central Harlem.

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## VALVES FOR LUNGS SHOW PROMISE

Patients with chronic obstructive pulmonary disease (COPD)—whose every breath is made arduous by this progressive lung disease—could benefit from a less-invasive therapy being tested at Mount Sinai.

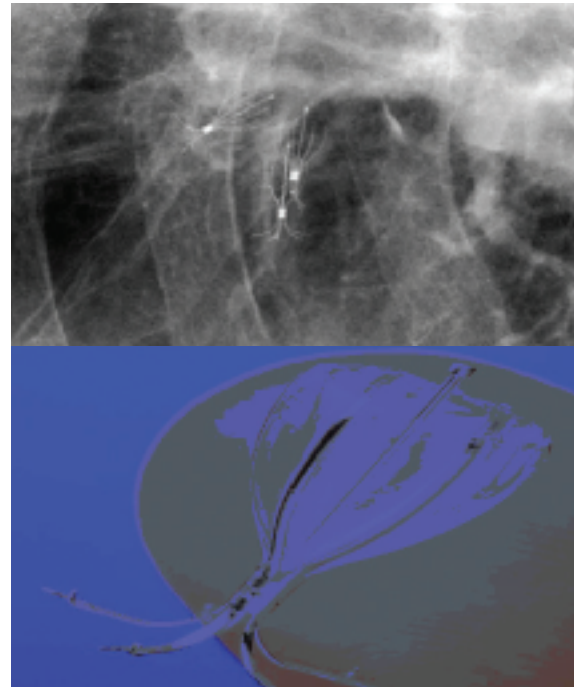
Timothy Harkin, MD, Associate Professor of Medicine and Director of Bronchoscopy (Pulmonary, Critical Care, and Sleep Medicine), and E. Neil Schachter, MD, Medical Director of the Respiratory Care Department and the Maurice Hexter Professor of Pulmonary Medicine, are studying the potential therapeutic benefits of the Intra-Bronchial Valve (IBV) System on patients with COPD, whose deleterious effects on the lungs make even daily routine activities difficult.

“The idea behind the valve and our study is to replicate the results of surgery without putting very sick patients through the ordeal of surgery,” explains Dr. Harkin.

The IBV System involves the insertion of several one-way valves between five and seven millimeters in diameter. By directing air flow away from damaged areas of the lung, and toward healthier lung tissue, the valves relieve pressure on the healthy tissue. Mount Sinai is one of 40 sites involved in the trial.

Insertion of the umbrella-shaped valves requires bronchoscopy, a nonsurgical technique that takes about an hour. Although the valves are intended to be permanent, they can be removed if necessary.

“COPD has a very dismal prognosis, and doctors don’t usually make a prognosis until the disease is far advanced,” notes Dr. Schachter. “The goal of the study is to prolong life and improve the ability of patients with moderate to severe COPD to live a better quality of life.”



TOP: A chest X-ray shows tentacle-like structures, known as the Intra-Bronchial Valve System, inside the lung. The valve system may help patients with chronic obstructive pulmonary disorder by improving air flow.

BOTTOM: A close-up image of the Intra-Bronchial Valve System on a fingertip.

The phase 3 randomized, double-blind clinical trial looks at COPD patients who have emphysema in the upper part of the lungs and will compare them with patients who do not receive valves. Between 200 and 500 patients will be enrolled.

## DISTINGUISHED BY SERVICE (CONTINUED)



LEFT TO RIGHT: Robert E. Accordino, MSc, Medical Student Leadership Award Recipient; David Muller, MD, Pride in the Profession Award Recipient; Nicholas O. Meo, Medical Student Leadership Award Recipient; Peter W. Carmel, MD, AMA Board of Trustees and AMA Foundation Board Member

“We are all honored to have Dr. Muller’s work and contributions to Mount Sinai and medicine be recognized in this important way,” says Dennis S. Charney, MD, the Anne and Joel Ehrenkranz Dean of Mount Sinai School of Medicine and Executive Vice President for Academic Affairs at The Mount Sinai Medical Center.

Having received the award in Washington, DC, this past spring, Dr. Muller, who is also an Associate Professor of Medicine and Medical

Education, says the ceremony “reinforced Mount Sinai’s superb reputation in service and leadership.”

Two Mount Sinai School of Medicine students also received Leadership Awards from the foundation—Mr. Robert E. Accordino, who founded an organization dedicated to education and care for people with autism, and Mr. Nicholas O. Meo, who directs a free health clinic for the uninsured in East Harlem.

## A NEW AWARD, A NEW RESEARCH PARADIGM

Mount Sinai School of Medicine has received a Clinical and Translational Science Award (CTSA) for \$34.6 million over the next five years from the National Institutes of Health (NIH). The CTSA will help support a new research paradigm at Mount Sinai that will facilitate the translation of breakthrough research from bench to bedside and will be led by Hugh A. Sampson, MD, Dean for Translational Biomedical Sciences, Director of the Jaffe Food Allergy Institute, and the Kurt Hirschhorn Professor of Pediatrics.

Launched in 2006, CTSA is an innovative program designed to improve collaboration among scientists pursuing basic and clinical research. CTSA recipients belong to a national consortium of medical research institutions that is funded by the National Center for Research Resources.

The research will be conducted under a new centralized, interdisciplinary structure known as the Mount Sinai Institutes for Clinical and Translational Sciences. The new structure will enable the translation of basic scientific discoveries into clinical practice by creating a centralized research administrative structure, fostering and rewarding interdisciplinary collaborations, educating and retaining new clinical and translational investigators, and delivering new therapies and an improved standard of care to its diverse community.

“The CTSA enables Mount Sinai to establish this infrastructure to better facilitate translational research and also to offer a range of new educational programs that will provide the translational investigators of the future,” says Dr. Sampson. “We are quite honored to receive such strong support and recognition from the NIH.”



Hugh A. Sampson, MD

## TRACKING LONG-TERM RESPONSES

As the lifeblood of research, grants enable scientists to continue their quests for tomorrow’s cures. And Fred D. Lublin, MD, Director of the Corinne Goldsmith Dickinson Center for Multiple Sclerosis and Professor of Neurology, just received some significant support, a \$19 million renewal grant from the National Institutes of Health (NIH).

The grant allows Dr. Lublin to extend CombiRx, the multicenter clinical trial he leads that focuses on two treatments for multiple sclerosis (MS), a chronic, disabling disease

of the central nervous system that causes inflammation, destruction, and scarring of the sheath that covers nerve fibers, called myelin, in the brain and spinal cord.

CombiRx, the largest and longest NIH-sponsored trial of MS therapeutics, pairs two standard disease-modifying drugs in combination and against each other, to learn if both drugs combined perform better than each drug alone. In addition to providing unique comparative efficacy data, the study will also provide clinical, MRI, and

biomarker profiles for prognosis and response to therapy.

The Corinne Goldsmith Dickinson Center for MS at Mount Sinai serves as the lead center in the trial, and it is now fully enrolled with more than 1,000 newly diagnosed patients participating through 67 medical centers across the United States and Canada. Combined with the

original grant, the NIH has now allocated more than \$44 million for this long-term trial.



Fred D. Lublin, MD

## Young Pioneers

### MAPPING THE GENETICS OF CANCER

Emily Bernstein, PhD, Assistant Professor of Oncological Sciences and Dermatology, studies how epigenetics goes awry in tumor cells and might contribute to cancer. Epigenetics refers to a way of regulating genes without changing DNA sequence, and the work of Dr. Bernstein and her team focuses on the control center of the epigenome—chromatin—and its role in melanoma.

Dr. Bernstein is a recipient of a 2009–2010 NYSTEM grant to



Emily Bernstein, PhD

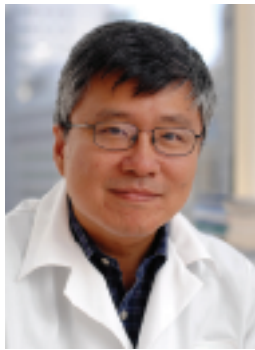
understand chromatin regulation in embryonic stem cells, as well

as a 2008–2012 New Scholar Award from the Ellison Medical Foundation and a 2008–2009 Research Scholar Award from the American Skin Association.

Her team examines molecular mechanisms by which chromatin dynamics take place, including histone variants and non-coding RNAs. In collaboration with Mount Sinai’s Dermatology and Pathology departments, the researchers investigate which chromatin regulators might be

aberrant in the development of melanoma and whether epigenetic abnormalities are a causal link or a mere consequence.

The team also isolated one molecule that helps regulate cell-cycle inhibition, and they are now investigating how the absence of this molecule might contribute to skin cancer. If the molecule is found to have clinical significance, it could become a target for an epigenetic-based melanoma treatment.



William K. Oh, MD

## WILLIAM K. OH, MD

William K. Oh, MD, an internationally renowned expert in genitourinary (GU) cancer, has been named Director of the Division of Hematology and Medical Oncology in the Department of Medicine, Co-Director of the Prostate Cancer Program, and Associate Director for Clinical Research for The Tisch Cancer Institute. Dr. Oh, a Professor of Medicine and Urology who will also hold the Ezra M. Greenspan Endowed Chair for Cancer Programs, joined Mount Sinai on September 1.

Dr. Oh's research interests include the role of chemotherapy and novel therapeutics in advanced prostate cancer. During his 12 years as an attending physician at Dana-Farber

Cancer Institute (DFCI), Brigham and Women's Hospital, in Boston, Dr. Oh served as principal investigator on multiple clinical trials and led research examining the use of neoadjuvant chemotherapy in men with high-risk localized prostate cancer.

He served as Clinical Director of the Lank Center for Genitourinary Oncology, overseeing a team of clinical and lab-based medical oncologists and nurse practitioners, and directing a multidisciplinary GU clinic. As Director of the Gelb Center for Translational Research and Prostate Cancer Clinical Research Database at the DFCI, Dr. Oh developed a large clinical database and specimen repository that enrolled over

7,000 patients with prostate, renal, and bladder cancer.

The founding Chair of the Data and Safety Monitoring Committee for Phase I/II Trials at the Dana-Farber/Harvard Cancer Center, Dr. Oh has trained physicians, nurses, medical students, and pharmacists through ground rounds, tumor boards, and lectures at Harvard Medical School and elsewhere.

A native New Yorker, Dr. Oh earned his medical degree from New York University School of Medicine and completed a residency in internal medicine at Brigham and Women's Hospital and a fellowship in medical oncology at DFCI.



Srinivas R. Dukkupati, MD

## SRINIVAS R. DUKKIPATI, MD

Srinivas R. Dukkupati, MD, MS, a renowned cardiac electrophysiologist, joined Mount Sinai as Director of the Experimental Electrophysiology Laboratory and Assistant Professor of Medicine.

Dr. Dukkupati comes to the Medical Center from the University of Miami, Miller School of Medicine, where he was part of a world-class cardiovascular team specializing in heart-rhythm disorders. The team was led by Vivek Y. Reddy, MD, who joined Mount Sinai in August as Director of the Cardiac Arrhythmia Service.

Dr. Dukkupati earned his medical degree at SUNY Upstate and then went to Royal Oak, Michigan, where he

completed a residency and fellowship in cardiology at the William Beaumont Hospital. He then completed a fellowship in cardiac electrophysiology at Massachusetts General Hospital.

At the University of Miami, Dr. Dukkupati served as Director of Experimental Electrophysiology Laboratory on the Cardiac Arrhythmia Service and as Associate Program Director of the Cardiac Electrophysiology Fellowship. Before that, he directed basic electrophysiology research at William Beaumont Hospital and helped establish its Cardiac Electrophysiology Fellowship.

At Mount Sinai, Dr. Dukkupati will help develop definitive therapies for cardiac

arrhythmias such as atrial fibrillation, the most common abnormal heart rhythm affecting millions of Americans, and ventricular tachycardia, the most common cause of sudden cardiac death.

Among his best-known published works is a pre-clinical study, findings of which appeared in *Circulation* last year, showing the possibility of performing electrophysiology procedures, particularly ventricular-tachycardia mapping, using MRI alone. Because the mapping was done without fluoroscopy, the study indicates the potential for performing interventional electrophysiology procedures using high-resolution cardiac images with zero radiation to patients.



Joanna Chikwe, MD

## JOANNA CHIKWE, MD

Joanna Chikwe, MD, who completed an advanced reconstructive-valve fellowship at Mount Sinai, returns as Assistant Professor of Cardiothoracic Surgery and Associate Program Director of the Residency Program in the Department of Cardiothoracic Surgery.

Dr. Chikwe joined the mitral valve team of David H. Adams, MD, the Marie-Josée and Henry R. Kravis Professor and Chairman of the

Department of Cardiothoracic Surgery, with whom she served during her fellowship. She is also Mount Sinai's first female cardiac surgeon.

Dr. Chikwe trained at Oxford University and completed her residency at the Royal Brompton and Harefield Hospitals in London. She spent two years performing off-pump, robotic, and video-assisted surgery in London and then went to the Heart Centre in

Leipzig, Germany, where she worked under Friedrich W. Mohr, MD, PhD, the physician who pioneered minimally invasive mitral valve repair and transcatheter aortic valve implantation.

In addition to valve reconstruction, Dr. Chikwe's interests include coronary surgery; she is involved in advancing the department's efforts toward applying less-invasive incisions and off-pump techniques.

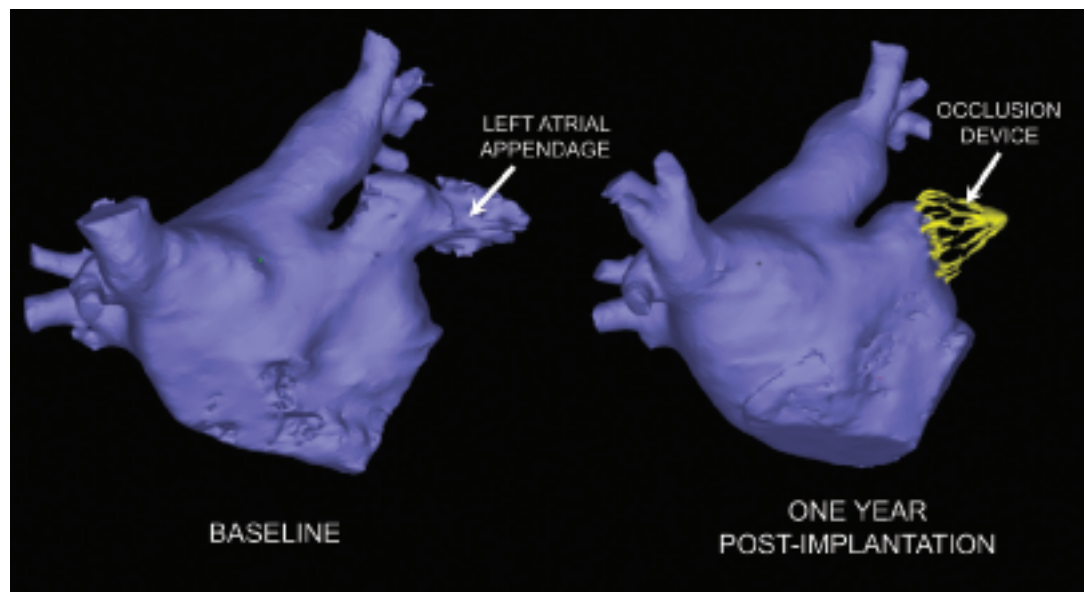
# Philanthropy

## THE HELMSLEYS DONATE \$37 MILLION

The Leona M. and Harry B. Helmsley Charitable Trust donated \$37 million to be used to establish three patient-focused research programs: the Helmsley Center for Electrophysiology, the Helmsley Inflammatory Bowel Disease Center, and the Sinai-Helmsley Alliance for Research Excellence (SHARE) network. Each one aims to leverage multidisciplinary collaboration to translate basic science into novel therapies and treatments.

“This generous gift from the Helmsley Charitable Trust represents a major step forward in our long-standing commitment to advance human health through research, innovative clinical care, and education,” says Kenneth L. Davis, MD, President and CEO of the Medical Center.

Mount Sinai Heart, a premier center for multidisciplinary care and research in cardiovascular disease at the Medical Center, will receive \$25 million to establish the Helmsley Center for Electrophysiology, the first of its kind in the region. Electrophysiology—the study of the electrical properties of biological cells and tissues—is critical to promoting the health of millions of Americans who have heart or blood vessel disease.



The CT angiograms of a patient with atrial fibrillation are shown at baseline (left) and one year after implantation (right). The patient received a left atrial appendage occluder, which helps prevent blood clots from entering the bloodstream. This is the kind of work that will receive support from the Helmsley Charitable Trust.

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—Kenneth L. Davis, MD

“For decades, doctors and researchers have been focused on treatment,” explains Valentin Fuster, MD, PhD, Director of the Zena and Michael A. Wiener Cardiovascular Institute and the Marie-Josée and Henry R. Kravis Center for Cardiovascular Health

and the Richard Gorlin, MD/Heart Research Foundation Professor. “Our goal at Mount Sinai is to help promote health and prevent disease. The team we have assembled will dramatically change the way medical science diagnoses, treats, and thinks about heart disease.”

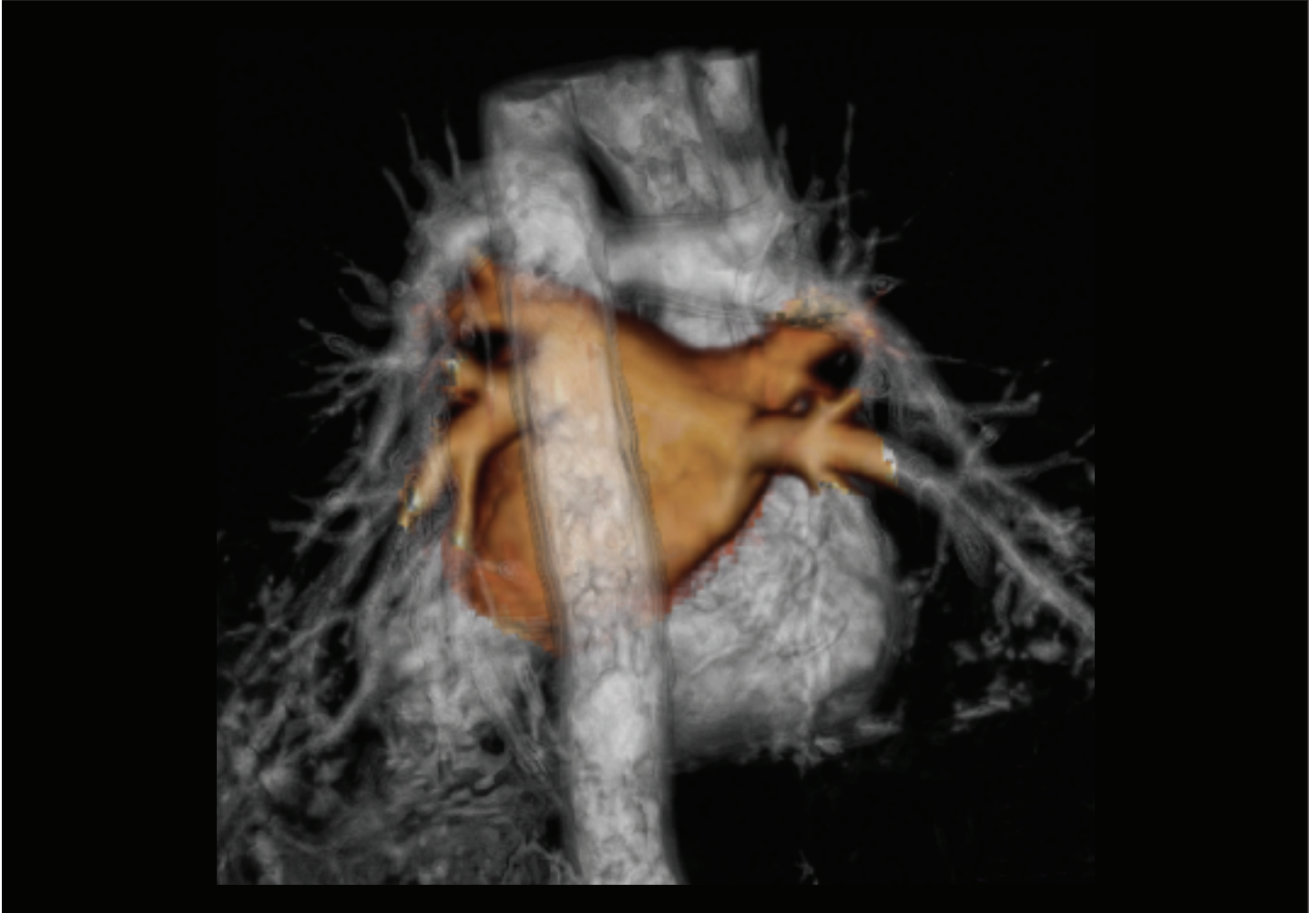
Two additional grants from the trust will go toward strengthening and expanding the Medical Center’s existing inflammatory bowel disease (IBD) program. A \$10 million grant will establish the Helmsley Inflammatory Bowel Disease Center, recruit new faculty and support personnel, establish an endowed professorship, and purchase equipment. The second grant, of roughly \$2 million, will establish the SHARE network—a systems biology–based multicenter program for integrated studies in IBD.

Lloyd F. Mayer, MD, Professor and Co-Director of the Immunology Institute, and Professor of Medicine

and Chief of the Divisions of Clinical Immunology and Gastroenterology, notes that each year 7,000 patients seek treatment at Mount Sinai for inflammatory bowel diseases such as Crohn’s disease and ulcerative colitis.

“Thanks to the generosity of the Helmsley Charitable Trust,” says Dr. Mayer, “Mount Sinai’s program is now in a position to expand on its success, bring about cutting-edge treatments, and continue to search for a cure for these diseases.”

## Photo Essay



### **TRACKING THE RHYTHMS OF THE HEART**

A patient's heart captured by a volume-rendered magnetic resonance angiogram (MRA) prior to undergoing radiofrequency ablation treatment for atrial fibrillation, a common cardiovascular condition.

MRA uses a magnetic field and pulses of radio-wave energy to capture real-time images of the body's blood vessels and signs of blood flow abnormalities. The images can provide clinicians with information not obtained from X-rays or ultrasounds.

The left atrium and pulmonary veins are highlighted in orange. The 3-D images are then merged in the electrophysiologic laboratory with electrical mapping signals to indicate the ablation lesions in the precise anatomical location.

To learn more, visit [www.mountsinai.org/cardiachimaging](http://www.mountsinai.org/cardiachimaging)

## PREVENTION: A HEART HEALTH INITIATIVE

**Cardiovascular disease (CVD) is the number-one killer and major cause of permanent disability worldwide.**

In the United States alone, one in three American adults—80 million people—live with some form of this deadly disease. In 2009, an estimated \$475 billion will be spent on CVD treatment and related lost productivity. Treatment alone is not the answer, as the cost of care is steadily increasing as a result of insufficient preventive action.

In the United States, the trends tell the story. Since the 1980s, the prevalence of overweight and obesity among our nation's children and adolescents has more than doubled, to about one-third today. Nearly one-quarter of our high school students smoke, and two-thirds do not exercise at recommended levels. Initiatives are urgently needed to reverse this tide and tackle the growing burden of CVD. In fact, CVD can start quietly in children as young as age three and progress slowly into adulthood. Smoking, high blood pressure, blood sugar and cholesterol, and being overweight put people at risk. However, these factors stem from behaviors that can be managed.

The mandate for patient care must be expanded to include prevention. Policy makers and health care communities play a major role in changing public attitudes through implementation of health-promoting measures, including diet, physical activity, and tobacco control. The Food and Drug Administration's long-overdue authority to regulate tobacco products is a victory for CVD prevention. We need equally strong, pervasive protections against the other risk factors—and for all age groups.

Cost-effective screening and treatment programs, including education for CVD risk reduction, are critical both in the United States and abroad. In Rwanda, for example, the Millennium Villages Project Cardiovascular Disease Initiative is developing a protocol to screen all patients at local health clinics for six risk factors: smoking, blood pressure, blood sugar, cholesterol, abdominal circumference, and physical activity.

Children between the ages of three and eight are especially receptive to learning lifelong heart-healthy habits. In Bogota, Colombia, we have teamed up with Sesame Workshop to create culturally specific Muppet segments that focus on nutrition, fitness, and health education. After only one year, children involved demonstrated increased awareness of health-promoting behaviors.

A program like this could benefit high-risk populations in metropolitan areas such as New York City, where two of five children are overweight or obese, including nearly a quarter of kindergarteners.

For those with a history of heart attacks, the polypill is a three-in-one drug in development that will increase patient compliance and might reduce medication cost to as little as \$2 per month.

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— Valentin Fuster, MD, PhD

Other measures to advance heart health include the use of electronic health records that are programmed to assess every patient's cardiovascular risk profile in all primary care settings.

Currently, the vast majority of dollars are spent treating rather than preventing CVD. Instead, through simple, low-cost efforts, we could significantly reduce the prevalence and burden of this debilitating disease and save money and lives.

To learn more, visit [www.mountsinai.org/Heart](http://www.mountsinai.org/Heart) and [www.mountsinai.org/Fuster](http://www.mountsinai.org/Fuster). This commentary was first published in the *New York Times* on July 14, 2009. Valentin Fuster, MD, PhD, is the Director of Mount Sinai Heart, Director of the Zena and Michael A. Wiener Cardiovascular Institute and the Marie-Josée and Henry R. Kravis Center for Cardiovascular Health, and the Richard Gorlin, MD/Heart Research Foundation Professor.



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Mount Sinai School of Medicine just released the second in a series of annual publications titled *Accelerating Science—Advancing Medicine*. This volume, *Medical Education*, showcases the many unique and transformational aspects of our school's curriculum and student experience.

To learn more, visit [www.mssm.edu/MedicalEducation](http://www.mssm.edu/MedicalEducation).