

Clinical and Research Training Program in Cardiology

**THE MOUNT SINAI MEDICAL CENTER
MOUNT SINAI SCHOOL OF MEDICINE**

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Dear Fellowship Candidate:

The Cardiovascular Institute and the new Center for Cardiovascular Health at The Mount Sinai Medical Center provide an outstanding clinical and research environment for its cardiology fellows. Long considered one of the finest academic clinical and research institutions in the country, Mount Sinai provides a wealth of opportunities to prepare selected individuals for careers in academic cardiology. The Faculty is comprised of multi-talented individuals, all of whom are highly respected in their particular specialties of medicine and science. Most importantly, these faculty/mentors are intimately involved in a fellow's daily activities, lending expertise and guidance while working together in both clinical and research arenas.

The reputation of the Cardiovascular Institute and the new Center for Cardiovascular Health at The Mount Sinai Medical Center are built on the work of great visionaries who saw the future of cardiovascular disease as a unique and important subspecialty. As we look toward the future, our goal remains to discover more effective and innovative methods of diagnosing, treating and preventing heart disease, and to more fully understand the basic mechanisms of cardiovascular disease.

We take a special interest in helping our fellows understand clinical cardiology and in identifying specific research projects best matched to their own interests and skills. Our clinical services provide fellows with excellent opportunities to learn both traditional and innovative diagnostic techniques. Our patient care facility, The Cardiac Care Center, is a mini-hospital within a hospital specifically designed for individuals diagnosed with cardiovascular illness. It features state-of-the-art equipment and specially-trained multi-skilled personnel. Our basic cardiovascular research facilities encompass over 30,000 square feet and include extensive animal laboratory facilities.

I hope that the following information is helpful to you in understanding the opportunities that exist at Mount Sinai and our goals for training fellows in Cardiovascular Medicine. I invite you to call or write any one of us, and we will make every attempt to answer your questions. We welcome diversity and encourage minorities and women to apply.

Sincerely yours,

Valentin Fuster, M.D., Ph.D.

HISTORY

Cardiology at The Mount Sinai Medical Center

The cardiology program at The Mount Sinai Medical Center is one of the oldest and most distinguished in the country. From 1934 to 1957, Dr. Arthur Master was the Chief of the Electrocardiography Laboratory. Under his leadership, this laboratory was transformed into the Division of Cardiology. Along with Dr. Simon Dack, Dr. Master developed the first exercise stress test known as the "Master Two-Step". Dr. Dack later founded and served as the first Editor-in-Chief of the *American Journal of Cardiology* and of the *Journal of the American College of Cardiology*.

In 1957, Dr. Charles Friedberg succeeded Dr. Master as the Chief of Cardiology. Dr. Friedberg was a pioneer in the use of DC cardioversion for the treatment of cardiac arrhythmias and the author of the widely read textbook *Diseases of the Heart*. His tenure as Chief of Cardiology was shortened by a tragic automobile accident in 1968.

Dr. Arnold Katz succeeded Dr. Friedberg in 1968. Dr. Katz introduced a more scientific approach to cardiology and was one of the first cardiovascular investigators to study hemodynamics.

In 1974, Dr. Richard Gorlin, an internationally renowned cardiologist, became Chairman of the Samuel Bronfman Department of Medicine and appointed Dr. Michael Herman as Chief of the Cardiology Division.

In 1983, Dr. Valentin Fuster was recruited from the Mayo Clinic to serve as the Chief of Cardiology and the Dr. Arthur M. and Hilda A. Master Professor of Medicine. Dr. Fuster brought with him a well-developed research program in thrombosis. He established the first experimental laboratories in cardiovascular research at Mount Sinai and reorganized the clinical practices of the division. In 1990, the Molecular and Cellular Cardiology Laboratories were established. Under the direction of Drs. Andrew R. Marks and Mark Taubman, these laboratories were dedicated to investigating cardiovascular diseases using the techniques of molecular and cellular biology.

In 1994, Dr. Fuster returned from the Massachusetts General Hospital, where he served for three years as Chief of the Cardiac Unit. He became Director of the newly-created Zena and Michael A. Wiener Cardiovascular Institute of The Mount Sinai Medical Center and more recently of the Kravis Center for Cardiovascular Health. Dr. Fuster is former President of the American Heart Association and President elect of the World Heart Federation. He has brought an outstanding record of clinical and research expertise in cardiovascular medicine. His morning report is an extremely popular meeting during which staff and fellows discuss patient management issues. Dr. Fuster's experimental laboratory, which uses the pig model, continues to address

important questions in thrombosis and atherosclerosis. It provides a link between the molecular and cellular cardiology laboratories and the patient-oriented clinical investigations.

GOALS

The goal of the Cardiology Training Program is to produce well-rounded academic cardiologists; that is, physician-scientists who will be cardiovascular clinicians, teachers and researchers. A foundation of clinical excellence is established through clinical rotations within Mount Sinai's Cardiac Care Center and through frequent interactions with our renowned faculty. Our research laboratories add to this foundation of clinical excellence by training fellows in the latest approaches to understanding the fundamental questions surrounding the cardiovascular system. Our Molecular and Cellular Cardiology Program is supported by an NIH Training Grant and offers a unique opportunity for fellows to participate in basic science research. Many of our fellows have successfully competed for prestigious NIH, AHA and ACC fellowships and have go on to become leaders in academic cardiology.

Within each group of incoming fellows, approximately half of the fellows choose to pursue clinical cardiology (including clinical research), while the other half focus primarily on basic science research. Fellows work closely with faculty members to develop effective, individualized schedules to ensure that both clinical requirements and research interests are satisfied.

PROGRAM DESIGN

To meet the changing needs of health care delivery and biomedical research, the Cardiology Fellowship Training Program at The Mount Sinai Medical Center is designed to be *flexible*. **Fellows are not required to declare their interest in clinical versus basic research at the outset of the fellowship.** Rather it is understood that interests will evolve as the individual progresses in his or her training.

However, the program is designed to attract equal numbers of trainees interested in pursuing careers in clinical cardiology and in basic research. **Thus, at any given time, approximately half of our fellows will pursue a path that includes three years of training in clinical cardiology and clinical research, and half of our fellows will pursue a path that includes two years of clinical cardiology followed by two years of molecular and cellular cardiology supported by an NIH Training Grant (The order can be reversed so that the basic research precedes the clinical training).** It is our belief that this balance provides the best environment for intellectual growth and best utilizes the outstanding resources available in both clinical and basic cardiovascular research.

In order for each fellow to develop a solid clinical foundation, a minimum of 24 months of intensive clinical training is provided. Fellows choosing an emphasis in

clinical cardiology also pursue clinical research, including advanced training in epidemiology, biostatistics, risk modification and health care planning.

The Cardiovascular Institute provides a rich environment for those fellows pursuing the basic science track. The Molecular and Cellular Cardiology Laboratories offer training in the areas of gene regulation and cellular signal transduction with concentrations in vascular biology, thrombosis and lipoproteins.

Mount Sinai Cardiology Fellowship Training Program

3 YEARS (Y) *

4 YEARS

**Clinical and 2Y Clinical
Clinical Research**

2Y Basic-Research**

*May add 1 or 2 years for subspecialty training in Heart Failure, Hypertension, Electrophysiology, Echocardiography and other disciplines.

**Supported by a training grant from the National Institutes of Health in "Molecular and Cellular Cardiology".

CLINICAL TRAINING

Regarded as one of the most comprehensive venues for training in clinical cardiovascular medicine, the Cardiovascular Institute at Mount Sinai offers each fellow a full exposure to both acute and longitudinal patient care across the entire spectrum of health and disease. Comprehensive patient care derives from a large staff of experienced cardiologists drawing upon the extensive resources encompassed by allied programs in lipid management and clinical nutrition, behavioral medicine, lifestyle interventions, vascular medicine, hypertension, cardiac rhythm disturbances, cardiac failure and transplantation, cardiovascular imaging. Fellows have traditionally gained exposure to clinical cardiology through interactions with and supervision by the full-time faculty and an experienced voluntary staff. The voluntary staff includes many outstanding cardiologists in active clinical practice who are eager to share their experience with fellows. For example, Dr. José Meller, widely recognized as one of the nation's leading cardiology practitioners, holds weekly conferences to discuss management of difficult or unusual cases. In addition to organized inpatient rotations involving intensive care, consultative cardiology, and subspecialty services, fellows participate in a comprehensive program of over 50 didactic conferences monthly, and conjoint rounds and care of patients within the Divisions of Pediatric Cardiology and Vascular Surgery and the Departments of Cardiothoracic Surgery and Geriatric and Adult Development. Close working relationships such as these provide complete

exposure to the latest techniques for surgical management of coronary artery disease, valvular heart disease, congenital heart disease, arrhythmias, cardiomyopathy, peripheral vascular disease and cardiac transplantation.

Cardiac Catheterization Laboratory

The Cardiac Catheterization Laboratory at The Mount Sinai Hospital is comprised of four fully equipped rooms for cineangiography (including one biplane lab) with state of the art computerized hemodynamic monitoring system, and a separate facility for myocardial biopsies. Presently, the laboratory performs approximately 9,000 procedures per year, including 2400-2500 interventional procedures, which involve percutaneous transluminal angioplasty, directional and rotational atherectomy, intracoronary stenting, valvuloplasty, intracoronary brachytherapy, alcohol septal ablation, and peripheral interventions. Approximately 25-30 procedures are performed each day, including between 8-10 interventional procedures. Cath and interventional procedures are expected to increase by about 15% each year.

Presently, the faculty of the catheterization laboratory includes six full-time attending physicians, three part-time attending physicians, five interventional cardiology fellows, three or four other cardiology fellows on rotation in the laboratory, and two nurse practitioners. During a typical training rotation in the catheterization laboratory, fellows learn diagnostic angiography by working closely with an attending cardiologist. Fellows typically perform all types of right-heart catheterizations and actively participate in the left-heart procedures. The main educational focus of this rotation is for fellows to gain an understanding of cardiac hemodynamics and cineangiogram interpretation, while developing expertise in the performance of procedures. A cardiology fellow is expected to perform ~300 cath procedures during mean 3-year fellowship.

Cardiac Catheterization Laboratory Research -- Samin Sharma, M.D., Warren Sherman, M.D., Michael Kim, M.D., Annapoorna Kini, M.D., Pedro Moreno, M.D.

Fellows are also encouraged to participate in the ongoing research activities of the catheterization laboratory. Major research efforts are focused on the pathophysiology and therapy of unstable angina. These research endeavors primarily include interventional devices, including: the determinants of thrombosis during angioplasty; mechanisms of the early change in luminal diameter following interventional procedures; and comparisons of angioplasty to atherectomy, trials of new stents, IVUS guided stenting, shock trial, trials of new interventional devices, trials of glycoprotein IIb/IIIa inhibitors, reduction in radiocontrast nephropathy, and angiogenesis and myogenesis.

The Phyllis and Lee Coffey Non-Invasive Area: Echocardiography Laboratory

The Echocardiography Laboratory at The Mount Sinai Hospital performs approximately 25 to 30 echocardiograms per day, six of which are interventional and/or stress studies (pharmacological and exercise). Studies are done with the latest and most sophisticated equipment (Acuson 128 XP, HP 2500 Sonos, ATL HDI3000, Acuson Sequoia, omniplane transesophageal echocardiography) and are performed with complete pulsed continuous wave and color Doppler interrogation. Transesophageal echocardiography (TEE) is performed by fellows under the supervision of experienced attending echocardiographers. A full-time cardiac nurse is assigned to the laboratory to assist with TEE studies. The physician staff of the laboratory consists of two full-time and four part-time echocardiographers. The technical staff includes a technical supervisor and four technologists. Fellows rotate through the laboratory as part of their first and third years of training and become proficient in both the interpretation and performance of transthoracic echocardiograms. Those desiring additional exposure to TEE, or other specialized ultrasound techniques, may spend additional time in the third year or in a fourth year emphasizing echocardiography research.

Echocardiography Laboratory - Martin E. Goldman, M.D., Eric Stern, M.D., David Vorchheimer, M.D., Edward Fisher, M.D.,

Research in the Echocardiography Laboratory covers a broad range of subjects including new, emerging technologies (3-dimensional echocardiography, Doppler tissue imaging, high frequency imaging of coronary arteries and atherosclerotic lesions), transesophageal echocardiographic evaluation of left atrial appendage dysfunction and cardio-embolic risk, and multicenter trials (V.O.T.E. = Value Of Transesophageal Echo, SPAF = Stroke Prevention in Atrial Fibrillation, and CHF in the elderly). Three-dimensional echocardiography is being used to evaluate right ventricular function and left ventricular remodeling in various disease states. Opportunities in basic investigations on the echogenicity of blood components and thrombus formation are also available.

The Phyllis and Lee Coffey Non-Invasive Area: Nuclear Cardiology & Stress Laboratory

The Nuclear Cardiology and Stress Electrocardiography Laboratory performs almost 4,000 noninvasive tests annually. includes exercise and pharmacological stress tests, gated SPECT imaging with Tc99m sestamibi, Tc99m tetrofosmine and Tl-201, gated blood pool studies at rest and during exercise. PET cardiac imaging, both for perfusion and viability, is performed in conjunction with Division of Nuclear Medicine. All Attendings in Nuclear Cardiology are Board certified in Cardiovascular Diseases and in Nuclear Cardiology or Nuclear Medicine. All Cardiology Fellows undergo Level I training. Level II and Level III training (JACC 25, 1995, 1-34) are also available by special arrangement. Fellows are encouraged to participate in clinical research.

Nuclear Cardiology Laboratory -- Milena Henzlova, M.D., Josef Machac, M.D.,

Opportunities are offered for both clinical and basic science research projects, which include *in vitro* animal experiments. Major research efforts in the laboratory include: investigations in the diagnostic uses of new perfusion imaging agents, combined tomographic imaging of wall motion and perfusion, myocardial blood flow reserve, diagnosis of myocardial viability and ischemia using Thallium-201 and metabolic PET imaging. Opportunities exist for laboratory and animal imaging studies.

Electrocardiography and Electrophysiology Section

The Electrocardiography (EKG) and Electrophysiology (EPS) Section provides a variety of services throughout the hospital. The EKG area provides electrocardiograms, signal averaged EKG's and 24-hour Holter monitors. The EPS service provides electrophysiology studies, radiofrequency catheter ablations, cardioversion, tilt-table tests, implantation of cardioverter defibrillators and pacemakers including bi-ventricular devices (in collaboration with cardiothoracic surgery); intraoperative mapping and cryoablation (in collaboration with cardiothoracic surgery), an arrhythmia clinic, and follow-up and consultation services. The staffing of this section includes three full-time attendings and one part-time attending specializing in pediatric electrophysiology and two dedicated EPS-Fellow. Other staffing includes two dedicated EP nurses, a technician, and two clinical nurse specialists. The program provides training in all aspects of clinical electrophysiology, with the cardiology fellow on rotation assisting on the consultative service and in all procedures in the EP laboratory and in the operating room. The fellow also reviews EP intracardiac tracings, signal-averaged tracings and EKG Holter tracings, attends clinic and provides consultations to inpatients with rhythm disturbances.

Electrophysiology Laboratory Research-- J. Anthony Gomes, M.D., David Bharucha, M.D., Davendra Mehta, M.D.,

Research interests in this area include atrial flutter-fibrillation, risk assessment in Atrial fibrillation utilizing signal processing techniques, ablative techniques in pulmonary vein ablation for atrial fibrillation, risk assessment of post-myocardial infarction patients, ventricular arrhythmias in cardiac sarcoidosis and right ventricular dysplasia, signal-averaged electrocardiography and clinical trials related to investigational antiarrhythmic drugs and implantable cardioverter defibrillators and dual site pacemakers. Basic research in cellular electrophysiology is conducted in the laboratories of Drs. Diomedes Logothetis and Maria Diverse.

Frieda and Milton F. Rosenthal Coronary Care Unit Coronary Care Unit - David Vorchheimer, M.D.

The Coronary Care Unit (CCU) is a state-of-the-art 14 bed facility. Approximately 1200 patients are admitted each year to the CCU with a range of cardiac problems, including acute myocardial infarction/unstable angina, decompensated heart failure (including patients awaiting heart transplant), and complex arrhythmias. Included in the unit is a treatment room equipped for the insertion of Swan-Ganz catheters and temporary pacemakers. The facility provides for patients on balloon pumps, multiple intravenous medications and arrhythmia monitoring. The CCU is staffed by a cardiology fellow, three senior medical residents, three medical interns and an outstanding nursing staff. Two attending cardiologists make teaching rounds in the CCU with the medical staff.

Heart Failure and Cardiac Transplantation Program -- Jeffrey Alexis, M.D., Alan Gass, M.D. (Director, Transplant Cardiology), Marrick Kukin, M.D. (Director, Heart Failure)

The Heart Failure and Cardiac Transplant Programs are integrated areas of clinical care and research. Patients referred to the Heart Failure Program receive a full cardiac evaluation and optimization of their medical regimen. A heart failure evaluation customarily includes exercise testing with metabolic cart as well as a hemodynamic assessment. Patients are often eligible to participate in one of the on-going trials of the Heart Failure Program. Current research studies encompass novel uses of beta-blockers in heart failure, investigational oral inotropic agents, the role of anticoagulation in heart failure, anemia and heart failure, and biventricular pacemakers for heart failure

Patients in the Heart Failure Program are also candidates for cardiac transplantation. The Cardiac Transplant Program is an active, integrated component of the Heart Failure Program and provides both clinical and research training in the management of heart failure transplant patients. Research in the Cardiac Transplant Program encompasses both the basic science laboratories and clinical research. Among the investigations in exercise capacity that are being investigated are changes in the peripheral vasculature in patients pre- and post-transplant.

Current basic science research includes regulation of calcium channels in heart failure, the development of animal models to study gene regulation during heart failure and the use of antiproliferative drugs to prevent accelerated atherosclerosis and rejection after transplant. Clinical research now involves markers for rejection, protocols for myocarditis, immunosuppressive protocols, use of left ventricular device systems in heart failure and prevention of allograft arteriopathy.

Joseph H. Hazen Ambulatory Cardiac Care Center

The Joseph H. Hazen Ambulatory Cardiac Care Center an integrated environment for comprehensive outpatient cardiovascular care. The site of both faculty practice and

longitudinal care of patients by cardiology fellows, the 10,000 square foot facility accommodates nearly 20,000 visits each year. Ancillary staff includes nurse practitioners, nurse clinicians, medical assistants and technologists, social worker, nutritionists, and an exercise physiologist. An extensive array of lifestyle oriented prevention services is available through a large staff of specialized personnel in the affiliated Behavioral Medicine, Cardiac Health and Rehabilitation programs.

The modern suite of offices includes patient reception, consultation and examination facilities equipped with computers that provide access to the cardiology information system network, the Enterprise Data Repository, allowing access to test results, clinical data, and the networks of the Mount Sinai Hospital and Mount Sinai School of Medicine and library.

Fellows are assigned to one session (four hours) weekly for the entire three years of training. The program in ambulatory care is structured as a firm-oriented consultative cardiology practice, in which fellows evaluate all newly referred cases and provide ongoing care under the supervision of preceptors from the full-time attending staff. Specialized programs are directed at the evaluation and management of hypertension, hyperlipidemia, congestive heart failure, cardiac rhythm disturbances, genetic diseases and peripheral vascular disorders.

Hypertension -- Thomas Pickering MD, D Phil.

The Hypertension section offers an integrated clinical and research approach to the understanding of hypertensive disorders. Opportunities exist for a comprehensive one-year training period in hypertension. This program offers advanced training in the pathophysiology, diagnosis and treatment of essential and secondary forms of hypertension. Experience is enhanced by an active consultative practice on the wards, emergency room, clinic, and faculty practice. There are weekly seminars reviewing recent research findings.

The research in this section is supported by several NIH grants. It focuses on the following areas. 1) The use of home and ambulatory blood pressure monitoring as a research and clinical tool, 2) The clinical significance of white coat and masked hypertension; 3) Adherence with medication and blood pressure control; 4) sleep-disordered breathing and hypertension; stress and hypertension; and 5) The molecular biology of hypertension (In a study funded by the American Heart Association, in collaboration with the National Cancer Institute, we are principal investigators on a unique national data set for the study of genes related to hypertension).

Vascular Medicine - Jeffrey W. Olin, D.O., Director

The Clinical Vascular Medicine Program offers clinical and research training in all aspects of peripheral vascular disease. Clinical training emphasizes:

- The natural history, epidemiology, diagnosis, and treatment of arterial, venous and lymphatic diseases.
- Arterial and venous thromboembolic disorders and hypercoagulable states
- Risk factor modification: hypertension, lipids, and diabetes.
- Medical management of the vascular surgical patient.
- Swollen legs, leg ulcers, leg pain
- Inflammatory and rare vascular diseases such as vasculitis, fibromuscular dysplasia, popliteal artery entrapment, cystic adventitial disease
- Aneurysms
- Atheroembolism
- Peripheral arterial disease, cerebrovascular disease and stroke, and renovascular disease.
- Endovascular treatment of vascular diseases
- Imaging modalities for vascular disease
- Vascular diagnostic laboratory

Cardiovascular fellows are exposed to a core curriculum of didactic topics related to vascular medicine as well as clinical experience in ambulatory care, hospital consultation and the noninvasive vascular laboratory. Electives rotations are available for more intensive training. Two interdisciplinary conferences are held each week in which specialists in vascular medicine, vascular surgery, and interventional radiology participate. One is devoted to imaging and case management and the other to a didactic core curriculum. This is an opportunity for true collaboration among individuals with different specialties involved in the care of vascular patients.

Research efforts include clinical trials in peripheral arterial disease, venous thromboembolic disease, renal artery disease, therapeutic angiogenesis for claudication and critical limb ischemia and research in vascular ultrasound. Fellows are encouraged to participate in the vascular medicine research initiative. Translational research with other members of the Cardiovascular Institute will be available on an individual basis.

Clinical Trials -- Jonathan L. Halperin, M.D., David A. Vorchheimer, M.D., Maryann McLaughlin, M.D., Jeffrey W. Olin, D.O.

Mount Sinai investigators have participated in countless clinical trials (GUSTO, PURSUIT, CAPRIE, AFFIRM, SHOCK, MOST, ROSTER, and TEAM, to name just a few) and have served in leadership roles as members of the steering committees for many others, such as the Assessment of Cardioversion Using Transesophageal Echocardiography (ACUTE), Warfarin vs Aspirin for Patients with Reduced Cardiac Ejection Fraction (WARCEF), Warfarin vs. Aspirin for Stroke due to Intracranial Arterial Disease (WASID) trials. More importantly, Mount Sinai has served as the scientific organizational hub of several of the largest, most influential multicenter clinical trials,

including the Stroke Prevention in Atrial Fibrillation (SPAF), the Coumadin Aspirin Reinfarction Study (CARS), Stroke Prevention using an Oral Direct Thrombin Inhibitor in Patients with Atrial Fibrillation (SPORTIF), Future Revascularization Evaluation in Diabetic patients: Optimal management of Multivessel disease (FREEDOM), and Systemic Immune Modulation Therapy In Patients Peripheral Arterial Disease and Intermittent Claudication (SIMPADICO). In addition to gaining experience in the conduct and execution of such trials, opportunities for fellows to design and carry out individual investigations typically involve sub-studies or secondary analyses that form the basis for hypothesis generation and the development of pilot studies for new trials.

Outcomes Research and Clinical Practice Evaluation - Ira S. Nash, M.D. and Maryann McLaughlin, M.D.

Several projects are underway to assess and improve clinical practices and patient outcomes in Cardiovascular Medicine. In close collaboration with the Department of Health Policy, we developed evidence-based guidelines for the acute hospital care of patients with acute myocardial infarction. Application of these guidelines form the basis of clinical quality improvement initiatives encompassing not only The Mount Sinai Medical Center, but also the Mount Sinai Health System of affiliated institutions and medical practices throughout the New York metropolitan area. Other areas of active investigation include the assessment and improvement of lipid management in patients undergoing coronary revascularization, the evaluation of functional status following percutaneous coronary revascularization, the impact of physician specialty and payor status on clinical outcomes in patients with cardiovascular disease and the development of new strategies to maximize functional independence in elderly people with heart failure. In collaboration with the Department of Emergency Medicine, studies focus on characterizing, developing treatment strategies for, and assessing the outcomes of patients undergoing evaluation of chest pain. A recently awarded grant establishes an infrastructure to monitor the quality of routine inpatient and outpatient cardiovascular care and evaluate aggregate outcomes against emerging benchmarks.

Integrative and Behavioral Cardiology Program - Thomas Pickering M.D., D Phil, Bill Gerin Ph.D., Karina Davidson Ph.D., Lynn Clemow Ph.D.

This novel program focuses on the ways in which behavior and lifestyles affect cardiovascular disease, and how they can be modified to prevent and treat it. The program is evidence-based, and includes research, clinical practice, and educational programs. It has an interdisciplinary approach, and includes physicians, psychologists, epidemiologists, nurses, and dietitians.

The treatment arm includes individual and group sessions in stress management, smoking cessation, weight control, and meditation. Educational programs focus on both patients and health care providers. Fellows are instructed in topics such as giving

brief smoking counseling, recognizing depression (a major risk factor for heart disease), and diagnosing and treating panic disorder (a common and often unrecognized cause of non-cardiac chest pain and other symptoms).

The research arm includes a variety of studies (mostly funded by NIH, and including a Program Project Grant). These include:

1. A study of the relationships between psychosocial factors and the diurnal rhythm of blood pressure in black and white normotensive and hypertensive patients, done in collaboration with Harlem Hospital and the Sleep lab at NYU.

2. A worksite-based study (The Cornell Worksite Study) of the effects of occupational stress on 24 hour blood pressure and cardiovascular disease. Measurements made over 3-4 year intervals include echocardiograms, carotid ultrasound, and a variety of psychometric tests.

3. A study of the determinants of white coat hypertension. Measurements include measurement of blood pressure made in the clinic, using self-monitoring, and 24 hour monitoring.

4. We are one of 6 national sites for the Sleep Heart Health Study, a prospective multi-center study of the relationships between sleep-disordered breathing and cardiovascular disease. The main outcome variables are cardiovascular morbid events.

5. A study of the associations between major depressive disorder and an altered circadian rhythm. Subjects are studied on the CRC with polysomnography, 24 hour blood pressure and heart rate monitoring, and blood sampling. Outcome variables include blood pressure control, heart rate variability (HRV), and platelet reactivity.

There are also several interventional studies. 1. We are investigating the use of a telephone-linked home blood pressure monitoring system and telephone-based nurse case management to improve the compliance of patients with uncontrolled hypertension. Both medication adherence and blood pressure control are major outcomes. 2. We are collaborating with Dr. Mark Chassin's group in a Program Project entitled Improving the Delivery of Effective Care to Minorities, which is also directed at minority groups with uncontrolled hypertension. 3. A study of the effects of an inexpensive brief behavioral intervention (expressive writing) on ambulatory blood pressure in treated hypertensive patients. 4. A study of the effects of behavioral therapy for depression in hypertensives. 5. A clinical trial of an omega-3 fatty acid supplement on blood lipids and blood pressure.

BASIC RESEARCH TRAINING

Recognizing that the future of basic cardiovascular research is in molecular approaches, Mount Sinai has made a major commitment towards developing one of the premier programs in the country. The Cardiovascular research Program (CVRP) represents a collaboration between the Department of Medicine and the Cardiovascular Institute. The CVRP comprises 15,000 square feet of space devoted to the application of molecular approaches to cardiovascular research. The laboratories of the CVRP are fully-equipped for molecular and cellular research with extensive core facilities including: tissue culture, transgenic mouse facilities, DNA sequencing and synthesis, protein sequencing and peptide synthesis, con-focal microscopy, fluorescence calcium measurements, cellular electrophysiology (patch clamp, oocyte and bilayer techniques), computing, flow cytometry, immunohistology, *in situ* hybridization, and phosphor imaging. The research programs in Molecular and Cellular Cardiology have received substantial funding from the NIH, AHA and ACC and provide extensive training for cardiology Fellows. Fellows participating in the program have been involved in major research efforts in the areas of atherosclerosis, heart failure, transplant biology, cardiac excitation, ion channels, cardiomyopathy, and thrombosis. Fellows take courses in Molecular Biology, Cell Biology, Signal Transduction, Physiology and Neurobiology offered by the Graduate School Faculty of Mount Sinai and participate in journal clubs and seminars. Typically, Fellows have presented the results of their work at the most prestigious international meetings of the American Heart Association, American College of Cardiology, and American Federation for Medical Research (formerly AFMR). Fellows participating in this program have had an extraordinary success rate (>90%) in applying for research grants (including AHA Clinician-Scientist Awards, NIH fellowships, Merck-ACC Fellowships and Howard Hughes Fellowships).

Funding support is available through the National Institutes of Health **Training Grant in Molecular and Cellular Cardiology** which has five major educational components reflecting the research directions of the Faculty: 1) Vascular Biology; 2) Ion Channels; 3) Genetics; 4) Lipids; and 5) Heart Failure. In addition, current funding for cardiology fellows in basic research training includes Clinician-Scientist Awards from the American Heart Association, NIH Fellowships, Merck-American College of Cardiology Awards and other prestigious fellowships. A separate brochure outlines the research projects of the faculty and the requirements for participation in the Training Grant.

FELLOW ROTATIONS

Mount Sinai Cardiology Fellowship Program

ROTATIONS*	<u>YEAR 1</u>	<u>YEAR 2</u> (flexible)	<u>YEAR 3**</u> (flexible)	<u>YEAR 4</u> (flexible)
			NIH Training Grant***	NIH Training Grant***
Outpatient Clinic	1/2 day per week	1/2 day per week	1/2 day per week	
Cardiac Catheterization	2 months	1 month	2 months	
Coronary Care Unit	3 months			
Nuclear Cardiology & Stress	1 1/2 month		1 month	
Electrophysiology	1 month	1 month		
Consults	2 months	2 months	2 months	
Basic Research			12 months***	12 months***
Echocardiography/ Transesophageal Echo	1 1/2 months	2 months		
Elective/Clinical Research		5 months	6 months	

*One month each year is reserved for vacation. Selected rotations include approximately one third time at the Bronx Veterans Affairs Medical Center.

**Fellows who elect to pursue advanced training in clinical cardiovascular medicine may add 1 or 2 years for subspecialty training.

***Fellows who elect to pursue training in basic research will complete the required clinical rotations in the first two years (in place of elective/clinical research) and enter a laboratory for two years starting in year three.

FELLOW CONFERENCES

Morning Conference Schedule

Monday	Clinical Conference*
Tuesday	Cath Lab Conference
Wednesday	Core Curriculum / Research**
Thursday	Dr. Fuster's Rounds and Senior Physician teaching rounds***
Friday	Journal Club

* Each Monday the CCU fellow is responsible for presenting one or two "best" cases. The cases are selected by the fellow and the attending. The fellow and the attending of the month are responsible for preparing a handout including a bibliography, presenting the case and leading a discussion based on the literature.

** The Core Curriculum is combined with a research conference in which staff and fellows present work in progress on selected Wednesday mornings.

***Senior physicians (including Drs. Fuster and Halperin) provide didactic instruction in pathophysiology and hemodynamics as well as discuss complex cardiac cases on selected Fridays at noon throughout the academic year.

Cardiology Grand Rounds will be held on Monday afternoon at 4:30 pm . In addition one Monday each month the Controversies in Cardiology (organizing by Dr. Martin Goldman) will be held.

Daily Conferences

- Morning Report
- CCU Rounds
- Echo Review
- Consult Service Rounds
- Cardiac Catheterization Review
- Nuclear Cardiology Review

Weekly Conferences

- Fellows Conferences (see above)
- Pediatric Cardiology
- ECG Conference

Bi-Weekly Conferences

- Heart Failure Conference
- Hypertension Conference

Monthly Conferences

- Cardiac Pathology Conference
- Controversies in Cardiology
- Quality Assurance Conference
- Visiting Professor Day

Annual Conference

- American College of Cardiology Consultant's Course in Cardiology

APPLICATIONS

Applications are welcomed from individuals with outstanding records who have completed a residency in Internal Medicine. Preference is given to applicants with U.S. citizenship or permanent residency.

Applications should be requested from:

The Cardiovascular Institute
Box 1030
Attention: Ms. Kelly Worrell
The Mount Sinai Medical Center
One Gustave L. Levy Place
New York, NY 10029-6574

Fax: (212) 423-9488

E-mail: kelly.worrell@msnyuhealth.org

Telephone: (212) 241-4029

Completed applications with three letters of reference (including one from the Chairman of Medicine) should be submitted to Valentin Fuster, MD, Ph.D. at the above address. The deadline for receipt of applications is December 15. Interviews of selected candidates are conducted in March. The Mount Sinai Medical Center is an Equal Opportunity Employer.

The Mount Sinai Division of Cardiology: Full-time Faculty

Fuster, Valentin, M.D., Ph.D.
Richard Gorlin, M.D./Heart Research Foundation Professor of Cardiology
Director, The Zena and Michael A. Wiener Cardiovascular Institute
Director, Cardiology Fellowship Training Program

Alexis, Jeffrey, M.D.
Assistant Professor of Medicine

Badimon, Juan José, Ph.D.
Professor of Medicine

Croft, Lori, M.D.
Assistant Professor of Medicine

Davidison, Karina, Ph.D.
Assistant Professor of Medicine
Integrative and Behavioral Cardiology Program

Fallon, John T., M.D., Ph.D.
Professor of Pathology

Farkouh, Michael, M.D.
Assistant Professor of Medicine
Clinical Director, Cardiac Care Center

Fayad, Zahi, Ph.D.
Assistant Professor of Medicine
Director, Nuclear Imaging

Fisher, Edward A., M.D., Ph.D.
Professor of Medicine
Director, Lipoprotein Research

Gass, Alan, M.D.
Assistant Professor of Medicine
Medical Director, Cardiac Transplantation Program

Gerin, William, M.D.
Associate Professor of Medicine
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