2008 REPORT

re:search

NYU Langone Medical Center

On the cover:

White matter fiber tracts in the living human brain, visualized noninvasively using diffusion tensor imaging, an evolving magnetic resonance (MR) technique. Images of this sort are used for neuroanatomical research, diagnosis of subtle neurological disorders, and to guide neurosurgery. Colors represent principal nerve fiber directions (blue: head-to-foot; red: left-to-right; green: front-to-back). NYU Langone's Center for Biomedical Imaging (CBI) produced this image, using one of our advanced magnetic resonance scanners, which include a 128-channel 3-Tesla and an ultra-high-field 7-Tesla, both unique in the region.

Our search for knowledge to alleviate human suffering continues with the unabated passion that has distinguished this medical center for more than a century. Today, we intensify our search with this further determination: to bring the brilliance of

re:search

our scientists and clinicians together in a culture of excellence and collaborative investigation that will not only spark new ideas and discoveries, but more swiftly translate into new ways to treat patients and prevent disease in our community and the world.

NYU Langone Medical Center


JOAN AND JOEL SMILOW RESEARCH CENTER
NYU
NYU

Vision For World-Class Excellence

NYU Langone Medical Center has been home to scientists whose discoveries have changed medical history. Giants like Walter Reed, Albert Sabin and Jonas Salk are among our alumni. Nobel Prize winners such as Severo Ochoa, Julius Axelrod and Baruj Benacerraf have served on our faculty. Saul Krugman unraveled the mysteries of infectious hepatitis. The first departments of rehabilitative medicine and forensic medicine in the U.S. were established here. Bellevue Hospital, the nation's oldest public hospital and our long-time partner, has been the training ground for generations of leaders and the site of countless breakthroughs. Today, the passion that produced these discoveries is once again propelling us to new heights.

Our goals are bold: building on the great legacy of this institution, we aim to set the standard for world-class medicine in the 21st century. To accomplish this, we must do more than burnish each facet of our three-fold mission: medical education, patient care, and scientific research. We must bring all three together so that the brilliance of each makes the others shine more brightly.

Working closely with the faculty and our Scientific External Advisory Board, we are developing strategies to identify areas of growth and opportunity; to recruit, foster, and retain the best scientists; to enhance the research environment, and to facilitate the conduct of research. Below are several key components of our plan.

The Strategic Plan for Research

As scientific methodology and expertise become increasingly complex and sub-specialized, group and interdisciplinary collaboration has become an important dimension of research. We support team science, but we also recognize and value the individualistic nature of much research. As a leading academic medical center with an exceptionally broad base of scientific and clinical expertise, we are well positioned to build bridges and create synergies that accelerate and advance discovery.

Building Collaborative Hubs Through Centers of Excellence

In this spirit, this year we are launching six new Centers of Excellence that bring together some of our most distinguished scientists—researchers and clinicians—who share a deep passion and a common cause: to improve and extend the lives of patients who suffer from Alzheimer's disease and other dementias; addiction; multiple sclerosis; skin cancer; urological diseases; and musculoskeletal diseases. For example, researchers in the Center of Excellence on Brain Aging and Dementia study the fundamental processes of Alzheimer's disease in animal models and humans, develop new diagnostic tools and therapies, and explore new psychosocial interventions for patients and caregivers. Research conducted in the centers is informed by first-hand experiences with patients and, in turn, the results of our research provide new opportunities and hope to patients and their families. In these new Centers of Excellence, our three missions converge, bringing together world-class research, advanced diagnostics and treatments for patients, and a rich environment for educating the next generation of researchers and physicians.

Accomplishment

> Launched six Centers of Excellence (see pages 52-57). These centers will receive $15 million in collective support from the Medical Center over the next 3 years.

Advancing Scientific Discovery

Our basic scientists are intrepid explorers whose discoveries—sometimes serendipitous, often transformative—help us to understand the why and how of diseases. We aim to build on our strengths by attracting leaders and rising stars, and by providing a fertile intellectual environment and a strong infrastructure of resources and technology to retain the best and the brightest.

In the vibrant academic medical community of NYU Langone and through their interactions with patients and trainees, our clinical faculty raise and explore many of the provocative questions that drive scientific inquiry. Our Clinical and Translational Science

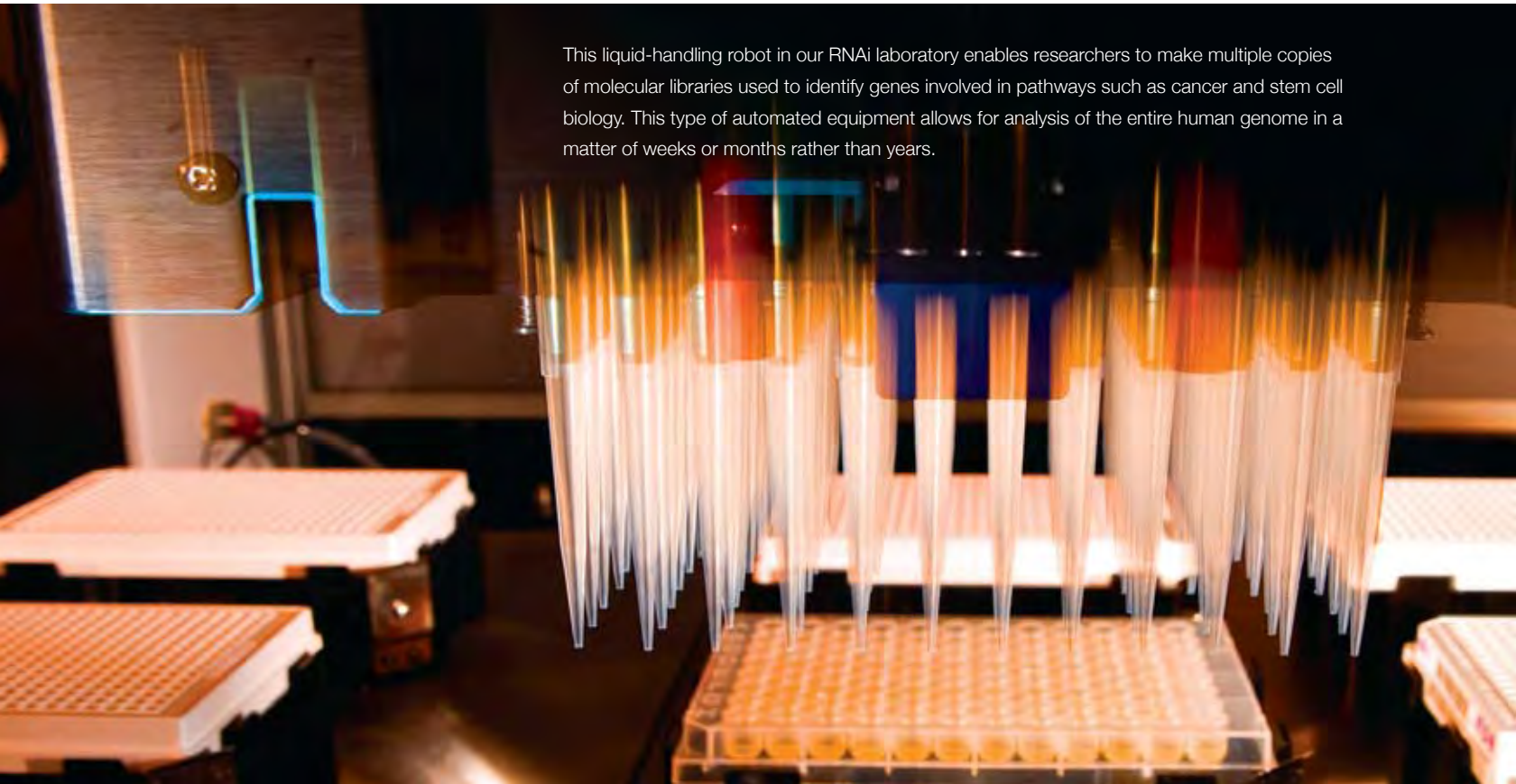
Institute—through a unique partnership with New York City's Health and Hospitals Corporation, the largest municipal healthcare provider in the U.S., and its flagship Bellevue Hospital—ensures that large and diverse groups of New Yorkers participate in and benefit from the breadth of discoveries in medicine.

Accomplishment *> Initiated the NYU Langone-Health and Hospitals Corporation Clinical and Translational Science Institute. > Launched focus on four strategic areas of basic science research: integrated neurosciences research, inflammation and immunology, genetics and stem cell research.*

Enriching Core Facilities and Shared Resources

More than ever, technology underpins and accelerates scientific investigation and, by orders of magnitude, the research process itself. At NYU Langone, we want to make sure our scientists are equipped to do the best science by having the best tools. Over the past year, we have developed plans for enhancing a number of our research technologies, including genomics, proteomics, microscopy and imaging, and shared resources, such as bioinformatics, statistical consultation, and biorepositories. We recently built a state-of-the-art core facility for RNAi screening , a powerful tool that can rapidly analyze not just a single gene, but whole genomes involved in specific biological processes, such as cancer.

Accomplishment *> Established RNAi laboratory and high throughput sequencing core facility. > Created $15 million fund to enhance existing facilities and establish new ones, including microscopy, proteomics, and a mouse behavioral facility. > Formed a new Center for Health Informatics and Bioinformatics and recruited its leadership. > Opened state-of-the-art Smilow animal facility.*



This liquid-handling robot in our RNAi laboratory enables researchers to make multiple copies of molecular libraries used to identify genes involved in pathways such as cancer and stem cell biology. This type of automated equipment allows for analysis of the entire human genome in a matter of weeks or months rather than years.

Supporting Research through Effective Administration

The mission of the Office for Science and Research is to support and enhance the productivity and quality of research at NYU Langone through administrative structures, facilities, and programs. We want our scientists to be able to focus on their research, so we continuously seek to enhance services and efficiently coordinate functions. These are provided under our umbrella by the Office of Clinical Trials, Institutional Review Board, Sponsored Program Administration, Office of Industrial Liaison, Institutional Animal Care and Use Committee, Division of Laboratory and Animal Resources, and Institutional Biosafety Committee. We also work with the Office of Legal Counsel to review institutional policies, provide education about responsible conduct, and ensure the integrity of research.

Accomplishment

> Accredited by the Association for the Accreditation of Human Research Protection Program (AAHRPP), NYU Langone was the first academic medical center in New York state to receive this accreditation. > Initiated grantsmanship workshop series with video recording available online. > Launched InfoEd Proposal Development for electronic submission of NIH grant proposals.

Building Momentum

To support the research mission, our diversified portfolio of funding is serving us well. By virtually every measure, the momentum at NYU Langone is building.

Technology Transfer: Ranked in the Top Three

Technology transfer, the ability to translate discoveries from the laboratory to diagnostics and therapeutics, allows patients everywhere to benefit from our inventions and also provides important revenue for supporting research. With licensing income of $400 million from 2004-2006, NYU Langone Medical Center ranked in the top three universities and medical centers in licensee income during that period, according to the Association of University Technology Managers.

Inventions by faculty have risen steadily over the past five years: we have 13 products now in clinical trials and 24 products brought to market. Products range from vascular stents, MRI equipment and hip prosthesis to HIV diagnostics and drugs such as Zinecard to reduce chemotherapy side effects and Sutent for kidney and stomach cancer. Perhaps no product better exemplifies the impact of therapeutic discovery than the monoclonal antibody developed in the Department of Microbiology by Junming Le, Ph.D. and Jan T. Vilcek, M.D., Ph.D. As the blockbuster medication called Remicade, this antibody has proven to be a life-changing anti-inflammatory agent for the treatment of rheumatoid arthritis, Crohn's disease, ankylosing spondylitis, psoriatic arthritis, Behçet's disease, and other inflammatory diseases.

Accomplishment

> Renewed the Applied Research Support Fund to support new inventions and innovations with grants of up to $75,000. > Impacted the lives of over a million people worldwide. Remicade annual sales exceeded $4 billion, with significant financial benefit to the Medical Center, further enhanced by Dr. Vilcek's generous pledge of a $105 million gift from royalties earned on the drug.

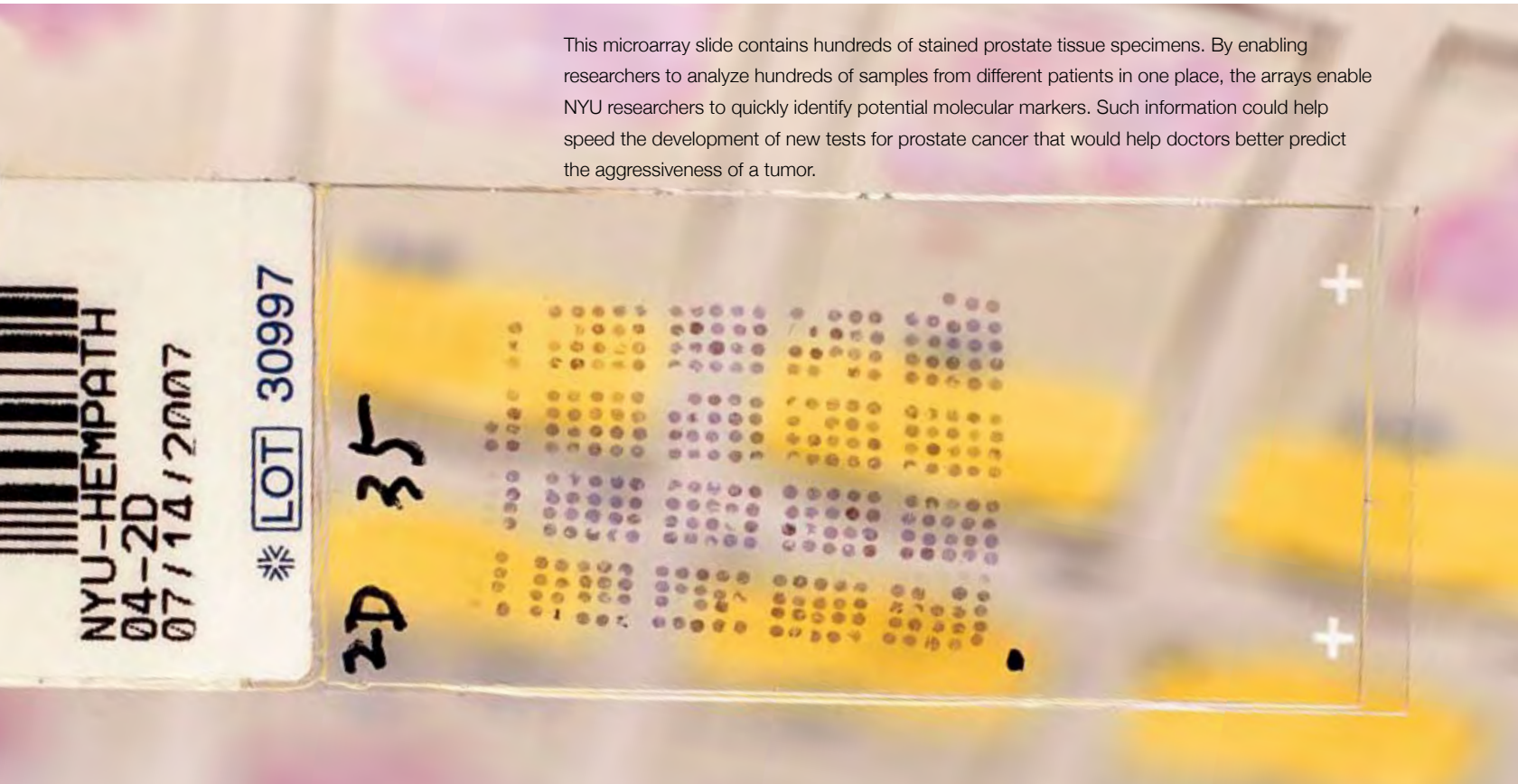
NIH Funding for Research: Strong and Growing

Despite increasing competition for limited federal funds, NYU Langone's NIH funding remained strong, totaling $121,835,760 in 2007. Approximately 30.6 percent of our NIH applications were funded, compared to a 22.5 percent success rate for all medical schools. In the challenging climate of NIH funding, we are expanding our research portfolio and aggressively developing strategies to enhance our competitiveness through many of the initiatives described above.

Philanthropic Support: Reaching Unprecedented Levels

Renamed to acknowledge our board chair and his wife, NYU Langone Medical Center raised an unprecedented $506 million last year, led by an exceptional gift from Elaine A. and Kenneth G. Langone. Our philanthropic partners understand that the scope of our transformation requires extraordinary support from individuals as well as corporations and foundations and have launched an unsurpassed effort in response to our call.

This monumental support was exemplified this year by gifts from Trustees Fiona Druckenmiller and Tom Murphy and their spouses, which provided seed funding to our new Centers of Excellence and Core Facilities programs. Meanwhile our research enterprises have been transformed through several other notable gifts, including one from the Litwin Foundation, establishing the Litwin Alzheimer Research and Treatment Group, another from the Gary Saltz Foundation, establishing the Anita Saltz Institute for Anxiety and Mood Disorders, and an estate gift from alumnus Stanley Allan Isenberg, M.D., '43, establishing a fund for cardiovascular research.



This microarray slide contains hundreds of stained prostate tissue specimens. By enabling researchers to analyze hundreds of samples from different patients in one place, the arrays enable NYU researchers to quickly identify potential molecular markers. Such information could help speed the development of new tests for prostate cancer that would help doctors better predict the aggressiveness of a tumor.

Accomplishment *> Opened the Joan and Joel Smilow Research Center recently. The 13-story facility, completed in 2006, brought an additional 230,000 square feet of laboratory space equipped with some of the finest and latest technology available in biomedical research. > Strengthened our basic sciences through the gifts of Helen L. and Martin S. Kimmel for the Helen L. and Martin S. Kimmel Center for Biology and Medicine at the Skirball Institute for Biomolecular Medicine, and the Helen L. and Martin S. Kimmel Center for Stem Cell Biology.*

Our commitments are clear: to foster a highly collaborative model of multidisciplinary scientific investigation, to build programmatically, to invest in our future through training and career development, to stay at the cutting edge of enabling technologies, and to facilitate research through effective administration. In this report, we highlight just some of the exciting science and scientists at NYU Langone, and report on initial steps we have taken to translate our vision into reality.

Robert I. Grossman, M.D.
The Saul J. Farber Dean
& Chief Executive Officer

Vivian S. Lee, M.D., Ph.D., M.B.A.
Vice Dean for Science
Senior Vice President & Chief Scientific Officer

NYU Langone Medical Center comprises dozens of eminent institutes, centers, and programs that testify to the depth and breadth of scientific research and clinical care. Complementing the focus of our basic and clinical science

Two years ago, Marisa Elliano and her husband dreamt of having a child. But there was a problem. Diagnosed recently with Behçet's disease, which inflames the gastrointestinal system, causing debilitating pain, she was advised not to. Referred to the Seligman Center for Advanced Therapeutics at NYU Langone, she was put on Remicade, an anti-inflammatory drug developed by two NYU researchers. Within months, she was pain free—and pregnant. Today, over a million people with arthritis, Crohn's disease, and other inflammatory disorders, have also regained their lives.

departments, these provide interdisciplinary approaches to training, care, and research, exemplifying the spirit of NYU Langone. We are proud of the impact we have made on science through publication in prestigious journals and of the many distinctions our faculty receive.

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A View of Excellence at NYU Langone Today

With 230,000 square feet of space, the 13-story Joan & Joel Smilow Research Center accommodates dozens of researchers. Its open bench, modular design promotes interaction among colleagues and adapts to the changing needs of investigators. Laboratories along the eastern façade enjoy sweeping views of the East River and beyond.

Excellence Across the Spectrum of Medical Science

NYU Cancer Institute

Director: William L. Carroll, M.D.

The research mission of the NYU Cancer Institute is to discover the origins of cancer, and to use that knowledge to eradicate the personal and societal burden of cancer in our community and around the world.

The Cancer Institute specializes in translational research programs in melanoma, genitourinary cancers, and breast cancer, among other areas. Its basic research programs are devoted to cancer immunology, stem cell biology, and environmental and molecular carcinogenesis.

NYU cancer researchers are highly regarded for their studies of the complex cellular pathways leading to cancer—particularly breast cancer, childhood leukemia, prostate cancer, and lung cancer—which may provide new targets for treatment. New programs in neuro-oncology, developmental therapeutics, and cancer healthcare disparities have expanded research and treatment capabilities in these critical areas.

Leading-edge clinical trials at the institute, based on NYU research, are currently evaluating vaccines, new tools to detect lung and ovarian cancer at their earliest stages, and new treatments for prostate and breast cancer that appear to cause fewer side effects than existing treatments.

The Helen L. and Martin S. Kimmel Center for Biology and Medicine at the Skirball Institute for Biomolecular Medicine

Director: Ruth Lehmann, Ph.D.

The mission of the Helen L. and Martin S. Kimmel Center for Biology and Medicine at the Skirball Institute for Biomolecular Medicine is to conduct basic research in the cellular and molecular mechanisms that underlie the way organisms function, with the goal of improving human health.

Founded in 1993, the Skirball Institute conducts cutting-edge studies in four thematic areas: developmental genetics, molecular neurobiology, immunology and pathogenesis, and structural biology. It is home to some 280 researchers, including 27 principal investigators, from a diverse range of specialties—creating a fertile ground for multidisciplinary collaboration.

Such collaborations and the research of individual investigators have led to important discoveries in many areas, such as autoimmunity, the unfolded-protein response, cardiac development, cell polarity, signaling and migration, and neural networks. Researchers at Skirball have developed models for muscle wasting, Alzheimer's and Parkinson's disease, discovered the structural basis of antidepressant function and identified drug targets for HIV entry into human cells.

Among many honors, six Skirball investigators have received prestigious MERIT Awards from the NIH, two are also Howard Hughes Medical Institute investigators, and three others were recently elected into the National Academy of Sciences.

NYU Child Study Center

Director: Harold S. Koplewicz, M.D.

NYU Child Study Center is the nation's leading organization for research, prevention, and treatment of child and adolescent psychiatric and learning disorders. Through science-based clinical care, cutting-edge research, expert professional training, and extensive public education, the center strives to generate new knowledge about children's mental health, improve the practices of healthcare professionals who serve children, and influence child-related public health policy. Most importantly, the center provides hope, help, and care to children who suffer from these disorders and to their families.

Founded in 1998, the NYU Child Study Center is the only New York State Center of Excellence in Mental Health. The center is known worldwide for its research and clinical programs for children with attention deficit hyperactivity disorder (ADHD), autism and Asperger syndrome, Tourette's syndrome, anxiety and mood disorders, and for traumatized children. It has also established highly regarded suicide and obesity prevention programs.

The NYU Child Study Center also offers advanced training programs for child and adolescent psychiatrists and psychologists. Outreach programs focus on translating research into everyday skills for parents and educators and into practical applications for pediatricians and mental health professionals around the country.

Our leadership goals are bold: building on the great legacy of this institution, we aim to set the standard for world-class medicine in the 21st century.

Howard Hughes Medical Institute Investigators

Ruth Lehmann, Ph.D., *the Laura and Isaac Perlmutter Professor of Cell Biology, Director of the Helen L. and Martin S. Kimmel Center for Biology and Medicine at the Skirball Institute for Biomolecular Medicine, and Director of the Helen L. and Martin S. Kimmel Center for Stem Cell Biology*

Dan Littman, M.D., Ph.D., *the Helen L. and Martin S. Kimmel Professor of Molecular Immunology and Professor of Pathology and Microbiology*

Michele Pagano, M.D., *the May Ellen and Gerald Ritter Professor of Oncology in the Department of Pathology*

Danny Reinberg, Ph.D., *Professor of Biochemistry*

National Academy of Sciences Members

Ruth Lehmann, Ph.D., *the Laura and Isaac Perlmutter Professor of Cell Biology, Director of the Helen L. and Martin S. Kimmel Center for Biology and Medicine at the Skirball Institute for Biomolecular Medicine, and Director of the Helen L. and Martin S. Kimmel Center for Stem Cell Biology*

Dan Littman, M.D., Ph.D., *the Helen L. and Martin S. Kimmel Professor of Molecular Immunology and Professor of Pathology and Microbiology*

Rodolfo Llinas, M.D., Ph.D., *the Thomas and Suzanne Murphy Professor of Neuroscience and Chairman of the Department of Physiology and Neuroscience*

Richard P. Novick, M.D., *Professor of Microbiology and Medicine*

David D. Sabatini, M.D., Ph.D., *the Frederick L. Ehrman Professor of Cell Biology and Chairman of the Department of Cell Biology*

Cochlear Implant Center

Co-Directors: J. Thomas Roland, Jr., M.D., Susan B. Waltzman, Ph.D.

Established in 1984, the Cochlear Implant Center is one of the largest and most highly respected clinical and research implant centers in the world. The center provides a wide range of services for the hearing impaired, including preoperative diagnostic evaluation, implant surgery, implant programming, and rehabilitation.

Since its founding, NYU's hearing specialists have performed approximately 1,800 cochlear and auditory brainstem implants—one of the largest caseloads anywhere. A pioneer in the field, the center has played a key role in clinical studies of cochlear and auditory brainstem implants over the years, leading to the routine use of these devices.

Today, researchers at the center are involved in numerous projects. They are investigating the efficacy and safety of new implants, evaluating whether implants should be offered to new groups of patients such as young children and people with residual hearing, assessing the variables affecting implant programming and outcomes, evaluating the complications related to surgical techniques with the aim of eliminating those problems, and conducting work to improve electrode design.

Comprehensive Epilepsy Center

Director: Orrin Devinsky, M.D.

The mission of the NYU Comprehensive Epilepsy Center, the largest center of its kind in the U.S., is to set the standard of care for people with epilepsy through innovative therapies and cutting-edge research.

The center offers the most complex forms of intensive epilepsy monitoring, extensive neuropsychological and psychosocial services, and neurosurgical services for epilepsy treatment, earning it a level four designation from the National Association of Epilepsy Centers—the highest such rating.

NYU Langone epilepsy specialists are also involved in dozens of research projects. The center is a member in the Epilepsy Clinical Trials Consortium, formed by leading research centers to accelerate clinical trials of epilepsy treatments. In addition, the center is co-leading the Epilepsy Phenome/Genome Project, a major new NIH-funded initiative aimed at understanding the genetics of epilepsy. Other research highlights include the Hybrid Neuroprosthesis Study, which is developing an implantable device to treat seizures by detecting them and then delivering a drug to the epileptic region; a study of brain cooling to treat epilepsy; and a study of magnetic resonance spectroscopy for analyzing neurochemical changes in patients with epilepsy.

Center for Biomedical Imaging

Director: Daniel K. Sodickson, M.D., Ph.D.

One of the premier imaging research centers in the world, the Center for Biomedical Imaging is pushing the frontiers of biomedical imaging in ways that directly translate into better health care.

The center's researchers investigate neurologic and neurovascular disorders, cardiovascular disease, breast and prostate cancer, pulmonary function and disease, hepatobiliary and renal function and disease, arthritis and musculoskeletal disease, and other areas.

Among the center's arsenal of imaging devices is a 7-Tesla MRI machine—the most powerful human MRI system in the New York metropolitan area, and one of only a handful of ultra-strong imaging magnets available in the world for clinical and basic research. The machine allows researchers to obtain highly detailed snapshots of anatomic structures and metabolic pathways in living tissue—improving our understanding, for example, of how disease affects the brain's metabolism.

The center is also home to two 3-Tesla MRI systems for research and clinical use, offering superior imaging both for adults and for the smaller anatomical structures in children. Other core technologies at the center include magnetic resonance spectroscopy, diffusion mapping, novel MRI detectors, and quantitative multimodality image analysis and modeling.

NYU Center for AIDS Research

Director: Fred Valentine, M.D.

The Center for AIDS Research supports a large multidisciplinary effort to advance basic, clinical, epidemiologic, and behavioral research into the prevention, detection, and treatment of HIV/AIDS. Basic research at the center spans many areas, including laboratory studies on the HIV genome and proteins, mechanisms of immunodeficiency, drug development, vaccine design, and interactions between HIV and tuberculosis.

One of the first centers of its kind in the U.S., the center has a distinguished history: NYU clinicians and scientists were among the first to identify, study, and treat adults and children with HIV. The center works to promote the highest quality of care for HIV-positive individuals by encouraging the involvement of providers and the community in clinical research.

The center participates in a wide variety of clinical trials, including studies that evaluate use of multiple drugs to control the virus as well as opportunistic infections. Other clinical trials assess strategies that reduce the negative side effects of HIV medications. Our researchers are also engaged in vaccine research aimed at preventing HIV infection, and programs aimed at changing behavior among people at risk of infection. The center's efforts now span the globe with training programs and studies in Africa and Asia.

Our basic scientists are intrepid explorers whose discoveries—sometimes serendipitous, often transformative—help us to understand the why and how of diseases.

Vital Statistics*

M.D. candidates	641
M.D.'s awarded	153
M.D./Ph.D. candidates	75
M.D./Ph.D.'s awarded	5
Ph.D. candidates	238
Ph.D.'s awarded	27
M.S.'s in Clinical Investigation awarded	9

Faculty Statistics*

Full-time	1,582
Part-time	3,491
Residents & Fellows	975
Postdoctoral Fellows	350
Registrants for Postgraduate Medical Education Courses	4,979

**Based on data for calendar year 2007*

Sackler Institute of Graduate Biomedical Sciences

Director: Joel Oppenheim, Ph.D.

A division of NYU's Graduate School of Arts and Science, the world-renowned Sackler Institute offers interdisciplinary training programs in the basic medical sciences, leading to the Ph.D. degree.

Degrees are offered in the following areas: biomedical imaging, cellular and molecular biology, computational biology, developmental genetics, medical and molecular parasitology, microbiology, molecular oncology and immunology, molecular pharmacology, neuroscience and physiology, pathobiology, and structural biology.

Ph.D. candidates also have the opportunity to enroll in a unique graduate program in structural biology linked with the National Institutes of Health (NIH) that combines the academic environment of NYU and the breadth and depth of research at the NIH.

The Sackler Institute, which attracts students from around the globe, also offers a combined M.D.-Ph.D. degree in coordination with the NIH's Medical Scientist Training Program, a Summer Undergraduate Research Program for qualified sophomores and juniors who are interested in pursuing research careers, and extensive opportunities for postdoctoral study.

Clinical and Translational Science Institute

Co-Directors: Bruce Cronstein, M.D., Judith Hochman, M.D.

One of NYU's newest centers, the Clinical and Translational Science Institute was established to transform the way that research is conducted at NYU Langone Medical Center, with the ultimate goal of speeding the translation of scientific discoveries into new therapies.

A partnership between NYU and the New York City Health and Hospitals Corporation, the institute aims to increase collaboration among clinical, translational, and basic scientists across the colleges and schools of NYU in order to better determine the relevance and applicability of scientific advances to clinical problems. In addition, the institute will provide the leadership, infrastructure, and resources to support novel science and the rapid, efficient, and safe application of scientific discoveries to the community.

This new venture will also support the education, training, and development of researchers who can carry on the investigations necessary to bring scientific advances to the public.

Finally, the institute will work to enhance ties between NYU researchers and the many communities in our large and polyglot city. This will enable researchers to move more rapidly to identify health problems, investigate their scientific basis, apply the knowledge gained, and promote the community's use of new advances and evidence-based medicine.

Nelson Institute for Environmental Medicine

Director: Max Costa, Ph.D.

The Nelson Institute for Environmental Medicine is part of the Department of Environmental Medicine, which was founded in 1947 and is one of the nation's oldest and most distinguished centers for research into the health effects of environmental pollution. It is particularly known for its studies of urban air pollution, and is one of a handful of centers nationwide focused on characterizing the biological basis of how tiny airborne particles affect mortality and morbidity, and cause pulmonary and cardiovascular diseases.

The institute played a leading role in warning the public about the dangers of air pollution resulting from the attacks of 9/11, and its researchers continue to study and treat respiratory disorders in people exposed to dust and debris from Ground Zero.

The institute's researchers have conducted groundbreaking studies on the role of ambient air pollution in causing asthma among children living in the South Bronx. In another area, they continue to employ biomedical, ecological, and engineering analyses to assess the potential hazardous impact of toxic metals on humans and on aquatic ecosystems. Nelson Institute researchers are particularly interested in how metals and other carcinogens cause cancer. Their projects focus on the effect of environmental carcinogens on cell signaling, epigenetic homeostasis and DNA damage, which can all lead to tumor formation.

Center for the Prevention of Cardiovascular Disease

Director: Edward A. Fisher, M.D., Ph.D., M.P.H.

The mission of the Center for the Prevention of Cardiovascular Disease is to reduce the impact of cardiovascular disease—the number one cause of death in the U.S.—through prevention and research.

One of the leading facilities of its kind, the center offers patients comprehensive risk assessment of cardiovascular disease, as well as medical and dietary treatment plans aimed at attaining a "heart healthy" status.

The center's clinical researchers recently launched a major study of how to optimize adherence and compliance with guidelines on blood pressure control and lipid levels. Also underway is a trial of rosuvastatin, a statin drug for lowering LDL cholesterol ("bad" cholesterol) in individuals who are overweight and at high risk for diabetes. In basic research, investigators are studying cellular pathways regulating LDL production, and have created pioneering animal models in which the arterial plaques that cause heart attacks have been eliminated.

Institute for Community Health and Research

Principal Investigator: Mariano Rey, M.D.

The mission of the Institute for Community Health and Research is to reduce health disparities in disadvantaged minority populations through community-based participatory research, outreach, and training. The institute works in partnership with community-based organizations, governmental agencies, healthcare institutions, and other academic centers.

There are four centers within the institute: the Center for the Study of Asian American Health; the Center for the Health of the African Diaspora; the Center for Latino Health; and the Center for Health and Human Rights. The institute addresses diseases that create an undue health burden in these populations, including cardiovascular disease, diabetes, hepatitis, and specific types of cancer.

The institute is funded through the National Institutes of Health and the Centers for Disease Control and Prevention. The institute has been designated a National Research Center of Excellence and a National Center of Excellence in the Elimination of Health Disparities. In January 2009, the institute will publish a book entitled *Asian American Communities and Health*, the first of its kind.

Highlights of Published Research

Our faculty are publishing their work widely. In this section, we highlight just a few of the more than 3,000 research publications that featured NYU researchers in 2007 and the first half of 2008. Listed are some of the papers by NYU Langone faculty in some of the most widely cited scientific journals of broad appeal, such as Science, Nature, JAMA, *and* The New England Journal of Medicine*—sometimes even gracing their covers. This list barely begins to cover all the great science our faculty members are reporting on—much of which is published in journals that have high impact within their fields directed to specialized audiences.*

2007

Abeles A, Pillinger M, Solitar B, Abeles M. Narrative review: the pathophysiology of fibromyalgia. *Annals of Internal Medicine.* 2007;146(10):726-734.

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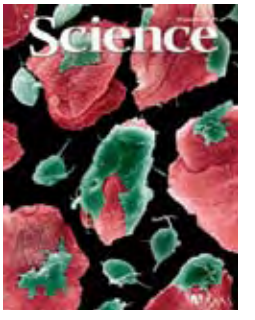

Bhardwaj N. Harnessing the immune system to treat cancer. *Journal of Clinical Investigation.* 2007;117(5):1130-1136.

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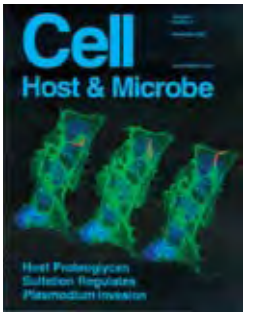

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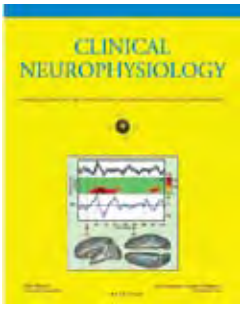

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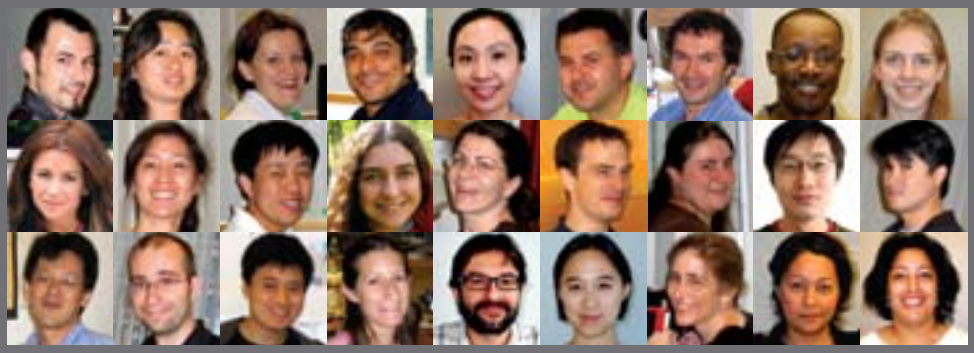
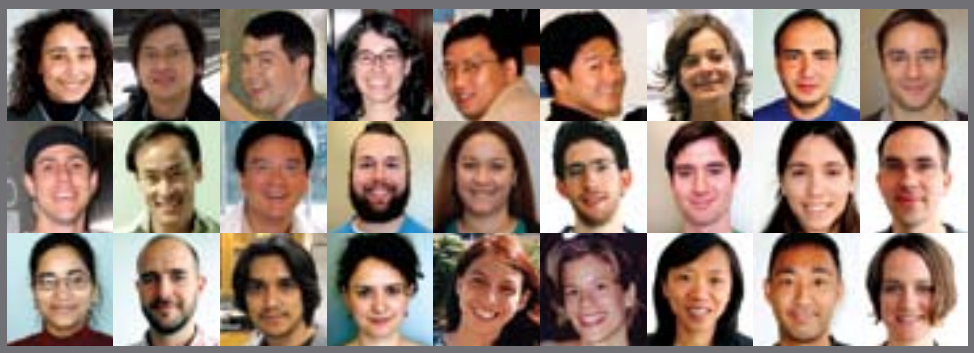


NYU Langone is home to hundreds of brilliant scientists and clinicians whose talents are our greatest asset. Amoung them: four Howard Hughes Medical Institute Investigators; five members of the National Academy of Sciences; five members of the Institute of Medicine; two recipients of the Alfred P. Sloan award for exceptional young researchers; and a 2006 recipient of the NIH Director's Pioneer Award. On the following pages, you will meet just ten of the many high-caliber scientists working in our laboratories, clinics, and classrooms.



The image below shows mitosis in a tumor cell with a tripolar spindle and misaligned chromosomes, defects that contribute to cancer development.

re:searchers

Profiles of Ten Scientists

Michele Pagano, M.D. *Crossing Borders*
Susan Zolla-Pazner, Ph.D. *A Hairpin Turn*
Tung-Tien Sun, Ph.D. *Getting to the Root of the Matter*
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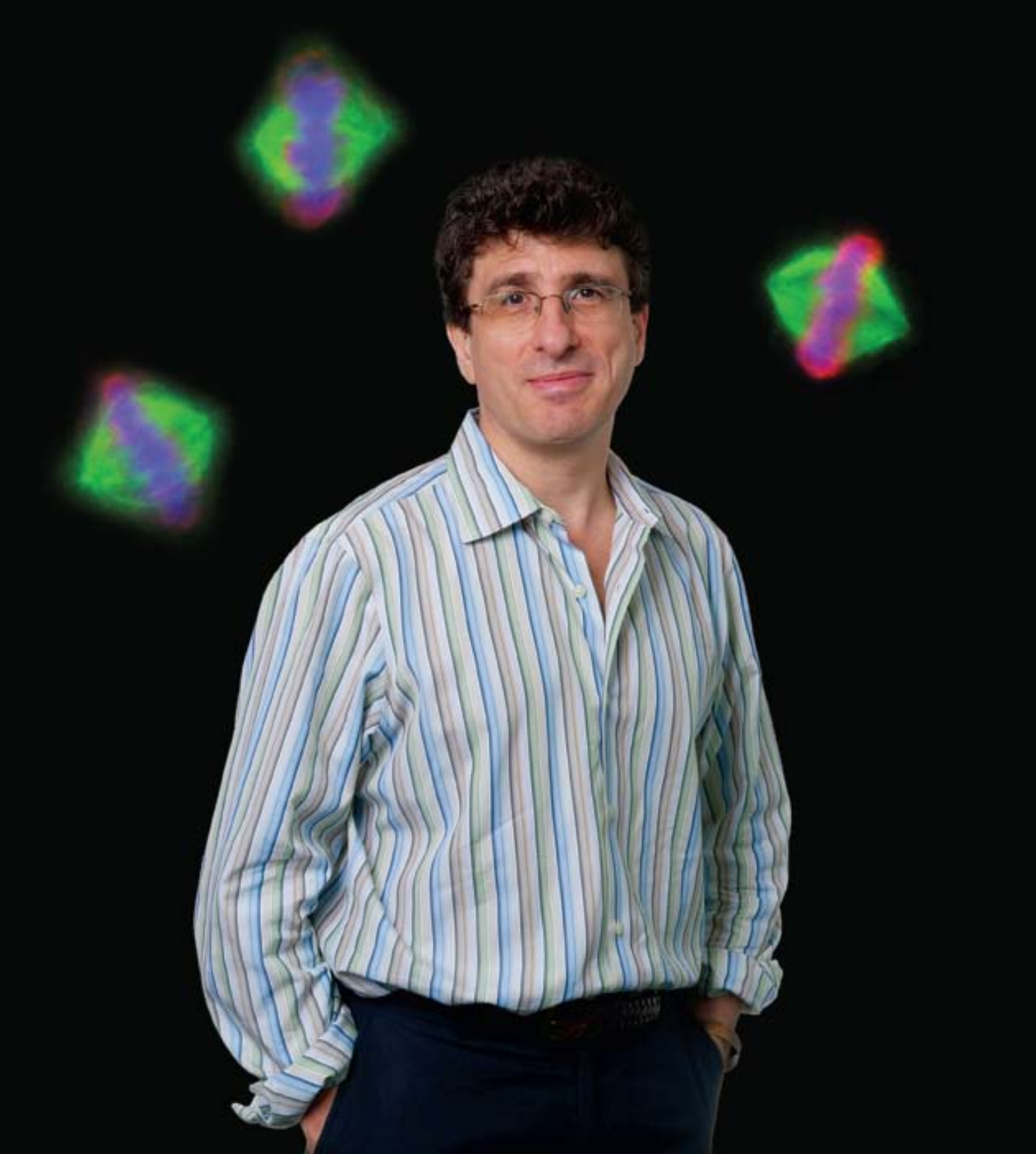
F. Xavier Castellanos, M.D. *The Brain Pediatrician*
Jane Carlton, Ph.D. *Hooked on Parasites*
Mark Philips, M.D. *Traffic Patterns*
Joan Reibman, M.D. *A Particle of Difference*
Wen-Biao Gan, Ph.D. *A Window on the Living Brain*
Evgeny A. Nudler, Ph.D. *Pioneer on Myriad Frontiers*



From his birthplace in Naples to his lab at NYU Langone, this scientist continues to cross borders as he uses an interdisciplinary approach to explore the role of the cell's ubiquitin system in cell proliferation, differentiation, and death. His studies have broad implications that bridge the worlds of basic science and translational cancer biology.

Crossing Borders

Michele Pagano, M.D.

May Ellen and Gerald Jay Ritter Professor of Oncology;
Professor of Pathology; Investigator, Howard Hughes Medical Institute

The F-Box Family as Pandora's Box: Dr. Pagano's research explores the roles that the ubiquitin system plays and how the deregulation of this system can cause cancers. He has found that many F-box proteins have connections to cancer—for instance, a low level of one type of F-box protein is a warning that a tumor may be developing. In breast cancer, Dr. Pagano demonstrated that high levels of a different F-box protein represent a diagnostic sign that the cancer is of a highly aggressive form. Raising levels of yet another F-box protein seems to sensitize tumors to anticancer drugs. Asked if he thought much about translating his work to the bedside, Dr. Pagano replied, "All the time. We have collaborations with people at the Medical Center and with industry to explore F-box proteins as targets for cancer therapies. But, I also remind you of the words of Arthur Kornberg, the Nobel Prize-winning biochemist: 'No matter how counter-intuitive it may seem, basic research has proven over and over to be the lifeline of practical advances in medicine.'"

Now that he has been selected as a Howard Hughes Medical Institute (HHMI) Investigator—one of the highest honors that can be bestowed on a biomedical research scientist—Dr. Michele Pagano has a passport that gives him unprecedented freedom to continue his interdisciplinary investigations and "extend the boundaries of knowledge."

His work virtually defines the HHMI criteria for creativity, innovation, and productivity. Since he joined the NYU Department of Pathology, Dr. Pagano has been working on the ubiquitin system, which is part of the cell's recycling organization. Specifically, he has focused on F-box proteins—subunits of the SCF ubiquitin ligase family of enzymes that are, as the name "ubiquitin" suggests, virtually everywhere in the cell's workings. In the past few years, his team has found that of the 69 F-box proteins identified to date, 16 play a major role in controlling cell size, proliferation, and death. Now they are working with this whole group of proteins to reveal their unknown substrates and functions.

"We opened Pandora's Box by studying this family of genes," said Dr. Pagano. "We started with a focus on cell cycle control, but have since expanded to multiple cellular pathways—and discovered that F-box proteins are involved in controlling cell proliferation, DNA-damage checkpoints, chromosomal stability, ribosomal biogenesis, protein synthesis, apoptosis, neurogenesis, and even the setting of the body's circadian clock! Many of these pathways have been studied separately, in isolation. We are excited about opening the field to new ideas and creating fresh interactions."

Her life's work took a hairpin turn in 1981, when this researcher's immunology lab described the immune impairment in four patients with a mysterious illness soon to be known as AIDS. Now, with a grant from the Bill and Melinda Gates Foundation, her team is using sophisticated techniques to find out if a portion of the virus—the V3 loop, shaped like a hairpin—could be the key to developing a novel vaccine against HIV.

A Hairpin Turn

Susan Zolla-Pazner, Ph.D.
Professor of Pathology;
Chief of Immunology at Manhattan VA Medical Center

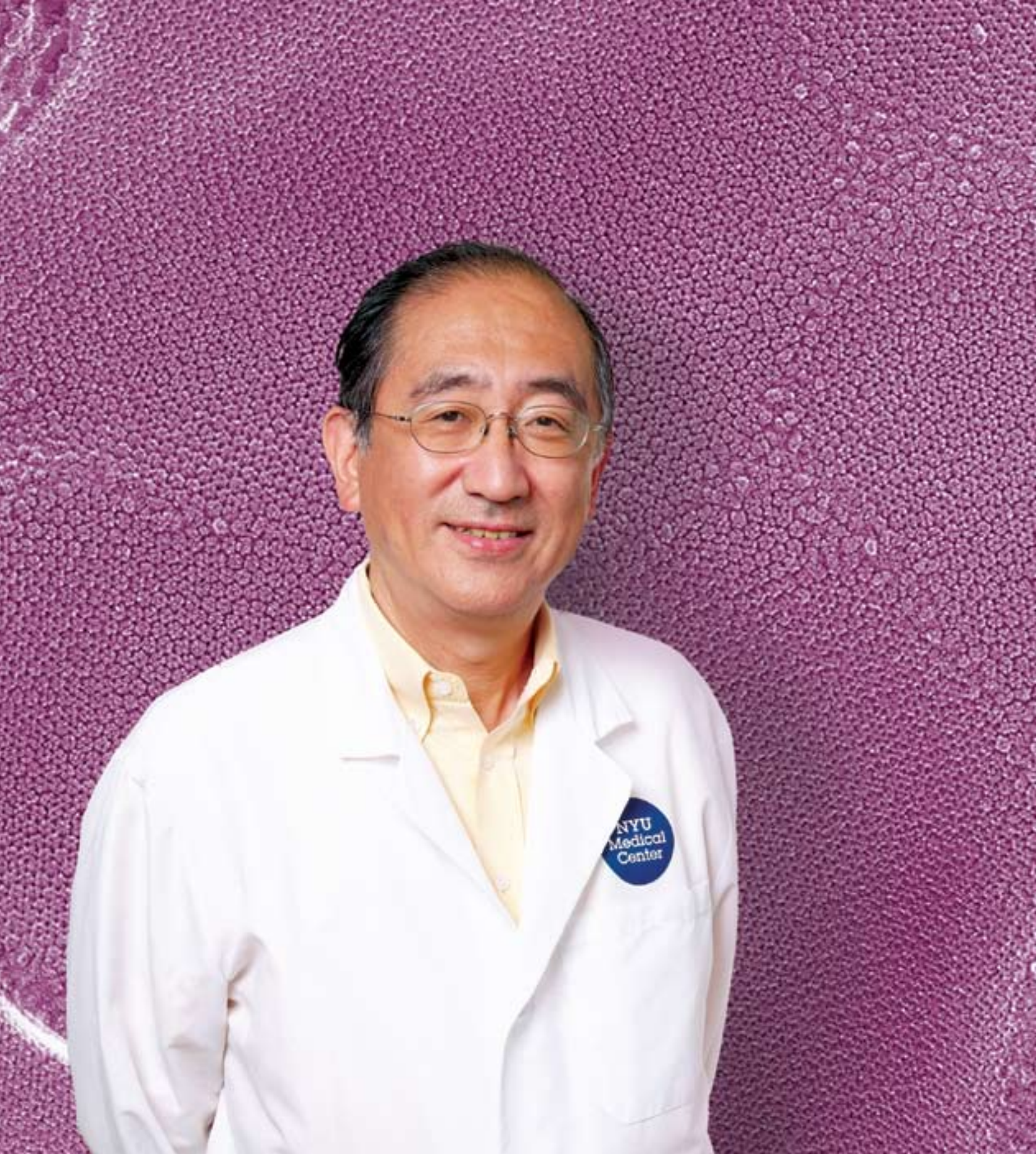
"A chill spread through all of us in the lab…When we saw that one-third of our healthy test group had the same strange T-cell syndrome as the four patients identified with Kaposi sarcoma, we knew something enormous was circulating in the gay community," said long-time AIDS researcher Dr. Susan Zolla-Pazner, recalling the start of the epidemic.

That moment was also the start of a career-long search for the specific part of the HIV virus' protein coat that elicits antibodies that block HIV infection. Although many scientists turned away from this "antibody path" when early attempts to develop vaccines failed, as an immunologist, Dr. Zolla-Pazner remained convinced of the importance of pursuing antibodies in general, and V3 antibodies in particular. Her lab has already produced powerful antibodies from cell lines of individuals infected with HIV.

In 2006, Dr. Zolla-Pazner was the recipient of a three-year grant to participate in the Collaboration for AIDS Vaccine Discovery, an international network of highly collaborative research projects funded by the Gates Foundation. Dr. Zolla-Pazner has assembled an interdisciplinary team of researchers that builds on her own strength in immunology, including scientists specializing in virology, crystallography, and structural and computational biology. This team brings together scientists from eleven institutions in the United States, India, and Cameroon in West Africa, where HIV subtypes B, A and C, respectively, are predominant.

"When I came to New York for a two-year post-doc, I could never have imagined all this," she said. "The intellectual stimulation. The human catastrophe. The sense that maybe you can make a difference in your lifetime. The opportunity to pass on to students what you know—and show them how basic science can really impact on the human condition."

The HIV-1 virus surface V3 loop (rendered here as an orange ribbon) captured by the broadly neutralizing human monoclonal antibody 447-52D (colored surfaces). The sequences of amino acids that make up the V3 loop vary, but the fundamental structure with its distinctive hairpin turn remains the same, and is widely recognized by a powerful group of antibodies. Using special assays, these antibodies are being tested for neutralizing activity, and the most broadly acting are being crystallized along with the V3 loops that they recognize. The crystals are providing the basis for sophisticated molecular modeling studies that are helping researchers identify the features of the V3 loop that elicit protective antibodies.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Center

Whether searching for the root of epithelial stem cells or the solution to the puzzling question of why some highly intelligent students fail as researchers, this biologist has a boundless curiosity that has led to unexpected answers.

Getting to the Root of the Matter

Tung-Tien Sun, Ph.D.

Professor of Cell Biology; Rudolph L. Baer Professor of Dermatology; Professor of Pharmacology and Urology

Shown magnified here behind Dr. Sun, the surface structure of the bladder epithelium consists of numerous 2D crystals of hexagonally-packed 16-nm uroplakin particles that provide a remarkably impermeable barrier. Among the findings of Dr. Sun's team: uroplakins are useful markers for metastatic bladder cancer; uroplakins may serve as the urothelial receptor for uropathogenic *E. coli,* which causes over 90 percent of urinary tract infections; and urinary bladder cells can be converted into a novel bladder bioreactor. This image was generated using electron microscopic techniques by Dr. Sun's collaborators, Dr. Xiangpeng Kong, Associate Professor of Biochemistry, and Dr. Bechera Kachar of NIH.

Dr. Tung-Tien Sun's curiosity is as diverse as the epithelial cells to which he has devoted a lifetime of study. By grappling with fundamental questions about the biology of the epithelial cells covering many of the body's organs, Dr. Sun has made discoveries that have contributed to dermatology, ophthalmology, and urology. These findings have translated into clinical areas ranging from corneal transplantation to urinary tract infections to cancer diagnostics.

His early research revealed that keratins—a group of proteins once thought to exist only as a tough fiber in hair and nails—are actually present in all epithelial cells. At NYU, Dr. Sun has used keratin expression to find answers to previously unsolved puzzles such as the location of corneal stem cells, and the location of stem cells for hair follicles. Each of these groundbreaking findings has had substantive clinical impact. The discovery of stem cells in the cornea's limbus led to a new surgical technique called "limbal stem cell transplantation" used to restore sight in patients suffering from severe corneal damage due to burns or other trauma. The discovery that hair and skin cells both originate from the common stem cell in the hair follicle may provide new therapeutic approaches to various skin diseases, and also has broad implications for our understanding of certain types of skin cancers.

In recent years, Dr. Sun turned his inquiry to the bladder epithelium (see caption, left), and to another riddle: why some straight-A students are lost when it comes to research. In a paper in *Nature Reviews: Molecular and Cell Biology*, Dr. Sun links excessive trust in authority to faulty experimental design and decision-making. He has also developed a series of lectures offering practical ways to overcome these problems.

Over the past two decades, this internationally recognized cardiologist has conducted several landmark clinical trials—the results of which have challenged prevailing assumptions. In the process, her work has dramatically changed the treatment of acute myocardial infarction and rewritten the guidelines for aggressive cardiac intervention.

Changing Hearts and Minds

Judith S. Hochman, M.D.
Harold Snyder Family Professor of Cardiology; Director, Cardiovascular Clinical Research Center; Co-Director, Clinical and Translational Science Institute

The story broke on the front page of *The New York Times* on November 15, 2006. Headlined "Study Questions Angioplasty Use In Some Patients," the article reported that an important clinical trial had shown that use of stents to unblock clogged arteries—though lifesaving in the hours immediately following a heart attack—often does no good if the heart attack occurred several days earlier.

The study, called Occluded Artery Trial, or OAT, involved 2,166 patients in 217 sites on five continents, and was led by NYU Langone's Dr. Judith Hochman. The results of the National Heart, Lung and Blood Institute (NHLBI)-funded study surprised her as much as it did other cardiologists. "We had expected to find that angioplasty would reduce the risks of heart failure, subsequent heart attacks and death—but the theory failed the test," she said. "That's why we have clinical trials, and that's why we need clinical trials that test current practices as well as new drugs and treatments."

Other trials led by Dr. Hochman have been equally impactful. She was Study Chair of the NHLBI-funded SHOCK trial which also yielded surprising results. According to Dr. Hochman, many current procedures and drugs warrant careful clinical study. "We have an overwhelming challenge, " she said. "Doctors and patients have to understand that participation in clinical trials is necessary if you want to keep making advances." Dr. Hochman is accustomed to such challenges as a physician, scientist, and author. Says Dr. Hochman: "Persistence is my hallmark."

In addition to the OAT trial, the results of which made headlines in *The New York Times*, Dr. Hochman was Study Chair of the SHOCK trial, which focused on treatment of patients who develop cardiogenic shock—the leading cause of death in heart attack patients once they reach the hospital. The findings of the study, published in 1999, showed that aggressive, invasive treatment such as bypass surgery or angioplasty could save the lives of cardiogenic shock patients. As a result of this study, the American Heart Association and the American College of Cardiology re-wrote their guidelines and now recommend aggressively treating heart attack shock patients

"All the News That's Fit to Print"

The New York T

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STUDY QUESTIONS ANGIOPLASTY USE IN SOME PATIENTS

EXPERTS URGING CHANGES

Implanting Stents Days After Heart Attack May Not Be a Benefit

By DENISE GRADY

Opening a blocked artery with balloons and stents can be lifesaving in the early hours after a heart attack, but a new study concludes that it often does no good if the heart attack occurred three or more days before.

The findings should change medical practice, researchers say, and could affect as many as 50,000 patients a year in the United States. They say doctors should stop trying to open arteries in people who had heart attacks days or weeks before and who are stable and free of chest pain.

Currently, the balloon procedure, called angioplasty, is used in many of those patients, along with stents, devices implanted to prop open an artery. When patients receive treatment late, it is often because they did not realize that they had had a heart attack and delayed going to the doctor or hospital. In some cases, too, doctors may not make the correct diagnosis right away.

The new study "should change practice, and I believe it will," said Dr. Judith S. Hochman, director of the cardiovascular clinical research center at New York University medical school, and leader of the study.

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LITARY ANALYSIS

So Fast, S

Dr. F. Xavier Castellanos has been paying close attention to attention-deficit/hyperactivity disorder (ADHD) for 17 years. Following his 2002 landmark study—which used neuroimaging to disprove that the drug Ritalin shrinks children's brains—he shifted his attention to a new way of studying the brain's activity, with implications for understanding not only ADHD, but how the brain processes information.

"The Brain Pediatrician"

F. Xavier Castellanos, M.D.

Brooke and Daniel Neidich Professor of Child and Adolescent Psychiatry; Director of Research at NYU Child Study Center; Director, Phyllis Green and Randolph Cōwen Institute for Pediatric Neuroscience; Professor of Radiology

Dr. Castellanos and his team at the NYU Child Study Center are working with the idea that slow, widespread patterns of brain activation, which fluctuate roughly every 45 seconds, highlight the circuits connecting widely dispersed parts of the brain, which could provide a key to understanding psychiatric disorders like ADHD. "The synchronization of these fluctuations across long distances indicates that the regions are functionally connected," Dr. Castellanos explained. "Even though we can't see the connections, there is no other explanation for their synchrony." His team has used various "spheres of interest," or "seeds," to measure blood flow patterns and to look for matching patterns in other parts of the brain. The fMRI image (above, left) is from a recently published pilot study of adults with ADHD. It compares the functional connectivity between front and back regions of the brain in a group of adults with ADHD and a control group. It shows that a strong association between the ventromedial prefrontal cortex and the posterior cingulate cortex (in red), was missing in the ADHD group.

To give a name to the unusual convergence of his work in pediatrics, child psychiatry, and radiology, Dr. F. Xavier Castellanos had to be creative. "I coined the term 'Brain Pediatrician,'" he admitted. But then, creativity seems to come naturally to someone whose penchant for original ideas has been acknowledged so widely.

Dr. Castellanos has been on the frontlines of ADHD, the most common and controversial of childhood disorders. He's convinced that the way to make real progress in treating disorders like ADHD is by uncovering their neurological basis. For ten years, he pursued his neurobiological investigation at the National Institute of Mental Health (NIMH), where he and collaborators published papers uncovering discernible physical differences in the brains of children with ADHD.

At NYU Langone's Child Study Center, he has found the creative freedom and the collaborators to pursue investigations of a little-understood aspect of the brain's neural activity: slow fluctuations in blood flow exhibit regular patterns of neural activity and inactivity that are synchronized widely throughout the brain—even when the brain is at rest. Because he believes this phenomenon reveals fundamental aspects of how the brain processes information, Dr. Castellanos and his colleagues are exploring how this 'functional connectivity' between brain regions may account for the cognitive symptoms of ADHD.

"With ADHD, there's confusion and frustration on the part of parents and afflicted children," said Dr. Castellanos. "And while we've done a good job of describing the behavioral aspects, we still don't have a good explanation of what's going on in the brain. Until we have that, the controversy will continue."

The obsession started during her student days, when she was exposed to malaria—the renowned malaria group at Edinburgh University, that is. Since then, Dr. Jane Carlton's fascination with "nasty bugs" has taken the genomicist all over the developing world. It recently brought her to NYU, which has its own illustrious history in malaria vaccine research and can also provide her the "broad diversity of parasites" she craves.

Hooked on Parasites

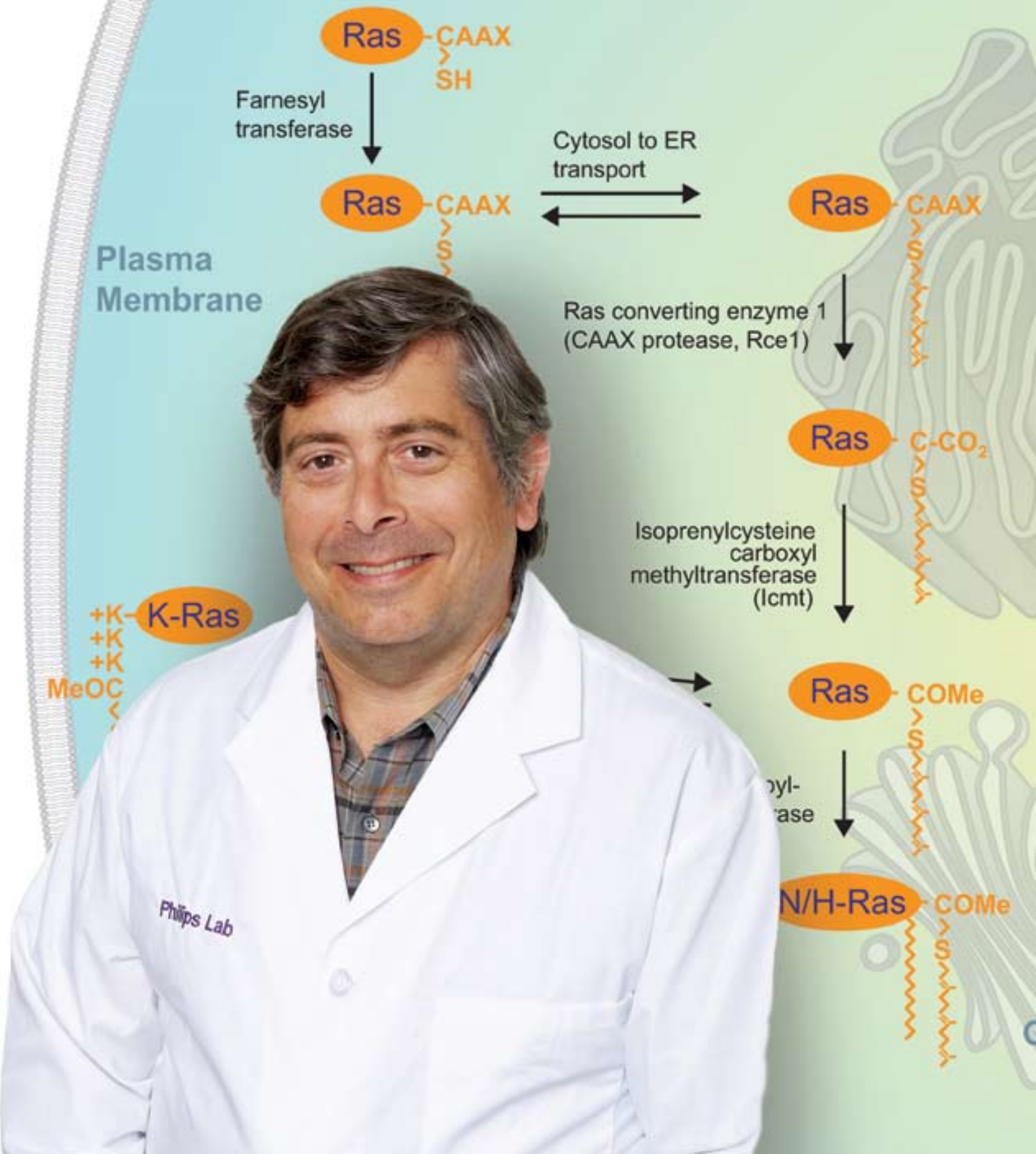
Jane Carlton, Ph.D.
Associate Professor, Medical Parasitology

"Parasitologists like the 'yuck' factor, and *Trichomonas vaginalis* (*T. vaginalis*) has loads of that," declared Dr. Jane Carlton, who led the team that recently finished decoding the unexpectedly large genome of this sexually transmitted human pathogen. According to the World Health Organization, trichomoniasis afflicts some 170 million people a year, and is an under-diagnosed global health problem. *T. vaginalis* latches onto the vaginal lining and destroys epithelial cells.

Sequencing the *T. vaginalis* genome was a four-year project that involved 66 researchers in 10 countries, with expertise in cell biology, biochemistry, and bioinformatics. The findings, published in the January 2007 issue of the journal *Science*, are already providing new approaches to the diagnosis and treatment of this sexually transmitted disease. For example, the researchers discovered several genes and proteins not found in humans—important information for drug developers. One enzyme, a peptidase, is similar to a peptidase in HIV, the virus that causes AIDS. A class of antiretroviral HIV drugs already exists to target this peptidase, and could be used to treat the parasite.

In addition to causing painful symptoms, the *T. vaginalis* parasite increases susceptibility to the HIV virus. "Curing this sexually transmitted disease (STD) in women would decrease vulnerability to HIV transmission in the entire population," said Dr. Carlton. She is currently working with the New York City Department of Health & Mental Hygiene, Bureau of STD Control, which has ten STD clinics where Dr. Carlton is collecting samples to learn more about the prevalence of *T. vaginalis* in New York's culturally diverse population.

In a color-enhanced scanning electron micrograph, *Trichomonas vaginalis* float behind Dr. Carlton. Sequencing the genome of *T. vaginalis* has given NYU researchers gory reading material on some of the pathogen's foul habits. The parasite latches onto vaginal tissue and forms tendril-like projections into it. The pathogen also secretes a series of proteins that destroy the vaginal epithelial cells—the cells that make up the vaginal tissue surface. *T. vaginalis* is just one of several eukaryotic parasites of interest to the Carlton lab, which focuses on the comparative genomics of infectious parasites—including those that cause tropical diseases such as malaria.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Philips Lab

For 20 years, this physician-scientist has navigated his bicycle through the streets of New York City to his lab, where he focuses on a different kind of traffic—the activity of cellular-signaling molecules called GTPases. These molecules are central to virtually all cellular processes, including those underlying disorders as diverse as autoimmune diseases and cancer. His team wants to interfere with the traffic pattern to find new routes to cancer drugs.

Traffic Patterns

Mark Philips, M.D.

Professor of Medicine, Cell Biology, and Pharmacology

The Philips lab made an important discovery about the regulation of K-Ras (the Ras gene associated with pancreatic, lung and colon cancers). "We discovered that the position of K-Ras in membranes is not permanent, and that its positioning can be regulated by a signaling enzyme called protein kinase C, which causes a phosphate molecule to be added to K-Ras and thereby dislodges it from the membrane," says Dr. Philips. "Most surprising of all, the dislodged K-Ras goes to the mitochondria, which regulates apoptosis. Once there, the K-Ras promoted cell death. We're seeing a gene that we usually associate with out-of-control cell growth—aka tumors—actually causing those cells to commit suicide." This suggests a novel method of treating human tumors with PKC agonists, one of several paths Dr. Philips is now pursuing.

"The road from rheumatology to cancer biology was via inflammation and some of the signaling molecules that control it—namely, small GTPases, including protooncogen Ras," explained Dr. Mark Philips, describing his post-residency path from a senior fellowship in the Division of Rheumatology, to the NYU Cancer Institute, and his present lab in the Smilow Research Center.

The Philips lab is investigating small GTPases along a number of tracks, and has made several important discoveries connected to Ras along the way—including work that illuminated the dramatic differences between the three types of Ras genes. Ras proteins have captured the interest of cancer researchers since the late 1970s, when they were discovered to be oncogenes. Acting like molecular switches, the Ras proteins can be turned on and off to control pathways that regulate cell growth and survival. The mutated form gets locked into the "on" position and can't be turned off, causing cells to grow uncontrollably—resulting in cancer.

When attempts to find a way to un-stick the "on" switch didn't succeed, researchers turned their attention to Ras trafficking and the three enzymes that direct its journey from the cytosol to the cell's membrane. Dr. Philips, who was the 2000 recipient of the Burroughs Wellcome Fund Translational Research Award, has continued to pursue this line of thinking. "We cloned the third enzyme, called Icmt, in my lab in 1998 and it is now a drug target for anti-cancer drugs," said Dr. Philips. "We're currently analyzing the structure and function of Icmt to assess its role in oncogenesis and tumor progression."

As Director of Bellevue's Asthma Clinic, she has been caring for asthma patients for years while also pursuing research on the impact of ambient particulate matter on the lungs. After 9/11, Dr. Joan Reibman found herself uniquely positioned to investigate how the Towers' collapse impacted the respiratory health of residents and bystanders near Ground Zero. Her findings have helped thousands breathe easier.

A Particle of Difference

Joan Reibman, M.D.
Associate Professor of Medicine and Environmental Medicine;
Director of Asthma Clinic

"We showed that not just World Trade Center workers were suffering, but residents and bystanders, too," said Dr. Joan Reibman, referring to the critical epidemiological research she conducted after 9/11 in collaboration with the New York State Department of Health. "We documented a significant increase in respiratory symptoms that were asthma-like at a time when there was no federal funding for treatment of this population."

In 2005, with $2.1 million in funding from the American Red Cross Liberty Disaster Relief Fund, the World Trade Center Environmental Health Center in Bellevue Hospital, under the direction of Dr. Reibman, finally began to treat patients with wide-ranging symptoms. With additional funding from the city, the clinic has since been able to add social workers, psychologists, gastroenterologists and other specialists to treat what has proven to be both a mental and physical health issue. "This is a wonderful interdisciplinary clinic—we have evaluated and helped over 2500 patients," said Dr. Reibman. "We would like this type of program to be available at the Asthma Clinic as well."

Dr. Reibman was drawn to pulmonary medicine by both a desire to help the underserved populations most affected by asthma and tuberculosis, and by a scientific curiosity about the unknown mechanisms of these chronic diseases. Her lab is currently focused on how airway epithelial cells modulate inflammation leading to asthma.

According to Dr. Reibman, New York is a great place for pulmonary and environmental research. "We have a large patient population in need of care and an understanding of why they're sick. We have great scientists, collaborators, and people doing outreach in the community. And we have plenty of particulate matter—better known as pollution!"

Shown in background, an enlarged image of human bronchial epithelial cells that have been exposed to New York City particulate matter and have engulfed the particles. In an NIH-funded study, Dr. Reibman's group found that these cells are stimulated and activated by pollutants. Signals derived from these stimulated epithelial cells trigger dendritic cell maturation and polarization, which in turn can alter T-cell function that promotes the type of immune response seen in asthma. This finding may provide clues to understanding the increase in allergic asthma in response to ambient pollutants. Further study is underway to understand which components of pollution are responsible for activation of the epithelial cell, how it generates signals to recruit dendritic cells, and whether there is an interaction with common urban allergens such as cockroach antigen.


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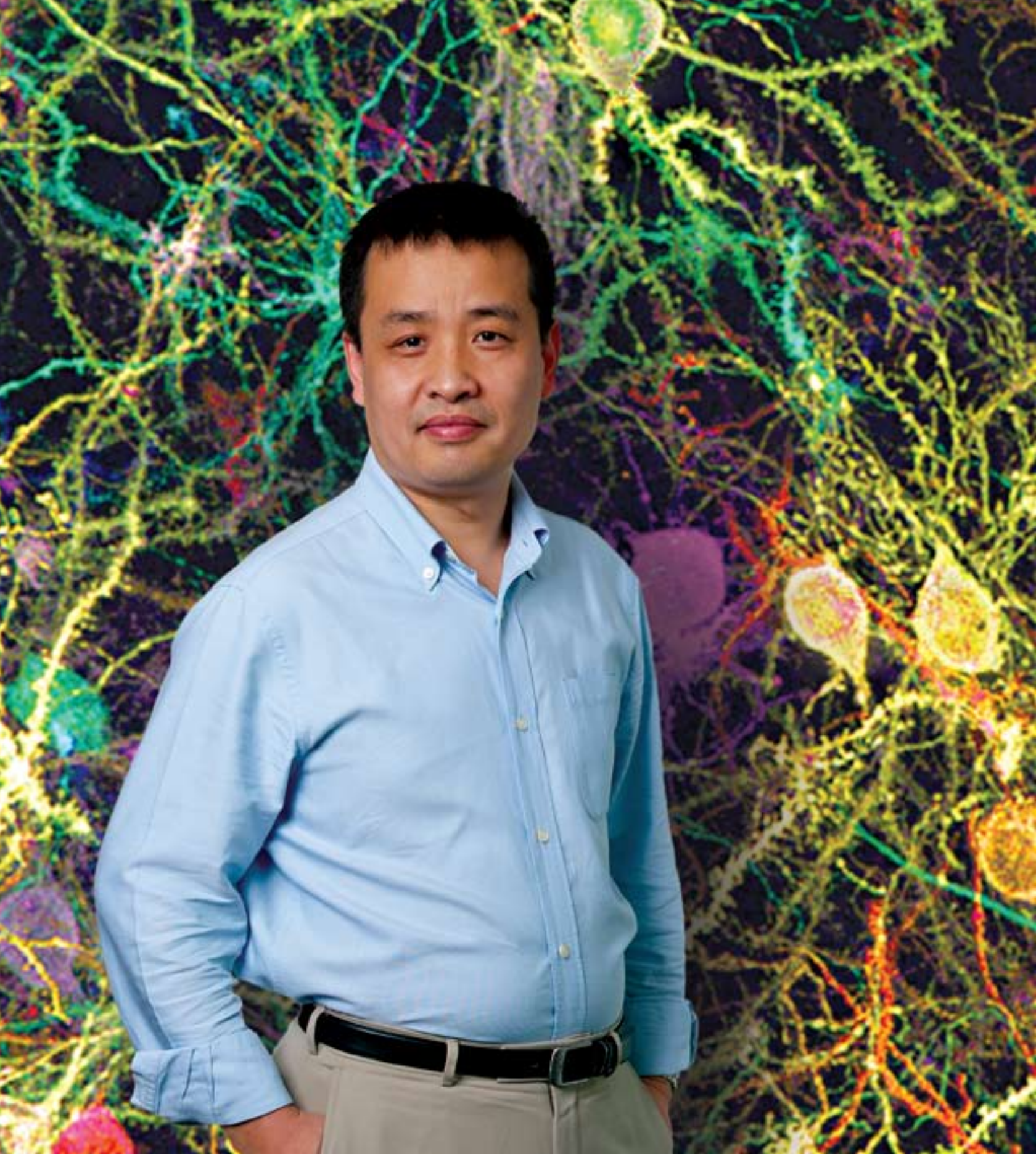
Jean Reibman, M.



This neuroscientist's early training in laser physics was useful in developing a novel methodology that has enabled him to look at living brain neurons in mice. The unprecedented window he discovered is expanding not only our understanding of neuronal development, but also of diseases ranging from Alzheimer's to multiple sclerosis, autism to schizophrenia.

A Window on the Living Brain

Wen-Biao Gan, Ph.D.

Associate Professor, Physiology and Neuroscience, Skirball Institute Program of Molecular Neurobiology

Dendrites—long fingerlike extensions of nerve cells—can be seen in this two-photon fluorescent micrograph of a living mouse brain, as captured by Dr. Gan. The thorny nubs on the dendrites are spines, which are continuously formed and eliminated. This is where synapses—neuronal connections—are made. After birth, the number of synapses increases and then decreases sharply. From early childhood to adolescence, the synaptic loss could be as much as 50 percent. Dr. Gan believes that in order for learning to occur, the brain's neurons have to be pruned. "First there is a raw material, and then it is sculpted," he says. In other words, learning isn't only about making new connections between neurons, it also involves pruning neuronal connections. Dr. Gan is now also examining neurons that have been damaged by brain disease. Early experiments in mice show that amyloid, the protein implicated in Alzheimer's disease, has a deleterious effect on dendrites, altering them in ways that lead to the atrophy.

"I attended a lecture that awakened a new curiosity about the brain and its mysteries… How do we learn? Why do we sleep?" said Dr. Wen-Biao Gan, describing the time when he decided to pursue brain research. "And unlike the stars in the sky, which also interested me, I could do more than just observe from far away—I could look closely, test, and understand."

At NYU Langone Medical Center, Dr. Gan's view of the brain has been anything but remote. Using a sophisticated optical imaging technique called two-photon microscopy and a novel method of painstakingly shaving the skulls of mice to create an ultra-thin window into the brain, Dr. Gan and his team have observed the neuron's dendritic spines (information receptors) up close and in vivo. The researchers tag neurons with a green fluorescent protein that makes it easy to identify the same cells and spines with a microscope and observe them even as they change shape over a period of time and under varying conditions. In one study, they demonstrated that sensory deprivation prevented the normal process of synaptic "pruning" that typically occurs in growing animals, revealing the important role of early experience in shaping neuronal development.

Currently, Dr. Gan is collaborating with colleagues to elucidate how the brain's only immune cells, called microglia, remodel synapses in the brain in response to disease or injury. "I would never have studied immunology," he said, "but connecting with Drs. Dan Littman and Michael Dustin on the microglia is a bridge to understanding another dimension of brain function." Clearly, advantageous connections at Skirball are not limited to the neuronal kind.

While still a doctoral student, this Russian-born biochemist began to publish a series of high-profile papers on the basic mechanisms of gene transcription, going on to join the faculty of the School of Medicine at the age of 26. As a 2006 recipient of the prestigious NIH Director's Pioneer Award, he is endeavoring to create conceptually new approaches to treat and prevent infectious diseases.

Pioneer on Myriad Frontiers

Evgeny A. Nudler, Ph.D.
Julie Wilson Anderson Professor of Biochemistry

Asked if there is any parallel between his interest in the Japanese martial art form Shorinji Kempo, in which he has a Black Belt, and his scientific research, Dr. Evgeny Nudler speaks of the diversity of techniques that each requires. "A common thread in my career has been the use of unorthodox approaches to more than one endeavor," said Dr. Nudler, who at 37 supervises a staff of 15 researchers and no less than five major projects in non-overlapping fields of cellular and molecular biology.

He has tackled several different complex biological questions, and found novel answers in each case. His studies on bacterial gene regulation led to the discovery of riboswitches (metabolite-sensing RNA) that control more than 3 percent of all bacterial genes. Riboswitches are now promising new targets for antimicrobial therapies and are also new tools for biotechnology.

On another biochemical frontier, Dr. Nudler has also made important contributions in the area of nitric oxide (NO) biochemistry in both animal and bacterial systems. NO is a crucial signaling molecule that is involved in numerous physiological and pathological processes, including blood pressure control, blood clotting, nerve transmission, and immune response. In addition to therapeutic treatments for heart attack, this work is opening new directions in the area of developing antimicrobial drugs against which it would be very difficult for bacteria to acquire resistance.

Working on numerous biochemical frontiers simultaneously seems to agree with Dr. Nudler. "I like to have more irons in the fire. Sometimes, on the borders where one field touches another, we make interesting discoveries."

In 2006, Dr. Nudler's group identified the existence of a eukaryotic RNA thermosensor that acts as the principal regulator of what is known as the heat shock response, which cells mobilize under stress. "This is the most ancient defense system, fundamental from bacteria and fruit flies to plants and humans, " explains Dr. Nudler. "Thermosensors act like a molecular thermometer, and their malfunction plays a pivotal role in inflammation, cancer, and aging." These findings open the possibility of manipulating the heat shock response to make cells more or less responsive to stress, thus offering a unique pharmacological target. They are likely to yield advances in areas ranging from heart attack and stroke prevention to more effective treatments for cancer.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Enhancing Our Intellectual Capital

New research faculty who joined NYU Langone in 2007-2008

Constantin Aliferis, M.D., Ph.D., has been appointed Director of the Center for Health Informatics and Bioinformatics. He has pioneered several algorithms for data analytics of molecular signatures, causal pathway reverse engineering, and feature selection for high throughput data. He earned an M.D. from Athens University, and completed a post-doctoral fellowship in biomedical informatics at the University of Pittsburgh. Prior to joining NYU in the fall of 2008, Dr. Aliferis was director of the Discovery Systems Laboratory at Vanderbilt University and founding director of the university's Ph.D. program in biomedical informatics.

Harold Brem, M.D., is Chief of the Division of Wound Healing and Regenerative Medicine in the Department of Surgery, and Associate Professor of Surgery and Pathology. Prior to joining NYU in 2008, Dr. Brem had established the wound healing program at Columbia University College of Physicians and Surgeons. His research interests are tissue regeneration and engineering, clinical outcomes, and bioinformatics. He has published extensively on the treatment of pressure, venous, and diabetic foot ulcers. He and his team have also begun identifying the genes responsible for regulating healing of wounds, and are exploring the use of stem cells for healing.

Mary Helen Barcellos-Hoff, Ph.D., is Associate Professor in the Departments of Radiation Oncology and Cell Biology. Her research is devoted to understanding how breast cancer develops and creating new approaches to treatments. Her laboratory has investigated how a potent growth factor called transforming growth factor beta1 regulates the physiological response of breast tissue to estrogen and progesterone and to ionizing radiation (the only known breast carcinogen). Her laboratory now aims to translate these newly discovered controls of breast tissue growth into improved radiation therapy. Dr. Barcellos-Hoff earned her Ph.D. from the University of California, San Francisco. She joined NYU in 2008.

OraLee Branch, Ph.D., is Assistant Professor of Medical Parasitology; her studies focus on malaria caused by the parasites *Plasmodium vivax* and *P. falciparum*. Prior to joining NYU in 2008, Dr. Branch earned her Ph.D. from Emory University, and was a research scientist at the NIH and an assistant professor at the University of Alabama at Birmingham. She was named a young investigator of the year by the American Society of Tropical Medicine and Hygiene and was a mentor to a fellow in a HHMI-funded project.

Jenghwa Chang, Ph.D., is Associate Professor and Director of Physics Research in the Department of Radiation Oncology. Dr. Chang applies engineering and physics principles to improve the outcome of radiotherapy, and has developed models and reconstruction algorithms for optical diffusion tomography for early cancer detection, among other accomplishments. Dr. Chang earned his Ph.D. from Polytechnic University of New York, and was affiliated with SUNY Health Science Center at Brooklyn and Memorial Sloan-Kettering Cancer Center before he joined the NYU School of Medicine in 2008.

Jessica Donington, M.D., is Assistant Professor of Cardiothoracic Surgery and Director of the NYU Thoracic Oncology Translational Laboratory at Bellevue Hospital. Her clinical and research interests are the diagnosis and treatment of non-small cell lung cancer. Prior to joining the NYU School of Medicine in 2007, she was a faculty member at Stanford University. She completed her thoracic oncology research training at the National Cancer Institute, and did her cardiothoracic surgery training at the Mayo Clinic.

Brian Elbel, Ph.D., M.P.H., is Assistant Professor of Medicine and Health Policy and holds a joint appointment with the NYU Wagner Graduate School of Public Service. He uses the tools of behavioral economics to study how people make decisions about their health and health care. He received his Ph.D. and M.P.H. degrees from Yale University and joined NYU in 2007.

Stefan Feske, M.D., is Assistant Professor in the Department of Pathology. His research focuses on calcium signaling pathways in cells of the immune system—particularly store-operated calcium channels, which are of critical importance to the functioning of immune cells. He graduated summa cum laude with an M.D. degree from the University of Freiburg in Germany, and was an assistant professor at Harvard Medical School. A recipient of a Cancer Research Institute fellowship and the prestigious Georges-Koehler Award from the German Immunology Society in 2007, the year Dr. Feske joined NYU.

Thomas Franke, M.D., Ph.D., is Associate Professor of Psychiatry and Pharmacology. He received his M.D. degree from the University of Lübeck in Germany, and his M.D.-Ph.D. in medical virology from Justus Liebig University in Germany. A pioneer in the field of Akt signal transduction, he currently explores the consequences of Akt activity in higher-order neural functions. Dr. Franke has received numerous awards, including career development awards from the Breast Cancer Research Program and the New York Academy of Medicine. He joined NYU in 2007.

Jacqueline French, M.D., is Professor in the Department of Neurology. Before joining the NYU School of Medicine in 2007, she had been an assistant dean for clinical trials at the University of Pennsylvania. Dr. French has focused her research efforts on the development of new therapeutics for epilepsy, and on creating novel clinical trial methodologies. She is director and founder of the Epilepsy Study Consortium, a collaboration of eight academic medical centers aimed at performing and improving clinical trials for antiepileptic drugs (AEDS). In addition to proposing new trial designs, she has worked with the FDA to successfully implement major changes in the approval process for AEDS. She is a recipient of the American Epilepsy Society Service Award.

E. Jane Albert Hubbard, Ph.D., is Associate Professor of Pathology and a member of the Developmental Genetics Program at the Skirball Institute. Her laboratory studies the mechanisms whereby cell-to-cell signals control when, where, and the extent to which cells proliferate. These mechanisms are conserved among all animals, and can be studied in detail in simple organisms like the nematode worm *C. elegans*. Dr. Hubbard's work lays the foundation for molecular studies in humans, and has already had an impact in leukemia research. The March of Dimes and the NIH support her current research. Dr. Hubbard earned her Ph.D. from Columbia University, and was a member of its faculty for eight years before she joined NYU in 2007.

Stuart Katz, M.D., is the first Helen L. and Martin S. Kimmel Professor of Advanced Cardiac Therapeutics and Director of the new Heart Failure Center at NYU Langone Medical Center. Dr. Katz previously served as director of Yale University's Heart Failure/Transplantation Program. During the course of his career he has made major contributions to the understanding of endothelial dysfunction in patients with heart failure. Dr. Katz will work closely with NYU Langone cardiovascular experts, both medical and surgical, to establish a multi-disciplinary program focusing on innovative strategies for the treatment of heart failure. Dr. Katz received his B.S. degree from Yale University and his M.D. degree from Downstate Medical Center. In addition, he received an M.S. degree in biostatistics from Columbia School of Public Health. He joined NYU in 2008.

Thorsten Kirsch, Ph.D., is Professor of Orthopaedic Surgery, Cell Biology and Pharmacology, Vice Chair for Research in the Department of Orthopaedic Surgery, and Director of the Musculoskeletal Research Center. Prior to joining the NYU School of Medicine, he was a professor and director of Orthopaedic Research at the University of Maryland School of Medicine. Dr. Kirsch studies mechanisms regulating skeletal cell differentiation during development, and is evaluating whether the inappropriate reoccurrence of differentiation leads to tissue destruction in certain diseases, such as osteoarthritis. Dr. Kirsch earned his Ph.D. from the Albrecht-Ludwig-University, Erlangen in Germany, graduating summa cum laude, and completed his postdoctoral training at the University of South Carolina and the University of Pennsylvania.

Holger Knaut, Ph.D., is Assistant Professor of Cell Biology and a member of the Skirball Institute. He studies how cells assemble into an organ—a complex process, since organ precursor cells are often born far from their destination and need to navigate through the embryo to reach the site of organ assembly. Dr. Knaut earned his Ph.D. from the University of Tübingen/Max-Planck Institute for Developmental Biology in Germany, and completed his postdoctoral training at Harvard University. A recipient of a prestigious research fellowship from the Human Frontier Science Program, Dr. Knaut joined NYU in 2008.

Catherine Scott Manno, M.D., is Chair of the Department of Pediatrics. Prior to joining NYU in the fall of 2008, she was at the University of Pennsylvania School of Medicine and the Children's Hospital of Philadelphia, where she held the Elias Schwarz Endowed Chair in Pediatric Hematology and served as associate chair of clinical activities in the Department of Pediatrics and senior physician in the Division of Hematology. She has been the principal investigator for several clinical research studies in the area of hemophilia, and has published widely on topics such as gene therapy for hemophilia, neonatal transfusion medicine, and bleeding disorders in children. She is a Fellow of the American Academy of Pediatrics. Dr. Manno earned her M.D. from Hahnemann Medical College, and completed her residency in pediatrics at St. Christopher's Hospital for Children in Philadelphia.

Gbenga Ogedegbe, M.D., M.P.H., is Associate Professor of Medicine. A board-certified internist, hypertension specialist, and clinical epidemiologist, Dr. Ogedegbe's research focuses on translating evidence-based behavioral interventions into primary care practices to improve the treatment of high blood pressure. He has multiple NIH-funded grants, and is a permanent member of an NIH study section and a fellow of the American Heart Association.

Manish Parikh, M.D., is Assistant Professor of Surgery and Director of the Bellevue Hospital Laparoscopic Bariatric Surgery Program. He graduated Alpha Omega Alpha from the NYU School of Medicine in 2001 and completed his general surgery residency at NYU/Bellevue in 2006, followed by a laparoscopic and bariatric surgery fellowship at Cornell/Columbia–New York Presbyterian Hospital. His principal research interests are related to clinical outcomes after bariatric surgery.

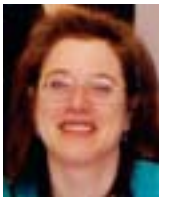
Kepal N. Patel, M.D., is Assistant Professor of Surgery and Biochemistry. Prior to joining NYU, he was a faculty member at SUNY-Stony Brook University Medical Center. His research focuses on the molecular pathogenesis of thyroid cancer. He earned his M.D. from UMDNJ-Robert Wood Johnson Medical School, and completed his training in oncologic head and neck surgery at Memorial Sloan-Kettering Cancer Center. His research has been recognized by the American Society of Clinical Oncology and the American Head and Neck Society.

Mary Perrin, Dr.P.H., is Assistant Professor of Psychiatry and Environmental Medicine. Her research focuses on epigenetic processes in the etiology of psychiatric disorders and female reproductive cancers. She received her Dr.P.H. degree from the Mailman School of Public Health at Columbia University in 2004 and subsequently joined its Department of Epidemiology. She is a recent recipient of the prestigious NARSAD Young Investigator Award as well as a career development award from the National Cancer Institute. She joined NYU in 2007.

Silvia Priori, M.D., Ph.D., is Director of the new Cardiovascular Genetics Program. Her groundbreaking studies have used genetic techniques to identify new genes responsible for various forms of inherited arrhythmias. Prior to joining NYU in 2008, she had established the world's largest genetics screening laboratory, database, and clinic dedicated to genetics of arrhythmias at the University of Pavia, Italy. The lab focused on unraveling how mutations lead to disease, thus enabling screening of individuals and families at risk of sudden cardiac death in order to target treatment and prevent cardiac arrest. Dr. Priori is the recipient of numerous grants, and has served in leadership positions in many international organizations. She serves on the editorial board of major cardiovascular journals and has received the Outstanding Research Award in Pediatric Cardiology from the American Heart Association.

Michael P. Recht, M.D., has been appointed Chairman of the Department of Radiology. Prior to joining NYU in the fall of 2008, Dr. Recht was at the Cleveland Clinic, where he was chair of both the Department of eRadiology and the Department of Business Development of the Cleveland Clinic's Imaging Institute. "eRadiology" is a relatively new discipline engendered by the development of digital imaging in place of traditional films. His many honors include the 2001 President's Award from the International Skeletal Society. Dr. Recht earned his M.D. degree, Alpha Omega Alpha, from the University of Pennsylvania School of Medicine, completing his residency in diagnostic radiology at the Hospital of the University of Pennsylvania, where he was chief resident. He has completed fellowships in several areas, including angiography/interventional radiology, magnetic resonance, and osteoradiology.

Philip Reiss, Ph.D., is Assistant Professor of Child and Adolescent Psychiatry. He holds master's degrees in mathematics and statistics from the University of Toronto, and earned his Ph.D. in Biostatistics from Columbia University in 2006, the year he joined the NYU Child Study Center. His research focuses on statistical methods for the analysis of high-dimensional data, with applications to human brain mapping. He is developing novel analytic techniques for using functional neuroimaging data to understand how different regions of the brain interact. Dr. Reiss earned the Joseph L. Fleiss Memorial Prize in Biostatistics from Columbia.



Helen Scharfman, Ph.D., is a Professor in the Department of Child & Adolescent Psychiatry, and a research scientist in the Center for Dementia Research at The Nathan S. Kline Institute for Psychiatric Research. Her research focus is the limbic regions of the brain, such as the hippocampus and entorhinal cortex, which are crucial to learning and memory. Her studies use animal models of disease to help clarify mechanisms underlying neurologic and psychiatric disorders. Her most recent work evaluates ways in which the normal plasticity and excitability of limbic regions are influenced by brain-derived neurotrophic factor, steroids, and post-natal neurogenesis. Dr. Scharfman received her Ph.D. from the Uniformed Services University, and was director of the Center for Neural Recovery Rehabilitation Research at Columbia University/Helen Hayes Hospital prior to joining NYU in 2007.

Susan Schwab, Ph.D., is Assistant Professor of Pathology and a member of the Skirball Institute. Dr. Schwab studies the lipid sphingosine-1-phosphate (S1P), which plays a critical role in the immune system and in blood vessel development. S1P is also essential for embryonic vascular development and may promote angiogenesis, enabling tumor growth, in adults. Despite its critical roles, little is known about how its production and distribution are regulated. Dr. Schwab is exploring how S1P levels are set and how S1P affects immunity. Dr. Schwab earned her Ph.D. from the University of California, Berkeley, and completed her postdoctoral training at the University of California, San Francisco. She joined NYU in 2008.

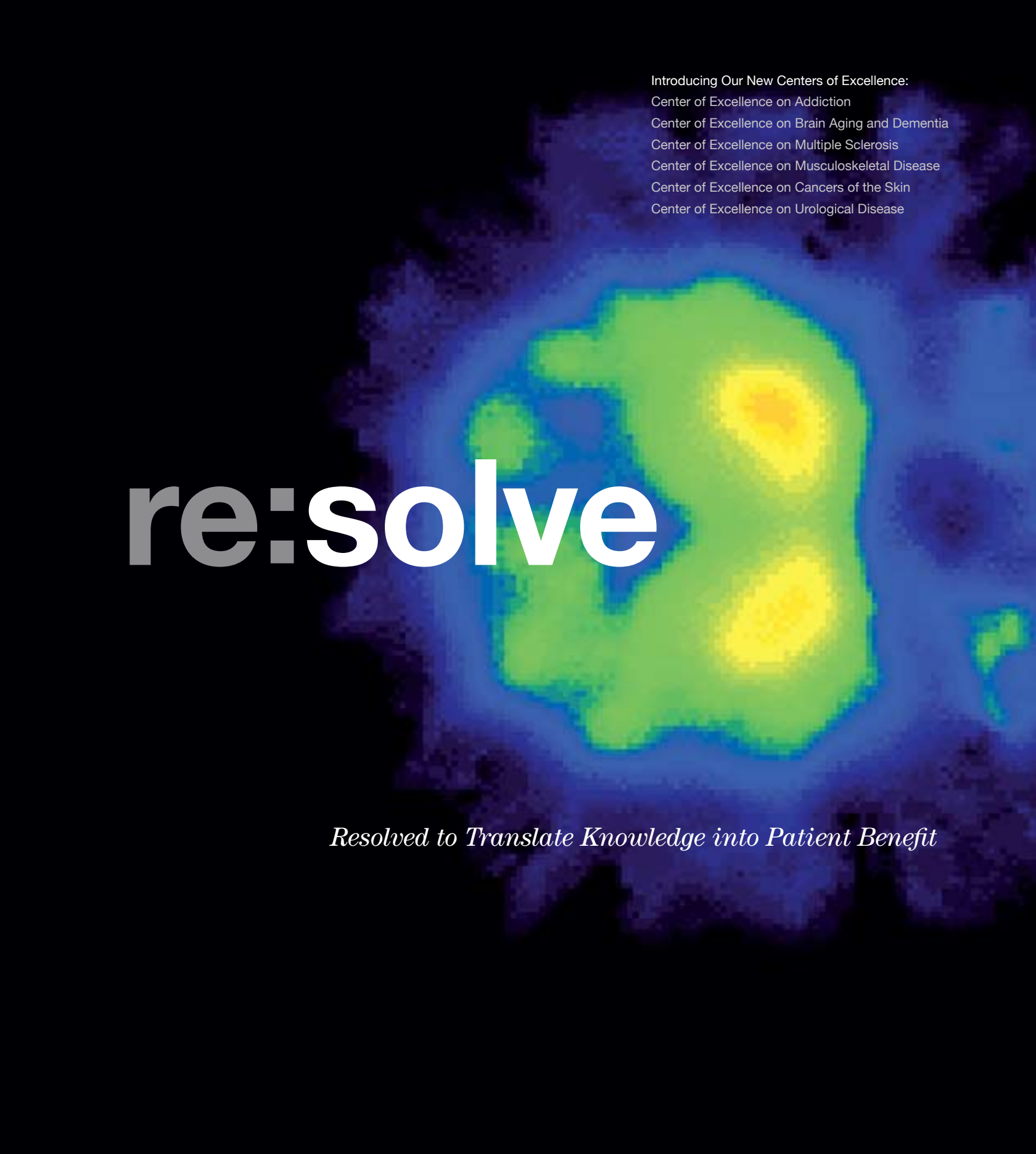
Greg Suh, Ph.D., is Assistant Professor of Cell Biology and a member of the Skirball Institute. Dr. Suh studies how fruit flies recognize cues—such as odors emanating from a morsel of food or from stressed flies—and then respond with appropriate behaviors. Dr. Suh earned his Ph.D. from the University of California, Los Angeles, and completed his postdoctoral training at the California Institute of Technology. A recipient of a prestigious research fellowship from the Alfred P. Sloan Foundation, Dr. Suh joined NYU in 2008.

We are resolved to make collaboration part of our institutional DNA…to provide the structures, resources, and incentives that foster cross-pollination between the basic and clinical sciences and medical specialties…to ensure that

Color-coded PET scan showing gamma-vinyl-GABA (GVG) blockade of cocaine-induced dopamine release. The novel use of GVG as a medication strategy to treat a variety of addictive disorders has been pioneered by Drs. Stephen Dewey and Jonathan Brodie and will be a focus of translational research activities in the Center of Excellence on Addiction. These studies have resulted in 10 issued U.S. patents and the successful formation of a new start-up pharmaceutical company whose clinical trial program in cocaine and methamphetamine addiction has been "fast-tracked" by the FDA.

the strength of our scientific discoveries can be readily translated into healing. Our new Centers of Excellence—building on existing strengths—serve as the collaborative model that makes NYU Langone synonymous with world-class excellence and a beacon of hope for patients.

Introducing Our New Centers of Excellence:
Center of Excellence on Addiction
Center of Excellence on Brain Aging and Dementia
Center of Excellence on Multiple Sclerosis
Center of Excellence on Musculoskeletal Disease
Center of Excellence on Cancers of the Skin
Center of Excellence on Urological Disease



re:solve

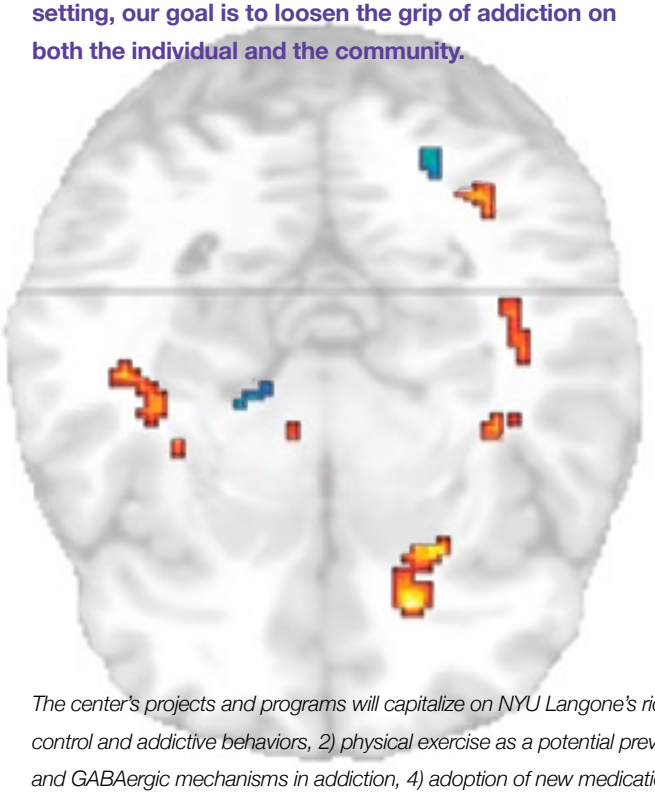
Resolved to Translate Knowledge into Patient Benefit

Loosening the Grip of Addictive Disorders

Center of Excellence on Addiction

Director: John Rotrosen, M.D.

Addiction to illicit and prescription drugs, to alcohol and tobacco, and to behaviors such as gambling, eating disorders and sexual risk-taking, lead to more death and disability than any other preventable health condition. Addictive behaviors also contribute to the spread of HIV, hepatitis C, and other infections, and exacerbate many chronic illnesses. NYU Langone's ranking as one of the country's top 10 sites for clinical training in addiction medicine is due in part to exceptional research and clinical programs that serve as a training platform. As a private institution in the public service in an urban setting, our goal is to loosen the grip of addiction on both the individual and the community.



NYU Langone Medical Center and other schools at NYU have a strong and impressive commitment to the study and treatment of addiction. Our programs and affiliates—the Nathan Kline Institute (NKI), the Brookhaven National Laboratory and the New York Academy of Medicine—have breadth and expertise ranging from basic neuroscience, molecular biology and genetics to community outreach. The exceptional clinical programs at Bellevue Hospital Center and the Manhattan VA Medical Center have long strengthened our addiction medicine and clinical research.

A leader in substance abuse research, NYU has made significant discoveries in the etiology of addiction—notably, the original identification and characterization of the opioid receptor and elucidation of the central nervous system mechanisms that co-regulate ingestive behavior and rewarding properties of abused drugs. We have contributed to the development of new therapeutic agents and dosage delivery systems for opiate and alcohol dependence, and we have led the nation in developing the field of addiction in medicine and moving treatment advances into the community.

The Center of Excellence on Addiction will focus on both prescription and illicit drugs, as well as addictive behaviors. By establishing a University-wide, multi-disciplinary consortium of programs, researchers and clinicians; facilitating collaboration on program development; and bringing together healthcare professionals, faculty, basic and clinical research and training programs, the center will span the full range of addiction research, teaching, and care. To ensure that the translational "arrow" truly goes both ways, the center will have research informed treatment, and treatment-informed research with the goal of maximizing clinical and public health benefits.

The center's projects and programs will capitalize on NYU Langone's rich basic and clinical resources, with translational projects focused on 1) impulsivity, cognitive control and addictive behaviors, 2) physical exercise as a potential preventive or intervention strategy, 3) medication strategies, including gamma-vinyl GABA (GVG) and GABAergic mechanisms in addiction, 4) adoption of new medications and behavioral and systemic interventions in traditional and novel healthcare settings, and (5) prevention and early intervention in children and adolescents. Cutting across the full spectrum of our projects will be a genetics component focused on vulnerability and response to treatment. We see a huge gap in high-quality addiction care for patients in the New York metropolitan area, and will explore establishing a new clinical initiative through Faculty Group Practice to provide cutting-edge, evidence-based care to NYU Langone's patient population. We will work closely with representatives from organizations in the NYU-served community, advocacy groups, city, state and federal agencies, schools, the criminal justice system, clergy, providers, philanthropy and media, to ensure meaningful translational efforts and to get innovative treatment to the community.

Fighting the Scourge of Alzheimer's Disease on All Fronts

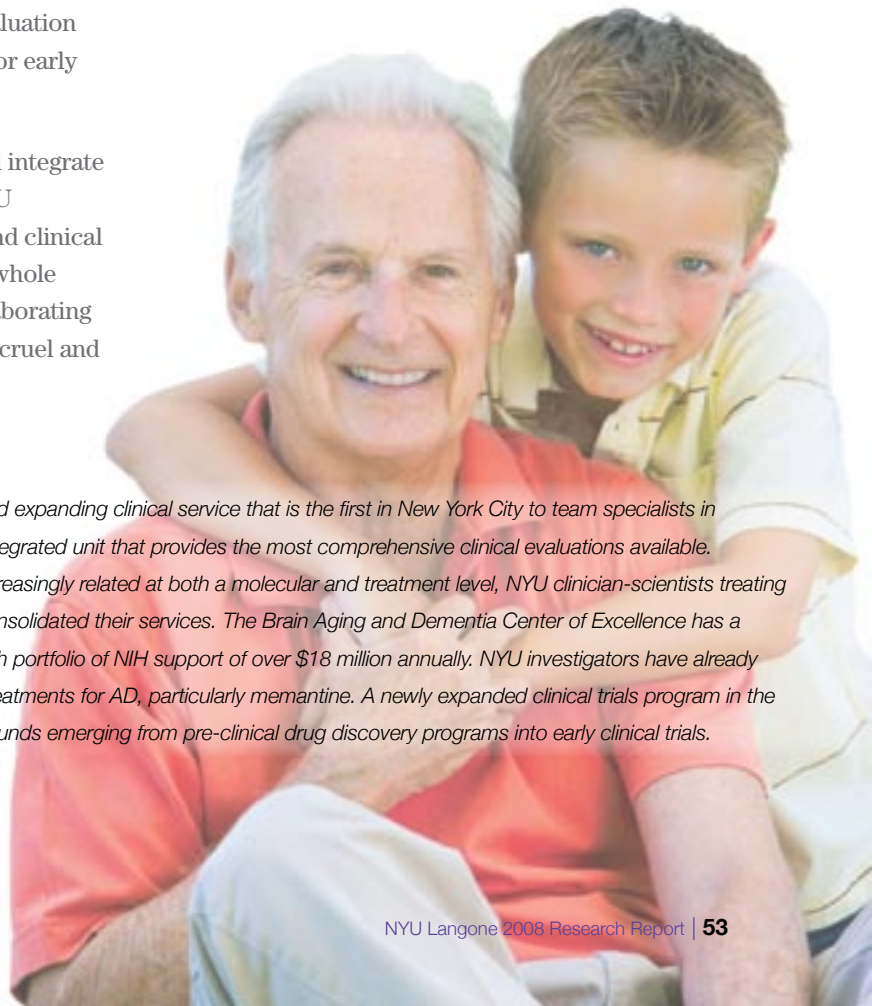
Center of Excellence on Brain Aging and Dementia

Director: Ralph A. Nixon, M.D., Ph.D

Since the 1970's, researchers at NYU Langone have played a leading role in studying how Alzheimer's disease affects the brain, and in diagnosing and devising treatments for the disease. Our scientists were among the first to characterize amyloid, the plaque-forming protein implicated in Alzheimer's, and provided the first comprehensive description of the clinical stages of the disease. As the scope of research has broadened, NYU Langone remains at the forefront, bringing its diverse basic and clinical research programs on brain aging together under the aegis of the William and Sylvia Silberstein Institute for Aging and Dementia. The institute has achieved significant success with individual NYU aging-related research programs, and in 2007, established a strong clinical care program, the Barlow Center for Memory Evaluation and Treatment. The program is unique in New York City for providing "one-stop" multi-disciplinary evaluation and clinical care, with access to the most advanced options for early diagnosis and treatment.

The new Brain Aging and Dementia Center of Excellence will integrate a broader range of investigators and clinicians across the NYU network—creating an extraordinary translational research and clinical capability with an unprecedented opportunity to look at the whole picture—from one cell in the brain to the entire person. Collaborating at the highest level, we will advance on all fronts against this cruel and deadly adversary.

Alzheimer's disease, the most common form of dementia affecting people over 65, is a devastating brain disease that slowly destroys mental function, personality, and lives. Currently this dreaded disease afflicts more than five million Americans, a number expected to reach 16 million by the year 2050. There is no more timely biomedical initiative than the one undertaken by NYU Langone's Brain Aging and Dementia Center of Excellence, and no more synergistic alliance to make NYU Langone the "go-to" institution for early diagnosis and comprehensive treatment of emergent memory problems.



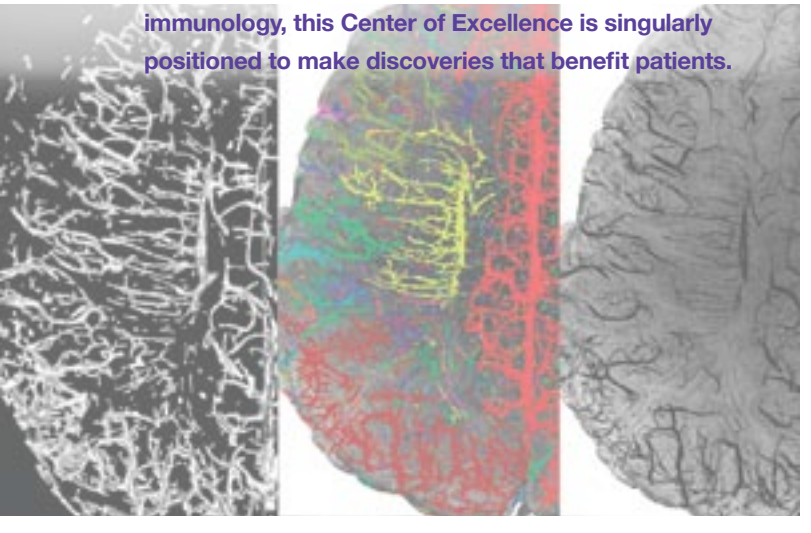
The Brain Aging and Dementia Center of Excellence is providing a new and expanding clinical service that is the first in New York City to team specialists in neurology, psychiatry, medicine, psychology and social services into an integrated unit that provides the most comprehensive clinical evaluations available. Recognizing that different disorders leading to dementia are becoming increasingly related at both a molecular and treatment level, NYU clinician-scientists treating Alzheimer's, Parkinson's and less common or atypical dementias, have consolidated their services. The Brain Aging and Dementia Center of Excellence has a constituency of over 30 independently funded investigators with a research portfolio of NIH support of over $18 million annually. NYU investigators have already contributed directly to the clinical development of all currently approved treatments for AD, particularly memantine. A newly expanded clinical trials program in the center will extend the capabilities for quickly moving anti-dementia compounds emerging from pre-clinical drug discovery programs into early clinical trials.

Bringing New Hope to the Study and Treatment of MS

Center of Excellence on Multiple Sclerosis

Co-Directors: Joseph Herbert, M.D., and James Salzer, M.D., Ph.D.

Multiple sclerosis (MS) is a chronic, insidious disease of the central nervous system that affects approximately 400,000 Americans. MS is believed to be an autoimmune disorder, in which the body's immune system gradually eats away the myelin sheath that insulates the nerves and prevents them from sending impulses. Symptoms range from muscle weakness and numbness in the extremities to partial or total paralysis. While there is presently no cure for MS, researchers at NYU Langone see an unequaled opportunity for treating MS patients with the creation of the Center of Excellence on Multiple Sclerosis. By combining state-of-the-art clinical care, a nationally recognized translational program in neuroimaging, and world-class basic research in immunology, this Center of Excellence is singularly positioned to make discoveries that benefit patients.



Integrating several world-class facilities, the NYU Center of Excellence on Multiple Sclerosis assembles teams of distinguished clinician-researchers to create a preeminent facility dedicated to the study and treatment of MS. The MS Comprehensive Care Center (CCC) at NYU Hospital for Joint Diseases is taking part in 24 ongoing research studies, is participating in three worldwide MS registries representing a diverse population, and has developed its own customized database to track patient clinical courses and outcomes. The nationally recognized Center for Biomedical Imaging (CBI) now houses a highly advanced 7-Tesla MRI that in clinical studies elucidates underlying changes in the brain not visible using standard imaging techniques. The center is renowned for outstanding basic science related to autoimmunity, myelin biology, and neural degeneration. Using established murine models of demyelination and remyelination that will provide important insights into pathogenesis and potential targets for therapeutic intervention, we hope to clarify the source of cells required to repair damaged myelin, and to develop strategies to protect the injured neurons from undergoing neural degeneration.

The NYU Center of Excellence on Multiple Sclerosis has a strong foundation of funding. Key researchers currently receive major grants from the NIH and the National Multiple Sclerosis Society (NMSS). In fact, NYU is one of the nation's few collaborative MS research centers funded by NMSS. What's more, the Center of Excellence will provide enhanced training for medical students, residents, and fellows, enabling us to recruit the best and brightest clinician-researchers. For patients whose lives have been ravaged by MS, the translation of advances from bench to bedside brings new cause for optimism.

The Center of Excellence on Multiple Sclerosis is superbly positioned to raise the profile for NYU Langone's groundbreaking MS research. At NYU Langone, a novel model of Experimental Allergic Encephalomyelitis (EAE), which produces in mice a condition analogous to MS, is enabling researchers to study the inflammatory process that destroys the myelin and will help identify potential targets for therapy. Also investigated are the sources of cells and signals required to promote effective remyelination, a major therapeutic goal of MS research. At the Skirball Institute, an advanced new imaging technique called intravital microscopy is producing live, moving images of cellular events in the nervous system that give investigators a real time picture of how immune cells attack nerve cells. In addition, NYU radiology researchers using the 7-Tesla MRI system can detect MS lesions in the brain before they develop, as well as monitor therapy that could help stop damage before it starts. Scientists at the CCC are creating a new classification system for MS, which we expect to become the standard for the development of therapeutic algorithms and clinical trial design. Patients will have access to promising new drugs being tested in a number of major international, multicenter drug trials.

Joint Effort Against Degenerative Musculoskeletal Disease

Center of Excellence on Musculoskeletal Disease

Co-Directors: Joseph D. Zuckerman, M.D., and Steven B. Abramson, M.D.

From before the establishment of orthopaedic pathology as a specialty in the 1920's, to the development of rheumatology as a discipline, to the development of the human chondrocyte transplantation protocols in the present decade–NYU Hospital for Joint Diseases, part of NYU Langone, has been making significant contributions to orthopaedic treatment, knowledge and innovation in musculoskeletal diseases for over a century. The new Center of Excellence on Musculoskeletal Disease highlights a world-class research effort that complements the planned NYU Langone strategic initiative in musculoskeletal care, which includes a 110,000 square foot, $60 million Ambulatory Musculoskeletal Care Center.

The Center of Excellence on Musculoskeletal Disease will establish a multidisciplinary effort that examines the basic biology of joint tissues and their functional decline with aging and the onset of osteoarthritis, methods to promote intrinsic and extrinsic regeneration of these tissues, and applied bioengineering to enhance current clinical treatment and design more effective devices for such treatment. We will also build upon our world-renowned program in autoimmunity to discover the basic mechanisms of tissue injury in systemic lupus erythematosus and lead efforts to bring novel therapies to the clinic. The Seligman Center for Advanced Therapeutics is conducting more than 20 studies, industry and NIH-funded, while the recently created Orthopaedic Office of Clinical Trials has 14 industry-sponsored studies evaluating novel pre- and inter-operative protocols, new devices, and new therapeutics such as osteogenic protein.

Musculoskeletal problems are the number one cause of disability worldwide, and with the baby boomer generation aging these conditions and diseases will severely strain healthcare systems. Already, their impact in the United States costs $240 billion annually in lost productivity, according to the NIH. The Center of Excellence on Musculoskeletal Disease is a multidisciplinary effort coordinating the basic translational and clinical science efforts of the Departments of Orthopaedic Surgery and Rheumatology—currently ranked #8 and #11, respectively, by *U.S. News & World Report*. Bringing together the Department of Radiology and basic scientists at the School of Medicine, the center will create an integrated, world-class program and a top choice for patients seeking cutting-edge care.

The Center of Excellence on Musculoskeletal Disease is pursuing bench to bedside research in five key areas. The Biology of the Joint initiative is utilizing animal models to determine the ability of stem cells and new growth factors to arrest arthritic deterioration, and to induce repair in non-regenerating joint tissues. The Diagnostics, Biomarkers and Predictive Medicine program studies disease progression and the response to treatment, and includes a comprehensive patient database. Our robust Clinical Research program has produced evidence that terminal differentiation and mineralization in articular chondrocytes are major contributors of osteoarthritis progression, and interfering with these events may provide novel therapies to stop or slow down the progression. The internationally recognized Lupus Research Group continues to pursue biomarker studies, while the Division of Rheumatology is engaged in a multi-centered, NIH-funded pharmacogenetics study of TNF antagonists and abatacept, a T-cell co-stimulatory modulator, for the treatment of rheumatoid arthritis and psoriatic arthritis. Finally, Clinical Bioengineering research is improving implant technologies and surgical techniques for joint replacement surgeries, and studying the use of a combination of cells, scaffolds and factors to replace defective or injured bone and cartilage tissues. All of these initiatives will enhance the center's reputation as a leading therapeutic facility to attract patients with the full range of musculoskeletal diseases.

Seeking New Ways to Fight Skin Cancer

Center of Excellence on Cancers of the Skin

Director: Seth J. Orlow, M.D., Ph.D.

Skin cancer is the most common form of cancer in the U.S., with more than one million new cases diagnosed annually. In 2008, over 8,400 deaths will be attributed to melanoma. While most skin cancers are curable with early detection, the incidence of potentially fatal melanoma is increasing. As the population ages, the disease is becoming a growing public health concern. Bringing together unique assets of the Medical Center such as the largest Dermatology department in the country, our NCI-designated Cancer Institute and the Tumor Vaccine Program, this Center of Excellence will attract talented clinicians, new scientists, and the funding needed to accelerate the discovery of innovative ways to prevent, detect, and treat skin cancer.

Established in 1882 as the New York Skin and Cancer Hospital, dermatology at NYU has continuously been in the vanguard of skin cancer research and patient care—from opening one of the earliest Mohs surgery units for skin cancer to developing the nation's first computerized clinical data bank in dermatology, to devising the "ABCDE" guidelines for quick identification of melanomas. In the 1990s the NYU Cancer Institute was one of the first NIH-designated skin disease research centers, and is home to a state-of-the-art facility for producing cancer vaccines and other immuno-therapies. More than 9,000 patients with cancer of the skin receive care at NYU Langone each year.

Exemplified by the creation of the Interdisciplinary Melanoma Cooperative Group (IMCG) in 2002, NYU Langone is a pioneer in integrating translational research with patient care. For example, our clinicians recently noted an increased percentage of patients with nodular melanoma. They then screened for approved drugs that specifically kill these cancer cells. Upon completion of animal testing, the NYU Cancer Institute will complete the path of translation by offering these drugs to patients in a clinical trial.

The new Center of Excellence on Cancers of the Skin will expand on its successful translational model. Some 40 researchers from over a dozen disciplines are investigating the genetic risk factors for early onset melanoma, the molecular biology of melanoma, prognostic blood markers, prevention and early detection, vaccine strategies, and the development of small molecule therapeutics.

The Center of Excellence designation recognizes NYU Langone's leadership in cancers of the skin. Here, researchers have access to one of the nation's largest patient and tissue databases, and collaborate with leading clinicians who translate their ideas to the clinic. Patients receive attention from teams of collaborating physicians with a specific interest in skin cancers, and are the beneficiaries of unique therapeutic protocols developed at NYU Langone. In one recent study, researchers at the NYU Cancer Institute and the Ronald O. Perelman Department of Dermatology identified mebendazole, a drug used to treat parasitic infections, as a novel investigational agent for treating chemotherapy-resistant malignant melanoma.

Revolutionizing the Treatment of Common Urological Diseases

Center of Excellence on Urological Disease

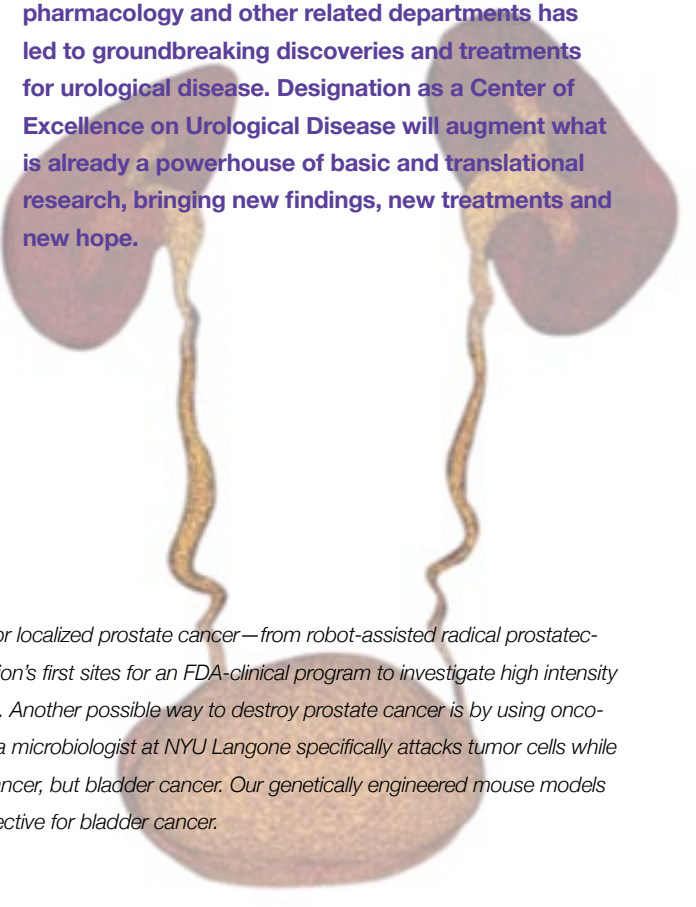
Co-Directors: Herbert Lepor, M.D., Tung-Tien Sun, Ph.D., and Xue-Ru Wu, M.D.

Home of the first Department of Urology in the United States, NYU Langone Medical Center has been a leader in treating localized prostate cancer with nerve-sparing radical retropubic prostatectomy, a technique co-developed by Dr. Herbert Lepor, co-director of the Center of Excellence. Men from all over the world have come to NYU Langone for this treatment, which maximizes the prospect of retaining erectile function.

NYU Langone is host to world-renowned research programs on bladder biology and diseases, and has made seminal contributions including the discovery by the center's co-director, Dr. Tung-Tien Sun, of bladder-specific markers, "uroplakins," that can be used for early detection of the metasasis of bladder cancer. The group also developed the first genetically engineered bladder cancer mouse models, which are being used to evaluate novel preventive and therapeutic strategies.

Fifteen years ago, the Urology Department had a strategic vision: fostering strong collaboration between basic scientists and clinicians across multiple departments could create a catalyst for advancing basic urological research and innovative clinical care. The Urology Research Group now consists of 34 NYU Langone faculty members representing 12 academic departments. The enthusiastic members are committed to making this center a truly preeminent translational base. Discoveries here can revolutionize treatment of common urological diseases.

Prostate cancer is the most common cancer in American males, with some 300,000 new cases diagnosed annually, while bladder cancer ranks as the fourth most common cancer in men and eighth in women. These diseases, and disorders such as kidney stones and urinary tract infection (UTI), affect people of all ages, genders, races and socio-economic groups. A fifteen-year history of collaboration between investigators in urology, cell biology, oncology, pharmacology and other related departments has led to groundbreaking discoveries and treatments for urological disease. Designation as a Center of Excellence on Urological Disease will augment what is already a powerhouse of basic and translational research, bringing new findings, new treatments and new hope.



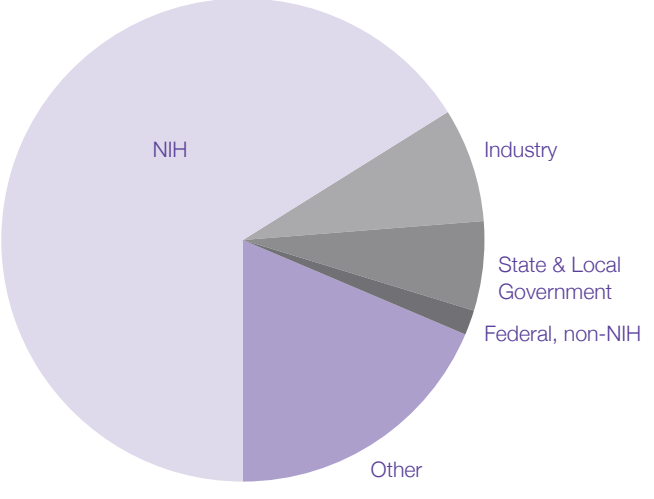
The Center of Excellence on Urological Disease is at the hub of cutting-edge treatment for localized prostate cancer—from robot-assisted radical prostatectomy to minimally invasive ablative therapies. In fact, NYU Langone will be one of the nation's first sites for an FDA-clinical program to investigate high intensity focused ultrasound (HIFU) treatment, and one of the first to test photodynamic therapies. Another possible way to destroy prostate cancer is by using oncolytic viruses. A novel version of the herpes-simplex virus engineered by and patented by a microbiologist at NYU Langone specifically attacks tumor cells while sparing normal ones—offering tremendous potential for treatment of not only prostate cancer, but bladder cancer. Our genetically engineered mouse models of bladder cancer are being investigated to determine drug and interventions that are effective for bladder cancer.

Research Funding

New grants of over $100,000 awarded to NYU Langone researchers during 2007 and the first half of 2008

Research Funding*

$121,835,760	NIH
$14,102,906	Federal, non-NIH
$10,948,614	Industry
$2,884,975	State & Local Government
$34,195,486	Other



Vital Statistics*

Research Faculty	365**
New Research Faculty 07-08	28
Endowed Professorships	26
Total U.S. Patents	508
New U.S. Patents	46
No. of Publications	2,390
Success rate for grant applications	30.6 percent of NIH applications funded***

** Based on data for calendar year 2007*
*** At least 50 percent effort devoted to research*
**** compared to 22.5 percent success rate for all medical schools*

FEDERAL 2007

Aberg, Judith *New York University HIV/AIDS Clinical Trial Unit* NIH $9,741,549

Abikoff, Howard B. *Home-Based Parent Training in ADHD Preschoolers* NIH $3,456,380

Adams, Sylvia *Augmenting Cancer Vaccine Therapy with TLR9 agonists* NIH $690,940

Aifantis, Ioannis *Hedgehog Signaling as a Novel Regulator of Hematopoiesis* NIH $422,604

Aifantis, Ioannis *preTCR as an Inducer of Cell Survival and Transformation* NIH $633,584

Baker, Robert *Eye Movement: Physiological Organization* NIH $2,116,979

Barr, William B. *Post Doc: Test Biases Limiting Preoperative Evaluation of Hispanic Immigrants with Epilepsy* AHRQ $146,508

Bar-Sagi, Dafna *Positive and Negative Regulation of RTK-Ras Signaling* NIH $1,286,775

Bar-Sagi, Dafna *Mechanisms of Signal Transduction by RAS Proteins* NIH $946,187

Basilico, Claudio *Regulation of Bone Development by FGF Signaling* NIH $1,185,334

Belasco, Joel G. *Mechanisms of Gene Regulation by MicroRNAs* NIH $1,151,609

Bender, Heidi A. *Test Biases Limiting Preoperative Evaluation of Hispanic Immigrants with Epilepsy* NIH $146,508

Brook, Judith S. *Tobacco Use Among Minority Youth: A Longitudinal Study* NIH $2,645,072

Bystryn, Jean C. *Phase II Randomized Trial of IVG with or without Cyclophosphamide in Pemphigus* FDA $1,003,822

Bystryn, Jean-Claude *Phase II Randomized Trial of IVIG With or Without Cyclophosphamide in Pemphigus* NIH $1,003,722

Bystryn, Jean-Claude *Serum CYT-MAA as an Early Marker of Response to Therapy in Resected Melanoma* NIH $276,378

Carlton, Jane M. *Promotion of Plasmodium Research and Training in India* NIH $667,500

Chen, Donald S. *P.falciparum var genes in Urban Malaria & Severe Malaria* NIH $119,772

Choi, Jennifer H. *APP Metabolism in Transgenic Down Syndrome Mouse Models* NIH $122,916
Costa, Max *Carcinogenesis of Nickel and Epigenetic Control* NIH $1,796,219
Cowan, Nicholas *Inhibition of the Tubulin Folding Pathway as a Novel Therapy for Cancer* NIH $958,817
Dai, Wei *PLK3 in the DNA Damage Checkpoint and Tumor Suppression* NIH $540,979
Dai, Wei *BUBR1 in the Spindle Checkpoint and Tumor Suppression* NIH $102,626
Darwin, Katerina H. *Virulence Regulation by the Mycobacterium Tuberculosis Proteasome* NIH $1,906,250
Darwin, Katerina H. *Mtb Proteasome-Associated Factors and Virulence* NIH $422,500
Dasgupta, Ramanuj *A Novel Screen for Small Molecule Modulators of the Wnt/wingless Signaling pathway* DOD $126,750
De Jong, Bouke C. *Genomic and Immunological Comparisons of M africanum and M tuberculosis NIH* $359,487
Delisi, Lynn E. *World Congress of Psychiatric Genetics with Emphasis on Genes for Drug Abuse* NIH $159,076
Demaria, Sandra *Local Radiation as an Adjuvant for Immunotherapy* NIH $1,607,479
Dustin, Michael L. *Requirement for Sensitive T Cell Response to Antigen* NIH $1,693,417
Dynlacht, Brian D. *Role of the pRB Family in Quiescence and Differentiation* NIH $1,372,229
Dynlacht, Brian D. *The Role of Ubiquitination in Cell Cycle Exit and Cachexia* NIH $372,200
Feig, Jonathan E. *Role and Regulation of CCR7 in Regression of Atherosclerotic Lesions* NIH $183,888
Feske, Stefan *Characterization of Genes Responsible for Store-operated Ca2+ Entry in T Cells* NIH $1,521,480
Fishell, Gordon J. *Cell Fate Determination in the Cerebellum* NIH $1,799,611
Fishman, David A. *Microvascular Perfusion Sonographic Imaging to Detect Early Stage Ovarian Cancer* NIH $350,128
Fishman, Glenn I. *Connexin43 Regulation and Cardiovascular Function* NIH $2,081,750
Franke, Thomas *Role of Akt Signaling in Learning & Synaptic Plasticity* NSF $564,621
Gabbay, Vilma *The Neurobiology of Adolescent Depression* NIH $836,800
Goldfrank, Lewis R. *Risk Management in the Healthcare Sector: What and Where are the Agents of Opportunity* DOD $3,315,249
Gordon, Terry *Aquatic Toxicity of Waste Stream Nanoparticles* EPA $399,828
Gourevitch, Marc N. *Research Training in Health Protection and Preparedness* NIH $2,678,551
Gourevitch, Marc N. *Substance Abuse Research Education and Training (SARET)* NIH $1,548,175
Gourevitch, Marc N. *Research Training in Health Protection and Preparedness* CDC $2,678,551
Greenberg, Jeffrey D. *Prognostic Genetic Biomarkers in Rheumatoid Arthritis* NIH $664,740
Grossman, Robert I. *Quantitative MRI and 1H-MRS in Traumatic Brain Injury* NIH $2,886,617
Helpern, Joseph A. *Quantitative MRI of Iron Homeostasis, Atrophy and Tissue Structure in AD Brain* NIH $2,469,656
Hioe, Catarina E. *HIV Env-Induced Synapse and Signaling* NIH $465,010
Hochman, Judith S. *Occluded Artery Trial: Long Term Follow-Up* NIH $2,964,913
Holz, George G. *Molecular Basis of Antidiabetogenic Hormone Action* NIH $1,184,969
Huang, Xi *Role of Estrogen and Iron in Breast Cancer* NIH $372,300
Hubbard, E Jane *Control of Onset of Meiosis in C. elegans* NIH $649,782
Hubbard, Stevan R. *Structural Study of the Insulin Receptor Tyrosine Kinase* NIH $1,481,399
Ichtchenko, Konstantin *Botulinum Neurotoxin Derivatives for Targeted Neuronal Delivery* NIH $452,808
Ito, Kazuhiko *Real Time Modeling of Weather, Air Pollution, and Health Outcome Indicator in NYC* EPA $494,551
Klein, Hannah L. *DNA Helicases in Recombination and Repair* NIH $1,252,638
Kleinberg, David L. *Breast Cancer Chemoprevention by SOM230, an IGF-1 Action Inhibitor* US Army $842,733
Landau, Nathaniel R. *Vpr Revisited* NIH $1,694,063
Landau, Nathaniel R. *Identification of Trim5alpha Cofactors* NIH $470,600
Landau, Nathaniel R. *Murine Model for HIV-1 Replication* NIH $338,000
Lazar, Mariana *Anatomical Connectivity in the Autistic Brain* NIH $169,166
Lee, Peng *Androgen Receptor Coactivator p44 in Breast Cancer* DOD $126,750
Liu, Chuanju *Degradative COMP Fragments as a Biomarker of Arthritis* NIH $637,740
Liu, Chuanju *Role and Regulation of ADAMTS-12 in the Cartilage Catabolism* NIH $138,785
Llinas, Rodolfo R. *Neurobiology of Cerebellar-Brainstem Systems* NIH $6,159,399
Lucas, Christopher P. *Prevention of Anxiety in High-Risk Pre-School Children* NIH $761,813
Malaspina, Dolores *Jerusalem Perinatal Cohort Schizophrenia Study II* NIH $2,685,649
Malaspina, Dolores *Olfactory and Social Function in Schizophrenia* NIH $668,822
Nance, Jeremy F. *Mechanisms of Contact-Mediated Cell Polarization in the C. elegans Embryo* NIH $1,439,616
Nelson, Peter Jacob *TNF-Alpha: an Immunologic Precipitant of Collapsing Glomerulopathy* NIH $169,000
Neubert, Thomas A. *Triple Quadrupole (Q-Trap) Mass Spectrometer* NIH $413,850
Novick, Richard P. *Molecular Genetics of Exotoxin Regulation in S aureus* NIH $1,932,927
Pai, Vinay Manjunath *Dynamic 3He MRI of the Lungs* NIH $465,114

Parathath, Sajesh *The Role of ES-4 in the Hydrolysis of Cholesteryl Ester in Hepatic Cells* NIH $147,750
Philips, Mark R. *Compartment Specific Signaling of Ras* NIH $1,388,448
Pinderhughes, Alicia D. *Latent TGF-beta Binding Protein in Mammary Development and Tumorigenesis* NIH $122,916
Regatte, Ravinder R. *Quantitative MRI for Early Diagnosis of Arthritis* NIH $1,820,602
Reibman, Joan *Diesel Exhaust Particles and Mucosal Immunity* NIH $1,799,346
Rey, Mariano J. *NYU Center for the Study of Asian American Health - Research Center of Excellence* NIH $7,893,907
Rey, Mariano J. *Center to Reduce HBV Disparities* NIH $4,250,000
Rice, Margaret E. *Electrochemical Analysis of Dopamine Release* NIH $422,500
Rom, William N. *Longtitudinal Studies of HIV-Associated Bacterial Pneumonia* NIH $3,978,959
Rom, William N. *Translational Research Training in Environmental Medicine* NIH $1,867,441
Rosenbluth, Jack *Pathology of Dysmyelination and Demyelination* NIH $999,797
Rostagno, Agueda *Cerebrovascular Amyloidosis, Stroke, and Dementia* NIH $1,852,448
Ryoo, Hyung D. *Coordination of Apoptosis and Cell Proliferation in Drosophila* NIH $1,482,177
Salafia, Carolyn M. *Prenatal Risk Factors for Neuropsychiatric Disease* NIH $175,066
Salzer, James L. *Assembly of the Node of Ranvier* NIH $1,852,357
Schneider, Robert J. *Viral and Cellular Determinants of Hepatitis B Virus Pathogenesis* NIH $2,111,251
Sigurdsson, Einar M. *Immunotherapy for Pancreatic Amylin Aggregates in Diabetes* NIH $464,750
Skolnik, Edward Y. *Regulation and Function of Myotybularins* NIH $1,524,281
Skolnik, Edward Y. *The Role of the Calcium Activated Potassium Channel, KCa3.1, in the Pathogenesis* NIH $465,209
Smith, Susan *Mechanisms of Sister Telomere Cohesion and Resolution* NIH $1,608,825
Stokes, David L. *Electron Microscopy of P-Type Ion Pumps* NIH $1,557,963
Tracy, Kathlene *Mentorship for Alcohol Problems (MAP)* NIH $917,719
Tse, Doris B. *FACSAria Flow Cytometer* NIH $344,045
Volgyi, Bela *Structure and Function of Retinal Ganglion Cell Gap Junctions* NIH $1,566,677
Wall, Stephen *Spanish and English Multimedia Intervention to Increase Organ and Tissue Donation* AHRQ $529,541
Wall, Stephen P. *Spanish and English Multimedia Interventon to Increase Organ and Tissue Donation* NIH $529,541
Wang, Da-Neng *Structural Studies of Sugar Transporters* NIH $1,836,555
Wisniewski, Thomas M. *Detection and Clearance of AD Amyloid Lesions* NIH $1,562,563
Wisniewski, Thomas M. *Immunization Approaches for Alzheimer's Disease* NIH $253,281
Xu, Rui-Ming *Structural Studies of Transcriptional Silencing* NIH $1,712,096
Yamasaki, Lili *Mouse Models for pRB Growth Control Via E2F/DP Action* NIH $1,023,223
Yelon, Deborah L. *Genetic Regulation of Cardiac Patterning in Zebrafish* NIH $1,356,000

NON-FEDERAL 2007

Aifantis, Ioannis *Modeling T Cell Acute Lymphoblastic Leukemia* G & P Foundation for Cancer Research $$132,482
Axelrod, Deborah M. *AMBER-Arab American Breast Cancer Education and Referral Program.* Komen New York City $135,317
Bach, Erika *Mechanisms of Regulating Stem Cell Number in Vivo* Hirschl Charitable Trust $175,000
Bach, Erika *Using Drosophila to Elucidate the Role of the JAK/STAT Pathway in Growth Control and Development* March of Dimes $150,000
Bhardwaj, Nina *Randomized, Double-Blind, Placebo-Controlled Study of Topical Resiquimod as an Adjuvant for NY-ESO-1 Protein Vaccination in Patients with Tumors That Often Express NY-ESO-1* Cancer Research Institute, Inc. $403,431
Bhardwaj, Nina *RNA Transfection as a Means to Enhance Dendritic Cell Immunity Against Tumors* The Emerald Foundation $100,000
Borkowsky, William *NICHD Pediatric and Perinatal HIV Studies Network* Westat $1,523,317
Burden, Steven J. *The Role of SMN in Skeletal Muscle Development* Spinal Muscular Atrophy Foundation $358,400
Buyon, Jill P. *Preventive Intravenous Immune Globulin (IVIG) Therapy for Congenital Heart Block (PITCH)* Lupus Foundation of America, Inc. $427,546
Calzada, Esther J. *A Cultural Model of Mental Health Services for Immigrant AfroCaribbean Children* Johnson (Robert Wood) Foundation $300,000
Cho, Hearn J. *Type 1 MAGE mRNA-pulsed Dendritic Cell Vaccines for Multiple Myeloma* Multiple Myeloma Research Foundation $100,000
Convit, Antonio J. *The BODY project.* The Robert C. and Veronica Atkins Foundation $100,000
Cowin, Pamela *The Role of Gpr125 in Mammary Stem/Progenitor Cells* Komen (Susan G.) Breast Cancer Foundation $135,000
Darwin, Andrew J. *Mechanisms of Pseudomonas aeruginosa Tolerance to Secretin-induced Stress During Host Infection* Burroughs Wellcome Fund $500,000
Darwin, Andrew J. *Pseudomonas aeruginosa Tolerance to Secretin-Induced Stress* Cystic Fibrosis Foundation $194,400
David, Gregory *Heterochromatin Formation and Maintenance in Mammals* March of Dimes $150,000
D'Eustachio, Peter G. *The Human Pathways and Reactions Consortium* Cold Spring Harbor Laboratory $154,937
Di Rocco, Alessandro *The Parkinson's Disease Center of NYUMC* Edmond J. Safra Philanthropic Foundation $944,000
Dustin, Michael L. *Imaging Immune Cell Infiltration and Function in Brain Injury* Dana (Charles A.) Foundation, Inc. $100,015
Feske, Stefan *Characterization of the Role of Novel Protein Orai 1 in Store-Operated Calcium Entry and CRAC Channel Function in Primary Immunodeficiency* March of Dimes $239,172
Fishell, Gordon J. *Mouse models of Autism Using Genetic Manipulation of Cortical Interneurons* Simons Foundation Autism Research Initiative $240,000
Fisher, Edward A. *Pleiotropic Effects of Rosuvastatin on Plaque Gene Expression* AstraZeneca $168,045
Formenti, Silvia C. *Pre-Clinical Studies of Local Ionizing Radiation Therapy and 4-1BB-Mediated Co-stimulation* Bristol-Myers Squibb $106,470
Franke, Thomas *Evaluating Akt Tyrosine Phosphorylation as a Novel Marker for Therapeutic Resistance and Breast Cancer Prognosis* Komen (Susan G.) Breast Cancer Foundation $177,572

Frevert-Clarkson, Ute *Cerebral Malaria: Immune Cell and Parasite Interactions* Dana (Charles A.) Foundation, Inc. $200,000

Gan, Wenbiao *The Role of Microglial Activation in Synaptic Pathology* Fidelity Foundation/E. C. Johnson Fund $243,122

Gan, Wenbiao *Postdoc: The Role of Microcirculation in the Regeneration of Spiral Cord Axons* NYS Spinal Cord Injury Research Board $120,000

Gany, Francesca M. *Accessing Breast Cancer Clinical Trials for Immigrants (ABC CiTI)* Komen New York City $150,000

Ghiso, Jorge A. *Interdisciplinary Approach to Drug Discovery* Mount Sinai School of Medicine $358,174

Goldfrank, Lewis R. *DOD Pandemic Influenza* New York University $270,400

Greenberg, Jeffrey D. *Pharmacogenomic and Proteomic Biomarkers of Rheumaotoid Arthritis Therapeutics* Bristol-Myers Squibb $219,765

Gutstein, David E. *Connexin43 in Coronary Development* American Heart Association $198,000

Hubbard, Jane *Genome-scale High Content Phenotypic Analyis of Sterility in C. elegans* March of Dimes $185,422

Kaufman, Horacio *Dysautonomia Research Laboratory* Dysautonomia Foundation $290,403

Keller, Allen S. *Bellevue/NYU Program for Survivors of Torture* Robin Hood Foundation $250,000

Keller, Allen S. *Bellevue /NYU Program for Surviors of Torture* Open Society Institute $199,999

Kim, Daniel *Scientist Development Grant* American Heart Association $260,000

Kleinberg, David L. *Breast Cancer Chemoprevention by SOM230, an IGF-1 Action Inhibtor* United States Army Medical Research and Materiel Command $842,733

Kleinberg, David L. *Mammary Carcinogenesis: Growth Hormone and IGF-I* Novartis $150,000

Krogsgaard, Michelle *A Role for "self" in T-cell Development and Recognition* Pew Charitable Trusts $240,000

Krogsgaard, Michelle *Sensitivity of T-cell Recognition of Melanoma Antigens* Cancer Research Institute, Inc. $200,000

Kuzniecky, Ruben I. *The Epilepsy Phenome Genome Project* UCSF Medical School $4,262,728

Leech, Colin A. *Regulation of Nucleotide Binding to ATP-Sensitive Potassium Channels* American Diabetes Association, Inc. $176,404

Littman, Dan R. *Predoc: Regulation of Th-POK Expression During T Cell Differentiation* Leukemia and Lymphoma Society $150,000

Littman, Dan R. *Postdoc: Role of RORgamma in Th17 Differentiation, Infection and Autoimmune Disease* Cancer Research Institute, Inc. $130,500

Littman, Dan R. *Factors That Control Th17 Cell Differentiation in Human and Role of Th17 Cells in HIV Infection* Cancer Research Institute, Inc. $128,500

Llinas, Rodolfo *Methods and Systems for Diagnosing and Treating Thalamocortical Dysryhthmia and the Use of Octanol and Related Compounds to Treat Thalamocortical Dysrhthmias* NeuroResonance LLC $8,825,220

Llinas, Rodolfo *Chip Project* Neurocontrol Systems, LLC $900,000

Llinas, Rodolfo *Brain Machine Interface Systems* Neuro Interface, LLC $420,000

Lucas, Christopher P. *"STEPS" (Screening Treatment, and Education to Prevent Suicide) Program to be Piloted in Rockland County Schools* New York State Office of Mental Health $500,000

Ludvig, Nandor *New Method for Protein Sampling and Delivery in Brain* Lenox Laser $369,890

Malaspina, Dolores *Circumscribed Prenatal Adversity in Critical Gestational Windows and Psychiatric Outcomes: A Unique Prospective Population Study* National Alliance for Research on Schizophrenia and Depression $100,000

Matthews, Paul *Investigator Initiated Research Grant: Neuroprotection Following Modulation of Endogenous Abeta in Mice* Alzheimer's Association $240,000

Mendelsohn, Alan L. *Use of Plain-Language, Pictogram-Based Medication Instruction Sheets to Improve Parental Understanding of Medication Instructions and Prevent Medication Errors in Children* Pfizer Pharmaceuticals $130,000

Muggia, Franco M. *Sanofi-Aventis Hematology & Oncology Special Research Fellowship Program* Sanofi-Aventis $150,000

Munger, John S. *Activation of TGFb1 amd TGFb3 by RGD-binding Integrins* Hirschl Charitable Trust $175,000

Nudler, Evgeny A. *Increasing Plants' Resistance to Adverse Enviromental Conditions by Manipulating the RNA Thermisensor (HRS1)* Monsanto Company $203,400

O'Neill, David W. *Active Immunotherapy for Brain Tumors Using Dendritic Cells Transfected with mRNA Amplified from Tumor Cells* Making Headway Foundation $160,000

Orlow, Seth J. *Improved Therapies for Melanoma* Miguel and Jacklyn Bezos $510,000

Pagano, Michele *Functional Genetic Approaches for theIdentification of Novel Cell Cycle* Welfare Ministry of Italy $191,683

Pass, Harvey I. *Mesothelioma Virtual Bank for Translational Research* University of Pittsburgh $154,158

Pass, Harvey I. *A Breath Test for Lung Cancer* Menssana Research, Inc. $129,773

Petit-Jacques, Jerome *Generation and Control of Motion Detection in the Mammalian Retina* Whitehall Foundation, Inc. $225,000

Poles, Michael *Effect of HIV Infection of Soluble Mediators and Microbial Biota in the GI Tract* New York University $242,574

Rapoport, David M. *Neurocognitive Profiler: High Efficiency Brain Behavior Integrated Assay* Advanced Brain Monitoring, CA $139,886

Ren, Mindong *Genotype-phenotype Correlation and Genetic Modifiers in Barth syndrome* United Mitochondrial Disease Foundation $149,470

Rigaud, Mona *Clinton HIV/AIDS initiative* Clinton (William J.) Presidential Foundation $124,882

Rom, William N. *Early Detection Research Network (EDRN) MicroRNAs in Lung Cancer* Johns Hopkins University $102,295

Rosenbluth, Jack *Analysis of a New Dysmyelinating Mutant* National Multiple Sclerosis Society $290,235

Roth, David Brian *Postdoc: Defining Alternative Pathways for the Repair of RAG-induced DNA Breaks* Leukemia and Lymphoma Society $150,000

Rudy, Bernardo *Molecular and Functional Maturation of GABAergic Interneurons in MeC* International Rett Syndrome Association $100,000

Ryoo, Hyung *Signaling Cascades Activated by Incomplete Cell Death During Animal Development* March of Dimes $150,000

Sadowski, Marcin *Peptide Mimetic Therapeutic Agents for Blocking the Apo E/AB Interaction* American Federation for Aging Research $240,000

Salzer, James L. *Collaborative MS Research Center Award* National Multiple Sclerosis Society $825,000

Sauthoff, Harald *Adenoviral Delivery of Transducible p53 for Cancer Treatment* Alliance for Cancer Gene Therapy $499,995

Shah, Nirav *Outpatient Cardiovascular Guidlines Applied in Practice (GAP) Study* Johnson (Robert Wood) Foundation $300,000

Shopsin, Bo *AGR Function and Staphylococcal Fitness in Cardiovascular Infection* American Heart Association $526,000

Sigurdsson, Einar M. *Clearance of Pathological Tau as Therapy for Alzheimer's Disease* Hirschl Charitable Trust $175,000

Skok Gibbs, Jane *Epigenetic Factors That Contribute to the Development of B-ALL* Elsa U. Pardee Foundation $187,500

Smith, Julia A. *Integrated Breast Cancer Care for Medically Undersized Multiethnic Women in NY* New York Community Trust $200,000

Stokes, David L. *Probing the Dynamics of Protein Integration into and Translocation across Membranes using Flourescence Spectroscopy and Cryo-Electron Microscopy* Burroughs Wellcome Fund $488,000

Taouli, Bachir A. *Correlation Between Perfusion Metrics Measured With Contrast-Enhanced MRI and Tissue Oxygenation Measured With BOLD MRI with VEGF Receptor Expression in Hepatocellular Carcinoma* Radiological Society of North America $151,000

Torres-Vazquez, Jesus *Genetic Analysis of Angiogenic Vascular Development in the Embryonic Brain* American Heart Association $260,000

Trombetta, Eduardo S *Regulation of Cellular Immune Responses to Protein Antigens* American Cancer Society, Inc. $720,000

Turnbull, Daniel H. *Postdoc: Longitudinal Assessment of Spinal Cord Injury Repair by MRI* NYS Spinal Cord Injury Research Board $120,000

Turnbull, Daniel H. *Micro-MRI of Mouse Medulloblastoma Progression and Response to Therapy* Making Headway Foundation $100,000

Vlahos, Ioannis *NYU Dual Energy Collaboration with Berlex/Schering/Bayer* Bayer HealthCare Pharmaceuticals Inc. $127,984

Weiner, Howard Leslie *Sonic Hedgehog Mutations in Medulloblastoma* Making Headway Foundation $100,000

Wirgin, Isaac I. *Stock Structure of Winter Flounder Using Two Complementary Nuclear DNA Approaches* New York Sea Grant $218,000

Zeleniuch-Jacquot, Anne *Serum Epigenetic Markers and the Early Detection of Breast Cancer* Komen (Susan G.) Breast Cancer Foundation $186,724

FEDERAL 2008

Barash, Irina *Pre-clinical Testing of GSK3 Inhibitors in ADPKD* NIH $180,474

Bhardwaj, Nina *Modulating Immunity through Dendritic Cell Phagocytic Receptors* NIH $1,694,791

Bloomfield, Stewart Allen *Amacrine Cell Function in the Retina* NIH $2,869,198

Brotman, Laurie Miller *Preventing Conduct Problems in Poor Urban Preschoolers* NIH $2,193,210

Burden, Steven J. *Signaling by MuSK, a Component of the Agrin receptor* NIH $2,011,627

Buyon, Jill P. *Maternal Autoantibodies: Pathogenesis of Neonatal Lupus* NIH $1,863,950

Carr, Kenneth D. *CNS Mechanisms that Modulate Reward* NIH $320,694

Carroll, William L. *Cancer Center Support Grant* NIH $13,217,286

Castellanos, Francisco X. *Neural Substrates of Variability in Attention Deficit Hyperactivity Disorder (ADHD)* NIH $1,718,575

Chesler, Mitchell *Dynamics of pH Regulation in the Brain* NIH $1,853,359

Clark, Brian D. *Functional Roles of Kv1 Channels in Inhibitory Cortical Interneurons* NIH $124,416

Coetzee, William A. *Potassium Channels as Macromolecular Complexes* NIH $2,939,449

Cowin, Pamela *The Role of a Novel Orphan G-protein Coupled Receptor in Mammary Stem Cells* NIH $419,278

Cronstein, Bruce N. *Purinergic Regulation of Bone Metabolism* NIH $1,864,316

Dai, Wei *Molecular Mechanisms Underlying Chromosomal Instability and Aneuploidy* NIH $1,470,840

Darwin, Andrew J. *The Psp Response of Yersinia enterocolitica* NIH $381,188

Dasgupta, Ramanuj *Integration of RNAi, Proteomic and Chemical Genetic Approaches to Identify Specific Modulators of Wnt/ß-catenin Signaling* NIH $455,350

Dustin, Michael L. *Inverted Two Photon Laser Scanning Microscope for Host Defense* NIH $500,000

Ernst, Joel D. *Initiation of the Immune Response to M. tuberculosis* NIH $2,709,151

Fitzgerald, Matthew B. *Optimizing Fitting of Bilateral Cochlear Implants* NIH $180,000

Gardner, Esther P. *Neural Mechanisms of Cutaneous Spatial Integration* NIH $500,000

Gordon, Terry *Role of particle agglomeration in nanoparticle toxicity* EPA $1,199,927

Gorny, Miroslaw K. *The Immunoglobulin Gene Usage for Anti-V3 Monoclonal Antibodies* NIH $455,250

Grossman, Robert I. *Quantitative MR Imaging and Proton Spectroscopy in MS* NIH $3,450,548

Hong, Kyonsoo *CRCNS: Activity-Dependent Growth Cone Guidance* NIH $1,847,642

Javitt, Daniel C. *Sensory Processing Dysfunction in Neuropsychiatric Illness* NIH $1,324,850

Karpowich, Nathan K. *Structural Biology of the Sodium-Calcium Exchanger* NIH $153,822

Kelly, Anne Marie Clare *Functional and Structural Connectivity in Cocaine Addiction* NIH $263,163

Kirsch, Thorsten *Regulation of Mineralization in Skeletal Tissues* NIH $543,052

Kirsch, Thorsten *Collagen-Annexin Interactions in Tissue Mineralization* NIH $215,235

Krasinski, Keith *Ryan White Title IV Program* HRSA $975,124

Kreibich, Gert *Short Term Research Training for Medical Students* NIH $538,956

Lang, Eric J. *Abnormal Olivocerebellar Synchrony: A Possible Cause of Alcohol Withdrawal Tremor* NIH $438,107

Lee, Joshua D. *Treatment Study Using Depot Naltrexone(3/6)NY/Bellevue Protocol Treatment Site* NIH $1,827,289

Lee, Vivian S. *Non-Contrast-Enhanced Peripheral MR Angiography* NIH $3,908,324

Mohr, Ian J. *Virus-host Interactions that Regulate Translation in Cells Infected With HSV-1* NIH $2,118,541

Nans, Andrea S. *Electron Tomography of Axo-Glial Junctions* NIH $163,888

Nolan, Anna *CD80 and CD86 Mediated Innate Immune Response in Sepsis* NIH $795,690

Nudler, Evgeny *Transcription Termination and its Regulation in E. coli* NIH $2,530,531

Ogedegbe, Gbenga Godwin *Multi-Site RCT for BP Control in HTN African Americans* NIH $810,777

Pintucci, Giuseppe *Proteolysis of HMW FGF-2 by Thrombin and it's Cardiovascular Implications* NIH $381,865

Rey, Mariano J. *Project AsPIRE (Asian American Partnership in Research and Empowerment)* NIH $3,210,814

Rice, Margaret E. *Electrochemical Analysis of Dopamine Release* NIH $1,356,970

Sadowski, Martin J. *Targeting the apoE/ABeta Interaction as a Novel AD Therapy* NIH $1,597,926

Schneider, Robert J. *Infectious Diseases and Basic Microbiological Mechanisms* NIH $2,396,745

Sigurdsson, Einar M. *Immune Therapy and Imaging in Mouse and Primate Models of Alzheimer's Disease* NIH $1,323,356

Skolnik, Edward Y. *New Signaling Pathways that Positively and Negatively Regulate CD4 T Cells Via Th* NIH $868,667

Sun, Tung-Tien *Biochemistry of Urothelial Differentiation* NIH $2,517,379

Treisman, Jessica E. *Lipid Modification of Secreted Signaling Proteins* NIH $465,916

Turnbull, Daniel H. *Ultrasound and MR Imaging of Mouse Brain Development* NIH $1,482,668

Waxman, Joshua S. *Elucidation of Molecular Networks Required to Limit Cardiac Cell Number* NIH $180,000

Zabar,Sondra *Residency Training in Primary Care* HRSA $136,007

NON-FEDERAL 2008

Abramson, Steven B. *Identification and Characterization of Drug Targets in OA Daiichi Pharmaceuticals* $600,000

Aifantis, Ioannis *The SCF(FBW7) Ubiquitin Ligase Complex as a Tumor Suppressor in T Cell Leukemia* Leukemia and Lymphoma Society $550,000

Aifantis, Ioannis *Molecular Regulation of CNS Involvement in Pediatric ALL* Alex's Lemondade Stand Foundation $200,000

Bach, Erika *Elucidating the Molecular Mechanisms that Regulate Stem Cell Number In Vivo* American Cancer Society, Inc. $720,000

Bar-Sagi, Dafna *The Role of Diet-induced Pancreatic Injury in Inflammation and Cancer* American Association for Cancer Research $100,000

Blaser, Martin J. *NYU-L'Oreal Projects on Human Skin Microbiota* L'Oréal USA $142,500

Castellanos, F. Xavier *High-Troughput Neuroimaging of Pediatric Neuropsychiatric Disorders* Stavros S. Niarchos Foundation $375,000

Convit, Antonio *Banishing Obesity and Diabetes in Yuth (BODY) Project* New York City Council $350,000

Convit, Antonio J. *Banishing Obesity and Diabetes in Youth (BODY) Project* WellPoint Foundation $250,000

D'Eustachio, Peter G. *Knowledge Extraction and Annotation in a Grid Based Bioinformatics Environment* University of Delaware $331,700

Dustin, Michael L. *Study of Dynamic Immune System Using In-Vivo Imaging Technology* Osaka University Immunology Frontier Research $150,000

Elbel, Brian *Hospital Quality Data: Understanding Decision Making in Vulnerable Populations* Johnson (Robert Wood) Foundation $149,972

Ferris, Steven H. *A Double-Blinded, Placebo-Controlled, Randomized, Multicenter Study to Evaluate the Efficacy and Safety of Eighteen Months of Treatment With PF-04494700 (Rage Inhibitor)* University of California, San Diego $205,017

Franke, Thomas *AKT Action in Neuropsychiatric Disorder* Mathers Charitable Foundation $659,999

Frenkel, Krystyna F. *Effects of muira puama Extract on Fat and Muscle in Rats* Pennino Corporation $540,000

Gardner, Lawrence B. *Erythroid Gene Regulation by Nonsense Mediated RNA Decay* New York Community Trust $100,000

Hernando-Monge, Eva *Mechanisms of Mesenchymal Transformation and Leiomyosarcoma-Genesis* American Cancer Society, Inc. $716,000

Hernando-Monge, Eva *Role of Altered MicroRNAs in Melanoma-Genesis and Progression* Elsa U. Pardee Foundation $106,658

Krieger, Ana C. *Endothelial Cell Dysfunction in Sleep Apnea* Johnson (Robert Wood) Foundation $416,560

Lafaille, Juan J. *Improving the Efficacy of Regulatory T Cells in Inflammatory Bowel Disease* Crohn's & Colitis Foundation of America $429,000

Landau, Nathaniel *Identification of Host Protein Interactions with HIV Vpr/Vpx that Enhance Viral Pathogenesis* Cancer Research Institute, Inc. $130,500

Nance, Jeremy F. *Analysis of Cell Contact-Mediated Polarization in the C. Elegans Embryo* American Cancer Society, Inc. $138,000

Nussenzweig, Victor *Identification and Validation of Plasmodium Liver-Stage Drug Targets* Novartis $180,000

Pagano, Michele *Investigating the Role of Fbx09 in Multiple Myeloma Development* Leukemia and Lymphoma Society $165,000

Reinberg, Danny *Mechanism of Histone Methylation Function During Chromatin Transcription* Helen Hay Whitney Foundation $139,500

Rifkin, Daniel B. *Inflammation and tumorigenesis in mice with TGF-B mutations* Morris (Philip) Companies, Inc. $200,000

Rostagno-Ghiso, Agueda A. *Cerebral Amyloid Angiopathy and Endothelial Cell Dysfunction* American Heart Association $198,000

Salzer, James L. *Role of Sonic Hedgehog in Remyelination* National Multiple Sclerosis Society $150,800

Sigurdsson, Einar M. *Clearance of Pathological Tau Conformers* Alzheimer's Drug Discovery Foundation $125,000

Sivapalasingam, Sumathi *NYU/Bomu Training Program In Kenya* Gilead Sciences $208,216

Toniolo, Paolo G. *Characterization and Validation of Genomic Expression Signature of Pregnancy* AVON Foundation $1,400,000

Treisman, Jessica E. *Lipid modification of secreted signaling proteins* March of Dimes $350,766

Yelon, Deborah L. *Regulation of Cardiac Morphogenesis by a Novel Transmembrane Protein* March of Dimes $264,000

Zaim Wadghiri, Youssef *Improving Delivery and Labellin Efficiency of MRI Probes for Alzheimer's Plaques* American Health Assistance Foundation $150,000

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