THOMAS JEFFERSON UNIVERSITY
JEFFERSON MEDICAL COLLEGE
DEPARTMENT OF

MEDICINE

ANNUAL REPORT 2005–2006

JEFFERSON: DEFINING THE FUTURE OF CLINICAL CARE


Jefferson University Hospital

Contents

Jefferson Medical College is located in the heart of Philadelphia, within walking distance of the city's historical sites, such as the Liberty Bell and Independence Hall. Left: Philadelphia City Hall as seen from Logan Square. Inset (top to bottom): the Bluemle Life Sciences Building, the College Building, and the Gibbon Building (home to Thomas Jefferson University Hospital), which comprise the current borders of the expanding Jefferson campus.

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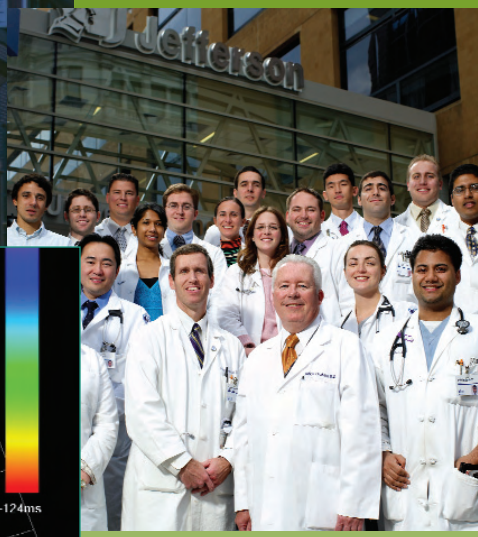
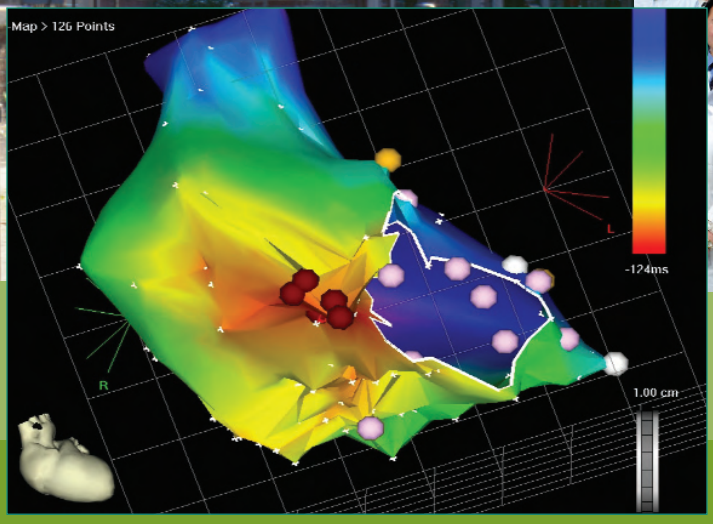
The Department of Medicine represents the most advanced technology and research, building on Jefferson's long history of excellent training and exceptional care. Jefferson Medical College was founded in 1824 (a century after Philadelphia's historic Elfreth's Alley, left, was built), and the Thomas Jefferson University Hospital was only the second in the nation to be formally affiliated with a medical school. The collaborative and pioneering efforts of the Department of Medicine continue this tradition today.





From the Chairman

In the nearly two centuries since its founding in 1824 as the second medical school in Philadelphia, the Jefferson Medical College (JMC) has been recognized as a leader in the training of the next generation of clinicians. However, at no time during its long history have the challenges in academic medicine been greater. To meet those challenges, the Department of Medicine has focused its efforts on its core mission: providing excellence in patient care. This focus on excellence has deep historical roots at Jefferson as it was first espoused by Dr. Thomas McCrae (1870–1935), the first Magee Professor of Medicine and ninth Chairman of the Department, who received his clinical training and taught at Johns Hopkins before coming to Jefferson in 1912. To maintain this tradition, we have worked to recruit and retain a cadre of talented clinical leaders and skilled young physicians with expertise in focused areas of medicine.

However, since McCrae's tenure, the delivery of outstanding patient care has become increasingly complex due to enormous advances in science and information technology, the development of new diagnostic and therapeutic tools, and the need for interdisciplinary collaboration across the vertical boundaries of academia. The Department has faced these challenges at least in part through the development of collaborative interdisciplinary programs in vascular disease, critical care medicine and sleep medicine, and the development of new programs in advanced heart failure and transplantation, inflammatory bowel disease, and interventional bronchoscopy.

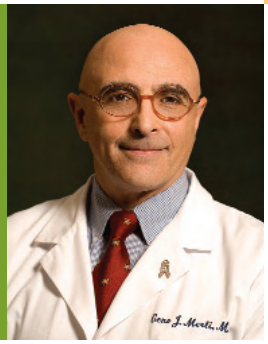
Excellence in clinical care translates directly into outstanding educational opportunities for highly talented trainees at all educational levels. We have enhanced our educational programs while at the same time improving patient care through development of a hospitalist program and a non-teaching clinical service. In addition, our faculty have strived to maintain high teaching standards while at the same time enhancing their clinical efficiency and productivity.

Clinical excellence cannot be accomplished without state-of-the-art discovery and the active and timely translation of new diagnostic and therapeutic techniques into the clinical arena. Excellent clinical care requires an ongoing and sophisticated assessment of clinical outcomes across the life cycle of individual diseases. An exciting part of the past four years has been the opportunity to support the development of the **Centers for Translational Medicine**, **Bioterrorism**, **Advanced Kidney Disease**, **Human Virology**, and **Outcomes Research**. These centers provide an opportunity for investigators with complementary interests and skills to be horizontally integrated, both physically and intellectually, around core facilities. The center concept also enables trainees to participate in research projects and seek out the best possible mentors regardless of their organ of interest.

I hope that you will enjoy this annual report that details the development of these exciting new clinical programs and research centers and the accomplishments of our outstanding faculty, trainees, and staff. The landscape of academic medicine changes daily and we are continuously challenged. However, the dedication, collegiality, and talents of our faculty, the excitement and energy of our trainees, and the hard work of our staff will ensure that we can continue to attain our goal of nurturing an environment of clinical excellence. I am both honored and privileged to be part of this outstanding team of physicians and scientists and to have the opportunity to lead our efforts as we build on the great traditions of our institution.

Arthur Feldman, MD, PhD
Magee Professor of Medicine
and Chairman of the Department

Report from the Vice Chair for Clinical Affairs



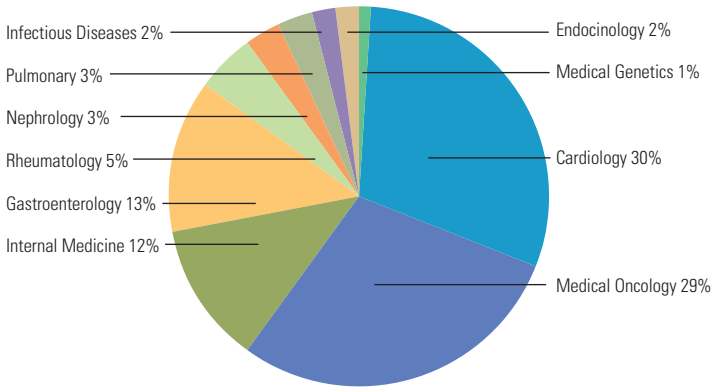
Geno Merli, MD, FACP
Ludwig A. Kind Professor of Medicine, Director of the Division of Internal Medicine, and Vice Chair of Clinical Affairs

A core focus of the Department of Medicine over the past four years has been to ensure that patients receive patient-friendly, state-of-the-art care at Jefferson. This goal has been achieved by building new multidisciplinary facilities including the new **Vascular Center** and **Sleep Center**, new outpatient space for pulmonary medicine, and new facilities for electrophysiology and gastroenterology. In addition, the recruitment of physicians with outstanding skills has provided new clinical capabilities and improved patient care in such sub-specialties as interventional bronchoscopy, sleep, critical care medicine, inflammatory bowel disease, heart failure and transplantation, lipid biology, HIV/AIDS, and transplant infectious disease.

Extensive efforts have been made to improve work flow in our offices and to expand our ability to communicate through the use of a single phone number access system, handheld computers for the house staff, and a reorganization of bed distribution and rounding services. Furthermore, one-third of our house staff has undertaken objective studies in outcomes research – which have resulted in improved healthcare for our patients.

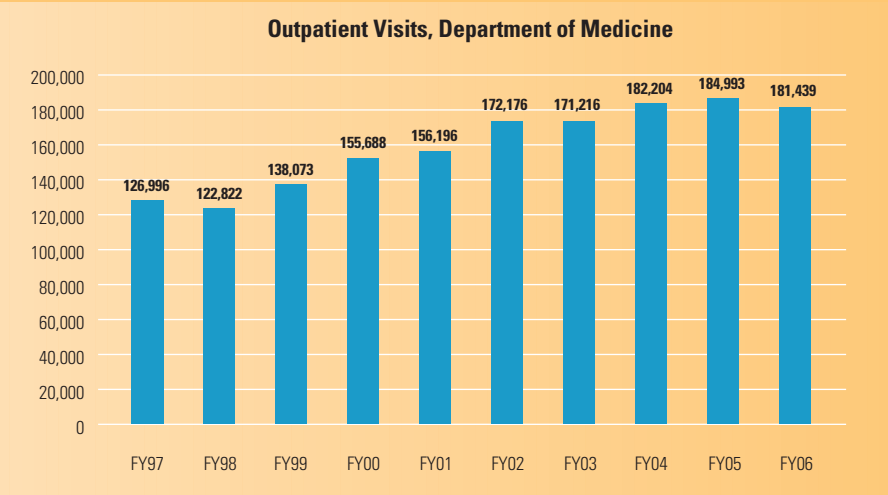
The most important ingredient in our ability to provide outstanding care for the wide variety of patients has been our faculty's commitment to excellence and their incredible work ethic. Indeed, as the accompanying tables demonstrate, we have increased patient visits and revenues, while at the same time maintaining a similarly sized faculty. ■

Department of Medicine, Revenue by Division, Fiscal Year 2006

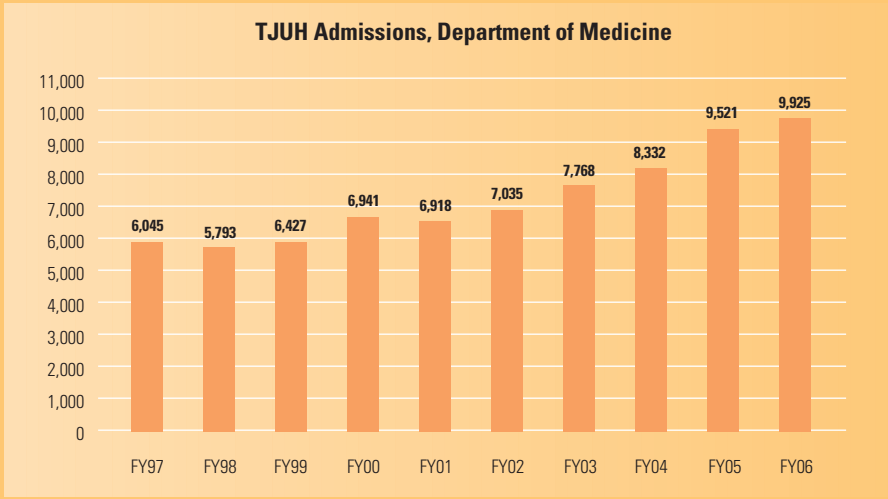


"Multidisciplinary facilities for the new Vascular Center and Sleep Center are among the recent contributions to state-of-the-art care at Jefferson."

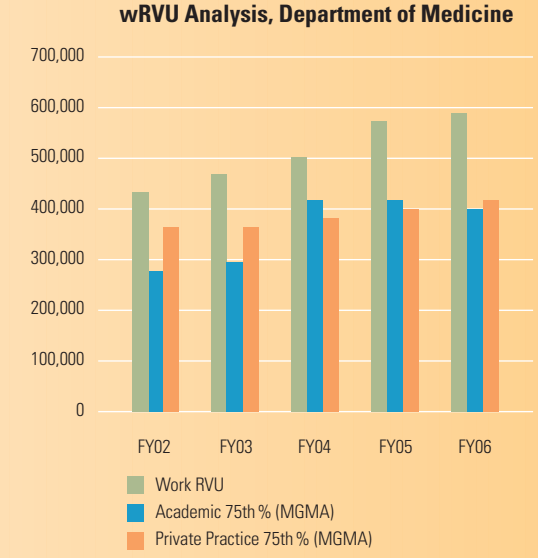
– Geno Merli, MD, FACP, Vice Chair for Clinical Affairs

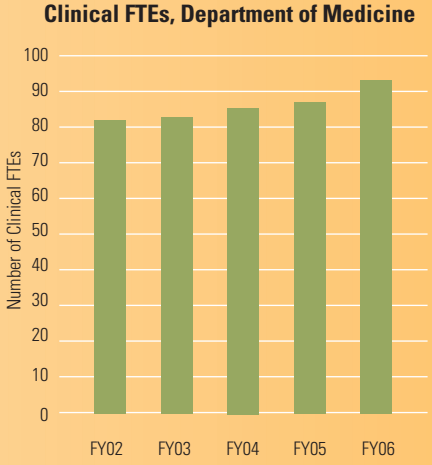


The graph at left reflects the overall rise in outpatient visits between Fiscal Years 1997 and 2006.



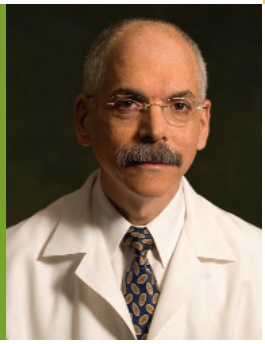
The graph at left reflects the increase in admissions of patients to the Thomas Jefferson University Hospital between Fiscal Years 1997 and 2006.





The work Relative Value Unit (wRVU) analysis at far left measures the increase in work productivity between Fiscal Years 2002 and 2006. Clinical Full Time Equivalents (FTEs) for the same time period are measured in the graph at near left.

Report from the Vice Chair for Education and the Vice Chair for Academic Affairs



Howard Weitz, MD
Professor of Medicine and
Vice Chair for Academic Affairs

Gregory Kane, MD
Residency Program Director and
Vice Chair for Education

The Department of Medicine is poised to train both academic and practice leaders for the new millennium through advanced clinical training and mentorship with senior faculty. Currently, the Department trains 123 residents and more than 50 sub-specialty fellows. While the program has as its core focus outstanding clinical training, there is a particular emphasis on training future physician-scientists and clinician educators as well as practicing physicians for the community.

The Department is also committed to meeting the continuing medical education needs of physicians who have completed their formal training. We strive to serve as an educational leader – promoting high-quality, innovative approaches to training in internal medicine, while at the same time serving the patients of the Jefferson community with competent and compassionate healthcare and providing the students who rotate through the Department with a sound fundamental experience in internal medicine.

Several recent unique innovations have enhanced educational opportunities for residents and students:

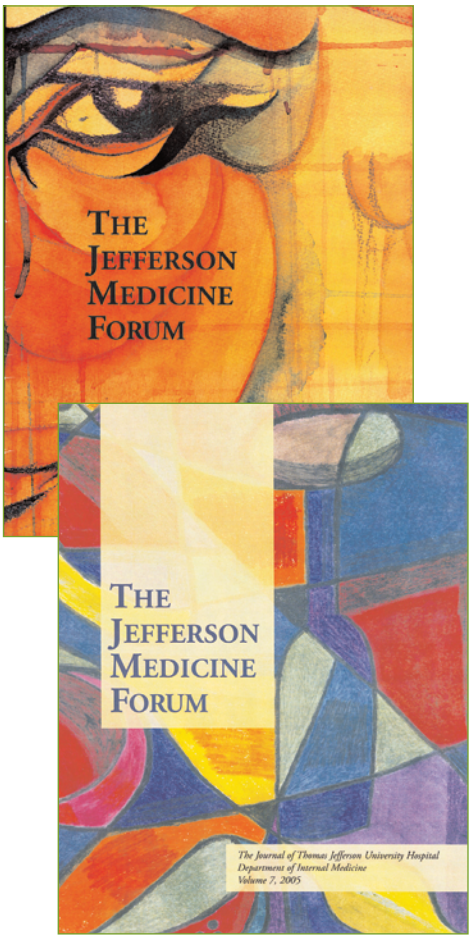
Advanced Physical Diagnosis/Urgent Care
Residents receive core lectures in advanced physical diagnosis and take advantage of state-of-the-art simulators to learn both diagnosis and ACLS and urgent care skills.

Ambulatory Training
The Jefferson Hospital Ambulatory Practice (JHAP) resident clinic features pharmacy services, social service consultation support, fixed-day clinic schedules and leading-edge office space that is highly unusual for an inner-city residency clinic.

2-2-2 Research Pathway
Residents with research experience can pursue two years of mentored basic science research while fulfilling requirements for both internal medicine and sub-specialty training.

Bedside Teaching
Using a novel approach first published in *Academic Medicine* in 2001, our faculty place strong emphasis on bedside teaching.

The Jefferson Medical Forum
First published in 1999, the *Forum* (below) is a resident-edited journal of scholarly research that has become a tradition of excellence within the Department of Medicine. ■



"We strive to serve as an educational leader – promoting high-quality, innovative approaches to training in internal medicine, while at the same time serving the patients of the Jefferson community with competent and compassionate healthcare." – Howard Weitz, MD, Vice Chair for Academic Affairs

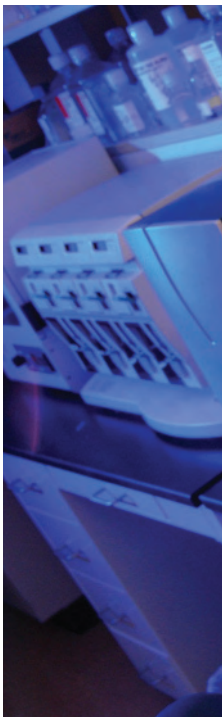
The educational leadership at Jefferson Medical College provides multifaceted educational and professional support to the members of the Internal Medicine residency program. Front and center are Gregory Kane, MD (left), Residency Program Director and Vice Chair for Education, and Mark Graham, MD, Associate Residency Program Director, surrounded by residents.

Report from the Vice Chair for Research

Walter J. Koch, PhD, FAHA
W. W. Smith Professor of Medicine, Director, Center for Translational Medicine, and Vice Chair for Research

My role since September 2003, has been to enhance the research program within the Department of Medicine's 13 Clinical Divisions. The **Center for Translational Medicine** (CTM) was developed as the cornerstone of the basic research program within the Department. The CTM is attempting to create a research environment in the Department that directly responds to the recent "roadmap" put forth by the National Institutes of Health (NIH), which has mandated more research aimed at human disease and more quickly translating basic science discoveries to improving patient care. Over the past three years, this program has been built both with new laboratory and administrative space and new faculty recruitment. In this time, the CTM has brought new grants to the institution, enhanced the research reputation of the Department and, in effect, attracted more external funding.

The CTM has several Core facilities and tehnologies that have facilitated research not only for the Center's faculty but also for researchers across all Divisions. Thus, the Center has quickly realized one of its primary goals to be a novel resource for basic and translational research within the Department. Faculty recruitment within the research areas of the Department will occur primarily in the CTM for the next one to two years, and we seek to complement existing strengths and recruit according to the overall strategic plan of the University established over the last year. A key goal is to capitalize on the critical mass we have established in basic and translational research in cardiovascular medicine.

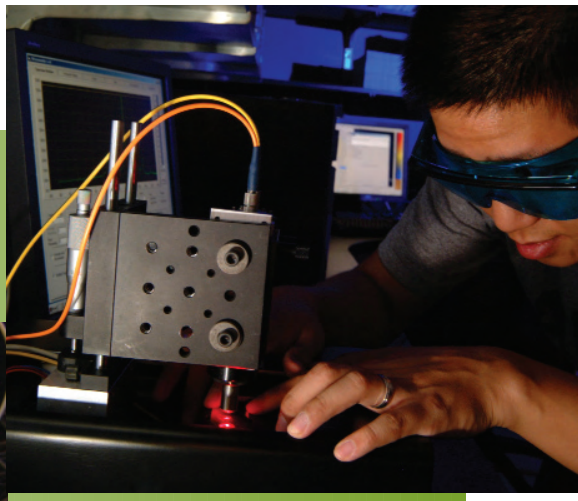


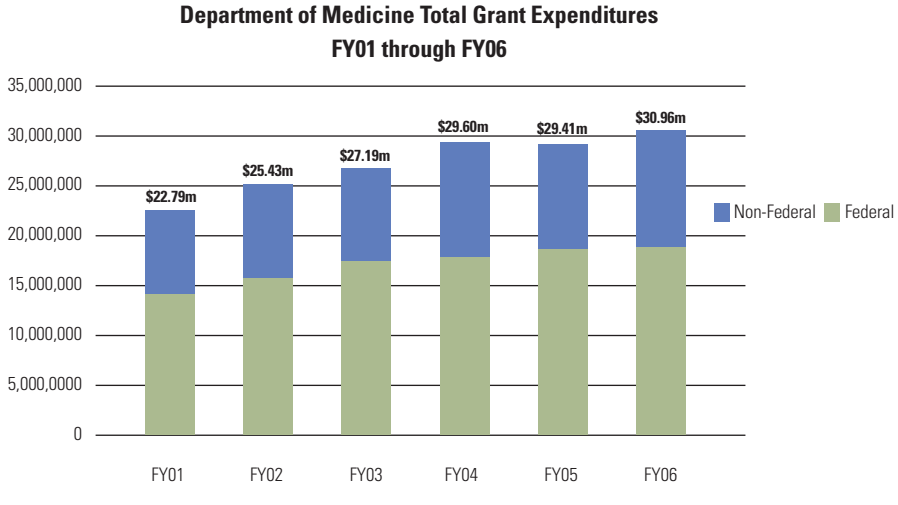
This new commitment to research by the Department of Medicine has begun to yield positive results. We have realized a substantial increase in total grant expenditures over the past three years. The two components of this increase are a rise in federal expenditures and a boost in non-federal funding. In the current funding climate, where federal dollars are becoming increasingly harder to secure, pursuing means of funding and non-federal monies within both the private and public sector will be extremely important in the coming years. Federal research dollars will remain the cornerstone of our funding portfolio, however, and the development of the CTM and the renewed research focus in the Department have promoted new collaborations among Departmental scientists as well as with other researchers within the institution. Several larger programmatic federal grants are planned for 2007, including a Departmental Translational Medicine Training Grant from the NIH to take advantage of our unique research environment.

We are excited about what has transpired in research within the Department over the last two years and look forward to continued progress and growth in the coming year. ■

"The Center for Translational Medicine responds to the NIH mandate for research aimed at translating basic science discoveries to improved patient care."

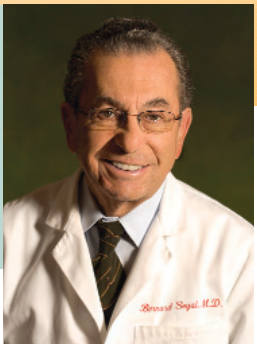
– Walter J. Koch, PhD, FAHA, Vice Chair for Research





The graph at left showing Total Grant Expenditures for the Department of Medicine between Fiscal Years 2001 and 2006 reflects a steady increase.

CARDIOLOGY



Bernard L. Segal, MD
Division Director

Faculty
Barbara A. Berko, MD
Albert N. Brest, MD
Indranil Dasgupta, MD
Matthew V. DeCaro, MD
John U. Doherty, MD
David L. Fischman, MD
Lori B. Frank, MD
Arnold J. Greenspon, MD
Christopher L. Hansen, MD
Reginald T. Ho, MD
Edward Lankford, MD
Paul J. Mather, MD
J. David Ogilby, MD
Alyson N. Owen, MD
Behzad B. Pavri, MBBS
Steven A. Roberts, MD
Sharon Rubin, MD
Michael P. Savage, MD
Gerald Scharf, DO
Alexis B. Sokil, MD
Marc A. Tecce, MD
Paul Walinsky, MD
David H. Wiener, MD
Howard H. Weitz, MD
David J. Whellan, MD
Donna R. Zwas, MD

The Jefferson Heart Institute (JHI)/Division of Cardiology has become a nationally recognized center of excellence in the many aspects of cardiovascular disease. Recent enhancements to the JHI include the opening of the **Center for Advanced Heart Failure and Cardiac Transplantation**, a new state-of-the-art electrophysiology suite, outpatient nuclear imaging facilities, and a new multidisciplinary **Vascular Center**. The creation of the Mid-Atlantic Research Consortium has enhanced participation in important and novel clinical investigations of both new devices and drugs. Through close collaborations with the **Center for Translational Medicine** (see p. 34), the JHI has been able to integrate the latest discoveries in genomics, gene transfer, and basic biology with cardiovascular patient care, clinical research, and education.

CLINICAL CARE

The Division of Cardiology provides state-of-the-art care for a wide range of patients in Center City Philadelphia at the JHI as well as in Northeast Philadelphia, the Main Line western suburbs, and Voorhees, NJ. There have been a group of important programmatic initiatives over the past four years:

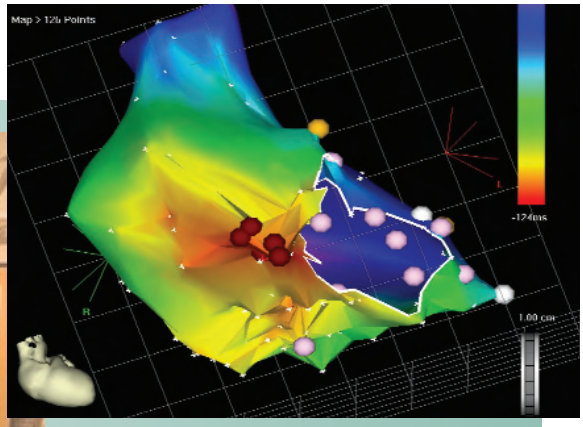
- The **Center for Advanced Heart Failure and Cardiac Transplantation** opened in 2003 and has now become a referral source for patients from the Tri-State area and beyond. With cardiologists and cardiothoracic surgeons recruited from such institutions as Temple, Duke, and UCLA, the group quickly developed the nursing, social work, dietetics, critical care, and research infrastructure to support the growing program.

Above: The Jefferson Echocardiography Laboratory is actively involved in all investigation of new real-time 3-D echocardiographic technology.

In September 2004 the first heart transplant was performed at the Thomas Jefferson University Hospital.

- Jefferson Hospital and the JHI opened a new state-of-the-art electrophysiology suite in November 2005. A Jefferson cardiologist–led team recently recognized that the combination of an implantable cardiac defibrillator and a resynchronization device (biventricular pacemaker) can have a dramatic impact on improving survival and reducing hospitalizations in patients with heart failure. New electrophysiology technologies have enabled physicians to use interventional techniques to treat both supraventricular and ventricular arrhythmias. This new facility provides a patient-friendly environment in addition to high-technology capabilities.

"A new electrophysiology suite opened in 2005, offering a patient-friendly environment as well as the latest interventional technologies." – Bernard L. Segal, MD, Division Director



Above: An electroanatomic map of a right atrial tachycardia along with the sites where radiofrequency catheter ablation was delivered and successfully terminated the tachycardia (red dots).

Center: The Cardiac Electrophysiology Laboratory suite, opened in 2005, is equipped with two large laboratories for invasive cardiac electrophysiology procedures (shown here), a room for more limited procedures, and an area for patients and families.

- The Division has partnered with the Division of Internal Medicine to form the **Jefferson Vascular Center** (see p. 29), recognizing that many patients with coronary artery disease also have symptomatic vascular disease in the carotid or peripheral vasculature.
- The JHI has established state-of-the-art imaging facilities at both its Center City and Northeast offices. Using sophisticated new technology, the nuclear cardiology program provides an opportunity to assess the presence or risk of coronary disease in a timely manner in the practice office. Efforts are ongoing to develop collaborative initiatives to evaluate the effectiveness, safety, and cost-effectiveness of newer imaging modalities, including CT angiography in the assessment of patients with possible or recognized coronary artery disease.
- Through the efforts of a multidisciplinary program, Cardiology has led the development of a geographically identifiable inpatient cardiology service in Thomas Jefferson University Hospital. This initiative has improved care for patients with all forms of cardiovascular disease, improving the capabilities of house staff and attending physicians to communicate on inpatient cardiology services, incorporating nurses, social workers, and pharmacists effectively into the care-delivery teams; developing standard care algorithms, and carefully measuring patient outcomes.

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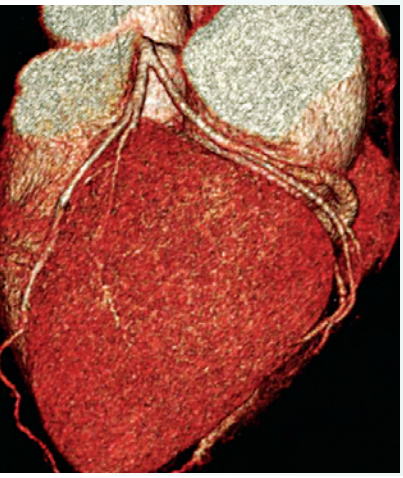
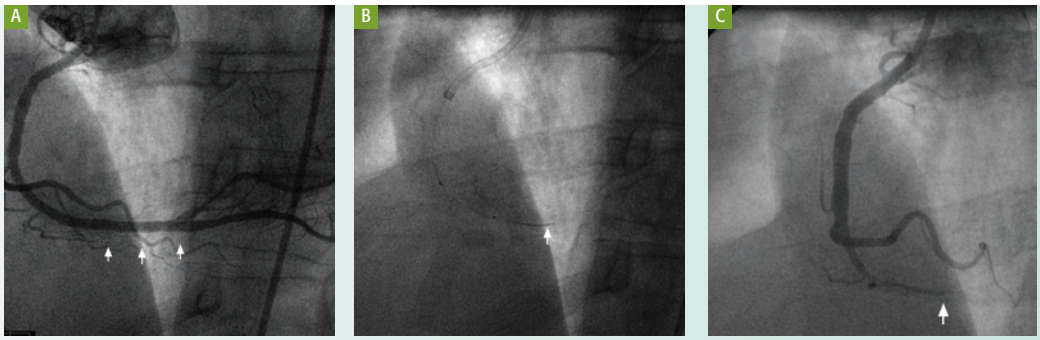


A 3-D volume rendering of a coronary CT angiogram showing normal left main, left anterior descending, and left circumflex arteries. Courtesy of the Department of Radiology, Thomas Jefferson University Hospital.



This series of images shows the sequence of a complex angioplasty in a 53-year-old man with a totally occluded artery. Image A demonstrates the right coronary artery with the point of total occlusion (see arrow). Image B shows a SafeCross infrared guidewire (see arrow) successfully traversing the obstruction, which previously was impenetrable by conventional guidewires. The tip of the wire is equipped with an infrared light that reflects off the plaque and has the capacity for radiofrequency ablation, which facilitates successful passage through the occlusion. Image C reveals the widely patent artery restored after placement of drug-eluting stents.

EDUCATION

The faculty of the Division actively participate in all aspects of medical student training, with a strong focus on the Introduction to Clinical Medicine course and the training of third-year medical students during their hospital rotations. The Division also offers a 36-month training program in cardiovascular disease for six fellows each year, as well as fourth-year fellowship programs in interventional cardiology, electrophysiology, and heart failure and transplantation. The Division sponsors a weekly cardiology clinical conference, as well as weekly conferences in electrophysiology and ECG interpretation, a bimonthly nuclear cardiology conference, a twice-monthly basic science conference, and weekly echocardiography and interventional cardiology conferences.

RESEARCH

The clinical research program in the JHI has undergone major restructuring over the past several years with the appointment of David Whellan, MD, PhD, as new Director of Clinical Research. JHI investigators now participate in 60 industry-sponsored research projects that cover a wide array of cardiovascular diseases including:

- preventive cardiology (METEOR, Tulenko study)
- electrophysiology (ACTIVE, MADIT-CRT, PARTNERS-HF, SAVE-PACE, PEGASUS, Sleep-BiV)
- cardiovascular imaging
- interventional cardiology (DISCOVER, COSTAR II)
- advanced heart failure and cardiac transplantation (MOMENTUM, REMODEL).

JHI faculty members also serve as principal investigators or on the steering committees of a number of these trials, including EMOTE, REMODEL, WATER1, PARTNERS HF, OptiVOL, and HF-ACTION.

The Division also supports more than twenty investigator-initiated research projects in diverse areas of cardiovascular care, including:

- the feasibility of 3-D echocardiography for assessment of coronary artery disease
- the use of new Doppler and stress/strain technology for evaluating the benefits from cardiac resynchronization therapy

"Along with providing state-of-the-art patient care, we are leading patient-oriented research as the creators of the Mid-Atlantic Research Consortium, a network of clinical researchers from five states."

—Bernard L. Segal, MD, Division Director

Center for Outcomes Research

Jefferson's Clinical Research Network brings together eighteen other centers in five states and offers access to a network of 25,000 patients.

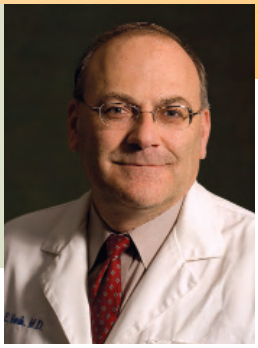
- the role of novel marker proteins (ßARK1) in assessing prognosis in patients with heart failure
- the role of novel disease management strategies in optimizing patient care and decreasing hospital readmission rates.

In addition, Department of Medicine residents actively participate in a large number of outcomes research projects – all focused on assessing the determinants of effective care in hospitalized patients with cardiac diseases. These projects are broadly focused, and studies have ranged from an assessment of the use of Greenfield filters in patients with pulmonary emboli to the relationship between the presence of the Metabolic Syndrome and length of stay in women hospitalized with chest pain syndromes. Most importantly, both cardiovascular trainees and JHI faculty collaborate actively with basic scientists in the **Center for Translational Medicine** (see page 34).

Clinical Research Program

Demonstrating its region-wide leadership, Jefferson has created the Mid-Atlantic Research Consortium (MARC), a clinical research network that offers a substantive infrastructure to support the complex needs of patient-oriented research. This community of clinicians, coordinators, and research professionals from academic medical centers, suburban hospitals, and large practices collaborates in performing leading-edge clinical research and fosters bringing those advances to care for patients in the most efficient way possible. The consortium engages in all levels of clinical research activity, including translational research – especially in the area of heart failure – the use of novel therapeutics, safety surveillance of approved drugs and devices, and research to foster a better understanding of quality-of-care outcomes. Jefferson's Clinical Research Network brings together eighteen other centers in five states and offers access to a network of 25,000 patients. ■

CRITICAL CARE, PULMONARY, ALLERGIC, and IMMUNOLOGIC DISEASE



Paul Marik, MD, FCCP, FCCM, FACP
Division Director

Faculty
Bharat K. Awsare, MD
Michael Baram, MD
Francisco Brun, MD
Andrew Haas, MD
Frederic Jaffe, DO
Gregory C. Kane, MD
Salvatore Mangione, MD
Frank T. Leone, MD, MS
Sandra B. Weibel, MD
James G. Zangrilli, MD

The Division plays a major role in the educational, research, and clinical activities of Jefferson Medical College and has undergone recent programmatic growth with the recruitment of Dr. Paul Marik as Director. Building on existing expertise in asthma and smoking cessation, new clinical programs have been developed in the areas of intensive care, sleep allergy, interventional bronchoscopy, and lung cancer. The Division continues to play a major role in the education of students, residents, and fellows, while also supporting new and innovative clinical research. The basic research programs of the Division are seamlessly integrated with the **Center for Translational Medicine** (see p. 34).

CLINICAL CARE

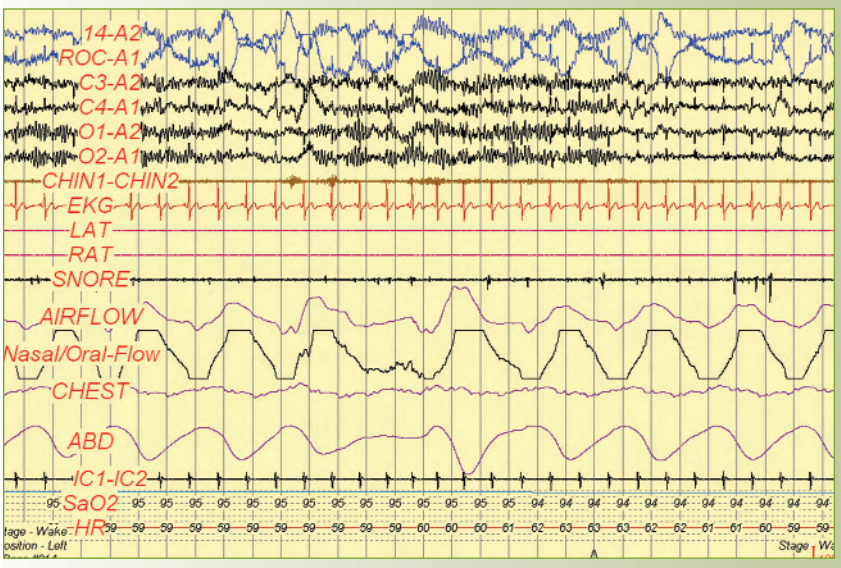
The Division has consistently provided the highest-possible level of service for patients across the Delaware Valley with lung disease; however, recent efforts have markedly expanded the opportunities for patient care. To support the marked increase in the activity of care at the Thomas Jefferson University Hospital, we have focused on enhancing our capacity to care for critically ill patients in the context of a multidisciplinary team. Faculty in the Medical ICU now work collaboratively with intensivists in the Cardiothoracic ICU, CCU, neuro-ICU, and surgical ICU to provide seamless critical care for the large numbers of patients treated daily at Jefferson. The recent development of a program in Pulmonary Intervention provides an opportunity to provide state-of-the-art care, as well as investigational devices and therapies, for patients with obstructive bronchial lesions. In addition, the creation of a "medical" sleep program, in cooperation with the Department of Psychiatry, provides an opportunity to care for the numerous patients with severe cardiac, gastrointestinal, or pulmonary disease who also have obstructive sleep apnea. The recent designation of a Director of Allergy as well as the creation of outpatient clinics – including the COPD Clinic, Asthma Clinic, and a Smoking Cessation Clinic – provide the opportunity to care for the full array of outpatients with pulmonary disease in a comprehensive clinical environment.

Jefferson's Asthma Bus had its first ride in 2000, visiting more than 73 Philadelphia schools and almost 8,000 middle-school students. Salvatore Mangione, MD, Associate Professor of Medicine, first conceived of a traveling asthma education program in the mid-'90s, to reach underserved communities in Philadelphia, where many children suffer from asthma and many more go undiagnosed.

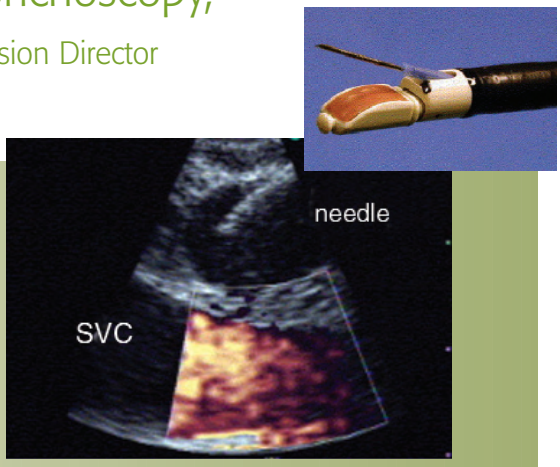
EDUCATION

The Division's primary contribution to the educational goals of the Department involves the house staff in the Internal Medicine training program, as well as the sub-specialty fellows in Pulmonary Diseases and Critical Care Medicine. The Division's faculty act as an educational resource for students, interns, and residents 365 days per year. Sub-specialty fellows, as well as

"New clinical programs have been developed in the areas of intensive care, sleep allergy, interventional bronchoscopy, and lung cancer." – Paul Marik, MD, FCCP, FCCM, FACP, Division Director



Measurements such as these aid physicians in the Jefferson sleep program to diagnose a wide range of sleep disorders in patients with a variety of comorbidities including, but not limited to, severe cardiac, gastrointestinal, or pulmonary disease.



Recent developments integrate ultrasound technology into the flexible bronchoscope. The top right image shows an ultrasound probe on the distal end and a needle that can be inserted under ultrasound guidance into abnormal tissue for diagnosis. The center image shows the transbronchial needle within an abnormal lymph node, while the superior vena cava (SVC) can be easily identified with Doppler capabilities beyond the site of needle aspiration. With this technology, the Jefferson interventional pulmonary program can perform nonsurgical staging of thoracic malignancies and diagnosis of mediastinal and hilar lymphadenopathy.

students and house officers rotating on the Pulmonary service, participate in a series of didactic lectures in Pulmonary Disease, Critical Care Medicine, basic and clinical research, journal club, pulmonary-ID joint conference, multidisciplinary clinical chest conference, and joint conferences with the surgical ICU as well as cardiothoracic ICU staff. Members of the Division are involved in a variety of university courses and programs including:

- Medical Practice for the 21st Century (first year)
- Foundations of Clinical Medicine (second year)
- Scientific Foundations of Medicine.

Members of the division also contribute actively to the graduate program in public health.

RESEARCH

The Pulmonary Division carries out a wide array of both clinical and basic research, facilitated by active collaborations with outstanding resources in the Department of Medicine, the Department of Pharmacology and Experimental Therapeutics, and the School of Graduate Studies. Pulmonary faculty pursue:

- the pathogenesis of asthma
- the effectiveness on health services of novel educational and outreach programs for patients with asthma and the effectiveness of tobacco cessation programs on health in the community
- clinical research in a diverse array of areas. ■

ENDOCRINOLOGY, DIABETES, and METABOLIC DISEASES

Barry J. Goldstein, MD, PhD

Intekhab Ahmed, MD
Kevin Furlong, DO
Serge Jabbour, MD
Jeffrey L. Miller, MD
Kevin J. Williams, MD

The Division actively pursues clinical, translational, and basic research activities, with a primary focus on diabetes, obesity, and related disorders. The Division has built a strong reputation for outstanding teaching both at the resident and medical student level. Clinical interests and activities have led to strong collaborative relationships with other Divisions in the Department as well as with other departments across the campus, including Surgery and Pathology. The Division's research interests have led to strong collaborative efforts involving the Divisions of Cardiology and Nephrology and the Center for Translational Medicine.

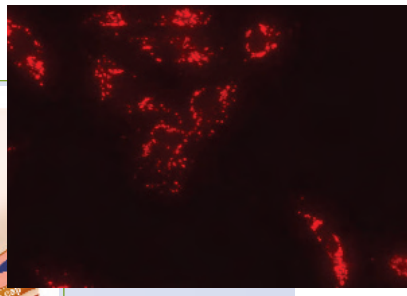
CLINICAL CARE

The Division of Endocrinology provides comprehensive care for inpatients with endocrine diseases at the Thomas Jefferson University Hospital and Methodist Hospital and for outpatients at Center City Philadelphia offices in Walnut Towers and in the Bove Center at Methodist Hospital in South Philadelphia.
A unique aspect of the Division's clinical practice is their **Comprehensive Weight Management Program**, which focuses on the medical complications of obesity. This program crosses many disciplines of medicine and surgery and has particular interest in the effects of rapid weight loss for patients anticipating organ transplantation or in patients requiring orthopedic surgery. The program has been one of the top centers nationwide in terms of the number of patients who have maintained their weight loss goals. In addition, the Division's clinical programs focus on the care and treatment of patients with diabetes – with particular attention to patients living in the Center City Philadelphia community. The success of the **Diabetes Prevention Program** is illustrated by the fact that it has retained 90 percent of its participants (among the top three centers in the nation).

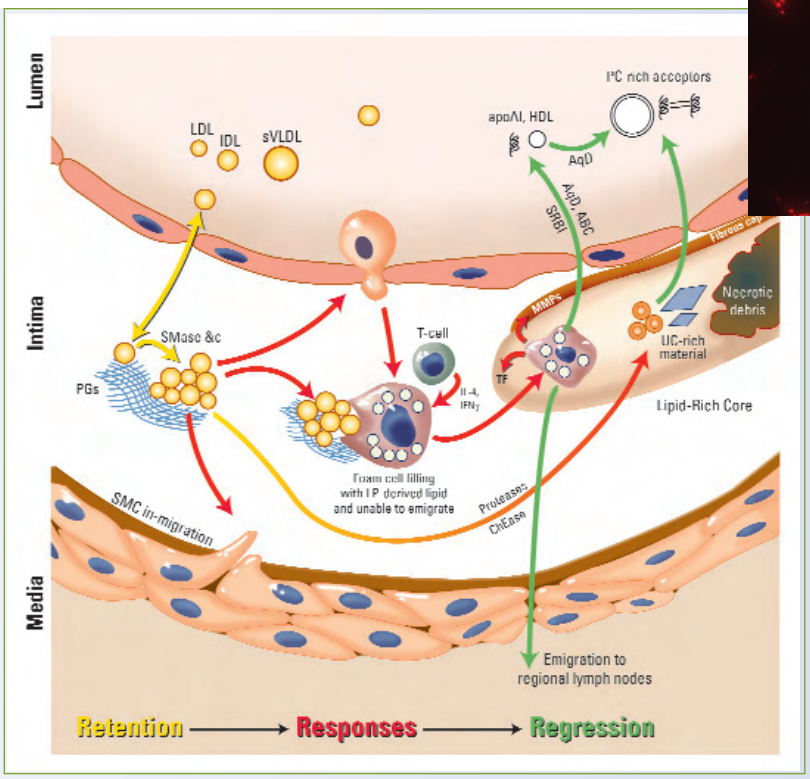
Jefferson's patient-centered programs help treat and prevent cardiovascular disease through nutritional counseling and weight loss management for overweight patients and education for patients with diabetes. Our faculty and staff also maintain ongoing clinical trials to test the latest medicines for diabetes and related complications.

"Our collaborative relationships with other departments and divisions allow us to more systematically treat patients suffering with the complications of obesity and makes us one of the most effective programs in the country when it comes to patients maintaining life-saving weight loss."

— Barry J. Goldstein, MD, PhD, Director, Endocrinology, Diabetes and Metabolic Diseases.



Using special reagents, researchers in Dr. Goldstein's group are studying the effects of a circulating protein called adiponectin on endothelial cell function. (At top right are cultured endothelial cells from the lining of blood vessels, with the mitochondria – energy factories of the cell – highlighted in red.) Adiponectin has protective effects on some of the initial steps of the process of atherosclerosis by modifying the production of metabolites from the cell mitochondria. This "anti-inflammatory" effect of adiponectin results in a healthier function of the endothelial cells and a protection of the initiation of vascular disease processes.



Left: Copyright of *Arteriosclerosis Thrombosis and Vascular Biology*, vol. 25, pp. 1536-40, August 2005.

EDUCATION

The Division of Endocrinology has a strong reputation for excellence in education. The faculty teach at all levels of the medical school and graduate school curriculum, including courses in biochemistry, physiology, introduction to clinical medicine, and physical diagnosis. Endocrinology faculty participate actively in the training of both residents and endocrine fellows. Division faculty members have received numerous "best teacher" awards from the residents and students and have served on thesis committees for graduate students and participate in CME symposia at both the national and regional levels. A monthly multidisciplinary Thyroid Conference is attended by faculty and fellows from multiple disciplines, and a weekly Endocrine Forum attracts faculty, trainees, and community practitioners. A two-year ACGME-accredited fellowship program in Endocrinology, Diabetes, and Metabolic Diseases is offered to two applicants each year.

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ENDOCRINOLOGY, DIABETES, AND METABOLIC DISEASES *continued*

Kevin Williams, MD (left), and Barry Goldstein, MD, PhD, do complementary research in the Endocrinology Division.

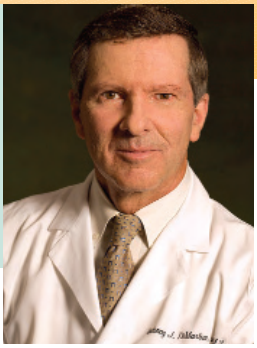
RESEARCH

Clinical research in the Division focuses on the treatment and prevention of diabetes and its complications, obesity, clinical pharmaceutical trials, and studies on devices used in the management of diabetes, as well as translational and collaborative projects with both large pharmaceutical companies and small biotech start-ups. These include development of a glucose sensor and continuous subcutaneous insulin infusion for obtaining optimal metabolic control. An important component of the clinical research program is the Diabetes Prevention Program Outcomes Study, a multicenter NIH-sponsored research study to delay the onset of diabetes in high-risk populations and determine how medications and lifestyle interventions may affect cardiovascular risk. In collaboration with the Department of Surgery, obesity research is characterizing differences in the insulin-responsiveness and secretory activities of omental and subcutaneous fat cells.

In the basic research laboratory, members of the Division of Endocrinology study:

- the regulation of insulin signaling by protein-tyrosine phosphatase enzymes. Investigators have defined a new process by which reactive oxygen species inactivate tyrosine phosphatase enzymes and in so doing promote insulin signaling.
- a novel protein secreted from fat-cells called adiponectin that has intriguing effects on insulin sensitivity and vascular protection.
- specific cell-surface heparan sulfate proteoglycans that mediate lipoprotein catabolism through novel pathways
- the potential role of abnormalities in heparan sulfate biosynthesis in diabetic complications
- the role of artificial particles that can force the transport of cholesterol from peripheral tissues to the liver in vivo. ■

GASTROENTEROLOGY and HEPATOLOGY



Anthony J. DiMarino, Jr., MD
Division Director

Jeffrey Abrams, MD
Cuckoo Choudhary, MD
Robert Coben, MD
Sidney Cohen, MD
Mitchell Conn, MD
Michael DiMarino, MD
Steven Greenfield, MD
Hie-Won Hann, MD
Steven Herrine, MD
Anthony Infantolino, MD
David Kastenberg, MD
Leo Katz, MD
Thomas Kowalski, MD
Howard Kroop, MD
Patricia Kozuch, MD
David Loren, MD
Victor Navarro, MD
Jorge Prieto, MD
Satish Rattan, DVM
Simona Rossi, MD
Robin Miller, CRNP

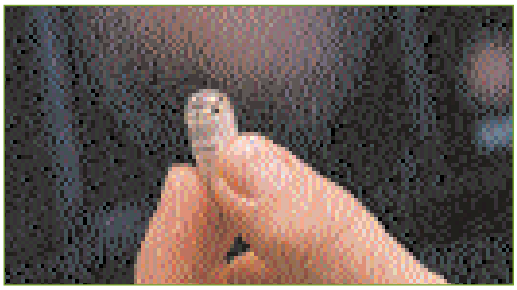
The Division is recognized nationally as a leader in the delivery of comprehensive and multidisciplinary care for patients with gastrointestinal disease, while at the same time fulfilling its mission to educate the next generation of gastroenterologists and to be on the leading edge of translational medicine. The Division's faculty have clinical and research interests that span the gamut of gastrointestinal disease, and members of the faculty have spearheaded investigations that have resulted in new algorithms of practice for both treatment and diagnosis.

The Division has seen extraordinary growth in its clinical base, and for nearly a decade it has served as a primary referral site for physicians in Pennsylvania, New Jersey, and Delaware. Patients come to Jefferson gastroenterologists for primary care GI services, such as screening colonoscopy, as well as for the diagnosis and treatment of complex gastrointestinal diseases. The Division has played a key role in the education of students, house staff, and fellows, and the large number of residents that pursue gastroenterology as a specialty is due at least in part to the outstanding educational experience they receive while serving on the GI services. The Division has built superb collaborative activities in both research and clinical care with the other departments and continues to be ranked as one of the outstanding programs in the U.S. by *U.S. News & World Report*.

CLINICAL CARE

For nearly a decade, the Division has been recognized both regionally and nationally for its clinical excellence. The recent recognition regarding the benefits of screening colonoscopies and increased awareness of the danger of severe gastroesophageal reflux disease have contributed to an extraordinary growth in clinical volume. The Division has taken a leadership role in the strategic planning for a Digestive Diseases Service Line in collaboration with specialists in Surgery, Colorectal Surgery, Liver Transplantation, Radiology, Oncology, Genetics, and Medicine. A new state-of-the-art, 5-room endoscopy suite will open in early 2007, thereby increasing the Endoscopic procedural space to a total of 11 rooms performing more than 15,000 procedures per year.

The Division has been a leader in both designing and evaluating new technology and incorporating new therapeutic options into the clinical practice at Thomas Jefferson University Hospital. New technologic advances include the use of wireless capsule endoscopy and double balloon endoscopy for investigating disorders of the small intestines and esophagus and the "Bravo" pH monitoring system for assessing esophageal



Thanks to advances in swallowed-camera technology, like this imaging device, physicians treating patients for gastrointestinal illnesses can reach and examine areas of the intestinal tract, including the small bowel, that previously only X-rays could image.

pathology. The faculty perform all forms of advanced diagnostic and therapeutic endoscopy, including photodynamic therapy and endoscopic mucosal resection for early gastrointestinal

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Cataldo Doria, MD (left), and Victor Novarro, MD, collaborate on the medical and surgical aspects of Jefferson's liver transplant program.

mucosal cancers, laser therapy, video capsule endoscopy, endoscopic gastroplication, endoscopic ultrasound and fine-needle aspiration.

Division hepatologists are key members of the liver transplant team, which is the longest continuous liver transplant program in Philadelphia. The Division has recently undertaken strategic efforts to redesign patient scheduling and to increase the number of patients seen, procedures performed, and admissions to Thomas Jefferson University Hospital – without compromising the commitment to meeting the patients' expectations of high quality, patient-friendly care. Process redesign has been an important part of providing high-quality and patient-friendly care. Patients are also seen by the full-time faculty of the Division in satellite offices in Voorhees, Woodbury, and Egg Harbor Township, NJ.

The newly reformulated **Inflammatory Bowel Disease (IBD) Diagnostic and Treatment Center** has been created to better organize the clinical core and research programs for the more than 2,100 ulcerative colitis and Crohn's patients seen at Jefferson. Important new developments in "biologic treatment" protocols in inflammatory bowel include eight clinically active protocols, giving our patients access to leading-edge treatment – often of newly released medications. Study of the phenotypic and genotypic correlation of Caucasian and minority IBD patients is ongoing in conjunction with the Center for Translational Medicine (see page 34).

The Inflammatory Bowel Disease (IBD) Center provides comprehensive, cutting-edge care for patients with ulcerative colitis and Crohn's disease. Multiple ongoing clinical trials evaluate new medicines for these chronic diseases. Patricia Kozuch, MD, and others work closely with colleagues in Surgery, Radiology, and Pathology in a multidisciplinary diagnostic and therapeutic approach to IBD.

EDUCATION

The educational goal of the Division is to provide medical students, house staff, gastrointestinal fellows, practicing internists, and gastroenterologists as well as patients with the latest information regarding the diagnosis and treatment of gastrointestinal patients. Education is a primary commitment of the Division, which graduates three new fellows each year who go on to both prestigious academic and private practice appointments. In addition to the traditional educational programs, the Division offers outreach programs to community groups in conjunction with the Office of Continuing Medical Education (CME) at the University, as well as the Marketing and Public Relations Departments. For example, the 25th annual "Advances in Gastroenterology Update Course" provides updates from leaders in gastroenterology and hepatology to over 250

"We have been at the forefront of research on GI diseases for 25 years. As we recruit new faculty and make other investments in IBD, capsule endoscopy, and other specializations, our capacity to serve becomes even more comprehensive." – Anthony J. DiMarino, MD, Division Director

primary care physicians and gastroenterologists from eight states.

The Division also sponsors in conjunction with the Ponce Research Institute in Puerto Rico a biannual course for a multinational group of clinicians. Given the advances in endoscopic technology, techniques, and the resultant increased diversity and complexity of required endoscopic procedures and associated skills, the Division also offers a one-year fellowship in advanced endoscopy to train the next generation of academic endoscopists and a one-year advanced Liver Transplant Fellowship – one of the few certified by the Accreditation Council for Graduate Medical Education (ACGME).

The Division has a national reputation for the on-site and satellite training of the leaders of American industry, including pharmaceutical executives, doctors of pharmacy, professional liaisons, and representatives. Much of this training takes place in the state-of-the-art conference facilities within the Division.

RESEARCH

The Division places a high priority on supporting quality basic clinical and translational research in the five key areas of: gastrointestinal motility; intestinal endoscopy; hepatic biliary disease; gastrointestinal cancer; and inflammatory bowel disease (IBD). Examples of the clinical research projects include:

- esophageal, gastric, and small intestinal and colonic motility function
- the safety and efficacy of GI endoscopy
- new biologic treatments of inflammatory bowel disease
- the relationship between sleep disorders (insomnia) and gastroesophageal reflux disease
- new treatment protocols for Hepatitis B, Hepatitis C, and Hepatocellular cancer.

Jefferson investigators have held a leadership role in the development of:

- capsule endoscopy, endoscopic ultrasound, fine needle aspiration, and endoscopic diagnosis and treatment of pancreatic disease
- evaluating new therapeutic options for patients with inflammatory bowel disease, including the use of anti-tumor necrosis factor strategies.

Basic research in the Division has focused on:

- the regulation of internal anal sphincter smooth muscle tone and the nature of the inhibitory neurotransmitters that regulate intestinal sphincter smooth muscle relaxation
- the genetic mutations that predict cancer risk in patients with benign adenomatous polyps, in conjunction with scientists in the gene discovery core of the **Center for Translational Medicine**. ■

An early gastric cancer (fig. 1) that is discovered at routine upper endoscopy can be precisely staged with endoscopic ultrasound as to the exact depth of invasion into the gastric wall (fig. 2). This early stage cancer was endoscopically resected (fig. 3) and cured without the need for surgery.

HEMATOLOGY and the CARDEZA FOUNDATION for HEMATOLOGIC RESEARCH

Paul F. Bray, MD
Division Director

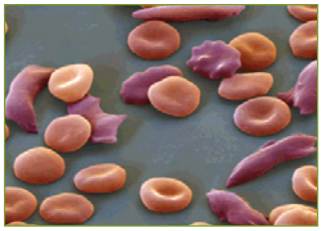
Faculty
Samir Ballas, MD
Jaime Caro, MD
Scott Dessain, MD, PhD
Andres Ferber, MD
Steven McKenzie, MD, PhD
Michael Reilly, PhD
James San Antonio, PhD
Nianli Sang, MD
Barbara Schick, PhD
Jamie Siegel, MD
Saul Surrey, PhD

The Division of Hematology and the Cardeza Foundation for Hematologic Research have a long tradition of clinical and research excellence. Since its creation in 1939, highlights have included former Director Dr. Allan Erslev's discovery of erythropoietin at Jefferson in 1953. The tradition of excellence in the Cardeza continues today with the recent recruitment of Dr. Paul F. Bray to serve as its new Director.

CLINICAL

Clinical faculty in the Division carry out the important component of patient care in programmatic centers of excellence. Faculty also provide consultative support in the hospital for patients with bleeding or clotting, anemia, and other red cell disorders. In addition Hematology plays an important role in the new **Vascular Center**.

- The **Cardeza Hemophilia Treatment Center (CHTC)** has grown steadily, with over 200 patients receiving comprehensive care in the center. Supported by Thomas Jefferson University Hospital, the CDC, the DHHS Maternal and Child Health Bureau, Medicare, and the Commonwealth of Pennsylvania, the Center has become a model for care of patients with inherited bleeding and clotting disorders. The CHTC is an invaluable resource for pursuing clinical and translational research.
- The Cardeza Special Hemostasis and Hematology Clinical Laboratory operates in close cooperation with the Department of Pathology and TJUH. The lab provides state-of-the-art testing for a variety of hematologic diseases and supports growing clinical programs that serve complex and high-acuity patients at Jefferson.



- **The Adult and Pediatric/Adolescent Sickle Cell Centers**, supported by the Commonwealth of PA and the NIH, are run in cooperation with the Division of Internal Medicine and the Department of Pediatrics. A unique aspect of Sickle Cell Care is the Sickle Cell Day Treatment Unit, which is a national model for care and has facilitated the ability to treat sickle cell patients as outpatients – thereby decreasing both the cost and morbidity associated with a hospitalization.
- Jefferson's location next to Philadelphia's Chinatown has provided care for a large number of infants and families with Thalassemia syndromes.

EDUCATION

The major educational foci of the Hematology Division are the fellowship program and the second-year JMC Foundations of Clinical Medicine (FCM) course. The Division continues to direct the joint Hematology/Medical Oncology fellowship program. The Hematology section of the FCM course has been noted for its use of team teaching with Pathology and Pharmacology. Divisional faculty also play major roles in MS, PhD, and MD/PhD student education. Most faculty hold either secondary appointments in basic science departments or membership in graduate groups.

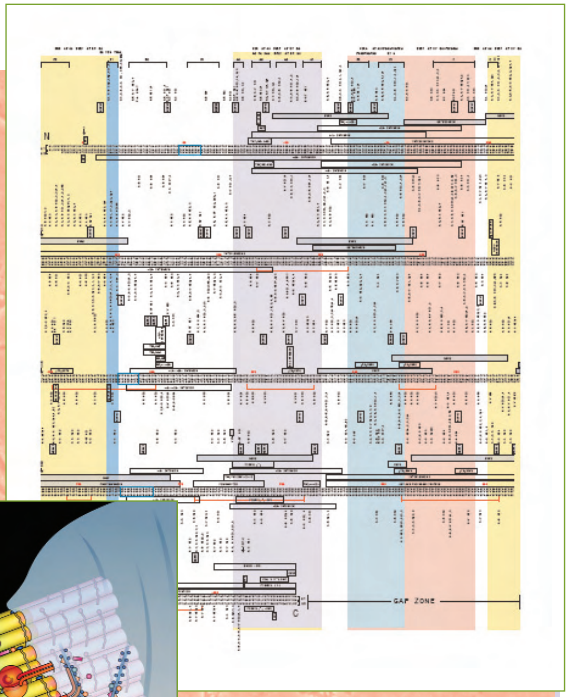
RESEARCH

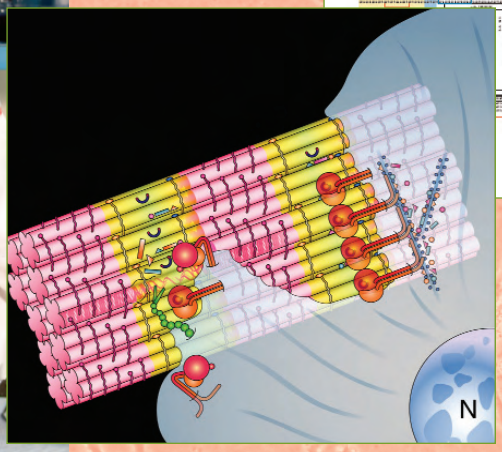
The **Cardeza Center** pursues a broad range of basic and translational research. Ongoing projects include the study of:

- the molecular mechanisms underlying the regulatory pathways of hypoxia-inducible factors

"From our treatment center and clinical labs, to pediatric/adolescent programs, we have the unique ability to treat patients, advance research, and train tomorrow's experts in all aspects of hematologic care."

—Paul F. Bray, MD, Division Director





Insights from experiments creating small blood vessel networks may lead to therapies for improved vascular diseases in humans.

Associate Professor James D. San Antonio, PhD, uses chicken eggs to explore how blood vessel development occurs in the embryo and in human diseases, such as tumor growth. His group created the first "road map" of type-I collagen (inset), a ubiquitous molecule known to stimulate blood vessel development, or angiogenesis. Revelations from the map (top right) – which contains all of collagen's known functional sites and human disease mutations – are being used to identify collagen's features needed for its promotion of angiogenesis.

- the mechanisms by which tumor cells respond and adapt to their microenvironment
- the mechanisms of collagen-induced angiogenesis
- the pathophysiology of immune-mediated platelet disorders, in particular heparin-induced thrombocytopenia and thrombosis
- secretory granules in blood coagulation disorders
- the regulation of the expression of globin genes during human erythropoiesis as well as hemoglobin assembly and degradation
- adhesion molecules and their associated proteins in the regulation of growth and apoptosis of hematologic cells
- human antibodies in thrombosis and autoimmunity
- use of microarray-based approaches to identify genetic mutations in hemoglobin genes
- new apheresis technology
- platelet transfusions in the therapy of hematologic diseases
- new approaches to the early diagnosis and treatment of sickle cell disorders
- genetic variations that affect thrombosis risk and anticoagulant benefit
- gender and hormone effects in hemostasis. ■

INFECTIOUS DISEASES and ENVIRONMENTAL MEDICINE

Kathleen E. Squires, MD
Division Director

Faculty
Rene Daniel, MD, PhD
Joseph DeSimone, MD
Phyllis Flomenberg, MD
David Horn, MD
Robert Measley, MD
Zahida Parveen, PhD
Bonnie Van Uitert, MD
Hui Zhang, MD, PhD

Under the leadership of its new director, Dr. Kathleen Squires, the Division of Infectious Diseases focuses on providing outstanding consultative support for patients treated by the wide array of practitioners at Thomas Jefferson University Hospital, while at the same time bringing the latest technological breakthroughs in HIV/AIDS therapy to the community of Jefferson patients and through outreach activities to a wider community of patients through participation in clinical trials of new therapeutic agents. The Division of Infectious Diseases also supports the activities of two exciting research centers: the **Center for Human Virology**, and the **Center for Biodefense**.

CLINICAL CARE

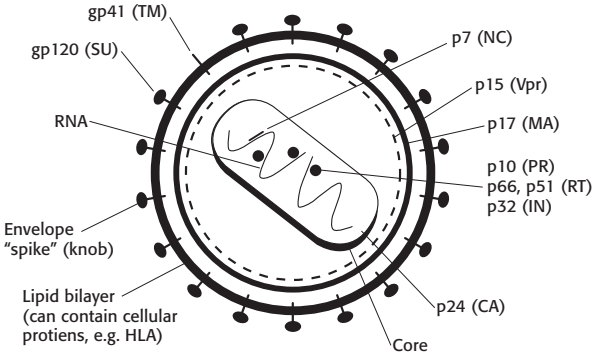
The Division of Infectious Diseases handles nearly 2,000 consults each year with evaluations being performed on patients hospitalized at Jefferson Hospital and Methodist Hospital. Extensive interactions occur between the infectious disease consultation service, the Bone Marrow Transplant Unit, and the Solid Organ Transplant Programs – interactions that have increased substantially over the past five years with the marked growth in those programs. In addition, the Division provides important consultative support for a wide array of medical and surgical patients, as well as providing outpatient treatment for a variety of infectious disease problems including HIV/AIDS. The HIV/AIDS program has increased substantially over the past year, with a greater effort to reach out to the Jefferson community in Center City Philadelphia as well as ongoing collaborative clinical and research efforts with the **Center for Human Virology**.

EDUCATION

The wide array of clinical problems seen by infectious disease specialists at the Thomas Jefferson University Hospital provides an outstanding environment for training medical students, house staff, and clinical fellows. Indeed, the infectious disease consultation service remains a vital and active part for both trainees and pharmaceutical doctoral candidates. Faculty members serve as teaching attendings on the consultation service and the inpatient medical service, and they present lectures throughout the year for residents and students, as well as providing case-based conferences.

"Jefferson brings research breakthroughs in the study of HIV/AIDS to the treatment of patients throughout the region, serving greater numbers each year, as we learn more about how the disease affects women."

— Kathleen E. Squires, MD, Division Director



Above: Structure of HIV. Image from *HIV and the Pathogenesis of AIDS* (2nd ed., Washington, DC: American Society for Microbiology; 1998:9-11).

Left: Gwen Verlinghieri, MSN, RN, CCRP (right), directs the Division's clinical trials focusing on individuals with HIV. A particular focus of the clinical trials is to study the efficacy of antiretroviral therapy in women and other special populations. In late 2006, NIAID awarded Jefferson funding in support of the Quintiles HIV Clinical Trials, with Dr. Kathleen Squires as the administrator for the Philadelphia site.

RESEARCH

The research in the Division of Infectious Diseases encompasses three fundamental areas: clinical research, human virology, and bioterrorism (see page 26).

A unique focus of the clinical research program in the Division of Infectious Diseases is the effects of HIV in women. For example, ongoing research addresses the natural history of HIV infection in women, sex/gender-based differences in response to antiretroviral therapy and adverse events and/or complications of antiretroviral therapy, and the pathogenesis of HIV infection in the female genital tract. In addition, University faculty leadership in numerous national clinical trials has led to opportunities for University physicians to participate in the development and identification of new modalities for treating HIV infection.

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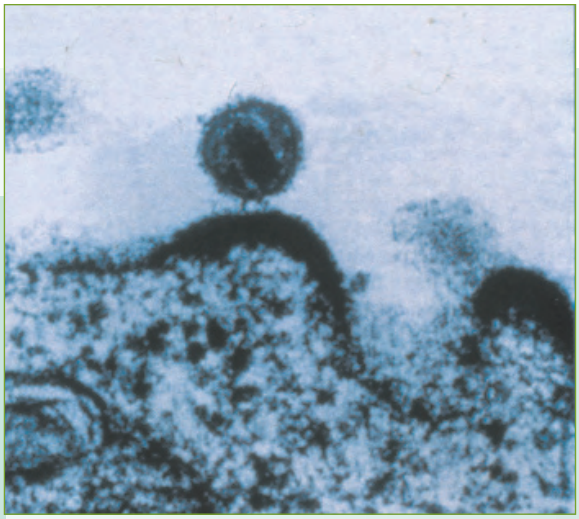
Center for Biodefense

The Center for Biodefense has focused on the pathobiology of biotoxins including botulinum, pox viruses, and anthrax. Known internationally for its expertise in botulinum toxin, the Center has focused not just on defining the mechanisms by which these agents exert their physiologic effects, but also has devised novel strategies for developing vaccines that could potentially protect the population. Supported by both Federal and non-Federal sources, the Biodefense program is housed in one of only a few federally authorized toxin facilities in the U.S.

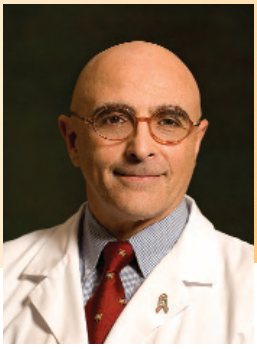


The number of people newly infected with HIV across the globe continues to rise, and was estimated to have risen by 4.3 million in 2006.

Above: An electron micrograph of the HIV virus budding from a cell. Photo courtesy of A. S. Fauci, Laboratory of Immunoregulation, NIAID.

Center for Human Virology

The Center for Human Virology is nationally recognized for its expertise in areas such as viral transmission, transcriptional control, residual disease and latency, neural handling of viral genome, vaccine design, and gene therapy. In collaboration with members of the Department of Microbiology, Center scientists pursue a multi-pronged approach to understanding the mechanisms that regulate how the HIV virus and other viruses integrate into host cells and avoid normal immune pathways. In addition, Center scientists are working to develop novel means of clearing HIV viruses, including the use of small interfering RNAs.



INTERNAL MEDICINE

Geno Merli, MD, FACP
Ludwig A. Kind Professor of Medicine, Division Director and Vice Chair for Clinical Affairs

Faculty
David J. Axelrod, MD
Karl T. Benedict III, MD
John W. Caruso, MD
James E. Davis, MD
Gretchen A. Diemer, MD
James A. Fink, MD
Marvin E. Gozum, MD
Mark G. Graham, MD, FACP
Daniel K. Holleran, MD, FACP
Richard H. Katz, MD
Bo Soo Kim, MD
Barbara S. Knight, MD
Janine V. Kyrillos, MD
Anthony J. Macchiavelli, MD
Rebecca M. Maury, MD
L. Bernardo Menajovsky, MD, FACP
Gregory Mokrynski, MD
Ronald E. Myers, PhD
Reetika K. Padha, MD
Kyong bin Park, MD, PhD
Susan L. Rattner, MD, FACP
Jeffrey M. Riggio, MD
Jessica Salt, MD
Richard G. Santamaria, MD
David L. Shklar, MD
Aleksandr Shpigel, MD
Thomas J. Sinclair, MD
John M. Spandorfer, MD, FACP
Elizabeth Teperov, MD
George L. Tzanis, MD
Kathryn E. Ussai, MD
Jenny Wang, MD
Susan E. West, MD, FACP
G. Robert Witmer III, MD
D. Diana Yin, MD
Barry S. Ziring, MD, FACP

The general medical division of the Department of Medicine delivers both primary and specialized clinical care. The Division has multiple practice sites in Philadelphia and New Jersey that serve adult healthcare needs of patients with acute and chronic problems. Physicians have expertise in the diagnosis and management of complex medical problems, including multi-system diseases.

The main responsibilities of the Division are to provide state-of-the-art medical care to patients in the outpatient primary care setting, the inpatient hospital setting, and the hospitalized medical patient on surgical services. There is a strong emphasis on preventive care as well as counseling and education. Specific areas of clinical expertise include assessment and management of thromboembolic disease, sickle cell disease, nursing home care, peripheral arterial disease, women's health, perioperative medical consultation, preventive healthcare, and care for the Chinese, Vietnamese, and Korean patients in Philadelphia. The Division is also committed to providing the highest level of academic education to the JMC students and the Medical residents of Thomas Jefferson University Hospital, so that trainees can learn the importance of tracking the entire life cycle of individual diseases, and actively participate in clinical and health services research.

CLINICAL

Members of the Division provide clinical care at a variety of sites including Center City Philadelphia; South Philadelphia; Woodbury, NJ; Main Line Philadelphia; Havertown, PA; and Marlton, NJ.

In addition:

- Physicians provide care to Chinese, Vietnamese, and Korean patients with specialized facilities that provide care in these patients' native languages.
- The Jefferson Preventive Healthcare Program provides comprehensive physical examinations and written reports for patients.
- The group collaborates with individuals in hematology at the Sickle Cell Outpatient Clinic.

Jeff Riggio, MD, reviews radiology studies and adds pertinent information to the Signout program, which facilitates the transfer of care of a patient and is accessible on the hospital's wireless network using a PDA (top right).

- The Division has particular expertise in the pre- and post-operative care of patients and has developed unique programs in conjunction with the Departments of Surgery and of Neurological Surgery programs that have significantly impacted length of stay and patient satisfaction.
- With the ever-increasing medical need for the aged in Philadelphia and its suburbs, members of the

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INTERNAL MEDICINE *continued*

The Jefferson Hospitalists are physicians devoted exclusively to caring for patients during their hospital stays. The program represents a progressive model of care involving co-management, has decreased patient stays by half a day on average, and reduces the number of pre-operation visits to the hospital. Seated are Kim Covington, CRNP (left), and Elizabeth Teperov, MD. Standing (left to right) are: Jessica Salt, MD; Jeff Riggio, MD; Bo Kim, MD; Reetika Padha, MD; Thomas Sinclair, MD; Geno Merli, MD; James Davis, MD; James Fink, MD; Gretchen Diemer, MD; and Jenny Wang MD.

Division provide patients with outpatient primary care and home services for nursing home and assisted living facilities in both New Jersey and Pennsylvania.

- Attending physicians participate in the education of residents and students in the outpatient residents' clinic as well as serving on the non-teaching inpatient medical service.
- The in-hospital clinical program has recently been restructured through the development of a hospitalist program to provide care for the ever-increasing number of unassigned and uninsured patients in Center City Philadelphia. Furthermore, the development of a non-teaching service provides an opportunity to separate patient care and to ensure that that patients with the highest acuity are covered effectively by the resident service.
- Most recently, members of the Division have begun the development of a Palliative Care Program in conjunction with the Department of Family and Community Medicine.

EDUCATION

Members of the Division are largely responsible for the clinical training of medical students and residents. Each junior medical student rotates through the medical services at Jefferson Hospital while also spending time at one of the Jefferson affiliates. With over 250 students in each class, each

"We place great emphasis on preventative care, counseling and education so that patients have the tools they need to stay healthy. The Vascular Disease Center and Hospitalist Program are evidence of our progressive initiatives on this front."

—Geno Merli, MD, FACP, Division Director

Center for Vascular Diseases

Integrating the Departments of Neurology, Radiology, Cardiology, and Vascular Surgery, the Center for Vascular Diseases offers a multidisciplinary approach to the diagnosis, management, and treatment of vascular diseases and thrombotic disorders. Led by a team of Internal Medicine physicians, the Center is distinguished from others in the area by its research functions and educational programs.

member of the Division has substantial teaching responsibilities. In addition, the Division is responsible for residency training on the internal medicine hospitalist service, as well as overseeing the education of residents while they rotate through other medical services and in the outpatient resident clinic.

The new **Hospitalist Service** was designed to improve patient care and to improve the educational experience for the house staff. Individual Division members have primary responsibilities in the Jefferson Clinical Skills Laboratory that takes advantage of state-of-the-art simulation technology to train the next generation of clinicians.

RESEARCH

The Division participates actively in research projects, many of which focus on outcomes research, the Center for Research in Medical Education and Healthcare, and are done in collaboration with the Department of Health Policy. Members of the Division also participate actively in studies of anti-thrombotic therapy for patients undergoing surgical procedures, patients with atrial fibrillation, and for non-hospitalized patients at risk for developing venous thrombosis. Leaders in computerization for both computerized physician ordering and electronic health records, Division members have undertaken clinical studies to assess the benefits of computerization on patient care delivery and the education of house officers. ■

NEPHROLOGY

Joseph Y. Cheung, MD, PhD
Division Director

James F. Burke, MD
Sonia Camphor, MD
Steven Dunn, BS
Bonita Falkner, MD
George C. Francos, MD
Rakesh Gulati, MD
Kumar Sharma, MD

Over the past two decades, the Renal Division has grown in all areas of clinical nephrology including the development of an active renal transplant program and the opening of centers focused on the treatment of Chronic Kidney Disease, Diabetic Kidney Disease, and Early Renal Insufficiency. Members of the Division have participated actively in the clinical and educational activities of the Department and have pursued exciting clinical and translational research. These activities will likely expand under the leadership of the new Director, Joseph Y. Cheung, MD, PhD.

CLINICAL

The Division oversees an active outpatient and inpatient practice located in Center City as well as in Voorhees, NJ. Jefferson nephrologists have a busy dialysis program at the Center City campus but also care for patients at other dialysis centers in the city. Jefferson has also had an active renal transplant program for many years. Unique clinical facilities include the **Center for Diabetic Kidney Disease**, the **Center for Chronic Kidney Disease**, and the **Early Renal Insufficiency Clinic**. These outpatient facilities provide care for an important and growing segment of the population and provide a unique setting in which faculty members can carry out investigator-initiated and industry-sponsored clinical trials. For example, ongoing investigator-initiated projects assess the optimal hemoglobin concentration in patients with kidney disease and anemia, and the role of ACE inhibitors versus angiotensin receptor blockers alone, versus in combination in the treatment of patients with proteinuria.

Dr. George Francos is among the Jefferson physicians to treat patients in the Acute Dialysis Unit at the Thomas Jefferson University Hospital.

EDUCATION

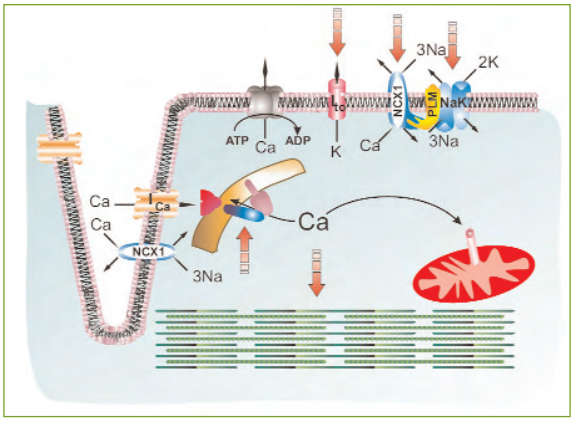
The Division plays an active role in the teaching of medical students, residents, and fellows. Clinical teaching occurs in the physical diagnosis course, ward rounds, student rounds, and the residents' noon conference. In addition, an extensive array of fellows conferences provides didactic educational opportunities for the fellows, while at the same time providing review for the faculty. The Nephrology Division also participates in the educational undertakings of the School of Graduate Studies.

RESEARCH

Extramurally funded research in the Division centers around state-of-the-art clinical research focused on hypertension and translational research aimed at gaining a better understanding of diabetic renal disease.

In the area of hypertension, ongoing research examines the role of relative androgen excess among women with insulin resistance and endothelial dysfunction, assessing pre-clinical genotypic and proteomic markers that can predict the occurrence of nephropathy in African-Americans, and investigating the utility of genotype in predicting risk and outcomes in patients with hypertension.

"Our one-of-a-kind clinical facilities allow us to respond to a variety of complex conditions. The Center for Novel Therapies in Kidney Disease is our latest patient-oriented effort to make a difference in people's lives." –Joseph Cheung, MD, PhD, Division Director



Scientists in the Division of Nephrology are elucidating the mechanisms by which two important ion transporters, the sodium pump (Na-K) and sodium-calcium exchanger (NCX1), are regulated by a novel protein called phospholemman (PLM). This has direct impact on therapy of hypertension and heart failure.

Center for Novel Therapies in Kidney Disease

Diabetes is the leading cause of kidney disease in the United States, and it continues to increase every year. A Center for Diabetic Kidney Disease at Thomas Jefferson University was initiated in 1996 to provide a resource for patients and primary care providers through education and treatment approaches to optimize the care of all diabetic patients. Renamed the Center for Novel Therapies in Kidney Disease in late 2006, the Center remains committed to understanding kidney disease at the clinical and basic science level. In addition, this center translates laboratory results directly to improvement in patient care.

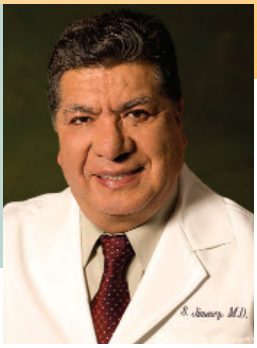
Translational medicine studies focus on patients with diabetic kidney disease. Using a multidisciplinary approach, investigators are attempting to assess the efficacy of maintaining optimal blood pressure and glycemic control as well as assessing the viability of anti-fibrotic therapy in reducing renal scarring and function in diabetic nephropathy.

In the basic laboratories, investigators are assessing the role of the key pro-fibrotic cytokine transforming growth factor-beta (TGF-ß) in the progression of kidney disease, primarily diabetic nephropathy, and attempting to identify new mouse models of progressive diabetic nephropathy.

The members of the Division of Nephrology also pursue a large number of Phase I-III multi-center industry-sponsored clinical trials, assessing the efficacy of new anti-hypertensives, anti-rejection therapy, calcium regulators, and strategies for treating anemia in the patient with chronic renal disease. ■

Bonita Falkner, MD (left), and other researchers in the Division of Nephrology are working in collaboration with the Genomics Laboratory in the Center for Translational Medicine to investigate possible genotypes linked with phenotypic types of hypertension such as salt-sensitive hypertension, obesity hypertension, and hypertension among diabetics.

RHEUMATOLOGY



Sergio A. Jimenez, MD
Division Director

Faculty
John L. Abruzzo, MD
Paul J. Christner, PhD
Chris Derk, MD
Oscar Irigoyen, MD
Nora Sandorfi, MD
J. Bruce Smith, MD
Charlene J. Williams, PhD

The Division aims to provide the highest level of patient care in the broad area of the rheumatic diseases, including diagnosis and treatment of patients with osteoporosis. The Division has become recognized as a premier center for diagnosis, treatment, and management of the rheumatic diseases in the Delaware Valley as well as nationally and internationally. The faculty also conducts the highest quality of research in the basic sciences and clinical investigation relevant to the rheumatic diseases.

CLINICAL CARE

The Division receives referral patients from the tri-state area, as well as from other states and numerous countries in Central and South America and overseas. The Centers of Excellence (Scleroderma, Lupus, Osteoporosis and Rheumatoid Arthritis) created within the division have become powerful magnets for attracting patients seeking treatment and participation in the numerous basic science and clinical research studies conducted by the faculty. Clinical activities have been expanded by the establishment of facilities for intravenous infusions of anti-TNF-å drugs for therapy of rheumatoid arthritis.

EDUCATION

The Division aims to teach the basic principles of rheumatology practice to medical students, residents, postdoctoral Rheumatology Fellows, and physicians in general practice and internal medicine. The educational activities involve both clinical aspects of the rheumatic diseases as well as the immunologic, biochemical, and molecular mechanisms involved in their pathogenesis and treatment. Faculty members participate in lectures for medical students as well as teach attending rounds on the general medical service. They also serve as preceptor in the ambulatory rotation for third-year residents in the Internal Medicine program rotating in their elective through the division.

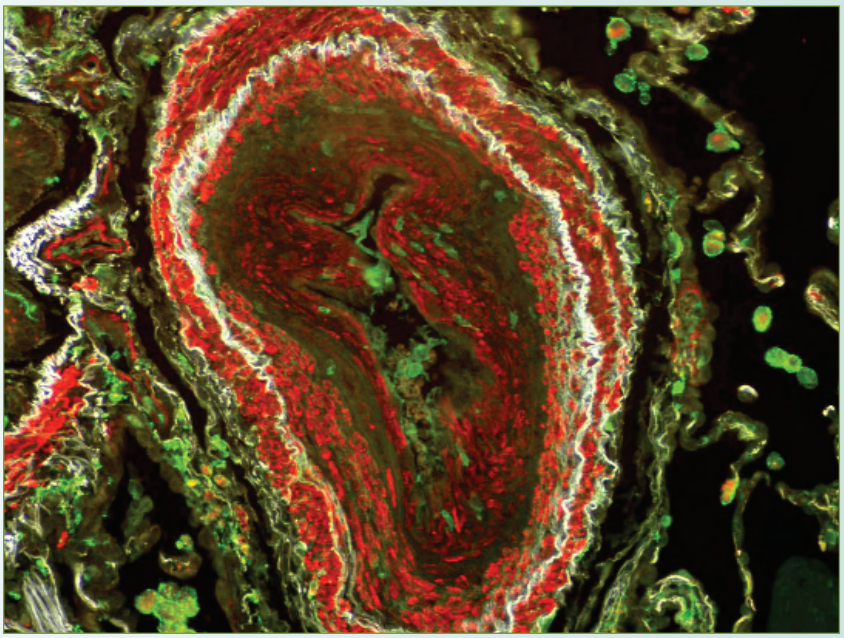
RESEARCH

The research activities both at the basic science and clinical investigation levels have placed Jefferson among the top rheumatology divisions in the country, as evidenced by the number of research papers published by the faculty. The Division has received substantial extramural funding for both basic and clinical research, from the National Institutes of Health, the Arthritis Foundation, the Lupus Foundation, the Scleroderma Foundation, and numerous biotechnology and pharmaceutical companies. The clinical research activities have also expanded substantially.

The multidisciplinary interactions of members of the division in basic science research activities have led to the establishment of a Program Project that includes the Departments of Orthopedic Surgery and Dermatology and Cutaneous Biology. Collaborative effort has led to the establishment

"From arthritis to scleroderma, we treat patients from the region and the continent and are committed to forward-thinking research studies at our centers of excellence."

– Sergio A. Jimenez, MD, Division Director



Systemic Sclerosis is an autoimmune disease characterized by tissue fibrosis and a severe fibroproliferative vasculopathy, the causes of which are as yet unknown. It is fatal for patients affected. Jefferson faculty member Charlene Williams, PhD (left), and her collegues have recently demonstrated that allograft inflammatory factor -1 (AIF-1), a protein known to be upregulated during chronic cardiac allograft rejection, is highly expressed in the skin and in the lungs of patients with Systemic Sclerosis and participates in the pathogenesis of the fibroproliferative vasculopathy. The figure (above) shows a pulmonary artery of a patient who died from Systemic Sclerosis-related pulmonary hypertension. Vascular smooth muscle cells are stained red whereas AIF-1 positive cells are stained in green. Note the presence of AIF-1 positive cells within the pulmonary artery and throughout the lung tissue.

of an NIH-funded Training Grant in Molecular Rheumatology and Orthopedic Science and includes the participation of faculty members from the Departments of Dermatology and Cutaneous Biology, Genetics and Immunology, Orthopedic Surgery, Pathology and Cell Biology, and Biochemistry and Molecular Pharmacology. Active research projects include:

- Molecular Biology of Heritable Osteoarthritis
- Regulation of Chondrocyte Gene Expression
- Biochemical and Vascular Alterations in Scleroderma
- Identification of the Genetic Mechanisms Responsible for the Alterations in Connective Tissue Metabolism
- Molecular Biology of Familial Chondrocalcinosis
- The Role of COMP and its Mutations in Modulating Chondrogenesis
- The Structure and Function of ANK.

CENTER FOR

Translational Medicine

Walter J. Koch, PhD, FAHA
W. W. Smith Professor of Medicine, Director, Center for Translational Medicine, and Vice Chair for Research

Faculty
Tung O. Chan, PhD
J. Kurt Chuprun, PhD
Andrea D. Eckhart, PhD
Thomas Force, MD, PhD
Paolo Fortina, MD, PhD
Ehre Gao, MD, PhD
Patrick Most, PhD
Karsten Peppel, Phd
Joseph E. Rabinowitz, PhD
Zhong Tang, PhD
Donna S. Woulfe, PhD

The Center for Translational Medicine (CTM) opened its doors in November 2003 and construction was completed in November 2005. Encompassing two floors of the original College Building at 1025 Walnut Street, the CTM serves as a departmental focal point for multi-disciplinary and collaborative cutting-edge research and as a launching point for the translation of basic research findings to patient care. Although only some are housed in the CTM facility, all of the Department's investigators can be members of the Center.

The CTM is built around a platform of core facilities:

- Genomics
- Gene Transfer
- Molecular Imaging
- Animal Models of Human Disease and Cardiac Physiology
- Stem Cell Biology

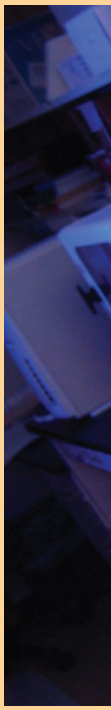
Each core serves Center members as well as investigators across the University. CTM members hold faculty positions in the Department of Medicine as well as in basic research departments in the Jefferson College of Graduate Studies.

While the Center has been highly successful in obtaining federal, state, and foundation funding, the past year was highlighted by the endowment of two laboratories, thanks to generous gifts from friends and patients: **Eugene Feiner Laboratory for Vascular Biology and Thrombosis** and the **George Zallie and Family Laboratory for Cardiovascular Gene Therapy**. The year was also highlighted by the recruitment of Thomas Force, MD, PhD, as Clinical Director for the Center, to enhance the ability to translate new findings at the bench to the patient's bedside.

RESEARCH

The research activities of the Center for Translational Medicine are broad and multi-focal. The CTM has particular interest and expertise in the area of heart muscle disease:

- One group of investigators is interested in the role of selective subtypes of the P13K/Akt survival protein and how signaling through this pathway influences the heart's response to stress. This group is also interested in the inter-relationship between adenosine signaling and cardiac response to hemodynamic load. These studies take advantage of the development of unique transgenics with controlled expression, as well as gene knock-out models
- A second group focuses on a family of kinases known to regulate ARs and other G protein-coupled receptors (GPCRs) known as the



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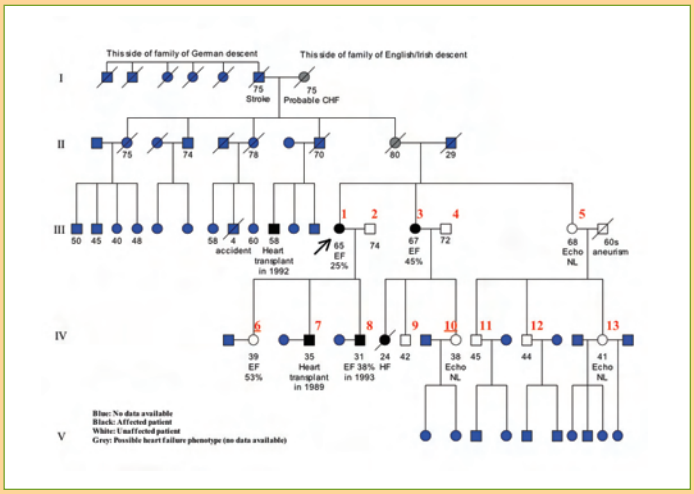
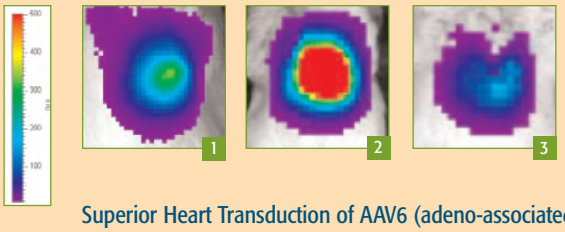
"CTM serves as a departmental focal point for multidisciplinary and collaborative leading-edge research and as a launching point for the translation of basic research findings to patient care." – Walter J. Koch, PhD, FAHA, Director

GPCR kinases (GRKs). These GRKs appear to be critically involved in normal and failing heart function, and investigators are assessing the effects of manipulating their expression utilizing either novel genetically engineered mouse models or adenoviral-mediated myocardial gene delivery. Indeed, a major focus of this laboratory is to utilize gene therapy protocols that incorporate novel intracoronary gene delivery technology to modulate heart muscle disease.



The Center's Clinical Genomics Core is engaged in studies to identify the disease-causing mutation in an extended pedigree with a dominant inherited form of heart disease.

- A third heart muscle laboratory has as its primary focus a better understanding of the role of kinases in the heart's response to injury and hemodynamic stress. Novel kinase inhibitors that have come out of this laboratory have salutary effects on the heart, but also have interesting effects on malignant tumors. These results are now being translated to the clinical arena.



Superior Heart Transduction of AAV6 (adeno-associated virus serotype 6). Three weeks after intra-coronary injection of AAV6 and AAV9 (1.3 x 1010 particles) in mice, or AAV6 (1 x 1011 particles) in rats, images were acquired 10 minutes after injection of the substrate. Each image is viewed at the same maximum/minimum intensity scale (left).

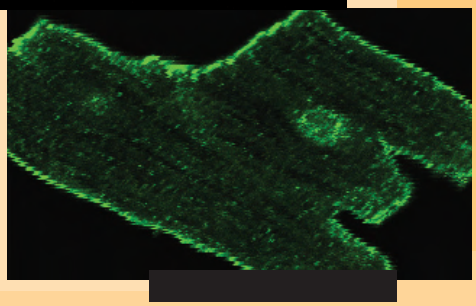
Core Facilities

Genomics Core

Since the Genomics Core was opened in the newly renovated CTM, it has focused on providing customers with a variety of methods for characterizing nucleic acid variation, including single-base mismatch (SNPs/mutations), microsatellites, insertions/deletions, gene copy number including loss of heterozygosity (LOH), and mRNA profiling of differentially expressed genes.

Additional technologies recently introduced in the Genomics Core include combinatorial sequencing-by-hybridization (cSBH) and use of gold nanoparticle with Raman spectroscopy. cSBH is an indirect sequencing method where two sets of universal short probes are used to generate a complete sequence readout of a template PCR product.

"The endowment of two new laboratories has enabled us to take the Center's multidisciplinary research to new levels, which we hope in turn will benefit the researchers and clinicians throughout the university and beyond." –Walter J. Koch, PhD, FAHA, Director



Animal Models of Disease and Cardiac Physiology Core

This Core – headed by Dr. Koch and maintained by Ehre Gao, MD, PhD – is set up to provide support for animal studies involving cardiac diseases and measuring in vivo cardiac physiology. Over the past year this Core has supported several research projects including:

- assessing the effects of cardiac delivery of novel AAV vectors.
- physiology support for novel transgenic mice over-expressing adenosine receptors.
- providing animal model development of cardiac ischemia/reperfusion and cardiac physiology for research projects including mouse and rat models.

EDUCATION

In June 2005, the CTM sponsored the 1st Annual Symposium in Translational Cardiovascular Medicine. The symposium included invited speakers and members of the CTM and provided an opportunity for postdoctoral fellows to compete in poster and abstract competitions.

The members of the CTM participate in the educational activities of the Department of Medicine and the University at multiple levels. CTM members participate actively in the formal lecture series of the many Departments of the School of Graduate Studies, train numerous graduate students and pre- and postdoctoral fellows in their laboratories, and participate in the educational activities of the Divisions of Pulmonary and Critical Care Medicine and Cardiology. In addition, CTM members present "translational medicine" conferences as part of the weekly Department of Medicine Grand Rounds schedule and as part of residents' noon conferences. Faculty members actively participate in courses at both Jefferson and the University of Pennsylvania, instruct physiology courses in the Jefferson Medical College, and dedicate time once a month to ongoing research within the department to introduce key research projects to the medical students and house staff.

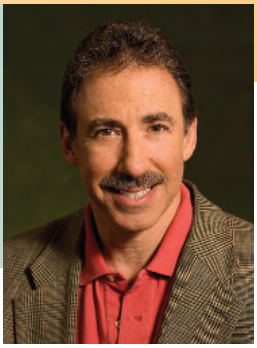
Left: Andrea Eckhart, PhD, heads the Eugene Feiner Laboratory for Vascular Biology and Thrombosis, where much of the research focuses on hypertension, and especially how receptors change their signaling in vascular smooth muscle under disease conditions.

Above: Myocytes (heart cells) are central to the various research being done in the George Zallie and Family Laboratory for Cardiovascular Gene Therapy.

UNIVERSITY COLLABORATION:

Department of Clinical Pharmacology and Experimental Therapeutics

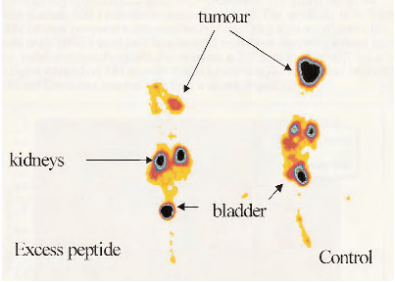
Division of Clinical Pharmacology, Department of Medicine



Scott A. Waldman, MD, PhD, FCP
Chair, Clinical Pharmacology

Faculty
Carol Beck, PhD
Inna Chervoneva
Constantine Daskalakis, ScD
Howard E. Greenberg
Dennis Gross, MSc, PhD
Walter W. Hauck, PhD
Terry Hyslop, PhD
Walter K. Kraft
Howard A. Levy
Giovanni Pitari
Stephanie Schulz, PhD

The Division of Clinical Pharmacology, a long-time Division in the Department of Medicine, filled a critical need in the School of Medicine by becoming the Department of Pharmacology and Clinical Therapeutics in 2005, chaired by Scott A. Waldman, MD, PhD, FCP. Although this shift markedly strengthened the Medical College, the Clinical Pharmacology program has also remained as a division within the Department of Medicine to effectively support the many ongoing projects that link residents and fellows with the clinical research training programs offered in Clinical Pharmacology. In particular, residents and fellows in the Department of Medicine participate in the NIH-funded K30 Training Program in Human Investigation. This program has been an important educational opportunity for residents in Internal Medicine. In addition, the Clinical Pharmacology Division houses the Biostatistics Section, a key collaborator in many of the ongoing research activities within the Department of Medicine.



The two images here represent mice growing human colorectal tumors in their flanks. The mouse on the right received a newly discovered molecular targeting agent that delivers radioactive imaging therapeutics to cancer cells, but not normal tissues. The targeting agent is a bacterial toxin that is a major cause of diarrhea, by binding to a protein normally made in intestinal cells or colorectal cancer cells. The mouse on the left is the control, which demonstrates the specificity of targeting.

EDUCATION

One of only nine NIH-funded training programs in clinical pharmacology in the country and one of only three programs accredited by the American Board of Clinical Pharmacology, the Training Program in Clinical Pharmacology trains a total of three fellows per year, with a total enrollment of twelve trainees. The NIH Program in Human Investigation, also funded through the National Institutes of Health, involves both didactic and research components over two years resulting in a master's degree in Human Investigation. Approximately thirty trainees participate in this program, many coming from the Department of Medicine. The Clinical Pharmacology Program also supports the training of a large number of master's and doctoral degree students.

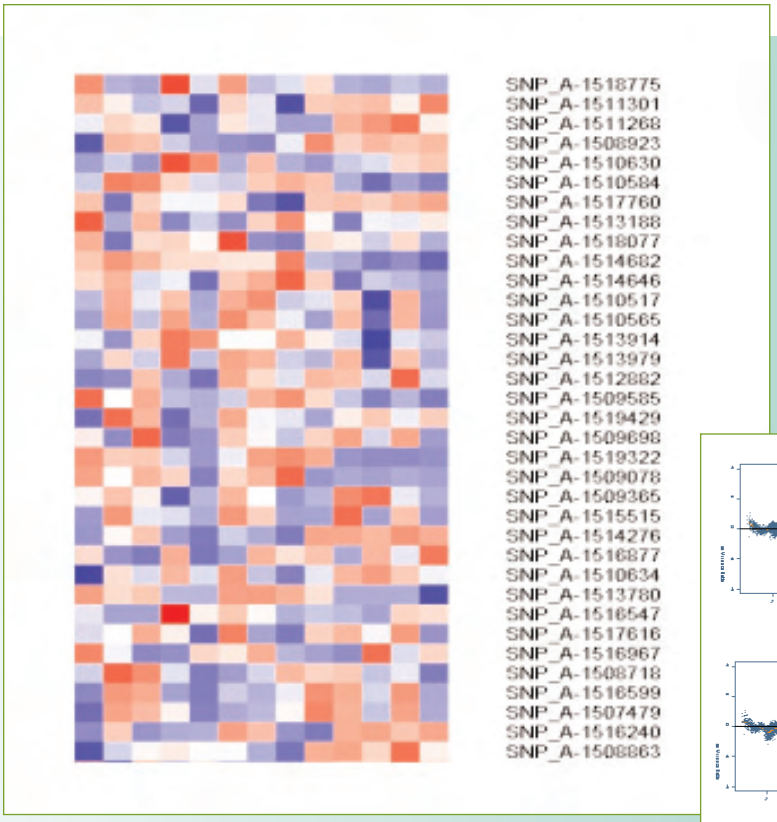
RESEARCH

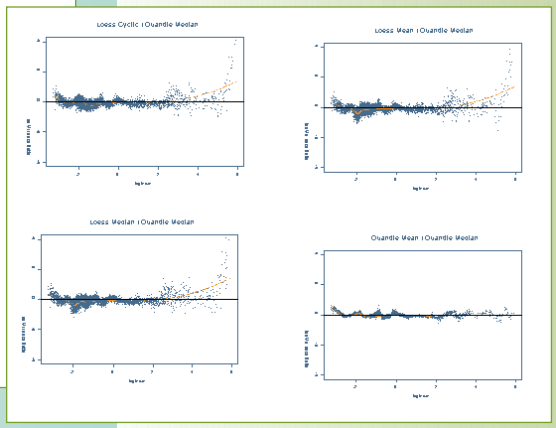
The Clinical Pharmacology program focuses on basic and applied research, with a small core nucleus of the faculty pursuing laboratory-based research. Members of the department pursue collaborative projects with many of the other basic science departments, as well as with the Department of Medicine, the Kimmel Cancer Center at Jefferson, and the Departments of Surgery, Pathology, and Radiology. In addition, active research collaborations occur within the

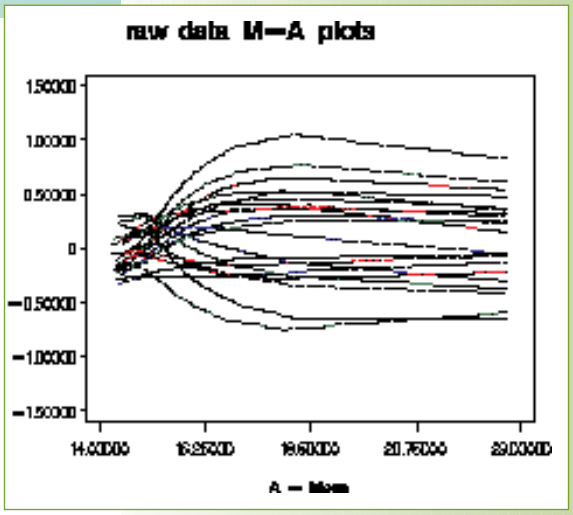
"Members of Clinical Pharmacology pursue collaborative projects with many of the other basic science departments as well as with the Department of Medicine, the Kimmel Cancer Center, and the Departments of Surgery, Pathology, and Radiology." – Scott A. Waldman, MD, PhD, FCP, Chair, Clinical Pharmacology

BIOSTATISTICS CORE

The Division of Biostatistics provides assistance with analysis of genome-wide association studies. These figures show examples of recent collaborative projects. The upper-left panel represents a single nucleotide polymorphism (SNP) array analysis, in which samples are on the horizontal axis, and SNPs are on the vertical axis, and red and blue represent under-expression and over-expression, respectively. Following clockwise, the next figure represents normalization of data from microarray experiments, while the figure in the lower-right represents microarray data prior to normalization.







sphere of clinical research. The Biostatistics Core for the institution is located within the Clinical Pharmacology program and provides a campus-wide resource for data management, data analysis, and development of innovative methodologies for genomic and proteomic analysis. The Clinical Pharmacology faculty also direct the Clinical Research Facility, which houses sixteen inpatient and six outpatient beds and provides an opportunity to pursue contract research studies from both primary and secondary sponsors. ■

UNIVERSITY COLLABORATION:

Department of Medical Oncology

Division of Medical Oncology

Neal Flomenberg, MD
Chair, Medical Oncology

Rita S. Axelrod, MD
David Berd, MD
Emmanuel C. Besa, MD
Bruce Boman, MD
Matthew Carabasi, MD
Robert E. Enck, MD
Kendra J. Feeney, MD
Joanne E. Filicko, MD
Jongming Li, MD, PhD
Michael J. Mastrangelo, MD
Edith P. Mitchell, MD
Bijoyesh Mookerjee, MD
Gloria J. Morris, MD, PhD
Ron Myers, MD
Alvaro Pereira-Rico, MD
Takami Sato, MD
John L. Wagner, MD

In 2005, the Division of Medical Oncology achieved Departmental status with the re-organization of the overall cancer program into the Departments of Clinical Oncology, Cancer Biology, and Radiation Oncology. These changes came about at the time of the recruitment of Richard Pestell, MB, MD, PhD, as the new Director of the Kimmel Cancer Center at the Thomas Jefferson University.

Despite its move to Departmental status, the clinical oncology program maintains close collaborative ties with the Department of Medicine, and the two Departments maintain numerous joint and collaborative programs. Among these is the joint Hemetology/Oncology fellowship program maintained by the Division of Hematology and the Department of Medical Oncology. In addition, the inpatient clinical services of Medical Oncology are staffed by Department of Medicine residents – who also provide coverage in our highly successful Bone Marrow Transplant Unit. Perhaps the most important collaboration between the two Departments exists in the day-to-day care of patients with cancer; many of these patients receive both initial care as well as intervening therapies through the collaborative efforts of physicians in the two Departments. For example, the clinical programs in Interventional Gastroenterology and Interventional Bronchoscopy play important roles in the care of patients with gastroenterologic or pulmonary tumors, while faculty members of the Division of Infectious Diseases work closely with their colleagues in Bone Marrow Transplantation to provide state-of-the-art care for immune-suppressed patients. These types of collaborative efforts are not new, as the Department of Oncology's international recognition for care of patients with melanoma comes at least in part from innovative collaborations with physicians in the Wills Eye Hospital.

One of the most interesting collaborative activities between the Department of Medicine and the Department of Oncology has come from the recent findings by scientists in the Department's Center for Translational Medicine that many of the new anti-cancer therapies have profound and often harmful effects on the heart. This observation comes from the recognition that many of the biological pathways that allow tumor cells to grow also protect the tissues of the heart. Therefore, potent anti-cancer drugs can inhibit the ability of

"Perhaps the most important collaboration between the Department of Medicine and the Department of Medical Oncology exists in the day-to-day care of patients with cancer."

— Neal Flomenberg, MD, Chair, Medical Oncology

the heart to protect itself – resulting in cardiac damage. Thus, Jefferson has placed itself in the forefront of research centers that are studying the biologic bridges between cancer and heart disease.

The relations between the Department of Medicine and the Department of Medical Oncology continue to expand, despite the recent restructuring, as they pursue their mutual interests of outstanding clinical care, education, and research. ■

Center Director Neal Flomenberg, MD (center), works with nurses on Jefferson's Bone Marrow Transplant (BMT) and Oncology units to identify procedures that would benefit from common protocols in treating patients with neutropenia, which weakens the immune system due to low numbers of white blood cells called neutrophils. Improved patient care has been shown to be the result of greater uniformity among the units.

SUPPORTING the FUTURE OF MEDICINE

The Department of Medicine has been fortunate to have a group of patients and friends who are dedicated to supporting the academic programs and research activities of the Department. These individuals recognize the importance of philanthropy in our ability to fulfill our core missions, and their generosity has led to the recent development of major new facilities for novel investigations and clinical care.

Gene Feiner (above, left, with Dr. Arthur Feldman) met Geno Merli, MD, and Howard Weitz, MD, some ten years ago, and has been a patient and friend of Jefferson ever since. Mr. Feiner's generosity has made possible the construction of the Center for Translational Medicine's Eugene Feiner Laboratory for Vascular Biology and Thrombosis, headed by Andrea Eckhart, PhD (see page 34), located on the fourth floor of the College Building at 1025 Walnut Street in Philadelphia. An individual with a long history of philanthropy in the Philadelphia community and abroad, Mr. Feiner sees his interest in the Center for Translational Medicine's cutting-edge research as a vital link between the visions of today and the possibilities for the patients of tomorrow.

The generosity of George Zallie (center, with Walter Koch, MD, PhD, left, and his physician Howard Weitz, MD, right) has made possible the Center for Translational Medicine's George Zallie and Family Laboratory for Cardiovascular Gene Therapy, also on the College Building's fourth floor. This laboratory supports the work of Dr. Koch involving animal studies and measuring in vivo physiology (see page 36). Mr. Zallie is particularly pleased to augment his support for cancer as well as programs in his native South Jersey by supporting the progressive heart failure research being done at the Center. "I have referred many people to the program at Jefferson, and I am confident that the research they are doing will make a tremendous difference in generations to come," he says.

The Thomas Jefferson University Hospital's Medical Respiratory Intensive Care Unit (MRICU) will receive a new look thanks to a generous gift from Evelyn R. Tabas of Haverford, PA. Ms. Tabas recently donated $1 million to Jefferson in honor of her late husband Daniel M. Tabas, a longtime friend of the hospital. The gift will provide the necessary funding for the renovation, which is to include an expanded nursing station and patient waiting room (shown above), enhanced patient rooms, and a new family and physician consultation room.

Thomas Jefferson University
Jefferson Medical College
Department of Medicine House Staff 2006–2007

Chief Residents	Medical School
Stuart Gould, MD	University of Vermont
Bryan Kavanaugh, MD	Georgetown
Ubaldo Martinez, MD	Universidad Complutense de Madrid

Third-Year Residents	Medical School
Carol Alvarado, MD	Universidad de Costa Rica
Adam Bates, MD	University of Vermont
Raman Battish, MD	Jefferson Medical College
Jason Bradley, MD	Drexel University
Howard Brumberg, MD	St. George's University
Bonnie Callahan, MD	Jefferson Medical College
Kimberly Campbell, MD	Jefferson Medical College
Amy Chang, MD	Temple University
Siu Lai Cheng, MD	Drexel University
Eric Choi, MD	Temple University
Pamela Cines, MD	Temple University
Emanuel Chryssos, MD	St. George's University
Michael Cohen, MD	University of Miami
Genevieve Everett, MD	Jefferson Medical College
Nicole Farmer, MD	Howard University
Lax Gadde (until 12/31)	Osmania Medical College, India
Taki Galanis, MD	Jefferson Medical College
Jamie Garfield, MD	St. George's University
Leyla Ghazi, MD	George Washington University
Mary Halak, MD	Jefferson Medical College
Brandy Kaneshiro, MD	Drexel University
Joanna Kipnes, MD	Jefferson Medical College
Sandy Kotiah, MD	SUNY Buffalo
Karl Kwok, MD	Boston University
Ricardo LaFleur, MD	Albany Medical College
Allyson Larkin, MD	University of Pittsburgh
Michael Manolas, MD	Jefferson Medical College
Maria Martinez-Cantarin, MD	Universidad Complutense de Madrid
Mary Kate McCullen, MD	Jefferson Medical College
Anita Mehrotra, MD	Jefferson Medical College
Donna Mscisz, MD	Jefferson Medical College
Nakia Newsome, MD	Howard University
Nicole Orr, MD	Drexel University
Andrew Rose, MD	Columbia University
Erica Rosenbaum, MD	University of Miami
Vincent Savarese, MD	Jefferson Medical College
Maya Spodik, MD	Drexel University
Fortunata Verdetti, MD	Temple University
Sefton Vergano, MD	Temple University

Second-Year Residents	Medical School
Mustafa Ahmed, MD	West Virginia University
Sandeep Anreddy, MD	Gandhi Medical School
David Assis, MD	Jefferson Medical College
Arka Banerjee, MD	Drexel University
Saurabh Bansal, MD	Case Western University
Daniel Borrus, MD	Albert Einstein, Yeshiva University
Mark Cerefice, MD	St. George's University
Ellina Cheskis, MD	Jefferson Medical College
Caroline Critchell, MD	Columbia University
Anthony Flynn, MD	Jefferson Medical College
Tamara Fisicaro, MD	Jefferson Medical College
Daena Heller, MD	SUNY, Downstate
George Kargul, MD	Wayne State University
Martin Kerrigan, MD	Jefferson Medical College
Dae Hyun Kim, MD	Yonsei University, Korea
Lissa Levin, MD	Temple University
Aarati Malliah, MD	UMDNJ, NJ
Ronald Martin, MD	University of Maryland
Yvonne McCarey, MD	Eastern Virginia
Vinia Mendoza, MD	University of the Philippines
Wayne Miller, MD	Drexel University
Christina Mitchell, MD	Jefferson Medical College

Stephanie Moleski, MD	Jefferson Medical College
Alfred Moon, MD	Albany Medical College
Neilanjan Nandi, MD	Northwestern University
Benjamin Ngo, MD	University of Miami
Angela Oates, MD	Creighton University
Andra Popescu, MD	Universitatea de Medicina Si Farmacie
Utpal Sagar, MD	UMDNJ, RWJ
Leonardo Salese, MD	UMDNJ, RWJ
Heath Saltzman, MD	Drexel University
Anthony Scarpaci, MD	Jefferson Medical College
Saum Shamimi-Noori, MD	Jefferson Medical College
Justin Vadaparampil, MD	UMDNJ, NJ
Jennifer Valentine, MD	UMDNJ, NJ
Santhi Vemuri, MD	George Washington University
Heather Walters, MD	Jefferson Medical College
Isabelle Zamfirescu, MD	SUNY Upstate

First-Year Interns	Medical School
Harold Agbahiwe, MD	Duke University
Rory Bowers, MD	Jefferson Medical College
Trang Bui, MD	SUNY Downstate
Lisa Calusic, MD	Georgetown University
Dorothy Chang, MD	Northwestern University
Harnish Chawla, MD	UMDNJ, NJ
Loren Chen, MD	Virginia Commonwealth
Sumeet Chhabra, MD	George Washington University
Michelle Choi, MD	SUNY, Downstate
Hannah Chung, MD	Temple University
Roger Coron, MD	UMDNJ, NJ
Marshall Fleurant, MD	Albert Einstein, Yeshiva University
John Fontanilla, MD	UMDNJ, NJ
Samuel Giordano, MD	UMDNJ, NJ
Melissa Gitman, MD	McGill University
Matthew Grant, MD	SUNY Upstate
Bryan Hess, MD	Jefferson Medical College
Austin Hwang, MD	SUNY Upstate
Laura Immordino, MD	Jefferson Medical College
Rajesh Kabadi, MD	Chicago Medical School
Sandarsh Kancherla, MD	UMDNJ, NJ
Adam Kaufman, MD	Jefferson Medical College
Anthony Lanfranco, MD	Drexel College of Medicine
Andrew Lee, MD	New York University
Esther Lee, MD	Virginia Commonwealth University
Regina Lee, MD	UMDNJ, RWJ
Matthew McClure, MD	SUNY Buffalo
Vaibhav Mehendiratta, MD	Maulana Azad Medical College, India
Brendon Nolt, MD	University of Pennsylvania
Rosemary Nwoko, MD	Wake Forest University
Kartik Patel, MD	University of Pittsburgh
Mihir Patel, MD	Medical College of Georgia
Michael Pfeiffer, MD	Jefferson Medical College
Marina Serper, MD	Jefferson Medical College
Faisal Shaikh, MD	Virginia Commonwealth University
Tamara Solitro, MD	University of Connecticut
Li-Min Teng, MD	University of Connecticut
Alexandra Tiliakos, MD	Jefferson Medical College
Andrew Yin, MD	SUNY Downstate

Preliminary Interns	Medical School
Arthur Ballard, MD	University of Miami
Melany Grogan, MD	Jefferson Medical College
John Jun, MD	Jefferson Medical College
John Khoury, MD	Jefferson Medical College
Mirja Laroche, MD	George Washington University
Carla LoPinto, MD	New York University
William Neil, MD	Albany Medical College
Jae Park, MD	New York University
Nii-Ayikai Quaye, MD	Howard University

continued next page

Department of Medicine 2006 Fellows

Blood Bank

Saleh Ayache, MD	Damascus University School of Medicine

Cardiology

Raphael E. Bonita, MD	Drexel University College of Medicine
Danielle Duffy, MD	University of Pennsylvania School of Medicine
Aaron M. Giltner, MD	SUNY Health Science Center at Syracuse
Matthew B. Hillis, MD	Columbia Univ. Coll. Physicians/Surgeons
Raghuram G. Mallya, MD	UMDNJ-New Jersey Medical School
Gregary D. Marhefka, MD	Jefferson Medical College
Shaw R. Natan, MD	Temple University School of Medicine
Matthew L. Ortman, MD	University of Maryland Medical School
Nicholas J. Ruggiero II, MD	Jefferson Medical College
Matthew D. Sewell, MD	University of Virginia
Mital P. Sheth, MD	New York University School of Medicine
Rajiv Singh, MD	Columbia University, College of Physicians/Surgeons
George E. Mark, MD	Temple University School of Medicine
Eugene S. Rhim, MD	University of Maryland-Medical School
Agostino Ingraldi, MD	Jefferson Medical College
Parul B. Patel, MD	SUNY Downstate Medical Center

Cardiology/Heart Failure or Cardiovascular Disease

Eman A. Hamad, MD	Ross University School of Medicine
Alexander Rubin, MD	Technion-Israel Institute of Tech, Haifa, Israel
Sivakumar Srinivasan, MD	Sri Ramachandra Medical Collegeand Research Institute, Madras, India

Endocrinology, Diabetes, and Metabolic Diseases

Jeremy J. Flood, MD	SUNY at Buffalo School of Medicine
Lisa L. Hamaker, MD	Milton S. Hershey Medical School
Monika K. Shirodkar, MD	Jefferson Medical College
Vanita Proothi Treat, MD	Medical College of Pennsylvania/ Hahnemann University School of Medicine

Hepatology

Kristin N. Braun, MD	Jefferson Medical College
Corey S. Brotz, MD	SUNY Health Science Center at Syracuse
Ravinder S. Dhillon, MD	Northwestern University Medical School
Gregg S. Gagliardi, MD	UMDNJ-Robert Wood Johnson Med School/Piscataway
Mara J. Goldstein, DO	University of Health Sciences, College of Osteopathic Med
Nikroo Hashemi, MD	Azad University School of Medicine
Pradnya A. Mitroo, MD	Mount Sinai School of Medicine
Bridget L. Seymour, MD	Albany Medical College

Hematology/Medical Oncology

Mark H. Chaitowitz, MD	University of Witwatersrand
Kathryn R. Chan, MD	University of Santo Tomas
Jiyon J. Choi, MD	UMDNJ-Robert Wood Johnson Med School/Piscataway
Douglass A. Drelich, MD	UMDNJ-New Jersey Medical School
Srilata Gundala, MD	Osmania Medical College
Roopesh Kantala, MD	Mahatma Gandhi College of Medical Science
Lisa D. Reale, MD	Jefferson Medical College
Priya C. Singh, MD	UMDNJ-New Jersey Medical School
Lia M. Spina, MD	SUNY Health Science Center at Syracuse
Erev E. Tubb, MD	Jefferson Medical College
Gabor Varadi, MD	Semmelweis University School of Medicine
Christine L. Wasilewski, MD	Tulane University School of Medicine

Infectious Diseases

Dionissios Neofytos, MD	University of Athens
Sarah R. Perloff, DO	UMDNJ-School of Osteopathic Medicine
Sutthichai Sae-Tia, MD	Mahidol University Ramathibodi Hosp, Bangkok Thailand
Bevin L. Sell, MD	University of Maryland Medical School
Chukwudum Uche, MD	University of Benin Medical School

Nephrology

Nidhi Garg, MD	Jefferson Medical College
Mamatha M. Gupta, MD	Bangalore Medical College
Tamanna H. Kalra, MD	UMDNJ-New Jersey Medical School
Jason A. Kline, MD	Jefferson Medical College
Collette J. Mehring, DO	Philadelphia College of Osteopathic Medicine
Pooja Singh, MD	Government Medical College, Miraj

Critical Care, Pulmonary, Allergic, and Immunological Diseases

Sajive Aleyas, MD	Debrecen Medical College, Hungary
Rashmi Chawla, MD	Kasturba Medical College, Mangalore Univ, Manipal, India
Timothy Lin, MD	SUNY Health Science Center at Syracuse
N. Enrique Machare Delgado, MD	Univ Nac de La Plata, La Plata,Argentina
Neil A. Mushlin, DO	Philadelphia College of Osteopathic Medicine
Abhilash N. Pochappan, MD	Calicut University Medical College
Tuhina Raman, MD	Christian Medical College, University of Madras, India
Catherine A. Riley, MD	Drexel University College of Medicine
Daniel A. Salerno, MD	University of Central Venezuela (L Razetti), Caracas, Venez
Bobbak Vahid, MD	Iran University of Med Sci, Teheran

Rheumatology

Marie S. O'Brien, DO	Philadelphia College of Osteopathic Medicine
Steffan W. Schulz, MD	Temple University School of Medicine

Gastroenterology and Hepatology

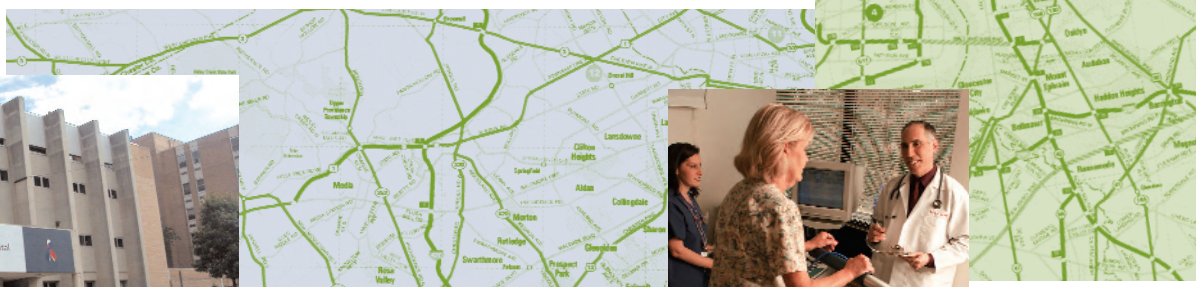
Rahul A. Nathwani, MD	Dr. D.Y. Patil Med Coll, Kolhapur, India
Ali Esmaili, MD	University of Maryland-Medical School
Kuldip S. Banwait, MD	University Calcutta Medical College

METHODIST HOSPITAL and AFFILIATED INSTITUTIONS

The educational missions of the Department of Medicine are enhanced at both the medical student and resident level by collaborative activities with more than four hundred volunteer faculty at Thomas Jefferson University Hospital, its Methodist Hospital Division, and affiliated institutions around the Commonwealth. Each of the approximately 250 third-year medical students spends about half of their junior medicine block at Jefferson Hospital and then rotates for a similar time period at Methodist Hospital or one of the affiliate programs. Interaction with our excellent volunteer faculty provides an opportunity for students and residents to interact with community-based generalists and specialists who bring a unique perspective and many years of experience to the diagnosis and treatment of medical problems.

Department of Medicine residents spend about one month per year at either Methodist Hospital, Frankford Hospital, or the Wilmington VA Medical Center. This provides a unique learning experience for our residents as they have an opportunity to see a wider breadth of disease pathology and to learn the differences between care in a community setting and in a quaternary care hospital.

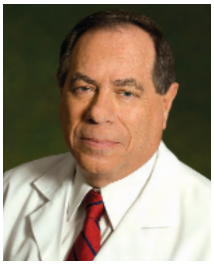
Representing the volunteer faculty are (left to right): Andrew Chapman, DO; Robert Dudnick, MD; Glenn Cooper, MD; Jack Garden, MD; Brian Fedgchin, MD; Steven J. Nierenberg, MD; David Shipon, MD; Allison Zibelli, MD; Matthew Killion, MD; Marc Schwartz, MD; Steven Breecker, MD; and Bradley Fenton, MD.



METHODIST HOSPITAL DIVISION OF THOMAS JEFFERSON UNIVERSITY HOSPITAL

Martin E. Koutcher, MD

Chair of Medicine



The Department of Medicine, with 14 divisions, is the largest department at the Methodist Hospital, a community hospital in South Philadelphia. Recent enhancements in clinical service that augment the teaching program include:

- implementation of a dedicated team of intensivists caring for critical care patients in the medical intensive care unit
- development of a hospitalist program caring for unassigned medical patients
- development of a weekly multidisciplinary Continuing Medical Education (CME) program supporting a broad spectrum of medical topics.

Due to the dedication of the teaching faculty, core clerkships received excellent ratings from medical students. In addition Methodist faculty members have been named the "Teaching Attending of the Year" from the Jefferson Residents. A multidisciplinary teaching program, teaming a fellow, resident, intern, medical students, and a PharmD provides comprehensive care of the medical patients and adds significantly to the educational experience at Methodist.

AFFILIATED INSTITUTIONS

Albert Einstein Medical Center

Steven L. Sivak, MD

Paul J. Johnson Chair of Medicine

Clinical Professor of Medicine, Jefferson Medical College

Albert Einstein Medical Center, founded in 1865, is a 500-bed primary through quaternary care hospital providing advanced care to patients in Northeast Philadelphia and the neighboring regions and states. Einstein sponsors more than 20 residency programs that train nearly 350 residents.

The Department of Medicine has almost 400 faculty members, including 75 full-time faculty. There are 140 residents-in-training in the Department's four residency tracks and nine sub-specialty training programs. All of Einstein's Internal Medicine residents participate in original research and many present their findings at national meetings. Rotations include physical diagnosis, clerkship in internal medicine specialty elective rotations and sub-internships. In addition, the Department of Medicine at Einstein sponsors a summer research program for Jefferson Medical College students.

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AFFILIATED INSTITUTIONS
continued

Frankford Hospitals

Geoffrey L. Braden, MD
Chief, Division of Internal Medicine

Frankford Hospitals' Department of Medicine encompasses a wide spectrum of medical services, offering the expertise of general practitioners and specialty physicians in 15 divisions including Allergy and Immunology, Cardiovascular Disease/ Cardiology, Dermatology, Endocrinology, Family Practice, Gastrointestinal Disease, Hematology and Oncology, Infectious Diseases, Internal Medicine, Nephrology, Neurology, Physical Medicine and Rehabilitation, Psychiatry, Pulmonary Medicine, and Rheumatology and Arthritis.

These services are available to patients at Frankford Hospitals' Frankford, Torresdale, and Bucks County Campuses.

Geisinger Medical Center

Dennis Torretti, MD
Associate Chief Medical Officer and Chairman, Division of Medicine

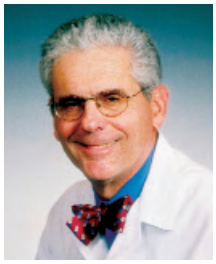
The Geisinger Health System is an integrated delivery system providing care to two million people in 30 counties in north-central Pennsylvania. The academic activities of the Division of Medicine are based at the Geisinger Medical Center, a 386-bed tertiary/quaternary care referral center. Post-graduate training programs include Medicine, Medicine/Pediatrics, and Dermatology residencies, as well as fellowship training programs in Cardiology, Gastroenterology, Rheumatology, Mohs Surgery, Nutrition, and General Internal Medicine.

The Siegfried and Janet Weis Center for Research has a highly regarded basic science laboratory with investigations in cardiovascular disease, cancer, and developmental biology. The Geisinger Clinic Genomics Core Laboratory coordinates and facilitates clinical and genomic research. The Center for Health Research and Rural Advocacy includes an active clinical trials program, an outcomes institute, an obesity institute, and an evolving aging institute. Students become an integral member of the healthcare team and benefit from personalized daily interaction with dedicated attending staff and residents.

Main Line Health

Jerome Santoro, MD, FACP

Chairman of the Department of Medicine



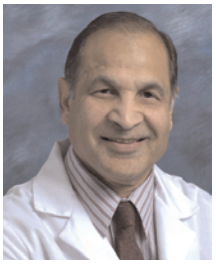
The Department of Medicine for Main Line Health has 631 members and encompasses physicians from three acute care hospitals in Bryn Mawr, Lankenau, and Paoli, providing care to diverse patients from West Philadelphia, the Main Line, and Delaware and Chester Counties. Lankenau has had an Internal Medicine Residency Program for 47 years, currently with 52 residents in ACGME/AOA approved programs. Fellowship Programs include Cardiovascular Diseases, Interventional Cardiology, Electrophysiology, Gastroenterology, Nephrology, and Hematology/Oncology. Combined fellowships with Jefferson include Infectious Diseases and Pulmonary/Critical Care. In addition, Junior and Senior Medical Students from Jefferson and Philadelphia College of Osteopathic Medicine (PCOM) rotate through Lankenau.

The Lankenau Medical Institute for Research is a freestanding facility on the Lankenau Hospital campus with research on cancer, aging, and cardiovascular disease. Monthly conferences highlight the relationship of basic science research to clinical medicine. The Department of Medicine also provides full service in all medical specialties including a nationally recognized cardiology program, allergy and immunology, dermatology, endocrinology, infectious diseases, neurology, physical medicine, pulmonary and critical care, and rheumatology.

Wilmington VA Medical Center

Brajesh Agarwal, MD

Medical Physician Leader



The Wilmington VA Medical Center (VAMC) is a 63-bed general medical and surgical hospital, with expertise in all medical sub-specialties. Primary, secondary, and some tertiary care is provided to area veterans. During 2005, there were over 2,000 inpatient admissions and more than 200,000 visits in outpatient clinics.

The Wilmington VAMC offers residents and students a variety of interesting pathology and provides a hands-on experience with active participation under close supervision, in performing procedures and developing care plans. Residents and students have consistently given high marks to Wilmington VAMC for their overall medical rotation. Their experience and training complements the teaching they receive at Jefferson Medical College.

An integral part of the VAMC team, students describe the program as a "relaxed, friendly environment that encouraged student involvement and promoted interaction," with "good patient contact" and "lots of time with attendings," where "you get to think about patients and formulate your own plan and assume greater responsibility of patient care." Students also get hands-on experience with the VAs leading-edge technology that supports patient care. ■

AWARDS AND HONORS

CARDIOLOGY

David M. Capuzzi, MD
Elected President of the Northeast Lipid Association (NELA).
Re-elected, member of the Board of Directors for the National Lipid Association (NLA).

Matthew V. DeCaro, MD
Attending Teaching Award, Jefferson Medical College, Thomas Jefferson University.
Chief Resident's Distinguished Service Award, Thomas Jefferson University.

Michael P. Savage, MD
Outstanding Teacher of the Year 2004 (Fellows' Award), Division of Cardiology.
Who's Who in America
Best Doctors in America

Bernard L. Segal, MD
Who's Who in American Education
Who's Who in the World
"Top Doctors 2005," *Philadelphia Magazine*

Paul Walinsky, MD
Multiple *Who's Who* editions
Guide to Americas Top Physicians

David H. Wiener, MD
Dean's Citation for Significant Contributions to the Advancement of Medical Education at Jefferson Medical College, May 2005.

Outstanding Teacher of the Year, Department of Medicine, Thomas Jefferson University Hospital, 2004–2005.

Outstanding Teacher of the Year, Division of Cardiology, Thomas Jefferson University Hospital, 2004–2005.

Critical Care, Pulmonary, Allergic, and Immunologic Disease

Gregory Kane, MD
Dean's Citation for Advancement of Education at Jefferson Medical College, 2004.
Gold Humanism Honor Society, 2004.

Excellence in Teaching Award for Foundations in Clinical Medicine.

ENDOCRINOLOGY

Jeffrey L. Miller, MD
Dean's Citation for Faculty Mentoring, Thomas Jefferson University.

GASTROENTEROLOGY AND HEPATOLOGY

Sidney Cohen, MD
Outstanding Mentor, Thomas Jefferson University, 2005.

Distinguished Mentor, American Gastroenterological Association, 2005.

Mitchell Conn, MD
Board Member, Delaware Society of Gastroenterology (DVSGE), 2000–2005.

Secretary, DVSGE, 2004–2006.

Health and Public Policy Committee, American Gastrointestinal Endoscopy Society (ASGE), 2005–2008.

Anthony J. DiMarino, Jr., MD
Named an "outstanding Gastroenterologist in Philadelphia" by Delaware Valley physicians, *Philadelphia Magazine*, 2004.

Named a "Top Physician of South Jersey" by New Jersey physicians, *New Jersey Magazine*, 2005.

President elect, National Chiefs of Gastroenterology Association, 2005.

Named in *America's Top Doctors*

"Advocate for Awareness Award" from the National Foundation of Celiac Awareness

Hie-Won Hann, MD
"Proud Ewha Alumnus #5," Ewha Girls' High School and Alumni Association, May 2005.

Steven Herrine, MD
Excellence in Teaching, Jefferson Medical College, 2005.

Dean's Citation for Significant Contributions to the Advancement of Education at Jefferson Medical College, 2005.

Anthony J. Infantolino, MD
Physician of the Year, Chron's & Colitis Foundation, 2005.

Best Doctors in America, 2005.

Leo Katz, MD
Delaware Valley Area's Top Doctors, Delaware Valley Consumers' CheckBook, 2005.

Best Doctors in America, 2004–2005.

Commendation for outstanding performance, Dr. Arthur Feldman, July 2004.

Howard Kroop, MD
American College of Gastroenterology, Public Relations Committee, 2005.

David Loren, MD
Faculty Teaching Award, Division of Gastroenterology and Hepatology, Thomas Jefferson University, 2005.

Faculty Teaching Award Nominee, Department of Medicine, Thomas Jefferson University, 2005.

Victor Navarro, MD
Dean's Citation for Significant Contributions to the Advancement of Education at Jefferson Medical College, 2005.

Attending Teaching Award, Thomas Jefferson University Hospital, 2005.

RHEUMATOLOGY

Sergio A. Jimenez, MD
Dean's Award for Mentoring, Thomas Jefferson University.

Advisory Board of "Reumatologia Clinica."

Ad Hoc member, Arthritis Connective Tissue and Skin Sciences Study Section (ACTS), National Institutes of Health.

Chair, Osteoporosis Study Group, Pan American League Against Rheumatism (PANLAR).

Charlene J. Williams, PhD
Co-Chair, Crystals Study Group, PANLAR, 2004–2005.

12th International Symposium on Basement Membranes, Co-Chair, Genetic Approaches to the Biological Role of Basement Membranes, 2005.

Stewart J. McCracken Award for Rheumatology Research, Eastern Pennsylvania Chapter of the Arthritis Foundation, Philadelphia, 2005.

CENTER FOR TRANSLATIONAL MEDICINE

Leif Erik Vinge, MD, PhD
Fulbright Scholar grant recipient, 2006–2007.

SELECTED PUBLICATIONS

Cardiology

Gaba D, **Pavri BB, Greenspon AJ, Ho RT**. Dual Antegrade Response Tachycardia Induced Cardiomyopathy. *PACE 2004*; 27:533–36.

Ho RT, DeCaro M. Narrow QRS Complex Tachycardia With a High-frequency Potential Recorded Near the His Bundle: What Is the Mechanism? *Heart Rhythm* 2005; 2:664–66.

Sanborn TA, **Ogilby JD**, Ritter J, Stone GW, Klugherz B, Fields R, White C, McGarvey J, Morris DL, Wilensky R. Reduced Vascular Complications After Percutaneous Coronary Interventions with a Non-mechanical Suture Device: Results from the Randomized Rapid Ambulation After Closure (RACE) Study. *Cathet Cardiovasc Intervent* 2004; 61:327–32.

Garot P, Lefevre T, **Savage M**, Louvard Y, Bamlet W, Willerson J, Morice M, Holmes D. Nine month outcome of patients treated by percutaneous coronary interventions for bifurcation lesions in the recent era. *J Am Coll Cardiol 2005*; 46:606–12.

Hirshfeld JW Jr., Balter S, Brinker JA, Kern MJ, Klein LW, Lindsay BD, Tommaso CL, Tracy CM, Wagner LK, Creager MA, Elnicki M, Lorell BH, Rodgers GP, **Weitz HH**. American College of Cardiology Foundation. American Heart Association. HRS. SCAI. American College of Physicians Task Force on Clinical Competence and Training. ACCF/AHA/HRS/SCAI clinical competence statement on physician knowledge to optimize patient safety and image quality in fluoroscopically guided invasive cardiovascular procedures: a report of the American College of Cardiology Foundation/American Heart Association/American College of Physicians Task Force on Clinical Competence and Training. Circulation 2005 Feb 1; 111(4):511–32.

Creager MA, Goldstone J, Hirshfeld JW Jr., Kazmers A, Kent KC, Lorell BH, Olin JW, Rainer Pauly R, Rosenfield K, Roubin GS, Sicard GA, White CJ, Creager MA, Winters WL Jr., Hirshfeld JW Jr., Lorell BH, Merli G, Rodgers GP, Tracy CM, **Weitz HH**. American College of Cardiology. American Heart Association. American College of Physician Task Force on Clinical Competence. ACC/ACP/SCAI/SVMB/SVS clinical competence statement on vascular medicine and catheter-based peripheral vascular interventions: a report of the American College of Cardiology/American Heart Association/American College of Physician Task Force on Clinical Competence (ACC/ACP/SCAI/SVMB/SVS Writing Committee to develop a clinical competence statement on peripheral vascular disease). *Journal of the American College of Cardiology* 2004 Aug 18; 44(4):941–57.

Hernandez AF, **Whellan DJ,** Stroud S, Sun JL, O'Connor CM, Jollis JG. Outcomes in heart failure patients after major noncardiac surgery. *J Am Coll Cardiol*. 2004; 44:1446–53.

Joynt KE, Gattis WA, Hasselblad V, Fuzaylov SY, Serebruany VL, Gurbel PA, Gaulden LH, Felker GM, **Whellan DJ**, O'Connor CM. Effect of angiotensin-converting enzyme inhibitors, beta blockers, statins, and aspirin on C-reactive protein levels in outpatients with heart failure. *Am J Cardiol* 2004; 93:783–85.

Weinberg NM, **Zwas DR, Owen AO, Zangrilli JG**, Van Tassell P. Left ventricular intracardiac metastatic germ cell tumor presenting with hemorrhagic cerebrovascular event. *Journal of the American Society of Echocardiography* 2004; 17:1080–83.

Critical Care, Pulmonary, Allergic, and Immunologic Disease

Lunenfeld E, **Kane GC**. Sudden dyspnea and hypoxia after an esophagogastric duodenoscopy. *Respiratory Care* 2004; 49(8):940–42.

Mingos M, **Kane GC**. Sirolimus Pulmonary Toxicity. *Respiratory Care* 2005.

Boushey H, Sorkness C, King T, Sullivan S, Fahy J, Lazarus S, Chinchilli V, Craig T, Dimango E, Deykin A, Fagan J, Fish J, Ford J, Kraft M, Kunselman S, **Leone FT,** Lemanske R, Martin R, Mauger E, Pesola G, Peters S, Rollings N, Szefler S, Wechsler M, Israel E. Regular vs. intermittent controller therapy for mild persistent asthma. *New England Journal of Medicine* 2005; 352(15):1519–28.

Patkar A, Batra V, Mannelli P, Evers-Casey S, Vergare M, **Leone FT**. Medical symptoms associated with tobacco smoking with and without marijuana use among crack cocaine abusers. *Am J Addict* 2005; 14:43–53.

Raghavan M, **Marik PE**. Anemia, Allogenic Blood Transfusion, and Immune-modulation in the Critically Ill. *Chest* 2005; 127:295–307.

Campbell R, Lopez, **Marik PE**, Severe Autoimmune Hemolytic Anemia Treated by Paralysis, Induced Hypothermia and Splenic Embolization. *Chest* 2005; 127:678–81.

Beaulieu Y, **Marik PE**. Bedside ultrasonography in the ICU. Part 1. *Chest* 2005; 128:881–95.

Beaulieu Y, **Marik PE**. Bedside ultrasonography in the ICU. Part 2. *Chest* 2005; 128.

Endocrinology

Mahadev K, Wu X, Motoshima H, **Goldstein BJ.** Integration of Multiple Downstream Signals Determines the Net Effect of Insulin on MAP Kinase vs. PI 3′-Kinase Activation: Potential Role of Insulin-Stimulated H2O2. *Cell Signal* 2004; 16:323–31.

Mahadev K, Motoshima H, Wu X, Ruddy JM, Arnold RS, Cheng G, Lambeth JD, **Goldstein BJ.** The NADPH Oxidase Homolog Nox4 Modulates Insulin-Stimulated Generation of H2O2 and Plays an Integral Role in Insulin Signal Transduction. *Mol Cell Biol* 2004; 24:1844–54.

Diabetes Prevention Program Research Group **Goldstein BJ.** The cost-effectiveness of lifestyle modification or metformin in preventing type 2 diabetes in adults with impaired glucose tolerance. *Ann Intern Med.* 2005; 142:323–32.

SELECTED PUBLICATIONS *continued*

Pan M, Cederbaum AI, Zhang Y-L, Ginsberg HN, **Williams KJ**, Fisher EA*. Lipid peroxidation and oxidant stress regulate hepatic apolipoprotein B degradation and VLDL production. *J. Clin. Invest*. 2004; 113:1277–87.

Frias JC, **Williams KJ**, Fisher EA, Fayad ZA. Recombinant HDL-like nanoparticles: a specific contrast agent for MRI of atherosclerotic plaques. *J. Am. Chem. Soc*. 2004; 126:16316–17.

Jiang X-C, Li Z, Liu R, Yang XP, Pan M, Lagrost L, Fisher EA, **Williams KJ**. Phospholipid transfer protein deficiency impairs apolipoprotein-B secretion from hepatocytes by stimulating a proteolytic pathway through a relative deficiency of vitamin E and an increase in intracellular oxidants. *J. Biol. Chem*. 2005. 280:18336–40.

Blonde L, Dailey GE, **Jabbour SA**, Reasner CA, Mills DJ. Gastrointestinal Tolerability of Extended-Release Metformin Tablets (Glucophage® XR) Compared to Immediate-Release Metformin Tablets (Glucophage®)-Results of a Retrospective Cohort Study. *Curr Med Res Opin* 2004; 20(4): 565–72.

Gastroenterology and Hepatology

De Godoy M, Dunn S, **Rattan S**. Evidence for the role of angiotensin II biosynthesis in the rat internal anal sphincter tone. *Gastroenterology* 2004; 127–38.

DiMarino AJ, Banwait KS, Eschinger E, Greenberg A, DiMarino M, Doghramji K, Cohen S. The Effect of Gastro-esophageal Reflux and Omeprazole on Key Sleep Parameters. *Aliment Pharmacol Ther* 2005; 22:325–29.

DiMarino AJ, Cohen S. Clinical Relevance of Esophageal and Gastric PH Measurement in Patients with Gastroesophageal Reflux Disease (GERD). *Current Medical Research and Opinion* vol. 21, no. 1, 2005; 27–36

Hann HWL, Lee, JM, Bussard A, Lui C, Jin YR, Guha K, Clayton MM, Ardlie K, Pellini M, Feitelson MA. Early Markers of Hepatocellular carcinoma in Hepatitis B.Virus Carriers. *Cancer Research* 2004; 64:7329–35.

Kowalski TE, Edmundowicz S, Vancante N. Endoscopy Unit Structure and Function. *Gastrointestinal Endoscopy Clinics of North America*, 2004; 14:657–66.

Lai CL, Leung N, Teo EK, Tong M, Wong F, **Hann HWL**, Han S, Poynard T, Myers M, Lloyd D, Brown NA. Telbivudine Phase II Investigator Group. A 1-year trial of Telbivudine, Lamivudine and the Combination in Patients with Hepatitis B Antigen- Postive Chronic Hepatitis B. *Gastroenterology* 2005; 129:528–36.

Hematology

Ballas SK, Viscusi, ER, and Epstein, KR. Management of Acute Chest Wall Sickle Cell Pain with Nebulized Morphine. *Am J Hematol* 2004; 76:190–91.

Dessain SK, Adekar SP, Stevens JB, Carpenter KA, Skorski ML, Barnoski BL, Goldsby RA, Weinberg RA. High efficiency creation of human monoclonal antibody-producing hybridomas. *J Immunol Methods* 2004 Aug; 291(1–2):109–22.

Addya S, **Keller MA**, K Delgrosso, CM Ponte, Vadigepalli R, Gonye GE, Surrey. S. Erythroid-induced Commitment of K562 Cells Results in Clusters of Differentially-expressed Genes Enriched for Specific Transcription Regulatory Elements. *Physiol Genomics* 2004 Sep 16; 19(1):117–30.

Keller MA, J Martinez, TC Baradet, C Nagaswami, MK Borowski, S Surrey, JW Weisel. Fibrinogen Philadelphia, a Hypodysfibrinogenemia Characterized by Abnormal Polymerization and Fibrinogen Hypercatabolism due to g S378P Mutation. *Blood* 2005 Apr 15; 105(8):3162–68.

Sang N, Fath DM, and Giordano A. A gene highly expressed in tumor cells encodes novel structure protein. *Oncogene* 2004; 23:9438–46.

Severino A, Baldi A, Cottone G, Han M, **Sang N**, Giordano A, Mileo AM, Paggi MG, and De Luca A. Rack1 is a functional target of the E1a oncoprotein. *J Cell Physiol*. 2004; 199:134–39

Adachi K, Lakka V, Zhao Y, **Surrey S**. Ubiquitylation of nascent globin chains in a cell-free system. *J. Biol. Chem*. 2004; 279:41767–74.

Maris JM, Hii G, Varde S, Lathrop J, Rappapport E, White P, Gelfand C, **Surrey S**, and Fortina P. High-throughput SNP-based detection of human solid tumor allelic deletion at multiple loci simultaneously using a tag-array platform. *Genome Research* 2005; 15:1168–76.

Suvarna S, Rauova L, McCracken E , Goss CM, Sachais BS, **McKenzie SE, Reilly MP**, Gunn MD, Cines DB, Poncz M, Arepally G. PF4/Heparin Complexes are T-Cell Dependent Antigens. *Blood* 2005; 106:92931.

Nephrology

Boyd GS, Koenigsberg J, Gidding S, Hassink S. **Falkner B**. The Effect of Obesity and Hypertension on Plasma Lipid Levels in Children and Adolescents. *Pediatrics* 2005; 116:442–46.

Campbell KL, Kushner H, **Falkner B**. Obesity and high blood pressure: a clinical phenotype for the insulin resistance syndrome in African Americans. *J of Clinical Hypertension* 2004; 6:364–72.

Chen S, **Hoffman BB**, Lee JS, Kopp JB, Ziyadeh FN. Tubular cells from TGF-beta 1 knockout mice show decreased fibronectin and blunted hypertrophy in high glucose. *Kidney International* 2004; 65:1191–1204.

Falkner B et al. The Fourth Report on the Diagnosis, Evaluation and Treatment of High Blood Pressure in Children and Adolescents. *Pediatrics 2004*; 114:555–576.

Kalantar-Zadeh K, Regidor DL, McCallister CJ, **Michael B**, Warnock DG. Time-Dependent Associations between Indices of Iron Store and Mortality in Hemodialysis Patients.

Journal American Society of Nephrology, in press, 2005

Pickering TG, Hall JE, Appel LJ, **Falkner BE**, Graves J, Hill MN, Jones DW, Kurtz T, Sheps SB, Rocella EJ. Recommendations for Blood Pressure Measurement in Humans and Experimental Animals. Part 1: Blood Pressure Measurements in Humans, A Statement for Professionals from the Subcommittee of Professional and Public Education of the American Heart Association Council on High Blood Pressure Research. *Hypertension* 2005; 45:142–61.

Sharma K, LeeSH, Han S, Lee S, Francos B, McCue, Wassell R, Shaw A, RamachandraRao S. Two-dimensional fluorescence differencial gel electrophoresis analysis of the urine proteome in human diabetic nephropathy. *Proteomics* 2005; 5:26–48.

Sharma K, Cook A, Smith M, Inscho E. Transforming growth factor-beta impairs renal autoregulation by generating reactive oxygen species. *American Journal of Physiology, Renal Fluid and Electrolyte* 2005; 288(5):F1069–77.

Rheumatology

Jimenez SA and Derk CT. Following the molecular pathways toward an understanding of the pathogenesis of Systemic Sclerosis. *Ann Int Med* 2004; 140:37–50.

Jimenez SA, Artlett CM, Sandorfi N, Derk C, Latinis K, Sawaya H, Haddad R, Shanahan JC. Dialysis-associated systemic fibrosis (Nephrogenic Fibrosing Dermopathy): A clinical description of nine new cases and study of inflammatory cells and transforming growth factor b-1 expression in affected skin. *Arthritis Rheum* 2004; 50:2660–66.

Markova MS, Zeskand J, McEntee B, Rothstein J, **Jimenez SA**, Siracusa LD. A role for the androgen receptor in collagen content of the skin. *J Invest Dermato*l 2004; 123:1052–56.

Steplewski A, Majsterek I, McAdams E, Rucker E, Brittingham RJ, Ito H, Hirai K, Adachi E, **Jimenez SA**, Fertala A. Thermostability gradient in the collagen triple helix reveals its multi-domain structure. *J Mol Biol* 2004; 338:989–98.

Derk CT, Rasheed M, Spiegel JR, **Jimenez SA**. Increased incidence of squamous cell carcinoma of the tongue in patients with systemic sclerosis. *J Rheum* 2005; 32:637–41.

Colter DC, Piera-Velazquez S, Hawkins DF, Whitecavage MK, **Jimenez SA, Stokes DG**. Regulation of the human Sox9 promoter by the CCAAT-binding factor. *Matrix Biology* 2005; 24:185–197.

Han F, Adams CS, Tao Z, **Williams CJ**, Zaka R, Tuan RS, Norton PA, Hickok NJ. Transforming growth factor beta 1 regulates ATDC5 chondrogenic differentiation, and fibronectin isoform expression. *J. Cell Biochem* 2005; 95(4):750–62.

Center for Translational Medicine

Higuchi Y, McTiernan CF, Frye CB, McGowan BS, **Chan TO**, **Feldman AM**. Tumor necrosis factor receptors 1 and 2 differentially regulate survival, cardiac dysfunction, and remodeling in transgenic mice with tumor necrosis factor-alpha-induced cardiomyopathy. *Circulation* 2004; 109:1892–97. Most P, Pleger ST, Volkers M, Heidt B, Boerries M, Weichenhan D, Loffler E, Janssen PML, **Eckhart AD**, Martini J, Williams ML, Katus HA, Remppis A, **Koch WJ**. Cardiac adenoviral S100A1 gene delivery rescues failing myocardium. *J Clin Invest* 2004; 114:1550–63.

Zhou R-H, Keys JR, Harris DM, Druckman CA, **Eckhart AD**. Vascular smooth muscle overexpression of G protein-coupled receptor kinase 5 elevates blood pressure which segregates with sex and is dependent on Gi-mediated signaling. *Circulation* 2005; 112:1145–53.

Maris JM, Hii G, Gelfand G, Varde S, White P, Surrey S, **Fortina P**. Region specific detection of neuroblastoma loss of heterozygosity at multiple loci simultaneously using a SNP-based tag-array platform. *Genome Research* 2005; 15:1168–76.

Most P, Pleger S, Volkers M, Heidt B, Borries M, Weichenhan D, Loffler E, Janssen PML, **Eckhart AD**, Martini J, Williams ML, Katus HA, Remppis A, **Koch WJ**. Cardiac adenoviral S100A1 gene delivery rescues failing myocardium. *J Clin Invest* 2004; 114:1550–63.

Parsa CJ, Kim J, Riel R, Pascal LS, Thompson RB, Petrofski JA, Matsumoto A, Stamler JS, **Koch WJ**. Cardioprotective effects of erythropoietin in the reperfused ischemic heart: A potential role for cardiac fibroblasts. *J Biol Chem* 2004; 279:20655–62.

Rabinowitz JE, Bowles DE, Faust SM, Ledford JG, Cunningham SE, Samulski RJ: Cross-dressing the virion: the transcapsidation of adeno-associated virus serotypes functionally defines subgroups. *J Virol* 2004; 78(9):4421–32.

Ito H, Koefoed M, Tiyapatanaputi P, Gromov K, Goater J, Carmouche J, Zhang X, Rubery P, **Rabinowitz J**, Samulski R, Nakamura T, Soballe K, O'Keefe R, Boyce B, Schwarz E. Remodeling of cortical bone allografts mediated by adherent rAAV-RANKL and VEGF gene therapy. *Nat Med* 2005; 3:291–97.

Woulfe D, Jiang H, Morgans A, Monks R, Birnbaum M, and Brass LF. Defects in secretion, aggregation, and thrombus formation in platelets from mice lacking Akt2. *J Clin Invest* 2004; 113(3):441–50.

Woulfe DS, Jiang H, Monks B, Birnbaum M, and Brass LF. Defects in secretion, aggregation, and thrombus formation in platelets from mice lacking Akt2. *The Journal of Clinical Investigation* 2004; 113:441–50.

SELECTED PUBLICATIONS *continued*

Kerkelä R, Grazette L, Yacobi R, Iliescu C, Patten R, Beahm C, Walters B, Shevtsov S, Pesant S, Clubb FJ, Rosenzweig A, Salomon RN, Van Etten RA, Alroy J, Durand J-B, and **Force T.** Cardiotoxicity of the cancer therapeutic agent imatinib mesylate. *Nat Med* 2006; 12, 908–16.

Department of Clinical Pharmacology

Agrawal NGB, Mattews CZ, Mazenko RS, Woolf EJ, Porras AG, Chen X, Miller JL, Michiels N, Wehling M, Schultz A, Gottlieb AB, Kraft WK, Greenberg HE, **Waldman SA**, Curtis SP, Gottesdiener KM. The effects of modifying in vivo cytochrome P450 3A (CYP3A) activity on etoricoxib pharmacokinetics and of etoricoxib administration on CYP3A activity. *Journal of Clinical Pharmacology* 2004; 44:1125–31.

Hauck WW, Capen RC, Callahan JD, De Muth JE, Hsu H, Lansky D, Sajjadi NC, Seaver SS, Singer RR, Weisman D. Assessing parallelism prior to determining relative potency. PDA *Journal of Pharmaceutical Science and Technology* 2005; 59:127–37.

Kazerounian S, **Pitari GM**, Shah FJ, Frick GS, Madesh M, Ruiz-Stewart I, **Schulz S**, Hajnóczky G, **Waldman SA**. Proliferative signaling by store-operated calcium channels opposes colon cancer cell cytostasis induced by bacterial enterotoxins. *Journal of Pharmacol. Exp. Ther*. 2005; 314:1013–22.

Ruiz-Stewart I, Tiyyagura SR, Lin JE, Kazerounian S, **Pitari GM**, **Schulz S**, Martin E, Murad F, **Waldman SA**. Guanylyl cyclase is an ATP sensor coupling nitric oxide signaling to cell metabolism. *PNAS* 2004; 101:37–42.

Wenstrup RJ, Florer JB, Brunskill EW, Bell SM, **Chervoneva I**, Birk DE. Type V collagen controls the initiation of collagen fibril assembly. *J. Biol. Chem* 2004 Sep 21; 10 1074/jbc.M409622200.

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