FALL 2006 VOL.58 / NO.1

NYU PHYSICIAN

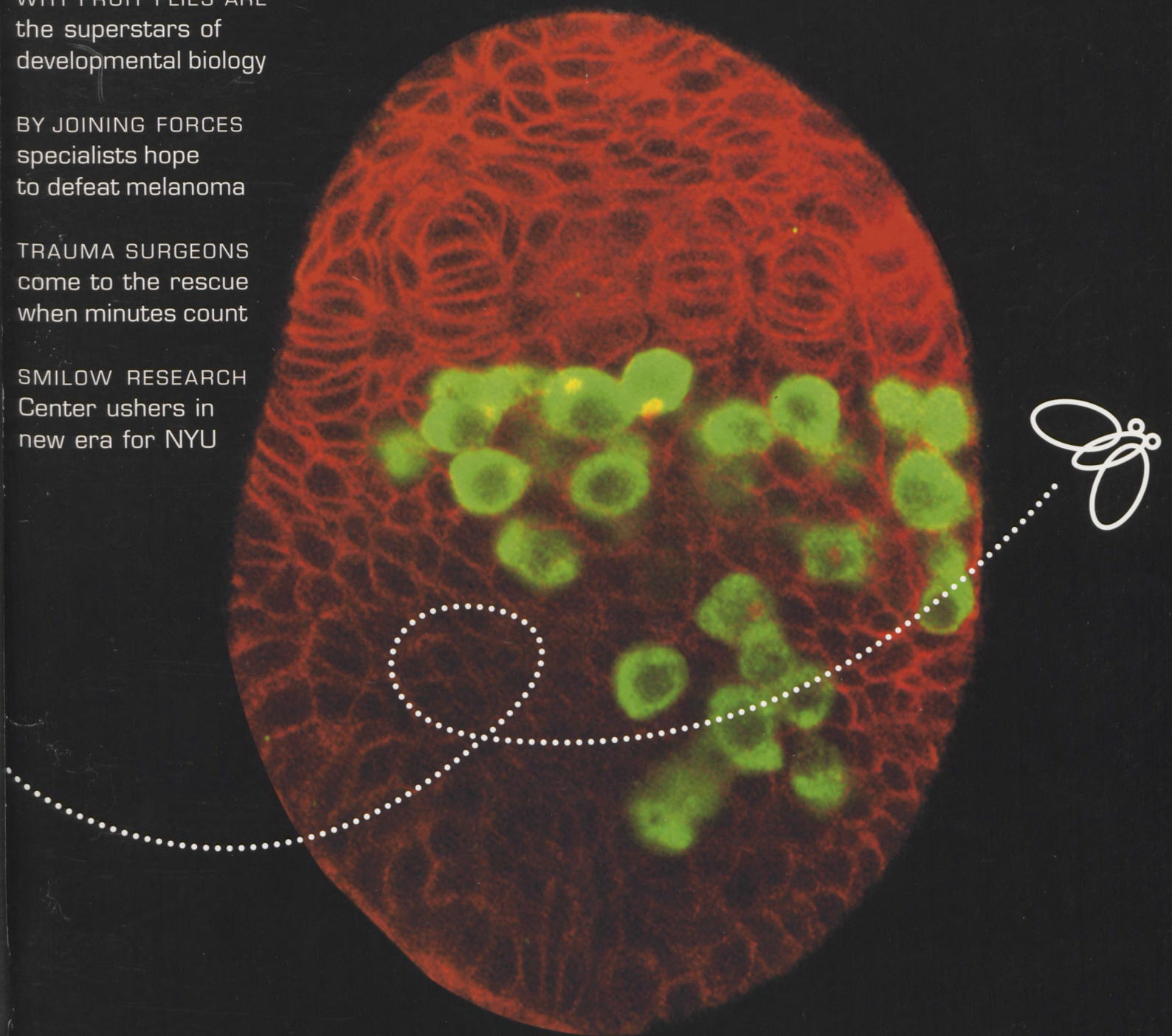
THE MAGAZINE OF NEW YORK UNIVERSITY SCHOOL OF MEDICINE

WHY FRUIT FLIES ARE
the superstars of
developmental biology

BY JOINING FORCES
specialists hope
to defeat melanoma

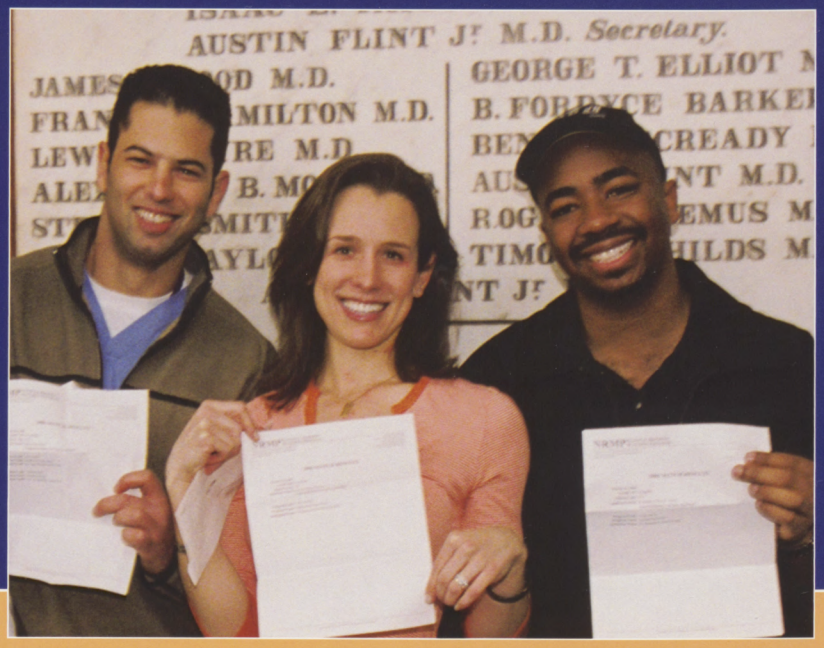
TRAUMA SURGEONS
come to the rescue
when minutes count

SMILOW RESEARCH
Center ushers in
new era for NYU



Germ Cells Are Forever

Help us make dreams come true



MATCH DAY
Oren Erlichman, M.D. ('06), Sara Barton, M.D. ('06), and Benjamin E. Young II, M.D. ('06), holding their residency acceptance letters on Match Day.

EVERY ASPIRING PHYSICIAN DREAMS OF THIS DAY: the day someone calls them "Doctor" for the first time. But getting there takes a lot more than patience, perseverance, and hard work. It takes resources—for library enrichment, for state-of-the-art research and teaching technology, and for financial assistance.

BY CONTRIBUTING TO THE SCHOOL'S ALUMNI CAMPAIGN, YOU WILL HELP our students fulfill their dream of becoming physicians. In so doing, you will also help us maintain one of our proudest traditions: that no student is ever forced to withdraw for lack of financial resources.

Someday you may even have the privilege of being one of their patients—and calling them "Doctor" yourself.

Easy to do:

Use the postage-paid return envelope inserted in this issue of NYU PHYSICIAN. Or go online at www.med.nyu.edu/alumni. Thank you for your generosity.

For special giving and memorial opportunities, call Anthony J. Grieco, M.D., Associate Dean for Alumni Relations, at 212-263-5390.

SCHOOL OF MEDICINE
NEW YORK UNIVERSITY

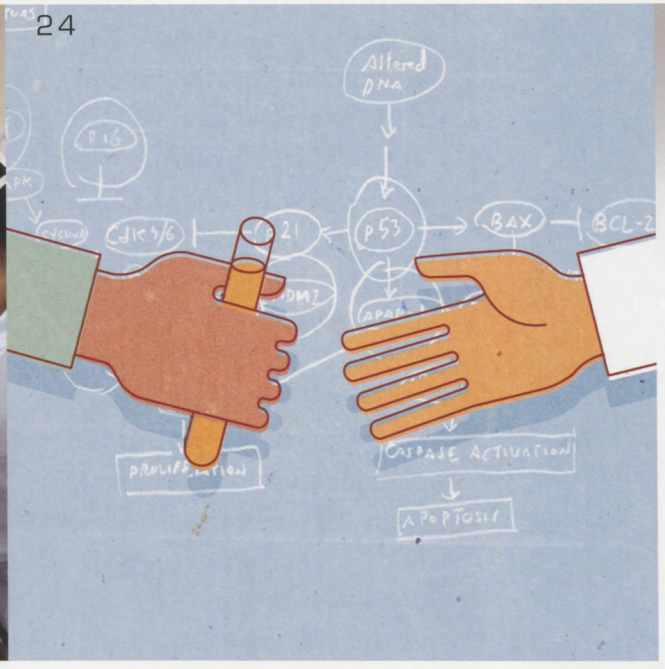
PHOTOGRAPHY: RENÉ PEREZ (ABOVE, LEFT), OTTO STEININGER (ABOVE, CENTER)

School of Medicine
New York University

FALL 2006 VOL. 58 . NO. 1

NYU PHYSICIAN

THE MAGAZINE OF NEW YORK UNIVERSITY SCHOOL OF MEDICINE



COVER STORY

18 Germ Cells Are Forever

The fruit fly, says Dr. Ruth Lehmann, Director of the new Kimmel Center for Stem Cell Biology, helps to reveal how generations are linked.

FEATURES

ON THE COVER: The fruit fly ovary, as seen through a confocal microscope, with germ cells shown in green. Germ cell development is the focus of Dr. Ruth Lehmann's laboratory. Cover micrograph by Dr. Lilach Gilboa.

DEPARTMENTS

PHOTOGRAPHY: RENÉ PEREZ (ABOVE, LEFT), OTTO STEININGER (ABOVE, CENTER)

THE ORDINARY FRUIT FLY IS A PESKY LITTLE CRITTER, best known for its fondness for rotting fruit, as anyone who has ever kept over-ripe bananas on the kitchen counter knows all too well. But for Dr. Ruth Lehmann, an eminent research scientist at the Skirball Institute of Biomolecular Medicine and Director of the new Helen L. & Martin S. Kimmel Center for Stem Cell Biology, the fruit fly is a superstar. This animal holds the key to understanding an essential process in developmental biology—the emergence, formation, and migration of germ cells. In our cover story, "Germ Cells Are Forever," we describe Dr. Lehmann's elegant work with these cells.

In "Teaming Up to Combat Melanoma," we report how seven physicians and researchers from diverse disciplines have pooled their resources—and the institutional expertise acquired by NYU over decades—to speed up their race to find a cure for the deadliest of skin cancers: melanoma. It's a fascinating example of the still-emerging discipline of translational medicine.

For our story about trauma care at Bellevue, "Trauma: When Minutes Count," we spent many a night in the hospital's legendary Emergency Department, observing and talking with the doctors and nurses who make up the trauma team, the specialists from various departments who are called in, and the surgeons and residents who form the newly created Division of Trauma & Critical Care.

In Class Notes (*see page 47*) we bid farewell to our esteemed Medical and Science Editor, Richard I. Levin, M.D. ('74), who has left NYU after more than 30 years of service to become Dean of the School of Medicine at McGill University in Montreal, Canada. His wisdom and support have enriched this magazine in countless ways, and we'll miss him.

You may notice some differences in the appearance of NYU PHYSICIAN. We've recast the design for a bolder look. We hope you enjoy this issue of the magazine.

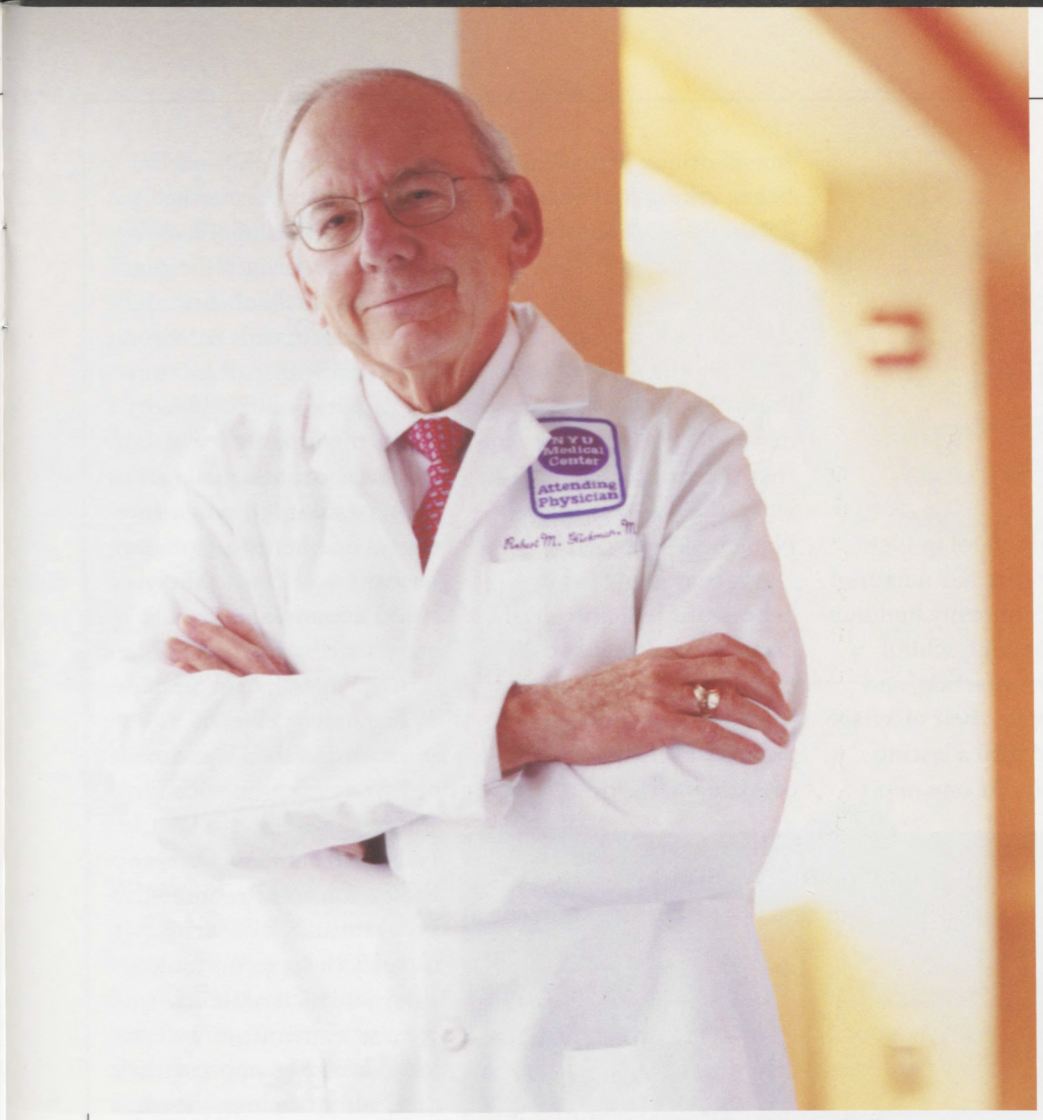
— The Editors

NYU PHYSICIAN is published by the Office of Communications & Public Affairs NYU School of Medicine.

Letters are welcome and should be sent to:
Editorial Director
NYU PHYSICIAN
NYU School of Medicine
550 First Avenue, MSB-153
New York, NY 10016

Letters can also be submitted to:
feedback@med.nyu.edu

We reserve the right to edit letters for length and clarity.



ROBERT M. GLICKMAN, M.D.

PHOTOGRAPHY: JOANNE SAVIO

Celebrations, Traditions, and Transitions

In every way, the Smilow Research Center is a worthy home for the physician-scientist of the 21st century.

Last May I had the pleasure of hosting a luncheon for a small but distinguished group of scientists from across the nation whom we had invited to help us celebrate the opening of the new Joan and Joel Smilow Research Center. The gathering, which included two Nobel laureates, represented an important milestone for me, both professionally and personally.

It was, indeed, an auspicious occasion for our Medical Center, heralding a new era of research—focusing on the emerging field of translational medicine—that will ensure that we remain in the forefront of academic research institutions. In every way, the Smilow Research Center is a worthy home for the physician-scientist of the 21st century.

Now that the Smilow building is a reality, it is attracting many first-class scientists from all over the country who are engaged in the kind of cutting-edge research that may one day improve lives—or, to put it another way, turn science into hope.

In March I announced to the NYU community my decision to step down as Dean and CEO of NYU Medical Center, effective June 2007, some nine years after I arrived. I chose the timing of this announcement to permit adequate time for a search for my successor. That person's challenges and rewards will be many, as they have been for me. Yet, across all levels of our institution, there is a renewed strength and vitality as our Medical Center continues to re-create itself.

The past year has been filled with dramatic examples of this momentum. In addition to the Smilow Research Center, we have merged with the Hospital for Joint Diseases, officially de-merged with Mount Sinai Hospital, and recruited five new department chairmen. These recent developments, and others that I am proud to have played a role in (*see page 14*), have set the course for our Medical Center for many years to come.

Needless to say, I would never have been able to advance our institutional agenda without the tremendous support, dedication, and hard work of many members of our community, including the Board of Trustees, administration, faculty, staff, and students. These are the people who make NYU Medical Center such a special place.

As I begin my final academic year as Dean, it gives me particular pride to preside over two ceremonies that I established in recent years and that I hope will become enduring traditions: the White Coat Ceremony, which welcomes incoming medical students, and the Dean's Honors Day, to celebrate the many accomplishments each year of our faculty.

It's too soon for farewells; there is still much to do before I turn over the reins to my successor, and I know I can count on your help, as I always have.

New Drug & Tender Care Slow Disease

FOUR YEARS AGO Sarina Mascheroni was quickly losing her ability to communicate. Her Alzheimer's disease had advanced to a stage when patients begin to lose their ability to care for themselves and can't remember such basic things as the current year or their former occupation. Her husband, John, recalls that his wife at times appeared to be no longer able to call him by his name. "She was clearly going downhill," he recalls.

Sarina's inability to remember her husband's name was perhaps the greatest blow to John because they had known each other almost 60 years, ever since they attended The High School of Music and Art, a celebrated school in New York City that has nurtured the talents of many budding artists. The high school sweethearts married, and over the years their marriage blossomed into a lasting partnership. At one point they established a furniture design business together. Then, in 1998, Sarina was diagnosed with Alzheimer's.

Today John speaks glowingly of his 73-year-old wife, who has moderately severe Alzheimer's. She still readily laughs at his jokes and, most tellingly, she also remembers his name. "It's quite obvious that her demeanor has changed for the better," says John. He credits Sarina's turnaround, in part, to a drug called Namenda (memantine), which Sarina began taking four years ago. The only FDA-approved drug for the treatment of moderate to severe Alzheimer's, it works by blocking the activity of a brain chemical called glutamate. "There is no question that she stopped declining when she was put on the Namenda," says John.

A recent study led by School of Medicine physicians showed that the drug could slow the mental and physical deterioration of patients in the later stages of Alzheimer's for at least one year. In the moderate to severe stages, patients have trouble dressing and bathing; many can no longer make a cup of coffee or tea. The study, published in the *Archives of Neurology,* was led by Barry Reisberg, M.D., Professor of Psychiatry, who is also Sarina's physician. "This study demonstrates that it is possible to alleviate some of the cognitive and functional losses associated with Alzheimer's, even at these stages, for a significant time period," says Dr. Reisberg. Patients in the study showed a significantly slower-than-expected rate of decline in a test of their ability to perform daily activities, and in other tests that measure cognition and behavior.

But the drug by itself cannot account for all of Sarina's ability to remain engaged in her life. Both her husband and Dr. Reisberg credit an individualized program of psychosocial care provided by Dr. Sunnie A. Kenowsky, Clinical Instructor in the Department of Psychiatry, who with Dr. Reisberg co-directs the Fisher Alzheimer's Disease Education and Resources Program at NYU. Sarina is partly the impetus for a study in which patients receive Namenda as well as individualized comprehensive care, which includes home visits and participation in exercise and cognitive stimulation programs. (To enroll in the study, contact its coordinator, Robyn Waters, at 212-263-8088.)

Dr. Kenowsky introduced Sarina to puzzles and flash cards, and she came up with the idea of filling in the outlines of drawings. Sarina's husband took the idea one step further, and made outlines of printings by Matisse, van Gogh, and other artists for Sarina to paint. He also created Christmas cards of her work. The painting, especially, revived Sarina, says John. "She hums and whistles when she does these paintings. It has increased her sense of self-esteem, has made her feel better about herself."

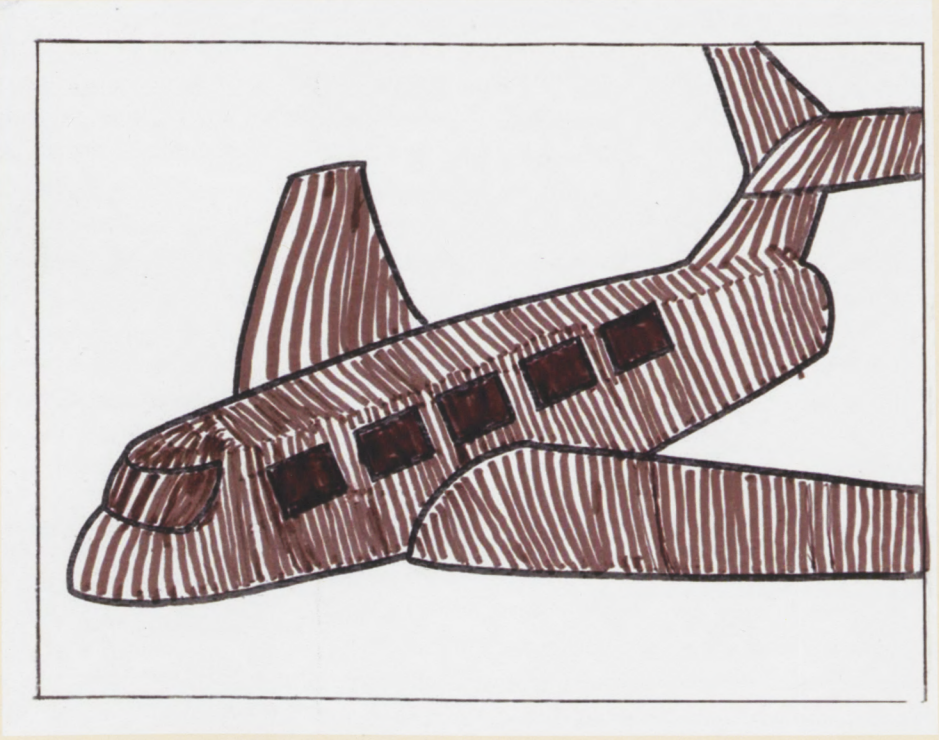
SARINA MASCHERONI AND HER HUSBAND, JOHN

Dr. Reisberg says that Sarina "has turned a disability into an ability." Dr. Kenowsky agrees, adding that the individualized comprehensive care program enhances the remaining strengths of people with Alzheimer's, helping them to function despite their limitations. The research project also trains caregivers to interact with the Alzheimer's patients. "The individualized management program brought out Sarina's gift for painting," she says. "The drug by itself cannot do this."

Certainly the loving attention of Sarina's husband has helped her maintain her dignity. John says that he has taken over the job of cooking, which is something he loves to do. Sarina is still able to use a fork and knife, and they have dinner at home together almost every night. Occasionally they go out to restaurants. "I'm not going to hide her from the world," says John. •

—Marjorie Shaffer

Alzheimer's disease is the most common form of dementia affecting people over 65. More than 4 million Americans—1 in 10 people over 65 and nearly half of those over 85—are afflicted.



As a former graphic designer, Sarina fills in the outlines of drawings as part of a comprehensive therapy program for Alzheimer's patients that capitalizes on their individual talents. Examples of Sarina's work are shown here.

Size Matters: Brain's Inner Matrix Is Twice as Large as Once Estimated

A CITY COULD NOT function without its streets. The brain, too, needs its conduits for communication, nutrient supply, and waste disposal—functions that are believed to be served by the so-called extracellular space (ECS). Scientists know that this space is filled with fluid containing proteins and salt, akin to spinal fluid and the matrix around most of the body's cells, but until now they've been uncertain about its exact size.

Since the 1970s a number of research groups have focused on the ECS, according to Charles Nicholson, Ph.D., Professor in the Department of Physiology and Neuroscience. He and his colleagues, however, are the first to measure it precisely. As it turns out, the ECS is twice as wide as previously estimated: between 38 and 64 nanometers wide, which is about one seventeen hundredth the diameter of the average human hair. The scientists presented their results in a recent issue of *The Proceedings of the National Academy of Sciences*.

Researching the brain's unexplored extracellular space, says Dr. Nicholson, helps to advance our knowledge of the brain's anatomy. One practical application of this knowledge is drug development. For example, a promising drug must not only pass the blood-brain barrier—the membrane that keeps many blood-borne infections and toxins from crossing into the brain. It must also travel through the ECS. If a brain tumor drug is too bulky, it will not reach the tumor.

Once a drug is administered, many factors affect how it might reach its target. Yet the last leg of a drug's journey always involves diffusion, says Dr. Nicholson. Diffusion refers to the spread of molecules through a medium in which they randomly bump into other molecules or boundaries. "By studying how certain molecules diffuse, you can say something about the structure through which they are traveling," he says.

In research that draws on such diverse disciplines as neuroscience, physics, mathematics, pharmaceutics, nanotechnology, and engineering, the team used special fluorescent probes to explore the ECS's unmapped terrain.

Despite its difference in size, the rat brain is actually an excellent model for studying the human brain, explains Dr. Nicholson. The scientists chose to work with live, anesthetized animals because the ECS shrinks and changes after death.

The experiments were set up to compare diffusion of different-size molecules, such as dextrans, which are water-soluble polymers used in ophthalmic solutions.

Robert G. Thorne, Ph.D., a postdoctoral fellow and co-author of the study, also chose quantum dots, which are tiny semiconductor crystals. They have been engineered to emit light in a range of colors over an extended time period.

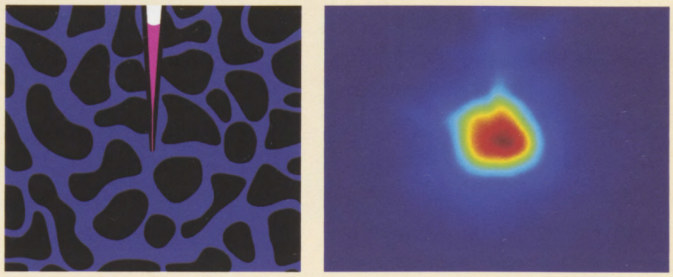
Quantum dots have been used since the late 1990s in many ways: in biology to tag molecules and in electronics to create light devices.

Using a thin pipette, the investigators delivered a few drops containing the probes to the ECS of rats. For the sake of comparison, probes were also added to an environment with known diffusion properties: a lab dish of agarose, a gel-like material consisting of seaweed extract. Much like the way a drop of food coloring would disperse in a glass of water, each probe created a diffusion cloud, which scientists imaged and analyzed. The quantum dots took 39 seconds to diffuse in agarose and 30 minutes to diffuse to the same extent through the rat's cortex.

The experimental data were then analyzed mathematically with the help of software written by Dr. Nicholson. To explain how this analysis of diffusion data led to an estimate of ECS width, he uses an urban analogy. At rush hour in Times Square, people are not exactly making a beeline for the subway. "They have to follow the streets, and this delays them a certain amount," says Dr. Nicholson. That factor is called tortuosity. There is also much more crowding than if the commuters poured from their buildings into an open field. The crowding provides information about the volume of a given space. So the tortuosity and volume data help researchers calculate the dimensions of the ECS.

The experiments had their their challenges. The probes had to be kept from clumping and the quantum dots required a special coating to prevent them from disintegrating in the brain's salty, watery environment. The team is now testing various types of molecules to better understand the ECS, the brain's vital matrix. •

—Vivien Marx



THE BRAIN'S ECS IS BEGINNING TO BE MAPPED: ITS DIMENSIONS ARE LARGER THAN PREVIOUSLY ESTIMATED. LEFT, A GRAPHIC RENDERING OF THE INTERCELLULAR MATRIX OF THE RAT'S NEOCORTEX. AN EXPERIMENTAL PIPETTE CAN DELIVER A FLUORESCENT PROBE TO THE TISSUE. RIGHT, A PSEUDOCOLOR IMAGE RENDERING OF THE FLUORESCENT PROBE'S DIFFUSION CLOUD.

PHOTOGRAPHY: CHARLES NICHOLSON, PH.D., ROBERT THORNE, PH.D.

Promoting Suicide in Cancer Cells

A PROTEIN widely known to cause uncontrolled cell growth can be manipulated to induce cancer cells to commit suicide, providing a novel target for the development of anti-cancer drugs, according to an NYU study.

In the study, featured in a recent issue of the journal *Molecular Cell,* researchers report they have discovered a new mechanism that they believe regulates the action of K-Ras, a cellular protein that plays a key role in many human cancers. "The general feeling was that we had learned everything about K-Ras that there is to know," says Mark R. Philips, M.D., Professor of Medicine, Cell Biology, and Pharmacology, who led the study. "But here is a completely new twist."

Ras proteins have captured the interest of cancer researchers since the late 1970s, when the first oncogenes—genes that cause the transformation of normal cells into cancerous ones—were discovered. One of those oncogenes was ras. There are three ras genes, and the one that produces K-Ras is the most important in terms of its impact on human cancer.

K-Ras acts like a molecular switch. In its normal form, the protein is turned on and off to control pathways that regulate cell growth. The mutant form, however, is locked in the *On* position, which causes cells to grow uncontrollably and, at the same time, turns off programmed cell death, or apoptosis, the normal process that tells a cell when it is time to die. The result is cancer.

Until recently K-Ras was thought to function only at the cell membrane and was permanently anchored in place by lipid molecules and electrostatic forces. "We discovered that the position of K-Ras in membranes is not permanent, and its positioning can be regulated by a signaling enzyme called protein kinase C," says Dr. Philips.

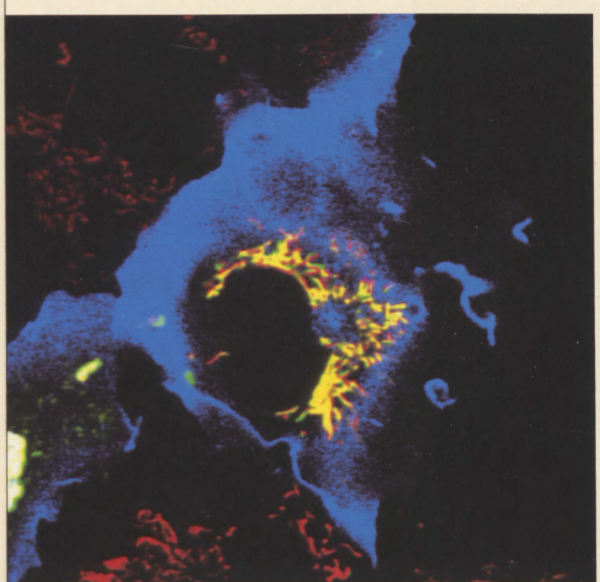
The inspiration for the study came from a separate experiment, in which cells were exposed to substances that stimulate protein kinase C (PKC). To the researchers' surprise, K-Ras began to appear on the mitochondria, organelles that power the cell and are thought to be involved in apoptosis.

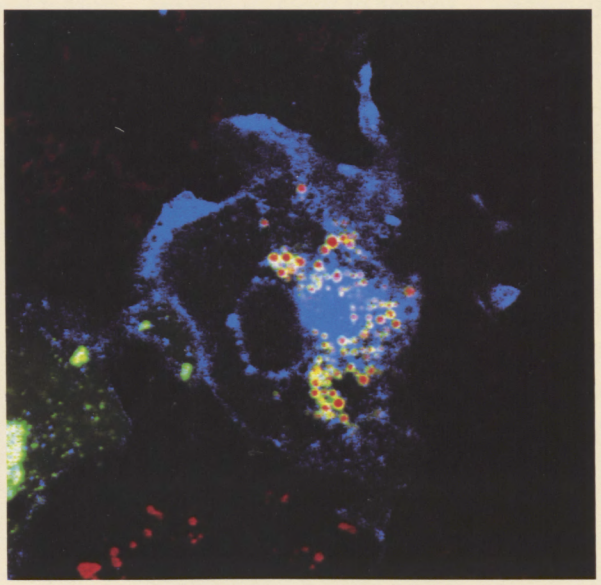
In the current study Dr. Philips and his colleagues sought to determine (1) the mechanism that causes K-Ras to relocate and (2) the protein's role in its new home. They discovered that PKC causes a phosphate molecule to be added to K-Ras. This phosphorylation process weakens the electrostatic bonds that help anchor the protein, allowing it to dislodge from the plasma membrane.

Once dislodged, K-Ras travels to the surface of the mitochondria, where the protein appears to play a role in promoting apoptosis, the researchers learned. "That was very surprising because ras is usually thought of as an oncogene," says Dr. Philips. "Oncogenes generally promote uncontrolled growth and block cell death. And here we were seeing a situation wherein ras was promoting cell death."

Intriguingly, the study identifies a potential mode of suppressing tumors, says Dr. Philips. "Our data suggested that if we could find a way to phosphorylate K-Ras, we might be able to promote programmed cell death in tumors driven by the ras oncogene, such as lung, colon, and pancreatic cancers." •

—Gary Goldenberg





THE PHOTOMICROGRAPH AT LEFT SHOWS THE PROTEIN K-RAS (BLUE) AT THE PERIPHERY OF THE CELL AND MITOCHONDRIA (YELLOW). A NEW NYU STUDY SHOWS THAT K-RAS CAN, IN FACT, MOVE TO THE MITOCHONDRIA, WHICH IS SHOWN IN THE IMAGE AT RIGHT.

PHOTOGRAPHY: MARK R. PHILLIPS, M.D.

Gates Grant for $8.4 Million Goes to School of Medicine AIDS Researchers

LED BY A LONGTIME AIDS researcher at the School of Medicine, an interdisciplinary team of scientists has received a multimillion-dollar grant from the Bill & Melinda Gates Foundation to develop novel AIDS vaccines. The team, led by Susan B. Zolla-Pazner, Ph.D., Professor of Pathology, is one of the recipients of the Gates Foundation's Collaboration for AIDS Vaccine Discovery grants. The goal of these grants, which were announced in July, is to accelerate the development of an AIDS vaccine.

Dr. Zolla-Pazner's team, which received a three-year grant for $8.4 million, involves collaborating researchers in immunology, virology, crystallography, and structural and computational biology. They will use sophisticated techniques to find out whether a section of the outer coat of the human immunodeficiency virus (HIV) can be used as a target for powerful neutralizing antibodies that defeat common strains of the virus.

Despite the enormous variability of HIV—one of the biggest stumbling blocks to developing effective vaccines—Dr. Zolla-Pazner's research suggests that this section of the virus appears to be "structurally conserved" across HIV strains. A more thorough understanding of this conservation may lead to vaccines that can elicit neutralizing antibodies against most strains of HIV.

THE ALPHA ROYAL MEDICAL CENTER IN BAMENDA, CAMEROON, IS ONE OF THE SITES OF THE NYU AIDS VACCINE DISCOVERY PROJECT. SHOWN WITH ITS STAFF ARE DR. SUSAN ZOLLA-PAZNER (THIRD FROM LEFT), WHO HEADS THE PROJECT, AND DR. PHILLIPE NYAMBI (FAR LEFT) OF THE SCHOOL OF MEDICINE. THE NYU RESEARCHERS HAVE WORKED IN MANY REGIONS OF CAMEROON.

For the Gates project, Dr. Zolla-Pazner has recruited colleagues who are affiliated with eight institutions, four in the United States, and two each in India and Cameroon in West Africa, where she has established many long-term collaborations.

"This is a proof-of-principle project," says Dr. Zolla-Pazner. "If it succeeds, it could be extended to the study of other parts of the HIV virus as well as to other disease-causing organisms."

Since the early 1980s, Dr. Zolla-Pazner's laboratory at the Manhattan Veterans Affairs Medical Center, an affiliate of NYU Medical Center, has focused on pieces of the outer coat of the HIV virus, and on the antibodies elicited by these pieces, as the basis for AIDS vaccines.

Over the years, she and other scientists have found some six regions of the outer coat of the virus, which is studded with a protein called gp120 in clouds of sugar. These regions induce antibodies that block the ability of the virus to infect cells. However, almost all of them have proved to be problematic. One region that remained promising was the so-called V3 loop of the gp120 protein, according to Dr. Zolla-Pazner. This region is used by the virus to gain a foothold on immune system cells targeted by HIV. During the process of infection, the V3 loop remains at least partially exposed to the immune system and produces strong antibodies that don't react with any of the body's own proteins.

Dr. Zolla-Pazner's laboratory has already isolated powerful neutralizing antibodies from the blood of individuals infected with subtype B of HIV, which is found mainly in AIDS patients in the United States and Europe. As part of the Gates antibody project, her colleagues will collect blood from HIV infected individuals in Cameroon and India in order to cull additional antibodies from people infected with subtypes A and C, which predominate in Cameroon and India. Subtypes A, B, and C account for about 86 percent of all HIV strains.

The researchers plan to select the most powerful antibodies found in individuals infected with different strains of HIV. Then they will identify the sections of the V3 loop targeted by the antibodies and incorporate these structures into genetically engineered vaccines that will be tested in rabbits. The hope is that their work will provide a platform for the development of AIDS vaccines in humans.

Dr. Zolla-Pazner's colleagues include Phillipe N. Nyambi, Ph.D., Miroslaw K. Gorny, M.D., Ph.D., Catarina E. Hioe, Ph.D., Xiangpeng Kong, Ph.D., Timothy J. Cardozo, M.D., Ph.D., and Suman Laal, Ph.D., at the School of Medicine. •

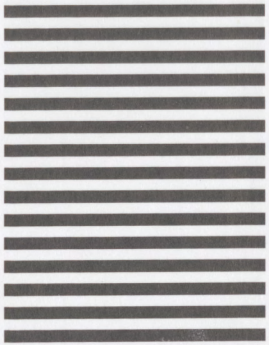
—Marjorie Shaffer

NO POSTAGE
NECESSARY IF
MAILED IN THE
UNITED STATES

Business Reply Mail
First Class Permit no. 3590 New York, NY

Postage will be paid by Addressee

NYU SCHOOL OF MEDICINE
Office of Alumni Relations
550 First Avenue, SLH 4-40-0
New York, NY 10157-0240



Hepatitis B Infection Rate Alarmingly High in NYC's Asian American Community

LIKE MANY INFECTIONS, it starts silently. But this one can lead to liver cancer and death. The cause is an underestimated virus, says Henry J. Pollack, M.D., Associate Professor in the Saul Krugman Division of Pediatric Infectious Diseases and Immunology. Dr. Pollack is the lead author of a recent study that found that approximately 15 percent of Asians living in New York City are chronically infected with the hepatitis B virus—an infection rate 35 times higher than is found in the general U.S. population.

"These rates are extraordinarily high and underscore the need for more intensive screening in this population," says Dr. Pollack. "There needs to be much more public awareness of this problem, and physicians caring for this population need to be more attentive to screening for hepatitis B." With 800,000 Asians, New York City is home to the largest Asian American population in the country.

The study, funded by a grant from the New York City Council and the New York State and City Departments of Health, was published in *Morbidity and Mortality Weekly*, issued by the Centers for Disease Control and Prevention.

The researchers screened individuals at 12 healthcare centers and community sites throughout New York City as part of the New York City Asian American Hepatitis B Program, which provides no-cost or low-cost screening, vaccination, and treatment.

Hepatitis B can be transmitted through unprotected sex, sharing of needles, contact with infected blood, or from mother to child at birth, but not through casual contact, such as hugging or coughing. In adults the immune system is often able to clear the body of the virus before it takes hold. But in susceptible adults, children, and infants in particular, the immune system is not strong enough to shield against infection.

When the infection first takes hold, the immune system turns against the body, attacking the liver in an attempt to ward off the virus. Liver damage caused by the resulting inflammation can progress for decades, leading to cirrhosis and liver cancer. Both require treatment to slow down this progression.

Worldwide, an estimated 400 million people are chronically infected with hepatitis B, according to Dr. Pollack. He says that while the numbers are troublesome, they are not surprising; hepatitis B is widespread across Asia. It used to be more common in the U.S., but transmission of the virus from mothers to newborns has been drastically reduced with the help of neonatal screening and vaccination over the last 15 years. In mainland China, however, prophylactic efforts have only just begun, due to a lack of allocated resources.

Given the new waves of immigration from Asia, especially China, the U.S. faces an under-recognized public health challenge, says Dr. Pollack.

Nearly all of the 1,836 study participants were born in east Asia, mainly China and Korea. The infection rate of 15 percent of Asians in New York City is derived from test results in an important subset of the screened group: 925 individuals who have never been tested for hepatitis B. Country of birth, gender, and age also turned out to be important factors.

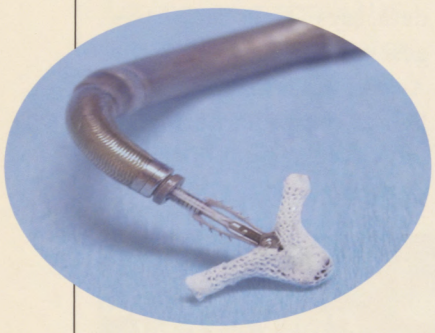
The highest rates of infection, for example, were found among people born in mainland China and in men between the ages of 20 and 39. These data, says Dr. Pollack, suggest which segments of the Asian population are at higher risk of harboring infection, and could guide a more targeted approach to reaching them effectively.

The long-term goal of the New York City program is to establish a national model for hepatitis B prevention in Asian American communities. "Its success," says Dr. Pollack, "is related to the fact that it is a grassroots project and also a community-academic partnership." •

—Vivien Marx

AMONG NEW YORK CITY'S LARGE, GROWING ASIAN POPULATION RESEARCHERS FOUND DISPROPORTIONATELY HIGH RATES OF INFECTION WITH THE HEPATITIS B VIRUS. WORLDWIDE, THE VIRUS IS THE MOST COMMON CAUSE OF CIRRHOSIS AND LIVER CANCER.

Repairing Mitral Valves Without Surgery



EARLY LAST YEAR, Emily Pierce, a 36-year-old mother of four from Westchester County, N.Y., began to notice that she couldn't keep up with her regular workouts. A few weeks later, when just two minutes on the treadmill left her winded, she went for a checkup.

The diagnosis: mitral regurgitation, a condition that occurs when the two triangular-shaped leaflets of the heart's mitral valve don't close tightly. This allows blood to regurgitate (flow) backward from the left ventricle into the left atrium, taxing the heart.

Emily's cardiologist recommended that the valve be repaired or replaced, which meant open-heart, or at least minimally invasive, surgery. With four young children to chase after and a household to run, she was reluctant to have a major operation. But without it, her heart would weaken and enlarge, ultimately leading to congestive heart failure.

Emily chose not to have surgery, yet she is doing well and her prognosis is good, according to her physician. In late October she came to NYU Medical Center to undergo an investigational procedure, available only through FDA-approved clinical trials, in which the mitral valve is repaired percutaneously (i.e., through the skin), employing techniques similar to those used in cardiac catheterization.

During the procedure, a sheath is threaded into the femoral vein in the groin until it reaches the right atrium, one of the upper chambers of the heart. Next, a catheter is used to puncture the septum, the structure that separates the right and left atrial chambers, providing access to the left atrium and the mitral valve. (Most punctures heal in 6 to 12 months.) A steerable catheter, equipped with a special clip, is then inserted into the sheath and guided toward the mitral valve. When the valve leaflets are grasped and the regurgitation reduced, the clip is deployed, allowing the valve to close properly and the normal direction of blood flow to proceed.

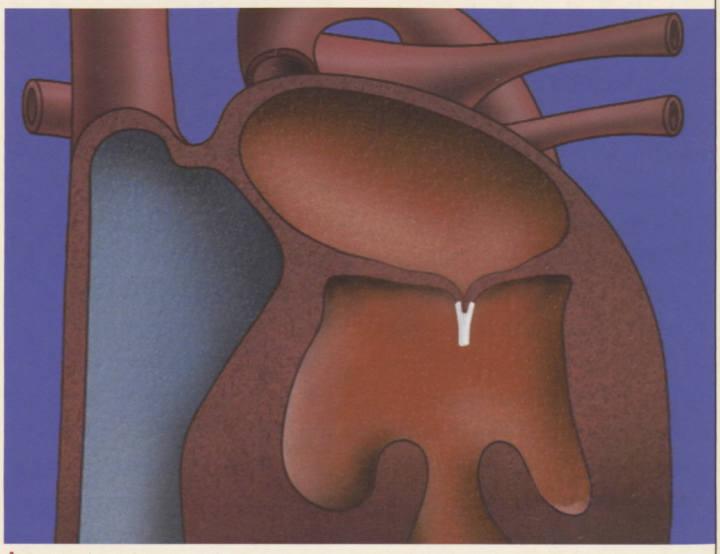
The clip, about half an inch long and made of metal and covered with polyester, is used to mimic a valve-repair technique, in which the edges of the two leaflets are partially sutured together. However, that valve-repair technique requires a conventional surgical approach through the chest wall in order to gain access to the valve and requires putting the patient on a heart-lung bypass machine.

"Judging by our initial experience, it is now possible to do a similar edge-to-edge repair percutaneously," says James N. Slater, M.D., Associate Professor of Medicine, who performed the procedure on Emily. "This option may spare the patient the trauma of surgery and the need to be put on a heart-lung bypass machine."

As with cardiac catheterization, the procedure carries a slight risk of heart rhythm disturbances, bleeding, stroke, and infection, among other complications, though few complications were reported in early evaluations of the device. Phase II clinical trials of the procedure are now being conducted at NYU Medical Center and some 30 other sites in the United States and Canada.

The overall role of the device—which is called the MitraClip and is made by Evalve, Inc., of Menlo Park, Calif. — in the management of patients with mitral regurgitation remains to be seen. The percutaneous option may also encourage more patients with mitral regurgitation to get definitive treatment earlier. Drugs can be prescribed to alleviate the symptoms, but they do not correct the underlying problem. "If you leave severe mitral regurgitation alone, it gets worse and worse," says Dr. Slater. "Eventually, the heart muscle enlarges and you go downhill pretty quickly. If you wait too long, the surgical results are not as good."

As for Emily, she is faring well. "Her mitral regurgitation went from very severe to moderate," reports Dr. Slater. "She is asymptomatic at this time."



AN EXPERIMENTAL PERCUTANEOUS PROCEDURE REPAIRS THE MITRAL VALVE WITHOUT OPENING THE CHEST. THE INTERVENTIONAL CARDIOLOGIST STEERS A CATHETER EQUIPPED WITH A SPECIAL CLIP TO THE VALVE (SHOWN IN WHITE ABOVE). ONCE IN PLACE, THE CLIP ALLOWS THE VALVE TO OPEN AND CLOSE PROPERLY.

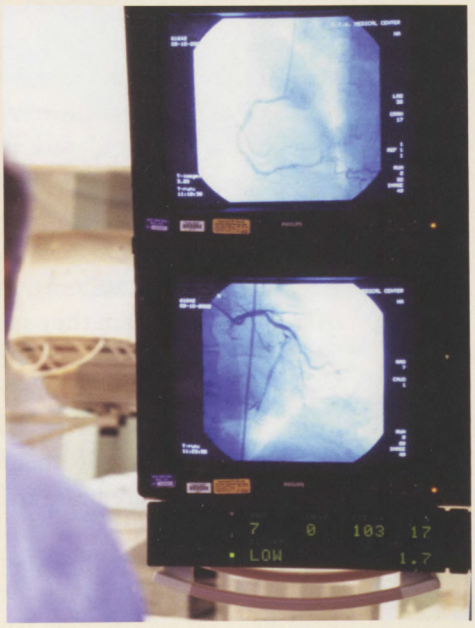
"About a month after the procedure," says Emily. "I started to get my energy back. I wasn't out of breath any longer. I felt like a new person." •

—Gary Goldenberg

Aggressive Treatment Can Extend Life of Patients with Heart Attack Shock

DESPITE ADVANCES in treatment, people who suffer a heart attack, survive the first hit, and get to a hospital still remain in danger. Almost one in 10 will develop cardiogenic shock, in which the heart malfunctions, causing an inadequate amount of blood to be pumped to the vital organs. As blood pressure plummets, the skin becomes cool and the body's organs shut down. Cardiogenic shock is the leading cause of death for heart attack patients once they reach the hospital.

A study published in 1999 by a group of researchers led by Judith S. Hochman, M.D., Clinical Chief of the Leon H. Charney Division of Cardiology and Director of Cardiovascular Clinical Research at NYU School of Medicine, showed that aggressive care with invasive treatments, such as angioplasty or open-heart surgery, could extend life for at least one year. On the basis of that study, the American Heart Association and the American College of Cardiology recommended that heart attack shock patients be treated aggressively. Still, not all eligible patients receive aggressive therapy at tertiary-care hospitals, which have sophisticated invasive-care facilities required for this kind of therapy. Moreover, most patients who reach a hospital without such facilities are not transferred to one where they can be treated appropriately.



TERTIARY CARE HOSPITALS LIKE NYU MEDICAL CENTER HAVE THE SOPHISTICATED INVASIVE CARE FACILITIES AND EXPERTISE FOR THE AGGRESSIVE TREATMENT OF CARDIOGENIC SHOCK PATIENTS. THE IMAGES OF THE CORONARY ARTERIES (ABOVE) ARE FROM CATHETERIZATION, AN ADVANCED INVASIVE PROCEDURE.

Now, a new study by Dr. Hochman's group demonstrates that the long-term survival benefit is even greater than originally believed for some hospitalized cardiogenic shock patients who quickly receive invasive treatment. The study, published in a recent issue of the *Journal of the American Medical Association*, shows that with invasive treatment, 33 percent of hospitalized heart attack patients with cardiogenic shock were alive six years afterwards. By comparison, only 20 percent of those treated initially with medications and a device to support the circulation, called an intra-aortic balloon pump (IABP), survived long-term.

"Our study shows a significant survival benefit that is sustained up to 11 years," says Dr. Hochman, who is also the Harold Snyder Family Professor of Cardiology. "This benefit extends even to selected patients over the age of 75. Patients can do very well and clearly benefit from this therapy, but many doctors are reluctant to treat these shock patients aggressively because they are the sickest of the sick. The death rate is so high."

Another problem is that some doctors are also reluctant to put shock patients into an ambulance and transfer them to tertiary-care centers, where they can receive appropriate care. Tertiary-care hospitals provide such specialized services as heart catheterization and angioplasty, which involves threading a catheter-tipped balloon to the site of a blockage in a coronary artery.

Only about 60 percent of shock patients younger than 75 received aggressive forms of treatment in tertiary-care centers in 2004, according to a previous study by Dr. Hochman and her colleagues. And only 38 percent of shock patients were transferred to such centers from 1998 to 2001.

The latest report from Dr. Hochman's group stems from an international trial funded by the National Heart, Lung, and Blood Institute. It enrolled 302 patients between 1993 and 1998 at 29 tertiary care centers. All were initially treated with medications and IABP to support the circulation and half received immediate angioplasty or bypass surgery.

In light of the new study, Dr. Hochman hopes that more patients with cardiogenic shock will be treated aggressively, and she already sees some progress. The New York State Department of Health recently began a two-year experiment in which heart attack patients with severe cardiogenic shock will be separated from the public databases. This means that such patients' mortality rates will not reflect on their physicians' records, encouraging more of their doctors to perform angioplasty and surgery. •

—Marjorie Shaffer

Smilow Research Center Opens, Focusing on Translational Medicine

The Smilow Research Center is the largest and most dramatic addition to midtown Manhattan's eastern skyline in more than half a century.

Event marked by two-day celebration

ONE JOURNEY JUST GOT LONGER at NYU Medical Center, and another just got shorter. For the first time, there is a single, nearly straight path from the main entrance on First Avenue to the edge of the campus that borders the FDR Drive. Visitors can now walk from the entrance of the Skirball Institute down Alumni Hall, through the Medical Sciences Building, into a new courtyard called Alumni Plaza. There they stand before the 13-story Joan and Joel Smilow Research Center, NYU's new home for translational medicine, which seeks to shorten the journey from the laboratory bench to the patient's bedside.

NYU celebrated the opening of the building in May with a two-day ceremony attended by hundreds of faculty, staff, and visitors. The first day featured a symposium with presentations by six distinguished guest scientists, including two Nobel Laureates.

It was a perfect introduction to the Smilow Research Center, which is designed to promote the translation of basic research into better ways of diagnosing, treating, and preventing disease. The 230,000-square-foot facility —the largest and most dramatic addition to midtown Manhattan's eastern skyline in half a century and the newest major structure on campus in more than a decade —will ultimately house some 40 multidisciplinary research teams, a mix of current investigators and new recruits. These teams will be dedicated to such fields as cancer, cardiovascular biology, neuroscience, dermatology, genetics, and infectious diseases.

"This is a truly historic moment for NYU Medical Center ... the culmination of an eight-year quest to help shape the future of biomedical science," declared Dean and CEO Robert M. Glickman, M.D., at the dedication ceremony held on the second day. "This research center will help cement our reputation as one of America's preeminent medical research institutions."

"With the Smilow Research Center, for the first time we will have enough money and enough space to try an organized approach to translational research and to assemble the teams we need to go after a problem in every direction," said Rodolfo Llinás, M.D., Ph.D., Chairman of the Department

Before the Dedication Symposium, distinguished speakers and presenters gathered. From left to right: (seated) Rodolfo R. Llinás, M.D., Ph.D., Chairman, Physiology and Neuroscience; (front row) David B. Roth, M.D., Ph.D., Chairman, Pathology; David D. Sabatini, Doc. en Med., Ph.D., Chairman, Cell Biology; Dafna Bar-Sagi, Ph.D., Chairwoman, Biochemistry; Nobel Laureate David Baltimore, Ph.D., , President, California Institute of Technology; Dean Robert M. Glickman, M.D.; Steven J. Burakoff, M.D., Director, Skirball Institute of Biomolecular Medicine and NYU Cancer Institute; (back row) Glenn I. Fishman, M.D., Director, Leon H. Charney Division of Cardiology; Richard P. Lifton, M.D., Ph.D., Sterling Professor of Genetics, Internal Medicine, and Molecular Biophysics and Biochemistry, Yale; Eric S. Lander, Ph.D., Director, Broad Institute of MIT and Harvard; Eugene Braunwald, M.D. ('52), Distinguished Hersey Professor of Medicine, Harvard; Nobel Laureate Paul Greengard, Ph.D., Head, Laboratory of Molecular and Cellular Neuroscience, The Rockefeller University; Ira Mellman, Ph.D., Chairman, Cell Biology, Yale; Hidde L. Ploegh, Ph.D., Professor of Biology, MIT; Trustee and Benefactor Joel E. Smilow; Claudio Basilico, M.D., Chairman, Microbiology.

of Physiology and Neuroscience and the Thomas and Suzanne Murphy Professor of Neuroscience.

Guest speaker Ira Mellman, Ph.D., Chairman of the Department of Cell Biology at Yale University School of Medicine, noted: "The advent of a new building as important as the Smilow Research Center is absolutely a seminal event in the history of NYU School of Medicine, as it would be at any other medical school."

An elegant marriage of form and function, the Smilow Research Center incorporates many design elements that are conducive to formal and informal interactions, including large open laboratories, a multiplicity of meeting rooms, a 140-seat lecture hall, a spiral staircase linking the top three floors (devoted to cancer research), a ground-floor café, and a courtyard.

The building was a challenge to engineering ingenuity and design efficiency. To capitalize on every available square foot of space in this hidden corner of the campus, once occupied by a bike shed and basketball court (both relocated), its footprint took the shape of an irregular trapezoid. The Smilow Research Center is built on landfill that was part of the East River only a century ago. Before its foundation could be laid, 60 million gallons of water had to be pumped out of the excavation site. To keep the waters from flowing back in, engineers devised a system of 394 secant piles, or overlapping concrete cylinders—the first of its kind ever used in New York City. To reduce heat and glare, the building's windows are made of highly reflective patterned glass and shaded by aluminum sunscreens. The windows are so soundproof that even helicopters lifting off and landing nearby are all but silent.

At the dedication ceremony, several people were honored for their contributions to the new facility, most notably Trustee Joel Smilow, whose generosity made the building possible. Mr. Smilow said that he hopes to attend a future symposium "composed of scientists involved in translational medicine, talking about how the discoveries at this institution have led to improving patient care and promoting health." •

—Gary Goldenberg

PHOTOGRAPHY: RENÉ PEREZ

Physician, Scientist, Architect

Dean Glickman to Step Down in 2007, Ending Nine-Year Tenure

EIGHT YEARS AGO, when newly appointed Dean Robert M. Glickman, M.D., reflected on how he might like to be remembered for his stewardship, he thought it would be as an architect who helped the School make its transition into the next century. The metaphor would prove apt. In the ensuing years, Dean Glickman—who announced last March that he will be stepping down as Dean and CEO of NYU Medical Center in June 2007—has led the institution through a period of ambitious growth.

As someone who had devoted his entire career to advancing modern medicine through the ideal of the physician-scientist, he found a home for his vision at NYU: "What distinguishes us as an academic medical center," he said, "is our ability to carry out research that is relevant to human health." Accordingly he strengthened one department after another by recruiting scores of top faculty from around the country, 18 of them as chairmen. He appointed a new joint Director of the NYU Cancer Institute and the Skirball Institute of Biomolecular Medicine and created two new departments (Emergency Medicine and Cardiothoracic Surgery).

To provide recruits with state-of-the-art equipment and resources, NYU expanded its facilities, both on campus and off. In 2004 the NYU Clinical Cancer Center opened, treating more than 500 outpatients daily. Earlier this year, NYU unveiled the 13-story Joan and Joel Smilow Research Center (*see page 12*).

There have been many other milestones: An agreement with Siemens Medical Solutions USA, Inc., to acquire more than 100 state-of-the-art imaging machines. A merger between NYU Medical Center and its longtime affiliate, the Hospital for Joint Diseases (*see page 36*). The creation of the Institute for Urban and Global Health to extend NYU's expertise near and far.

Yet the Dean's proudest accomplishment, he says, has been healing the rift caused by the ill-fated merger with Mount Sinai Medical Center. "Despite the difficulty of re-creating our Medical Center across two separate corporations, we have made enormous progress," he said.

A gastroenterologist, he will remain on the faculty as a Professor in the Department of Medicine. The location he has chosen for his office is the VA Medical Center on 23rd Street—far enough away from the tree he cultivated so as not to crowd its growth, but close enough to enjoy its fruit and shade. •

PHOTOGRAPHY: RENÉ PEREZ

MILESTONES

1998

- New Chairwoman of Radiation Oncology, Sylvia Formenti, M.D.

2001

- New Chairman of Pharmacology, Herbert Samuels, M.D.
- New Chairman of Radiology, Robert Grossman, M.D.
- New Chairman of Anesthesiology, Thomas Blanck, M.D., Ph.D
- School launches comprehensive curricular reforms emphasizing thematic, cross-discipinary, and interactive, small group teaching methods employing rich media technology and engaging community-based patient groups.

2003

- Jean & David Blechman Cardiac and Vascular Center—new gateway for diagnostic, treatment, and support services
- New Department of Emergency Medicine
- New Chairman of Emergency Medicine, Lewis Goldfrank, M.D.
- New Chairman of Obstetrics/Gynecology, John Curtin, M.D.
- New Chairman of Otolaryngology, Anil Lalwani, M.D.

2005

- Dr. Jan Vilcek's $105 million gift—our largest donation ever
- Helen & Martin Kimmel Center for Stem Cell Biology—$10 million gift establishes multidisciplinary research program
- Magnet Award for NYU Medical Center—NYU's nurses honored for their superb training and outstanding patient care
- Office of Diversity Affairs—expands efforts to recruit, retain, and promote minority students, faculty, and staff
- New Department of Cardiothoracic Surgery
- New Chairman of Cardiothoracic Surgery, Stephen Colvin, M.D.
- From 1998 to 2005, the School's annual NIH research funding grows 77 percent, to $138.8 million. Over the previous five years, annual funding had increased only 16 percent.
- $100 million capital improvement program is approved to renovate existing research facilities.

2000

- Institute for Urban and Global Health—think tank for innovative global health strategies established
- New Chairman of Medicine, Martin Blaser, M.D.
- New Director of Skirball Institute and NYU Cancer Institute, Steven Burakoff, M.D.

2002

- Siemens Radiology agreement—strategic alliance with Siemens Medical Solutions USA, Inc., to acquire more than 100 state-of-the-art imaging machines
- Dean's Honors Day—created to laud faculty achievements

2004

- Center for Biomedical Imaging Opens—NYU becomes one of only four research centers in the U.S. to have a Siemens 7-T whole-body magnet
- NYU Clinical Cancer Center—13-story outpatient facility of the NCI-designated NYU Cancer Institute
- New Chairman of Pathology, David Roth, M.D., Ph.D.
- New Chairwoman of Medical Parasitology, Karen Day, Ph.D.
- New Chairman of Ophthalmology, Jack Dodick, M.D.

2006

- NYU-HJD Merger—NYU Hospitals Center unites with Hospital for Joint Diseases
- Smilow Research Center—new era for research begins with the opening of a 13-story, state-of-the-art building devoted to translational medicine
- New Master's Program in Global Public Health—School of Medicine and four other schools at NYU address global health needs
- Children's Ambulatory Center—New pediatric outpatient facility opens
- De-merger with Mount Sinai Hospital finalized
- New Chairman of Surgery, Leon Pachter, M.D.
- New Chairwoman of Biochemistry, Dafna Bar-Sagi, Ph.D.
- New Chairman of Dermatology, Seth Orlow, M.D.
- New Chairman of Pediatrics, Michael Weitzman, M.D
- New Chairwoman of Psychiatry, Dolores Malaspina, M.D
- As part of Growth Agenda, more than 60 new faculty recruited for new positions since 1998.

New York State Helps NYU Build New Home for Child Study Center

Recognizing that childhood mental illness has become an epidemic, and that services to combat it are scarce, NYU, in conjunction with the state of New York, plans to invest $200 million in facilities and programs in child and adolescent psychiatry. The centerpiece of the plan is a new 120,000-square-foot home for the NYU Child Study Center, which will expand its work in such areas as anxiety and mood disorders, attention-deficit and hyperactivity disorder, Tourette's syndrome, and movement disorders. In addition, the plan will support the creation of a New York State Center of Excellence at the Child Study Center and a new children's psychiatric center in Rockland County in partnership with NYU.

An estimated 12 percent of Americans under the age of 18 are believed to have psychiatric disorders, and up to 70 percent of those children are never actually diagnosed and never receive treatment, according to Harold S. Koplewicz, M.D., Founder and Director of the NYU Child Study Center and the Arnold and Debbie Simon Professor of Child and Adolescent Psychiatry and Professor of Pediatrics.

"The incidence of childhood mental health disorders is a growing problem both nationally and in New York City," adds Lloyd Sederer, M.D., Executive Deputy Commissioner, New York City Department of Health and Mental Hygiene. "We need to better understand the reasons behind this disturbing trend, which is why the vastly expanded Child Study Center is so critical. The center's role in research, treatment, and training will have a major influence on public mental health programs and policy."

"The development of newer and more effective treatments for mental disorders in children and adolescents must be given the kind of priority that providing safe drinking water was accorded over a century ago," said New York University President John Sexton.

Under the plan, NYU will create a new eating disorders program, an autism center, and a model school for testing strategies to address students at risk for violence and conduct disorders. As a result of this initiative, the number of children treated at the center is expected to quadruple, from 2,000 to 8,000, in the years ahead. The center will also increase training programs for child psychiatrists and psychologists and prepare thousands more pediatricians a year in identifying and treating pediatric psychiatric disorders. The plan is a "key step in the transformation of how we as a society view psychiatric illnesses in children and adolescents," remarked Dr. Koplewicz at a February press conference announcing the initiative, which was also attended by New York State Governor George E. Pataki, New York City Mayor Michael R. Bloomberg, Dean & CEO Robert M. Glickman, M.D., and NYU President John Sexton. "Thirty years ago," said Dr. Koplewicz, "the word cancer had to be whispered. Now . . . childhood leukemia is almost always curable. Now is the time to address childhood psychiatric illness with the same sort of concerted comprehensive approach." The new center, scheduled to open in 2009, will be located on First Avenue between 25th and 26th Streets. •

— Gary Goldenberg

Artist's rendering of the new home of the NYU Child Study Center

Architectural rendering by Skidmore Owings & Merrill

Goldstein Conference Center

ARLENE AND ARNOLD GOLDSTEIN

THANKS TO A $15-MILLION GIFT from Arlene and Arnold Goldstein, two longtime benefactors of NYU, a series of conference rooms and meeting spaces in the new Joan and Joel Smilow Research Center will provide a striking new venue for the School of Medicine's biomedical symposia and other events. Named for its benefactors, the Arlene and Arnold Goldstein Conference Center will encompass two conference rooms, a 134-seat lecture hall, and a multimedia space—all equipped with state-of-the-art videoconferencing and multimedia technologies. The lecture hall, for example, is equipped with a sound-activated camera, a special sound system for the hearing impaired, ports for laptops, and electromagnetic shielding to eliminate outside interference.

These facilities will enable faculty, students, and guests to observe events such as live surgeries, real-time diagnostic studies, and scientific symposia. The grand opening of the Goldstein Conference Center took place on May 25, 2006, when it was host to a group of distinguished scientists and other special guests at the dedication of the Smilow Research Center. Arnold Goldstein is the founder and Chairman of Samson Management, LLC, a privately held family company that manages diverse properties in New York, Florida, and Oklahoma. Mr. Goldstein and his wife, Arlene, are also supporters of the NYU Urology Research Program, which continues to set a high standard of excellence for the research and treatment of urologic disorders.

"The Goldstein Center will provide an important venue for NYU scientists to share insights and ideas," says Steven J. Burakoff, Director of the NYU Cancer Institute and Director of the Skirball Institute of Biomolecular Medicine. "With today's explosion of scientific information, there is nothing more important than promoting the exchange of information." •

> "The conference center will provide an important venue for scientists to share insights and ideas."

Adults in Toyland

"ADULTS IN TOYLAND," a benefit held on November 17 for the Stephen D. Hassenfeld Children's Center for Cancer and Blood Disorders, raised $300,000 for the center, which is one of the nation's leading pediatric outpatient facilities of its kind. Among the attendees were (left to right):

COMMITTEE CO-CHAIRS PETER BAER, SUSIE BLOCK CASDIN, KELLY KENNEDY MACK, PATTI KIM, AND STEVEN JAFFE.

Child Study Center

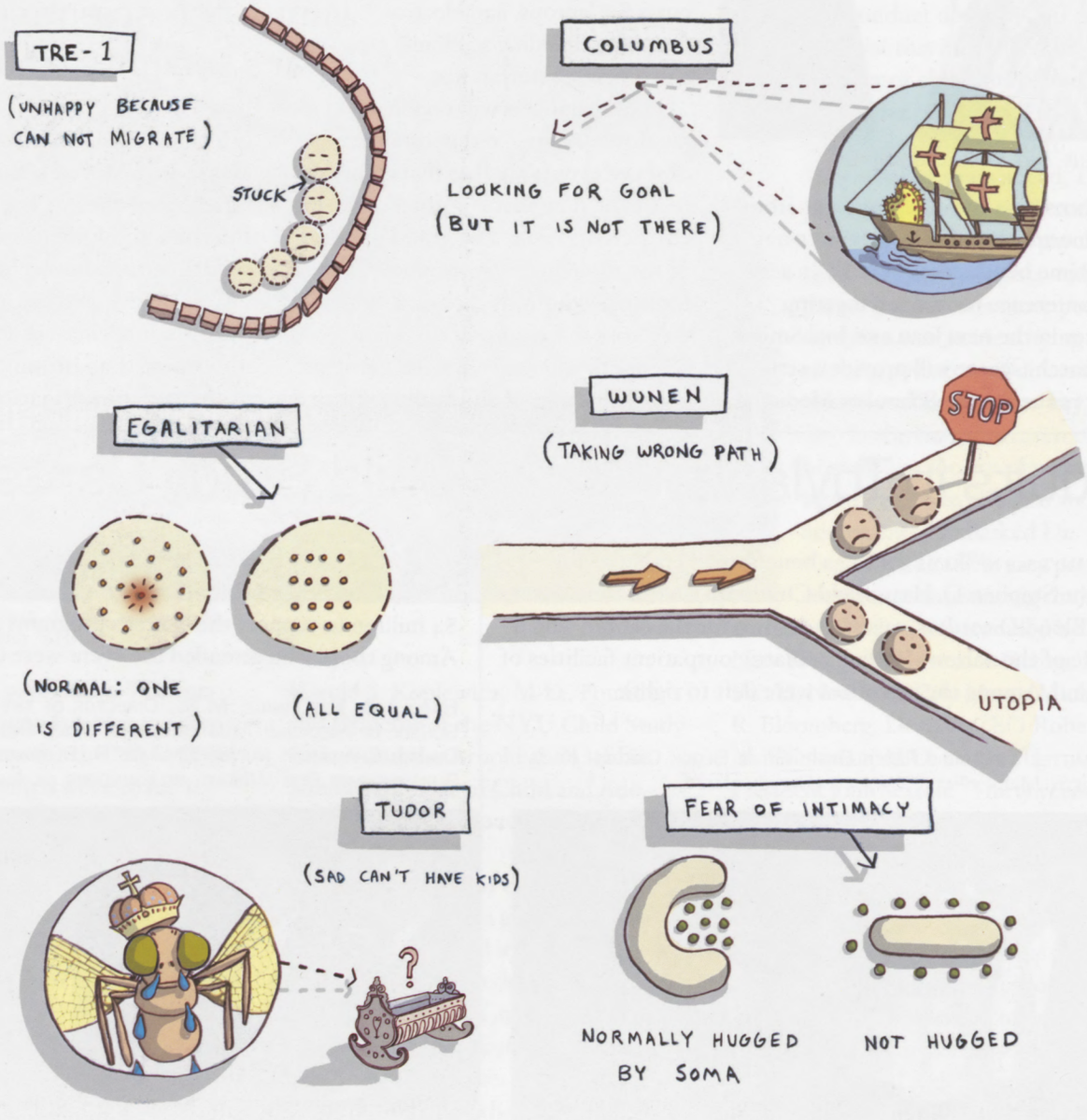
THE NYU CHILD STUDY CENTER held its eighth annual Child Advocacy Award Dinner on November 29, raising $4 million to support the center's programs and initiatives. Among those who attended the event were (left to right):

HAROLD S. KOPLEWICZ, M.D., DIRECTOR OF THE CENTER; SCHOOL OF MEDICINE TRUSTEE GEORGE HALL AND HIS WIFE, LORI; DINNER CHAIRMEN; MAYOR MICHAEL R. BLOOMBERG; AND SUZANNE AND BOB WRIGHT, CO-FOUNDERS OF AUTISM SPEAKS.

PHOTOGRAPHY: JULIANA THOMAS (LOWER LEFT); CHRISTINE BUTLER (LOWER RIGHT)

Germ Cells Are Forever

THE QUEST TO UNDERSTAND THE ONLY CELL TH



BY VIVIEN MARX

ILLUSTRATIONS BY LEIF PARSONS

THAT CAN LINK GENERATIONS

Genes dictate the development of germ cells, which give rise to sperm or egg and are therefore crucial for reproduction and development. Fruit fly scientists pick quirky names such as *oskar, tudor, columbus, egalitarian,* and *fear of intimacy,* to help them remember the function of each gene.

TOBI'S MOIST, BROWN EYES turn quickly from pensive, to curious, to happy, to sleepy. Then again, these are superficial observations, and may be completely wrong. Understanding Tobi would warrant careful, long-term observation and tests. And an important descriptor was left out: Tobi is a dog, mostly beagle. He is Dr. Ruth Lehmann's dog, whose trusted companionship she enjoys after a long day or, often, a late night in the lab.

Developmental biologists like Ruth Lehmann, Ph.D., the Julius Raynes Professor of Developmental Genetics, Director of the new Helen L. & Martin S. Kimmel Center for Stem Cell Biology, and Howard Hughes Medical Institute Investigator, use a classic tool—their eyes—to carefully observe and chronicle change. She and her 19 lab members also apply genetics, cell biology, biophysics, biochemistry, and microscopy to analyze and parcel out what is behind the changes they observe.

During one recent weekly meeting, the researchers collectively compared subtle changes in images of snow pea-shaped embryos. More experiments were devised to analyze what may be driving the changes observed. The researchers presented their work to one another to collect suggestions and critical remarks. Scientific concepts, along with quirky gene names, such as *oskar, nanos, wunen,* and *fear of intimacy,* bounced around the room.

Fruit fly scientists pick colorful names to help them remember a gene's function. *Fear of intimacy*, for example, is involved in forming the gonad, where eggs or sperm reside.

Dr. Lehmann has become internationally known for her ambitious quest to understand an entire crucial phase of embryonic development: the emergence, formation, and migration of germ cells. Germ cells are universalists of sorts because they can become either egg or sperm and, in turn, foster an entire organism. Though common to all organisms, they are unique in that they link generations by encapsulating the previous generation in the one that follows. Germ cells are forever, as Dr. Lehmann is wont to say. Studying these cells can yield a better understanding of embryonic development, help to understand reproductive function and disorders, and propel stem cell research.

Germ cells are challenging to study because they don't just emerge and grow in one place. They travel a long, elaborate journey through various parts of the embryo to get to their proper position. Once there, they meet up with the other cells of the body, somatic cells, and together form a set of gonads: ovaries or testes. A gonad—the ovary or the testis—is made up of germ cells, which give rise to sperm or egg, and somatic cells, which support the germ cells. Getting the germ and somatic cells to the gonad is a just-in-time feat, since they themselves form in different parts of the embryo at different times. This complex behavior has fascinated Dr. Lehmann since graduate school. In the words of the eminent developmental biologist Scott F. Gilbert, Ph.D., "The questions asked by developmental biologists are often questions about becoming rather than being."

"The work in our lab is having a big influence on understanding germ cell migration," says Dr. Lehmann. Migration involves movement as well as complex signaling patterns of chronological and spatial cues that choreograph germ cell development. Embryonic development—going from fertilized egg to complex organism in a short amount of time—amazes scientists, who use the words "beautiful," "awesome," "elegant," and "powerful" to describe this process. The animal Dr. Lehmann studies is not her loyal canine companion, Tobi, but the fruit fly *Drosophila melanogaster,* better known as that insect that hovers annoyingly around spoiling fruit. While the fruit fly is not a mammal, its germ cell development bears important similarities. "The fruit fly lets us study and understand processes that are much more difficult to study in other organisms," says Dr. Lehmann. Researchers can target their studies of other animals much better because they can build on insights drawn from fruit fly research, she says.

The fruit fly—about 3 millimeters long when fully grown (about half the diameter of a pencil eraser)—is a superstar of genetics and embryology. Scientists can observe its characteristics, see how it functions, and find the genetic underpinnings of both using various techniques to highlight genes on the fly's four chromosomes. *Drosophila* generates plenty of progeny, and it's easy and inexpensive to keep in labs. All of which helped Nobel Laureate Thomas Hunt Morgan, the father of modern genetics, to become the first to reveal functional concepts of chromosomes in the early 20th century. Many scientists have advanced his work, including Nobel Laureate Christiane Nüsslein-Volhard, Ph.D., who directs the Max-Planck-Institute for Developmental Biology in Tübingen, Germany, and was Dr. Lehmann's doctoral adviser. It was genetics that got Dr. Lehmann hooked on the fruit fly. "Genetics is the means to analyze function," she says, "and we want to understand how things work in the living organism."

After her postdoctoral training at Medical Research Council in Cambridge, England, Dr. Lehmann, a native of Germany, joined the Whitehead Institute of Biomedical Research in Cambridge, Mass., and was appointed Assistant Professor at the Massachusetts Institute of Technology. In 1996 she moved to NYU's Skirball Institute of Biomolecular Medicine, where she is a Howard Hughes Medical Institute Investigator; the institute provides funding for Dr. Lehmann and her lab. Last year, she was elected a foreign associate member of the National Academy of Sciences, a high honor.

Dr. Lehmann says that looking at the embryo yields many surprises. After an egg is fertilized, it divides multiple times. Then comes a phase of forming, reshaping, and in-folding, during which the embryo's parts move into position and develop. Given the enormous complexity that must arise out of simplicity, these rearrangements are carefully controlled. As Dr. Lehmann notes, "There is so much feedback in an organism."

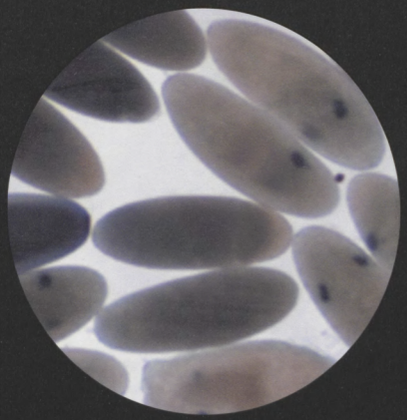
Researchers have discovered that fruit fly embryos create minute but marked gradients of proteins that act as spatial cues to guide development. Many of

THE FRUIT FLY IS A SUPERSTAR IN GENETICS AND E

Dr. Ruth Lehmann

PHOTOGRAPHY: JULIANA THOMAS; OPPOSITE PAGE: (TOP TO BOTTOM): HÉLÈNE ZINSZNER; DR. RUTH LEHMANN; DR. CARYN NAVARRO; DR. LILACH GILBOA; PRABHAT KUNWAR

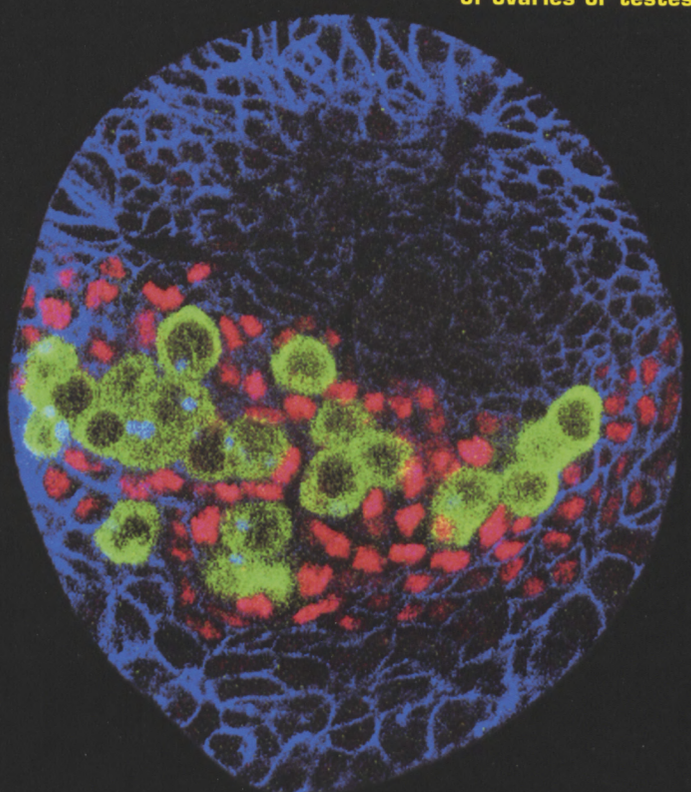
The fruit fly, illustrated at left, and its embryos, shown far right, as seen under low magnification. The germ cells (black dots) have been made visible by staining. It takes about 12 days for a fertilized egg to develop into an adult fly.



A section of the fruit fly ovary (above). Germ cells migrate through the body of the embryo to reach the ovary. Once there, a subset of them becomes stem cells, shown in the structure at the far left of the section. Each stem cell produces a cyst of 16 cells, only one of which develops into an egg, shown in red at far right of the section. The other 15 will become nurse cells, shown in green at far right, which feed the egg.

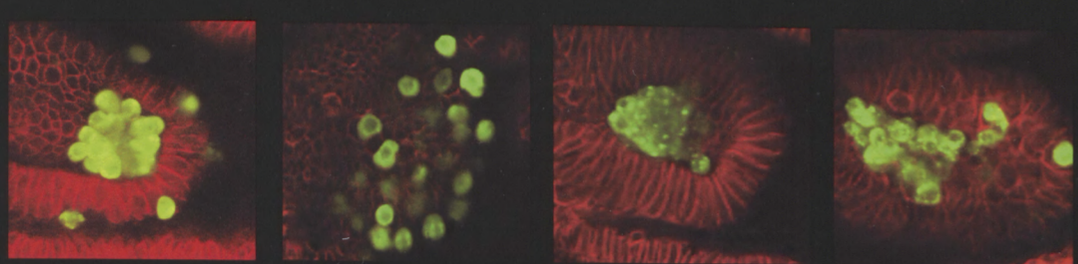
The fruit fly ovary (below). Germ cells, shown in green, can become either sperm or eggs. These cells travel a long way to reach their destination. There, they fuse with other cells, called somatic cells, and together form gonads—either a set of ovaries or testes.

EMBRYOLOGY RESEARCH.



As part of their normal development, germ cells, shown in green in the sequence below, initially adhere to one another (first image). In the next stage of development, they must separate and disperse (second image).

With live cell imaging and other techniques, Dr. Lehmann's lab identified the gene and protein that help the germ cells separate and disperse. When the cells lack this gene, they stay put (third and fourth images). The mutation is called *tre-1*, for trapped in endoderm-1.



these signals are in the unfertilized egg delivered exclusively through maternal genes. These genes dictate signals that shape the way the fertilized egg, a product of both mother and father, develops. These signaling substances diffuse through the embryo and ensure that the wings, the head, and the internal organs all emerge in the embryo in their predestined places. Earlier in her career, for example, Dr. Lehmann helped to identify previously unknown genetic signals for spatial cues governing the head and tail of the adult-to-be.

Much cell biology has been test tube biology, according to Dr. Lehmann. "We build on those studies," she says, "but in the end we always want to go back to the embryo to try to understand how the whole embryo works." It's what she calls an organismal approach to research. A physical change in the fly relates directly to a genetic one. That "tip of the iceberg," as Dr. Lehmann calls it, enables researchers to look deeper to see how genes rule function.

Dozens of racks, each containing vials of fruit flies, are stacked in the comfortably warm walk-in room where the insects live. Each vial contains a group being used in an experiment; they are in different stages of development and have differing traits. Globs of yeast, the fly's favorite food, sit at the bottom of the vials. Researchers take their vials from the racks to the fly room to look at them and set up crosses, in which males and females

"I LOVE LOOKING AT THOSE CELLS," SAYS DR. RUTH LEH

are placed in vials together so that they can produce progeny. The fly room is also a gathering place for the scientists, which contrasts with their solitary bench work.

The scientists look at the flies laid out on a pad under the dissecting microscope. The flies are asleep; carbon dioxide is piped in and diffused through the pad, but they twitch occasionally, and can be pushed around gently with a thin brush. "I really love studying questions about genetics and how cells interact. The fly is great for that," says Daria Siekhaus, Ph.D., a postdoctoral fellow whose previous research at Stanford and the University of California at Berkeley, was in fruit flies and in yeast. To work with flies, she says, you have to be very good at picking up subtleties and integrating that visual knowledge.

Her specific research involves *Drosophila's* immune cells, known as hemocytes. They, too, migrate like germ cells, although they disperse differently. Like all of her lab colleagues, Dr. Siekhaus seeks to understand cellular decisions in the context of the environment of the organism. As Dr. Lehmann explains, this scientific approach about organismal context has many implications. For example, many of the genes involved in cancer have been identified. Mutations can be found in all of the body's tissues, but cancers seem to form in certain tissues and not in others. "The ability of tumor cells to navigate through the blood and lymphatic system and exit it at a certain place is a critical step in metastasis," she says.

It takes about 12 days for a fertilized egg to develop into an embryo, then a larva, and an adult fly. Dr. Lehmann studies the niche at the rear of the embryo where the germ cells are formed. These cells swim in the germ plasm, the soupy fluid containing proteins that lend the germ cells their special identity. She has identified genes that play a role in this niche.

"In every organism," she says, "the germ cells are established early, set aside, and treated differently from other cells." Dr. Lehmann seeks to understand the precise nature of what makes these cells so different. Some primordial germ cells develop directly into either egg or sperm when in the gonad. Others take on a special identity, becoming stem cells. They are rejuvenators, producing sperm or eggs continually as their livelihood. "How do they know, 'You are ok, you can keep making an egg, or you can make sperm?' We don't know that yet."

When primordial germ cells finish migrating through the body of the embryo, the cells coalesce with the gonad. This is where a number of important decisions are made, explains postdoctoral fellow Lilach Gilboa, Ph.D. Like a busy harbor filled with docking boats, germ cells move into niches provided for them. There, they are transformed into stem cells that can repeatedly produce either egg or sperm. Dr. Gilboa's latest work is revealing how the ovary "measures itself" to see whether there are enough germ cells present for the adult fly to be fertile, or whether the danger of subfertility looms and more germ cells need to be made.

Understanding such mechanisms can potentially help explain the regenerative abilities of some organs. For example, if part of the human liver is removed, it can grow back. "How does the liver know to grow back, know what is the normal size, and what the right ratio of its different cells are?" asks Dr. Gilboa. Because the tools to study fruit flies are so powerful, she says, these questions can now be addressed, and the answers applied to complex organisms.

One remarkable trait of germ cells is their migration. "They know they are different while they are moving through the body," says Dr. Lehmann. "On their trek, they could decide to become a muscle cell, but they don't."

Primordial germ cells travel in complete silence; their genes are inactivated and do not produce protein. What they are following is an intrinsic program set up by maternal genes, placed in the unfertilized egg, and protected in the germ plasm. As postdoctoral fellow Andrew Renault, Ph.D., phrases it, the silence is as if "they are meant to just concentrate on their journey."

Dr. Renault, who came to Dr. Lehmann's lab from Oxford University, is deciphering another phase in germ cell development: namely, the cues that guide the cells along their migrating path. He

PHOTOGRAPHY: DR. HIROKO SANO (TOP AND CENTER); LESLIE PUSATERI (BOTTOM)

studies mutations in genes called *wunen* and *wunen2,* which create a biologically damaging situation for the embryo. "The germ cells don't have any idea where to go," he says, "and they scatter over the whole posterior of the embryo." Flies with this mutation would be infertile.

Wunen in flies, which has a mammalian counterpart, is found and expressed in somatic tissue cells. As Dr. Renault explains, *wunen* appears to pave the way for migrating germ cells to stay on track and avoid somatic tissue until their final destination. Both *wunen* genes deliver the blueprint for enzymes that catalyze a chemical reaction with substances in the cell called lipid phosphates. Where this reaction occurs, lipid phosphate is depleted. "We think this leads to a gradient, a diffusible signal in the embryo," says Dr. Renault. The germ cells follow this trail and avoid the locations where that specific chemical reaction has taken place. Researchers have not yet identified the lipid phosphate but this is one current focus of their research.

These types of questions have important ramifications. Normally, germ cells in fruit flies set off on their approximately three-hour journey to the gonad, and at a key moment split into two groups along the midline of the embryo, moving toward either the left or right ovary or testis. In humans, germ cells that get derailed are known to give rise to teratomas, germline cancers that develop in young adults.

As Dr. Lehmann explains, how *wunen* is regulated seems to affect every step of germ cell migration. "It is incredibly complicated how they move," she says, "through tissues, over tissues, under tissues." *Wunen*'s fine-tuning allows germ cells to travel from one location to another in the embryo.

Imaging technology, such as deep tissue live-cell imaging with time-lapse photography on a microscope, is an integral part of the lab's work. "You can look at a cell in the live tissue and really see what is wrong with it," says lab member Prabhat S. Kunwar. "That's really nice." The Nepalese scientist, who is writing his doctoral dissertation, chose NYU for its strong developmental biology program. During his four years in the lab, he has already made a mark by identifying an important facet of germ cell migration. Initially, he says, primordial germ cells adhere like grapes in a bunch. They are surrounded by another cell type, epithelial cells. As germ cells set out to migrate, they must disperse and pass single-file through junctions between the epithelial cells.

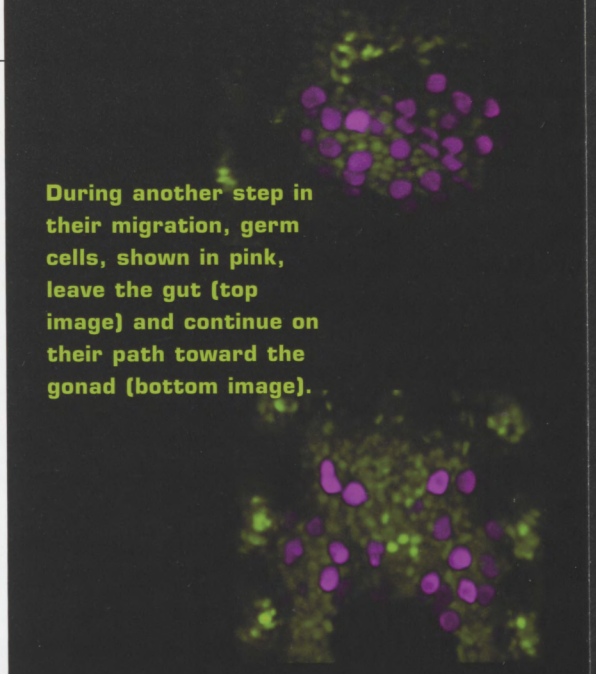
With live-cell imaging and other techniques, Kunwar identified the gene and protein that help the germ cells separate and disperse. Without this gene, cells stay put, which is why it is called *tre-1,* for trapped in endoderm-1. Intriguingly, the molecule is related to one that is important for the movement of white blood cells in humans. But *tre-1* is hardly the entire story. As Dr. Lehmann explains, "We are working to find the factors that set the germ cells in motion. How do they know when to stop? We are just beginning to look at that."

There are many mysteries yet to be solved, and they will require many years of rigorous work. Those who work with her admire Dr. Lehmann for her discipline, compassionate mentoring, and enormous experience. She is not just interested in the complicated signals that determine how germ cells develop. She is also keen on mentoring scientists in her lab and helping them to learn how to become independent and creative researchers, enabling them to run their own labs in the future.

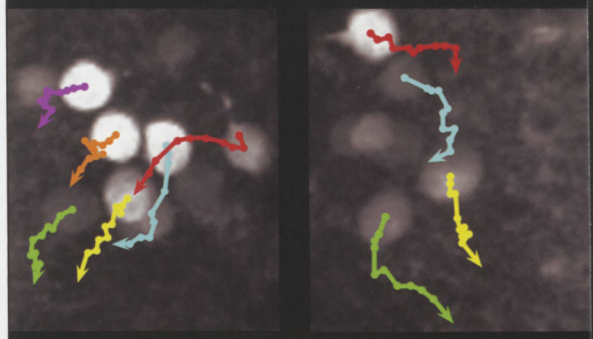
As the principal investigator, Dr. Lehmann doesn't just strategize about the direction of the research. She, too, puts in her hours in the fly room. "I love looking at those cells," she says. "The germ cells, the embryos, the staining. I like to sort flies."

H LEHMANN, DEVELOPMENTAL BIOLOGIST.

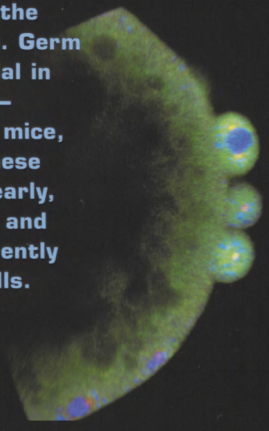
" I LIKE TO SORT FLIES."



During another step in their migration, germ cells, shown in pink, leave the gut (top image) and continue on their path toward the gonad (bottom image).

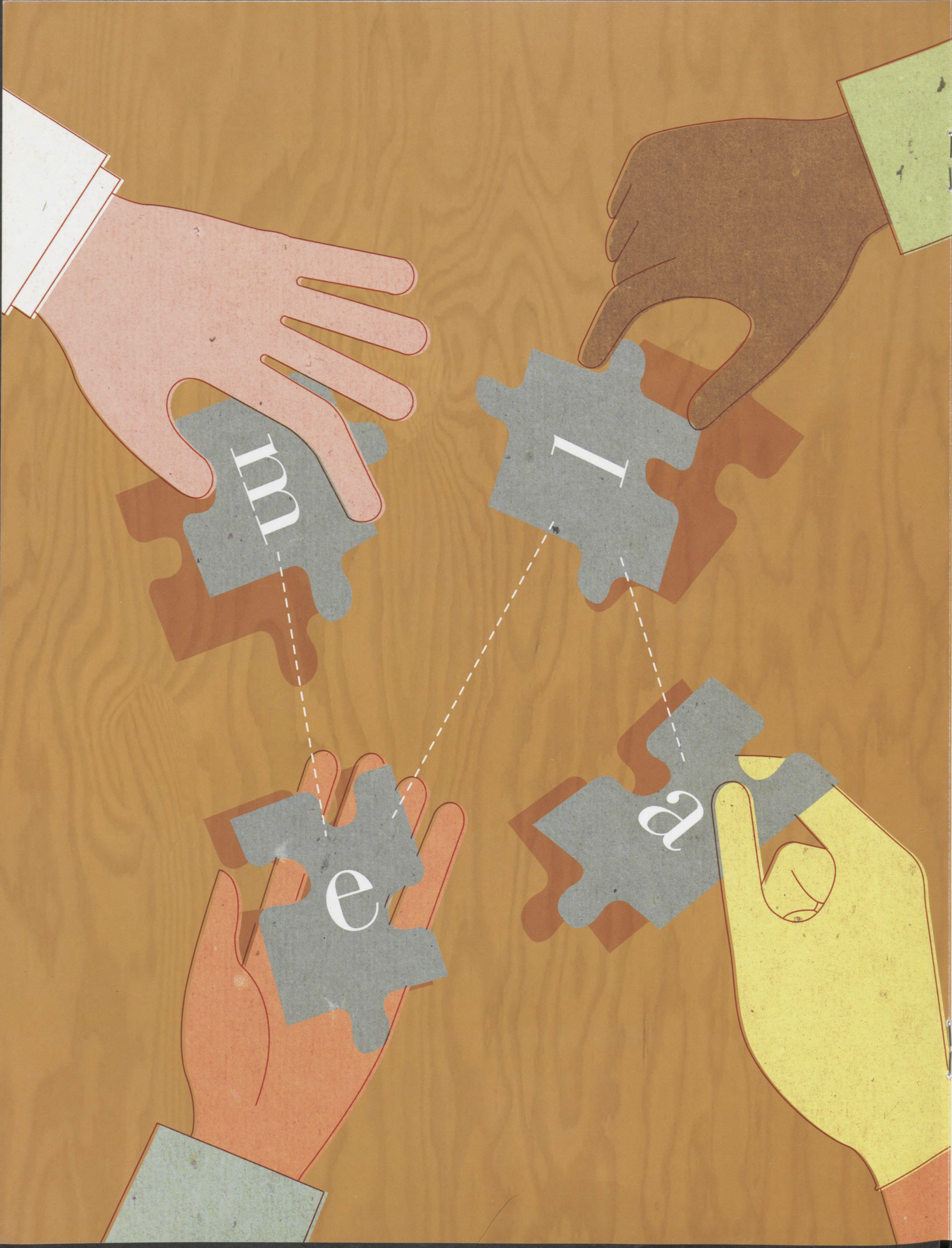


Using special imaging techniques, scientists in Dr. Lehmann's lab track germ cell movement (above). Chemical cues guide the cells along their migrating path. When there are mutations in the two genes called *wunen,* those chemical cues disappear and the germ cells no longer have a path to follow.



As they are formed, germ cells bud off to the side of the embryo (right). Germ cells are special in all organisms—whether flies, mice, or humans. These cells develop early, are set aside, and function differently from other cells.

PHOTOGRAPHY: DR. HIROKO SANO (TOP AND CENTER); LESLIE PUSATERI (BOTTOM)


m
l
e
a

TEAMING UP TO COMBAT MELANOMA:

SEVERAL RESOURCEFUL PHYSICIANS and researchers are speeding up the attack on the deadliest form of skin cancer by pooling their expertise.

FOR MONTHS, RESEARCHER WEIMING GAI KEPT HITTING A WALL. In the laboratory run by two physician-scientists, Drs. Iman Osman and David Polsky, she had been trying to grow and manipulate skin cells a certain way to better study the deadliest of skin cancers, melanoma. But the cells had been too finicky. Now, after 10 months of effort, her luck has shifted and she wears a beaming smile.

David Polsky, M.D., Ph.D., Assistant Professor of Dermatology and Associate Director of the Pigmented Lesions Section in the Ronald O. Perelman Department of Dermatology, peers through the microscope at the cells. He, too, is pleased, and will share the good news with his colleague, Dr. Osman, Associate Professor of Dermatology, Urology, and Medicine.

The ability to grow and tinker with cancer cells genetically is crucial. Yet melanoma cells are particularly difficult to manipulate, hampering the ability of researchers to understand the malignant behavior of these cells. Viewed through the fluorescent microscope, the large green glowing cluster of cells looks like shingles on a rooftop. The test that Gai applied involved a short electrical jolt to the cells, and it worked. A gene, one that causes the fluorescent green, has been successfully delivered to the cells. Such a method can now be used to study the genes that seem to transform a healthy cell into a cancerous one.

This successful day in the lab is a minute step forward in the race to understand and, ultimately, treat melanoma. The progress is important not only for Drs. Osman and Polsky, but for other colleagues with whom they have decided to join forces. They are part of a growing trend toward translational research, an approach that the National Institutes of Health (NIH) advocates as a "powerful process that drives the clinical research engine" in the NIH Roadmap for Biomedical Research, a large-scale program launched in 2002.

BY VIVIEN MARX/ILLUSTRATIONS BY OTTO STEININGER

Scientists' ability to grow and tinker with cancer cells is crucial. Yet melanoma cells are particularly difficult to manipulate in the lab.

ONCOLOGIST
Iman Osman, M.D.

In that same year, seven NYU physicians and researchers, including Drs. Osman and Polsky, banded together in a translational effort to improve the odds for patients afflicted by melanoma. They come from diverse disciplines: dermatology, molecular biology, medical and surgical oncology, and pathology. Their joint effort builds on the extensive expertise in melanoma that NYU Medical Center has maintained for decades. As individuals, each shines a flashlight on the melanoma puzzle. With the synergy of a group, the light shines brighter.

The progress in the labs of Drs. Osman and Polsky helped another group member, oncologist Anna C. Pavlick, D.O., Assistant Professor of Medicine and Dermatology, land a National Cancer Institute (NCI) drug trial that emphasizes translational research. "None of our activities would be possible without great collaboration between dermatologists, basic scientists, and surgeons," says Dr. Pavlick. To shorten the journey from lab bench to bedside, the group seeks to find better ways to detect melanoma, enhance responses to therapy, and contribute to developing effective drugs. Information flows in a loop, beginning and ending with the patient. Insights from the molecular biology of tumors are scrutinized in the lab and taken to the clinic. Clinical results are compiled and analyzed, and that knowledge circles back to the lab for further evaluation.

Separately, they all treat patients and pursue individual avenues of research. However, at monthly and sometimes

DERMATOLOGIST
David Polsky, M.D., Ph.D.

weekly intervals in the evenings after their busy workday, they depart from their individual routines and come together as members of what they call the Interdisciplinary Melanoma Cooperative Group (IMCG). They meet to think, brainstorm, and share results and methods with a singular mission. They review one another's projects and results, design experiments, and co-publish their findings in academic journals. They sometimes squabble. They praise and support and even harshly criticize each other.

"Many researchers want to work this collaboratively," says Dr. Iman Osman,, the group's co-founder. "We actually do it; we complement one another and understand each person's strengths." Dr. Osman is the IMCG principal investigator and organizer. As her colleagues say, she is the glue that holds the group together. "It is becoming clearer that collaborative efforts are going to make a difference in cancer," says Steven J. Burakoff, M.D., the Laura and Isaac Perlmutter Professor of Pathology and Director of the NYU Cancer Institute and the Skirball Institute of Biomolecular Medicine. He sees the IMCG as "a fantastic model program" with "a marvel of interaction." Recently, the IMCG received additional funding from the NYU Cancer Institute and has also been supported by the Department of Dermatology and by private donations.

Patients and the IMCG team face the harsh reality that advanced melanoma does not respond well to the few available drugs. Some patients call themselves "melanoma warriors" as they battle the disease and undergo treatment. And with good reason; the foe they face is formidable.

More than other forms of skin cancer, advanced melanoma has the hideous ability to spread beyond the skin to other organs. The five-year survival rates for patients with advanced melanoma that has metastasized lie between 10 and 20 percent, says Dr. Polsky. Surgery is the therapeutic mainstay. In fact, when melanoma is detected early enough, surgery can cure the patient. Early detection is crucial.

Alfred W. Kopf, M.D., ('55) Head of the Oncology Section of the Skin &

PHOTOGRAPHY: RENÉ PEREZ (THIS PAGE AND OPPOSITE BOTTOM); JULIANA THOMAS (OPPOSITE, TOP)

Cancer Unit of NYU Medical Center, is a pioneer in the study of melanoma. He developed a widely adopted mnemonic device used to help diagnose the disease (*see page 29*). He celebrated his 80th birthday this year, and still sees patients twice a week with Dr. Polsky.

Dr. Kopf is troubled by the lack of medications for melanoma patients, particularly for people with metastatic disease. "We really need to find better treatment," he says. The hopes are that scientific discoveries at the bench can find their way into drug development, and that clinical observations can stimulate new approaches in the lab. "I am very hopeful about all the new information coming from molecular biology; I think that is absolutely the right direction," he says.

Skin cancer is not well understood. It forms in various cell types found in the skin, such as squamous cells and basal cells. Both of these cell types can give rise to skin cancers, but the deadliest skin cancer is melanoma, which accounts for the majority of skin cancer deaths.

Melanoma forms in melanocytes, the cells that make, store, and transport pigment to surrounding skin cells. Why melanocytes transform into cancerous versions of themselves is not known. There is, however, a combination of genetic and environmental risk factors, such as family history of melanoma, light skin, and excessive exposure to ultraviolet rays, including the artificial ones of tanning salons.

In the U.S., says Dr. Polsky, melanoma is more frequent in men than in women: one in 58 men and one in 82 women develop melanoma. Many scientists say

IMMUNOLOGIST
Nina Bhardwaj, M.D., Ph.D.

the incidence of melanoma is growing faster than any other cancer in the U.S., although researchers differ in their assessments of why. "Some of the increased incidence may be due to better detection of early stage disease and more screening," says Dr. Polsky. "But there is also an overall increase in deaths from melanoma."

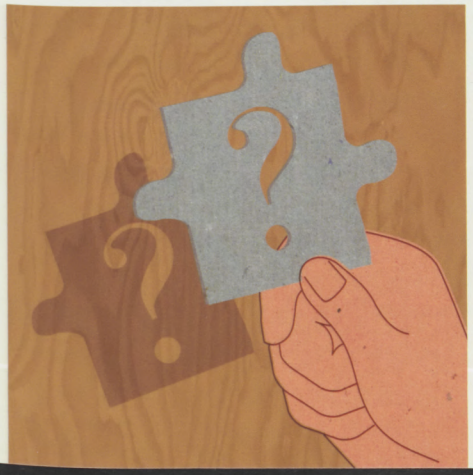
There is little debate about how deadly melanoma can be. One form that evolves rapidly—nodular melanoma—is very hard to detect early, and accounts for a large proportion of melanoma deaths, says Dr. Polsky. Only 4 percent of all skin cancers are melanoma, he says, yet melanoma causes some 80 percent of skin cancer deaths. According to the American Cancer Society, in 2006 an estimated 62,190 new cases of melanoma and 7,910 deaths are expected.

Besides the pressures of treating patients with a daunting disease, the collaborative effort faces plenty of logistical challenges. Tumor specimens are evaluated in the course of treatment. Specimens also need to travel in a timely fashion to the labs of various group members. In addition, information must jump over the hedges and walls that traditionally separate disciplines.

ONCOLOGIST
Anna C. Pavlick, D.O.

The IMCG has a comprehensive database that tracks patients, their treatments, and characteristics of their disease. That means careful data collection and analysis. It also means plenty of miles walked by IMCG Clinical Coordinator Joanna Spira.

With the patient's consent, she sees to it that a small amount of patient tumor tissue is taken from the operating room of IMCG member Richard L. Shapiro, M.D. ('88), Associate Professor of Surgery at the NYU Clinical Cancer Center, or that of his colleague and IMCG member Russell S. Berman, M.D. ('90), Assistant Professor of Surgery at the NYU Clinical Cancer Center. Spira makes certain that fresh



Why melanocytes transform into cancerous versions of themselves is not known. But there is little debate about how deadly melanoma is.

Melanoma accounts for about 4 percent of all skin cancers, but some 80 percent of skin cancer deaths. In the U.S. it occurs more commonly in men.

tumor specimens reach the lab of group member Nina Bhardwaj, M.D., Ph.D., ('81) Professor of Medicine, Pathology and Dermatology. Speed is important because the researchers need to study tissue in a state that best approximates that of the body.

Among other projects, Dr. Bhardwaj and her colleagues are trying to capture a snapshot of genetic patterns in the tumor tissue to better understand what makes a growing tumor so deadly. With the aid of microarrays—tools that let scientists examine patterns of activity in hundreds of genes at the same time—gene activity in metastasized tumors can be compared to non-diseased tissue. One early finding is that thicker, more aggressive melanomas show higher levels of a protein called NY-ESO-1. This protein may offer insight into melanoma. "We are still busy characterizing what we are seeing," Dr. Bhardwaj says.

Spira also ensures that samples reach Drs. Polsky and Osman, who study the role of individual genes and proteins. A small amount of blood is used by Leonard F. Liebes, Ph.D., another IMCG member, who is Director of the Oncopharmacology Laboratory and Associate Professor of Medicine, as he strives to develop a test that can help in establishing a patient's chemotherapeutic regimen.

Clinical oncologist Anna Pavlick, an IMCG member, is seeing an increasing number of patients referred to NYU because of its expertise in melanoma. She is in charge of administering clinical trials of chemotherapy and, in collaboration with Dr. Bhardwaj, two trials of vaccines to melanoma patients.

Clinical information and data about the molecular biology of the patient's tumors are compiled in the IMCG database and evaluated by Molly Yancovitz, M.D., the current Melanoma Translational Research Fellow working with the IMCG.

The group not only organizes clinical and research efforts—it sleuths collectively, following specific hunches about tumor biology. Somewhere, somehow, as pigment-producing melanocytes go about their normal business of dividing, differentiating, aging, and dying, a conversion occurs. Networks of interacting pathways of enzymes that regulate the cellular goings-on are hijacked for cancerous purposes.

"Melanoma is quite complicated and I would say we are just beginning to figure out how to short-circuit it," says Dr. Polsky. Some newer cancer drugs—a class of targeted drugs that build on insights from molecular biology—manage to intervene in those pathways, sometimes brightening the outlook for patients. There is no such drug for melanoma. Not yet. "If you could find a drug that cures even 10 percent of metastatic melanoma patients, it would be a major breakthrough," says Dr.

SURGEON
Russell Berman, M.D.

Polsky. To do so, researchers hunt for vulnerable spots in pathways, looking at the molecular cast of characters involved. "There's not really one key player in melanoma," says Dr. Polsky. "It is more like an ensemble."

One of the enzyme families that make up a pathway of interest is called the mitogen-activated protein kinase signaling cascade, MAPK for short. "One interesting thing is that this pathway is turned on in the vast majority of melanomas," says Dr. Polsky. There are different ways to activate this pathway and a number of players in it. One is an enzyme called BRAF. In patients with metastatic melanoma, Dr. Polsky and his colleagues found a high percentage

SURGEON
Richard L. Shapiro, M.D.

of a mutated form of this enzyme. Could its presence indicate malignancy? His team is studying a large number of tumor samples to pursue this question.

"BRAF is confusing because it is also found in a mutated form in moles, which are benign lesions," he says. He and his colleagues believe that this enzyme is basically a good guy that can

PHOTOGRAPHY: RENÉ PEREZ

turn bad. When other bad guys are added to the mix, and when the pathway goes haywire in a number of crucial spots, melanoma may result. Some information in melanoma research derives from studies of families predisposed to melanoma. About 25 percent of these persons appear to have a mutation in a gatekeeper enzyme called p16. When both BRAF and p16 mutate, the risk of melanoma appears to rise substantially, Dr. Polsky explains. That is another reason to watch BRAF closely.

At the 2005 World Congress on Melanoma, Dr. Polsky and his colleagues presented a sensitive blood test to detect this enzyme in patients. The test has potential in the clinic, Dr. Polsky says. For example, it could be used to monitor a patient's response to a drug that inhibits this enzyme.

BRAF has also caught the eye of commercial drug developers, and clinical trials are underway with inhibitors, one of which is called sorafenib. A clinical trial with this drug run by Dr. Pavlick began at NYU last year. The trial also has a molecular dimension: patients not only receive the drug, they are screened for mutations. "Do you need mutant BRAF to have a response to this drug?" Dr. Pavlick asks. "That is a question we are pursuing in this trial."

MELANOMA LOOKS LIKE...

A = asymmetrical lesion. B = lesion with irregular borders. C = multiple colors unevenly distributed. D = diameter larger than 0.2 inches or 6 millimeters (the size of a pencil eraser). E = evolving, changing size, color or symptoms such as itching and oozing over time.

PHARMACOLOGIST
Leonard F. Liebes, Ph.D.

The tumor specimens from patients in the trial are analyzed in the lab of Drs. Osman and Polsky to determine if the tumor has the mutation. That analysis can help reveal whether the presence of the mutation affects the response to the treatment.

This enzyme BRAF is a good example of the translational approach of the IMCG, says Dr. Polsky. Publishing their studies on the subject put the group on the map. A grant was then approved to develop the BRAF blood test. As Dr. Pavlick explains, the molecular biology findings by Drs. Osman and Polsky enabled her to land a special drug trial contract with the National Cancer Institute (NCI). The program that emphasizes translational research is called Cancer Therapy Evaluation Program (CTEP) and targets new anticancer agents and molecular biology.

As the group members probe melanoma with the tools and insight of their respective medical sub-specialties, they believe in the cross-disciplinary synergy that comes from joining forces. At the same time they are keenly aware that their group includes a larger community. And a key component of that community is patients facing a difficult disease, patients who may not see a cure come through in their lifetime. "We are so very grateful to patients," Dr. Osman says, "who let us use their blood and tissue and permit us to poll them for our research."

For a physician referral, please call the NYU Physician Referral Service at 888-7NYUMED (888-769-8633)

GROUP MUSCLE

The Interdisciplinary Melanoma Cooperative Group (IMCG) builds on efforts by NYU clinicians to collect, in a database from 1972 onward, the diagnostic workup, pathology reports, tumor characteristics and measurements, treatment, and follow-up care of their patients. Among those contributing to this endeavor over the years are Drs. Alfred W. Kopf ('55), Head of the Oncology Section of the Skin & Cancer Unit, Matthew Harris, Professor of Surgery, and Daniel F. Roses ('69), the Jules Leonard Whitehill Professor of Surgery and Oncology.

The IMCG is vigorously expanding this database, linking more complex clinical and research data to tissue specimens, explains Dr. Polsky. Since 2002, when the group was formed, 463 patients have agreed to participate in the program and 150 patients are being added each year. "We are not aware of any institution in the U.S. with a collection like this or a group like the IMCG," says Dr. Polsky.

Other institutions have tissue banks with patient samples; still others have complete records about patient care. "This is not just tissue banking," says Dr. Osman. "We collect specimens and we know what is going on with each of these patients."

Following diagnosis or treatment, patients who have given their consent, get a call at regular intervals from Clinical Coordinator Joanna Spira and her colleagues to chronicle their health. Biopsy samples, if they are collected at other medical centers, are sent to NYU where they are evaluated and tracked.

The upkeep of this collection is critical, the scientists say.

TRAUMA

when minutes count...

AT ONE MINUTE PAST MIDNIGHT on Christmas Eve, 2005, a phone rings in Bellevue's Emergency Department (ED) with news of an imminent arrival: a man in his 20s with multiple gunshot wounds.

12:0

12:10

12:30

12:36

WITHIN MINUTES another phone rings, this one at the home of Dr. Maurizio A. Miglietta, Director of Trauma at Bellevue Hospital Center, who is putting his kids to bed after a holiday celebration. As the ambulance races to Manhattan from Brooklyn, Dr. Miglietta begins his own high-speed journey from Edgewater, New Jersey.

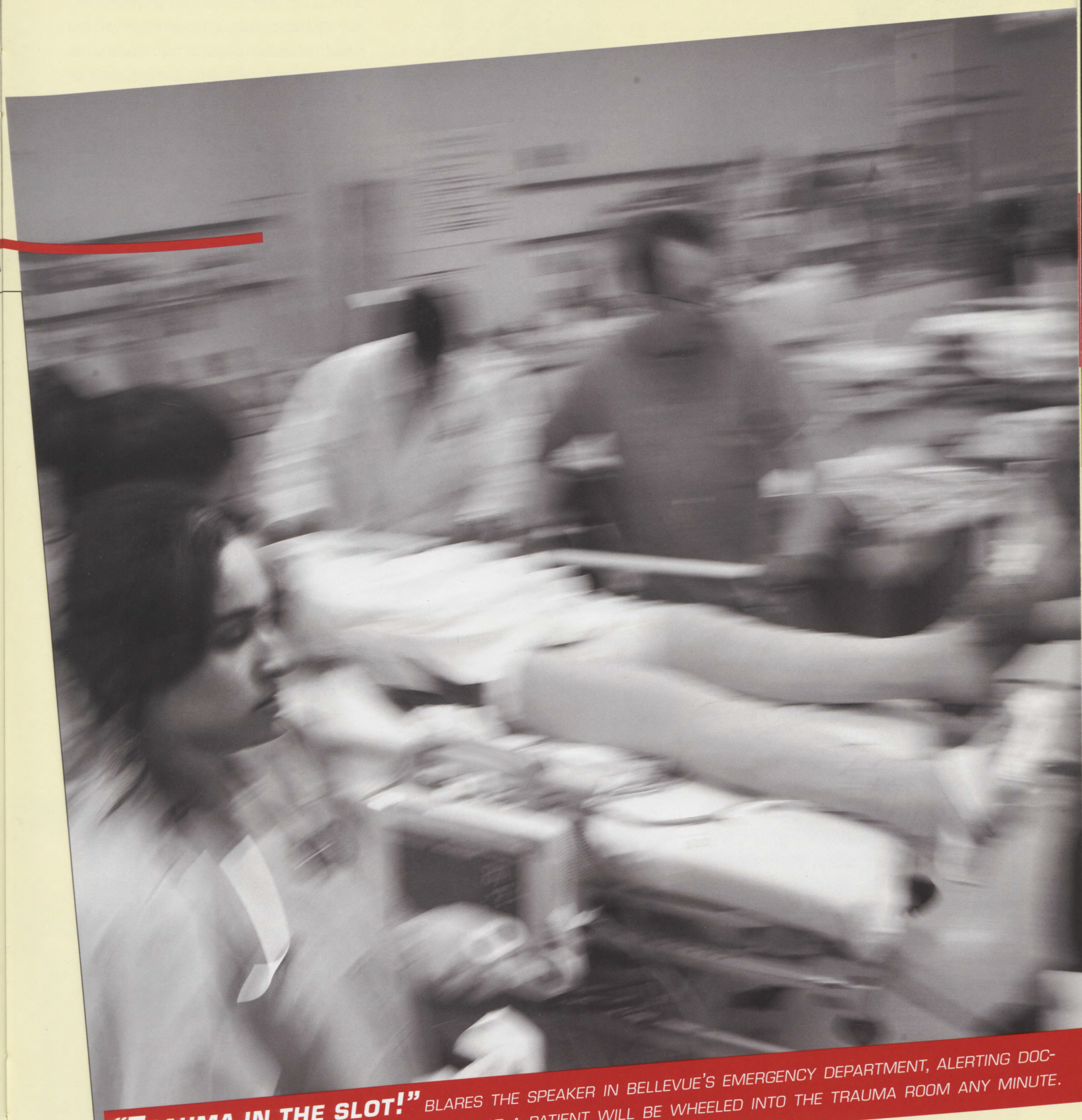
At 12:10 a.m. the gunshot victim, conscious but unstable, is wheeled into the Trauma Room, a brightly lit inner sanctum where a designated ensemble of doctors and nurses is already in place. When its wide door flies open, the quiet of the room is punctured by loud groans.

As the man's clothes are snipped off, the trauma team hustles through its paces, a combination of unthinking protocol and nonstop thinking. In coordination, chief surgical resident Michael Sedrak, M.D., senior emergency medicine resident Raj Gulati, M.D., and attending physician Stephen H. Menlove, M.D., move the team through its ABCs, ensuring that the patient's airway, breathing, and circulation are all adequate and stable. He can wiggle his toes: a good sign. His oxygen level is very low: a bad sign.

Dr. Gulati employs the time-honored tools of his trade—eyes, ears, and fingertips—to search for signs of hidden trouble. An ultrasound suggests there is no bleeding in the abdomen, but a stethoscope indicates that blood is filling the man's chest. He must swiftly be sedated so that chest tubes can be inserted, adding to the tangle of IVs. An X-ray reveals that two bullets lie in his chest, perhaps more elsewhere.

Despite the frenzy, the scene is one of precise choreography and seamless teamwork. At the moment of trauma, a "golden hour" of opportunity starts ticking away, for the odds of survival are greatest during the first 60 minutes or so. Often, by the time the patient arrives, half of those precious minutes are already gone. The goal is to stabilize the patient within 15 minutes so that he

BY THOMAS RANIERI / PHOTOGRAPHY BY RENÉ PEREZ



"TRAUMA IN THE SLOT!" BLARES THE SPEAKER IN BELLEVUE'S EMERGENCY DEPARTMENT, ALERTING DOCTORS AND NURSES ON THE TRAUMA TEAM THAT A PATIENT WILL BE WHEELED INTO THE TRAUMA ROOM ANY MINUTE.

Trauma kills more Americans between the ages of 1 and 44 than any disease or illness.

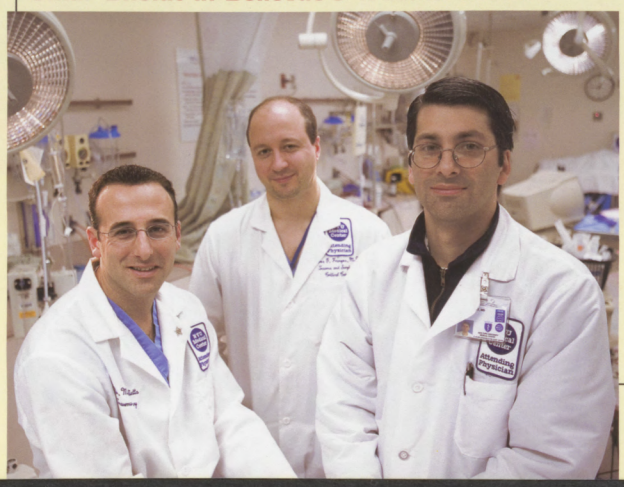
can move on to radiology or surgery.

By 12:30 a.m. the patient's gurney is escorted from the Trauma Room—or slot, as it's called—to the OR, leaving behind blue gowns and purple gloves in a puddle of blood. For the doctors and nurses in the ED, the trauma is over. For Dr. Miglietta and his surgical team, it is just beginning.

At 12:36 a.m., up in the 11th-floor surgical suite, the man whose life is on the line and the man whose line is saving lives share an intersection of fates. Dr. Miglietta is preparing for surgery without the benefit of a CT scan. There was no time. He must bring all of his training to bear on this delicate reconnaissance mission. Once inside the man's abdomen, Dr. Miglietta discovers, among other problems, multiple holes in the intestine. The result: the worst contamination he's ever seen from a gunshot wound—the man had recently consumed a large meal.

Five hours later, Dr. Miglietta meets with the patient's family. There were four bullets, he explains, and to avoid further harm, none of them were removed—not even the one that missed the man's heart by less than an inch. Each one did its share of damage, but none of it fatal. Not many people receive a gift like this on Christmas Day, or are able to give one.

Drs. Maurizio Miglietta, Spiros Frangos, and Omar Bholat in Bellevue's Trauma Room.



A decade ago Dr. Miglietta rotated through Bellevue as a fourth-year medical student. Today, he is Chief of the newly created Division of Trauma & Critical Care, presiding over a staff of surgeons, residents, and physician assistants who divide their time between the OR and the Surgical ICU.

Trauma (the Greek word for "wound") is defined as a blunt or penetrating injury. The cases Dr. Miglietta and his team of fellow surgeons are called in for are those involving injuries severe enough to threaten the patient's life or limb. Indeed, trauma kills more Americans between the ages of 1 and 44 than any disease or illness, accounting for nearly 100,000 deaths each year.

At Bellevue, trauma care is a collaborative effort between surgeons who specialize in trauma and critical care, emergency medicine physicians, anesthesiologists, orthopaedists, and other specialists. The hospital handles more cases, and more severe ones, than any other trauma center in Manhattan, treating some 1,800 patients annually, mostly pedestrians. Bellevue is one of 22 Level-1 trauma centers in New York City, but it's the only such hospital designated as both a Head and Spinal Cord Injury Center and a Limb Replantation Center. A study recently published in *The New England Journal of Medicine* concluded that the risk of death is significantly lower—25 percent—when care is provided in a trauma center.

"Bellevue has had a history of superb trauma care since the Civil War," notes H. Leon Pachter, M.D. ('71), Chairman of the Department of Surgery, who served as Director of Trauma from 1978 to 1998. "That's

why the New York City Police Department sends its injured to us and why the Secret Service keeps us on call when the President is in town." Dr. Miglietta trains members of both agencies in the basics of trauma care.

A trauma specialist, says Dr. Miglietta, is perhaps the most interdisciplinary of surgeons, for his expertise extends to all aspects of critical care. "We take the patient from the minute he almost dies," he explains, "to the minute he leaves the hospital." Unlike general surgeons, trauma surgeons are trained to prioritize multiple severe injuries, operate on every major body cavity, and deal with the enormous complexities of shock (a life-threatening condition resulting from inadequate blood flow). They must also be adept at earning the trust of a terrified stranger in a matter of seconds.

"There are only a few places in your body where you can bleed to death," notes Dr. Miglietta, "your chest, abdomen, pelvis, femurs, or through an open wound. Our job is to figure out which one, or which combination, it is—as fast as we can." To control severe bleeding, trauma specialists now have a new tool in their arsenal: a drug called Factor VIIa. This protein, previously reserved for hemophiliacs, is a powerful clotting agent that costs several thousand dollars per dose.

The man whose life is on the line and the man whose line is saving lives share an intersection of fates.

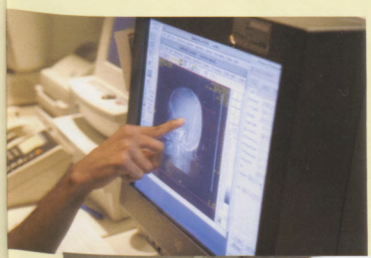
Though currently used at only a few trauma centers, including Bellevue, it promises to save more and more lives—primarily those of patients whose injuries cause them to "bleed out," or ooze, from breaks in the skin.

Some of Bellevue's darkest days for trauma coincided with the first decade of Dr. Pachter's tenure. "Drug dealers would shoot each other at such close range," he recalls, "that the contents of their pockets would end up in their abdomens." In China, Dr. Pachter learned pioneering techniques to salvage severely damaged livers and spleens, two of the most commonly injured organs because of their size and location. Performing more suture repairs to the liver than any other hospital in the world, Bellevue has cut the mortality rate for such injuries from 100 percent to 7 percent.

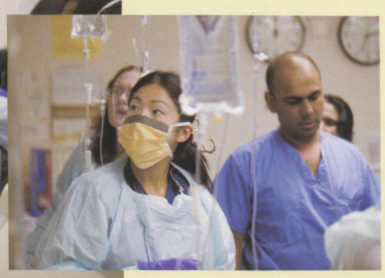
As violent crime has declined, alcohol has emerged as one of the chief causes of trauma, either directly or indirectly. "Alcohol is a devastating problem," laments Lewis R. Goldfrank, M.D., Chairman of the Department of Emergency Medicine and Director of Emergency Medicine at Bellevue. "As many as 5 to 10 percent of Americans are alcoholics," he reports, "and one-third to one-half of all car crashes leading to fatalities are alcohol-related."

The weekday flow of tragedy in Bellevue's ED has an all-too-familiar rhythm: morning pedestrian crashes, midday labor catastrophes, evening rush-hour crashes, and, in the wee hours, post-party incidents. Yet suicide attempts, violent assaults, and other harsh realities of urban life abound, so the beeper can go off anytime, anywhere. The warmer the weather, the busier the beeper.

"Trauma—whether it's mild, moderate, or severe—is a large part of emergency medicine," says Eric L. Legome, M.D., Director of the Emergency Medicine Residency Program. "The volume and variety of



"At Bellevue, we have some of the best of the best caring for some of the sickest of the sick."



cases at Bellevue give our residents tremendous experience. They fully participate in the most serious cases as an integral part of the trauma team, as well as less critical ones that go directly to the ED." As a measure of Bellevue's renown in this field, earlier this year the *Journal of Emergency Medicine* launched a regular column on trauma. Conceived and co-edited by Dr. Legome, it features Bellevue's most notable cases.

"In Bellevue's ED, OR, and ICU, we have some of the best of the best caring for some of the sickest of the sick," says Omar S. Bholat, M.D., Assistant Professor of Surgery, the newest member of the surgical team. Dr. Miglietta, Assistant Professor of Surgery, is particularly proud of his surgical residents, whom he considers "the top young people in this field in the country." He plans to launch a trauma fellowship program within three years.

A trauma cuts both ways. It's a life-altering experience for patient and doctor alike.

Trauma surgery was born on battlefields, notes Dr. Bholat, who recently served in Iraq as a surgeon in the U.S. Army Reserve. He adds that the military is so short of trauma surgeons that those up to the age of 54 are eligible for recruitment. Drs. Bholat and Miglietta received some of their finest training at an urban battlefield in Baltimore, where the University of Maryland Medical Center is home to the R. Adams Cowley Shock Trauma Center. The world's first and only hospital dedicated exclusively to trauma, it receives an average of one patient per hour. It was Shock Trauma's legendary Physician in Chief, Thomas M. Scalea, M.D., who figured out that the most reliable predictor of survival is not the patient's vital signs, but the level of lactic acid in his blood.

"Running a trauma unit like Bellevue's requires a high-energy personality," says Dr. Scalea, "and Dr. Miglietta has a huge amount of energy. I've done that job at Kings County Hospital in Brooklyn, and to do it in a way that's kind and compassionate—and he's both—is very challenging. I couldn't even tell you how many fellows I've trained, but I can tell you that he's right at the top."

The field of trauma medicine has advanced dramatically in the past decade, thanks in large part to such technology as sonograms and CT scans, which provide a priceless map of the territory. "Now we can scan the entire body in 15 minutes," says Dr. Miglietta, "pinpointing sites of bleeding, spotting problems we might otherwise have missed, and often avoiding the need for exploratory surgery."

When surgery is a must, the goal is damage control. "In the 1990s we used to operate on every problem at once," explains Dr. Bholat, "and after many hours in the OR the patient would die. Now we do the least amount necessary to get the patient out of crisis, and fix the rest later."

In the OR and beyond, care for the patient is shared between the trauma surgeon and an intensivist (a critical care specialist who may be another trauma surgeon or an anesthesiologist). "A patient may spend 20 minutes in the Trauma Room," explains J. David Roccaforte, M.D., Co-Director of the Surgical ICU and Assistant Professor of Anesthesiology, "but for every one of those minutes he may spend a day in the ICU and a week in rehabilitation."

In the ICU comes a second wave of trauma, for it is only then that the patient grasps the full impact of reality—on his body and his life. Research shows that the more trauma patients recall about their time in the ICU, the more likely they are to develop Post Traumatic Stress Syndrome. During the first week or so after trauma, patients are sedated with drugs specifically designed not only to treat their pain but disrupt their memory. Doctors rarely need to worry about the patient being haunted by memories of the Trauma Room resuscitation or even the traumatic event itself, however, because the patient usually has no recollection of them. "The low blood pressure that results from severe trauma, along with the various medications administered, produces amnesia," explains Dr. Roccaforte, "and psychologically it's very protective."

In about 50 cases each year, trauma results in one or more limbs or digits being severed. When that happens, Jamie P. Levine, M.D., Chief of Microsurgery, and his team of plastic surgeons are called in. "Once we attempt a replantation," he says, "we're successful about 90 percent of the time. The field of surgery requires so much deconstruction and removal, that it's very gratifying to be able to put things back together."

While trauma surgeons can call in other specialists, the miracle is often theirs to perform. The injuries they dread most are called "soul wounds." They involve the thoracoabdominal region, where havoc can occur in as many as five visceral compartments at once; the large vein behind the liver, which is fiendishly difficult to expose; and the vascular structures that converge with bowel structures, where bacteria can chew apart vulnerable tissue. "Traumas to the iliac vein and artery, pancreas, and duodenum are a nightmare," sighs Dr. Miglietta. "They make even the most experienced surgeon sweat."

His colleague, Spiros G. Frangos, M.D., M.P.H., Assistant Professor of

While trauma surgeons can call in other specialists, the miracle is often theirs to perform.

Surgery, explains that some patients lose so much blood in the OR that they enter what's called "the triad of death": severe acidosis (an increased acidity of body fluids), hypothermia (low body temperature), and coagulopathy (the inability to clot). In such cases, he says, "All the surgeon can do is to pack the abdomen to control bleeding and get the patient into the ICU as quickly as possible. The trick is deciding just when to do this, so that you don't lose the patient on the table."

Dr. Frangos describes his work as one of "instant gratification at its highest level, especially when you're able to save a life." But Dr. Bholat explains why the high is bittersweet. "Knowing that you've saved someone's life is very humbling," he says, "because you've only saved their life for now. The patient can survive the systemic effects of trauma only if you're vigilant in the ICU." That sentiment is shared by Marion Machado, R.N., a Head Nurse of the Emergency Ward, where many patients are monitored after they've been stabilized in the Trauma Room. "If you have a good nurse at your bedside," she insists, "your chances of survival are much greater. Swift intervention is the key."

The overall survival rate for trauma is surprisingly high: about 96 percent (though the rate is lower for the most critical cases). But that other 4 percent clearly haunts these men. "My wife can always tell when I've had a bad day," says Dr. Frangos. Dr. Bholat says he deals with defeat by trying to learn from it, so that "no death goes without some knowledge coming from it."

Trauma strikes—and claims—mostly the young, so it's not lost on these thirty-something surgeons that the lives they save could be their own. "Fortunately, young people have immense reserves that often enable them to survive massive trauma," explains Dr. Miglietta." But when they don't make it, adds Dr. Frangos, "nothing is harder than telling a parent that their child has died."

A trauma cuts both ways. It's a life-altering experience for patient and doctor alike. "But as much as a loss affects you," says Dr. Frangos, "you must overcome it for the sake of the next patient."

"Seeing patients survive at Baltimore's Shock Trauma Center who most likely would have died elsewhere made me raise the bar," says Dr. Miglietta. "Five days after I arrived at Bellevue, for example, I had a patient who fell seven stories from a rooftop, then landed on the roof of a bus, then landed on the sidewalk. He needed more than 100 units of blood. Some might say, 'Let him go—we may need that blood for other traumas.' But I'm proud to say that one month later he was released from the hospital."

"The best trauma surgeons," says Dr. Miglietta, "not only have supreme technical skills, but great connections with their patients. Patients don't even need to tell you how grateful they are. You can just sense it. What touches me most is when a family member—a total stranger—hugs me so hard that they can't let go. Even when people survive, of course, their lives are never the same. But for some, just the fact that they're alive is good enough."

For a profile of Dr. Maurizio Miglietta: www.med.nyu.edu/miglietta_profile.html

For guidelines about treating trauma: www.med.nyu.edu/treating_trauma.html

NYU Medical Center merges

Joined at the Hip, Knee, Shoulder,

You wouldn't normally think of seeing an orthopaedist for dating advice. But the bone, joint, and neuromuscular specialists at NYU Medical Center and its longtime affiliate, the Hospital for Joint Diseases Orthopaedic Institute (HJD), seem to have figured out the formula for a successful relationship.

On the first day of the new year, the two institutions formally tied the knot, creating NYU Hospital for Joint Diseases, whose expertise in musculoskeletal care can be now matched by few medical centers in the world. The merger marks the culmination of a 20-year-long courtship between NYU and HJD. It started with an academic affiliation in 1986, then a clinical association in 1994, the fusion of the two orthopaedic departments in 1997, and the union of the two rheumatology divisions in 2001. Through it all, the two institutions have cooperated in cutting operating costs, expanding clinical services, and combining residency training programs. As the new century unfolded, talk inevitably turned to the subject of marriage—that is, merger.

Main entrance of NYU Medical Center

"The concept behind the merger is that one plus one equals three," says Joseph D. Zuckerman, M.D., the Walter A.L. Thompson Professor of Orthopaedic Surgery, who has led the department since its inception. "We felt we could do a lot more together than we could do apart."

As evidence, Dr. Zuckerman points to plans for the development of a "musculoskeletal service line," comparable to those NYU has created for cancer and heart disease. The idea is that complex diseases require care that cuts across the usual specialty boundaries. This service line will fully integrate the Medical Center's expertise in rheumatology and orthopaedics—an ideal combination for the care of patients with the various forms of arthritis and autoimmune diseases, fractures, sports injuries, bone tumors, and spinal disorders. When NYU's specialists in rehabilitation medicine at the Rusk Institute, and in pediatrics, dermatology, neurology, neurosurgery, and oncology are added to the mix, the service line can meet the needs of any musculoskeletal patient. "The bottom line is that there's nothing we can't do in orthopaedics," says Dr. Zuckerman.

David Dibner, previously HJD's Interim Chief Executive Officer and now Senior Vice President/Site Administrator, makes an interesting point. Such clinical synergies would have been difficult, if not impossible, to achieve, he says, if NYU and HJD had continued to maintain separate administrative staffs and boards of trustees.

Other benefits are expected to arise from the merger. For example, NYU stands to gain by adding HJD's internationally recognized name in orthopaedics to its clinical roster. Additional benefits should accrue from the hospital's substantial market share, profitability, and excess bed capacity. As for HJD, it gets entrée to the clinical and academic resources of a world-class medical center and university, a secure footing for a specialty hospital.

Above all, patients will gain the most: access to the best-possible musculoskeletal care and, if necessary, to the

PHOTOGRAPHY: PAULA KELLY

Ankle...

entire NYU healthcare system. "In the past, when a patient came to HJD and developed heart problems," explains Dr. Zuckerman, "he or she would probably have returned to their physician. Now, we can place that patient into the NYU system with access to a whole world of specialty care."

While the musculoskeletal service line will take months to reach cruising speed, visitors to HJD will notice changes very soon. First on the agenda are renovations to HJD's entrance and lobby at 17th Street and Second Avenue. These will give the 17-floor, 190-bed hospital a new face to go along with its new name. Credit for this improvement goes to HJD's new advisory board, which has already brought fresh energy and resources to the institution.

HJD's short-term plans also call for several new operating rooms in addition to the two new ORs that were opened in 2005. This will be welcome news to surgeons on the main NYU campus, where OR time is at a premium. NYU and HJD together now perform about 15,000 orthopaedics-related procedures a year, a number that is expected to surge as more and more baby boomers reach the age where joints begin to stiffen and wear out. To make the most of this burgeoning market, HJD intends to open two off-site specialty centers, one focusing on spinal disorders and the other on joint replacements, areas of particular strength at this century-old specialty hospital.

The merger also promises to foster recruitment and research. "If you are trying to recruit clinicians and scientists in any of the musculoskeletal fields, it's a big plus to be part of a large academic medical center, not only a specialty hospital," says Steven B. Abramson, M.D., Professor of Medicine and Pathology and Chief of the Division of Rheumatology. Research should prosper as well, he says. Investigators will no longer have to contend with the difficulties of conducting studies across institutions, and HJD physician-scientists will be able to take full advantage of NYU's resources, such as the new Joan and Joel Smilow Research Center.

THE HOSPITAL FOR JOINT DISEASES

Some things won't change because of the merger, however. "We intend to maintain the familial culture that has sustained this place for a long time," says Mr. Dibner. "We've put a lot of emphasis on employee relations, patient satisfaction, and physician satisfaction, and we'll continue to do that."

Given the spectacular failures of many recent hospital mergers—here at NYU and around the nation—there are those who question whether this merger will succeed. Dr. Abramson, however, is not one of them. "This merger has been happening on the ground for 20 years," he says. "Dean Glickman set the tone from the beginning that this merger was going to be collegial. So there have always been attempts to find solutions."

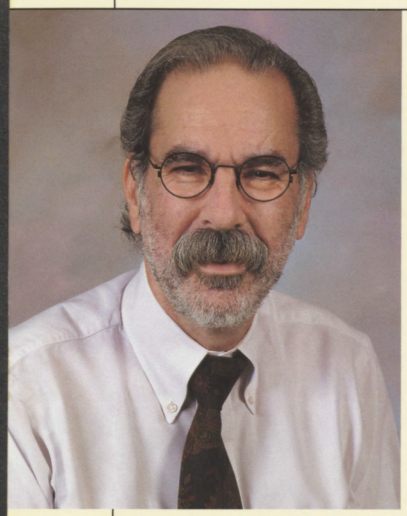
Dr. Zuckerman is also highly optimistic. "Because of our longstanding relationship, we haven't faced the turf issues and other obstacles that you run into with other mergers," he says. "We've gotten beyond that. And unlike other mergers, this one has not been forced in response to the marketplace. It's a merger that comes out of strengths."

"I've been involved in good mergers and bad mergers," adds Mr. Dibner. "The bad ones are generally because people haven't gotten on the same wavelength about the ultimate goals. You have to know whom you're going to the dance with. This dance started with the right music."

—Gary Goldenberg

PHOTOGRAPHY: PAULA KELLY

New Chairman of Pediatrics Appointed



DR. MICHAEL L. WEITZMAN

MICHAEL L. WEITZMAN, M.D., has been appointed Chairman of the Department of Pediatrics, replacing Benard P. Dreyer, M.D., Professor of Pediatrics, who served as Interim Chairman. Dr. Weitzman is also the Pat and John Rosenwald Professor of Pediatrics.

Previously, he was Executive Director of the American Academy of Pediatrics Center for Child Health Research and Professor and Associate Chairman of Pediatrics at the University of Rochester School of Medicine and Dentistry. There, he was Director of the Division of General Pediatrics and Pediatrician in Chief at Rochester General Hospital. Prior to that, he was Director of Maternal and Child Health for the City of Boston and Director of General Pediatrics and the Fellowship Training Program in Academic General Pediatrics at Boston City Hospital and the Boston University School of Medicine.

Dr. Weitzman has researched and written extensively on such diverse issues as childhood lead poisoning, chronic illness, passive and prenatal exposure to cigarette smoke, breast-feeding, excessive school absences, and the epidemiology of children's mental health problems, health risk behaviors, school failure, and asthma.

He also served as chairman of the Center for Disease Control's Childhood Lead Poisoning Prevention Advisory and the National Advisory Committee of the Robert Wood Johnson Generalist Physician Faculty Scholars Program. In 2005 he was the recipient of the 2005 Environmental Protection Agency's Children's Environmental Health Recognition Award.

Dr. Weitzman earned his M.D. from the State University of New York (SUNY), Upstate Medical University College of Medicine, in Syracuse. He remained at SUNY Upstate for his internship and residency (in pediatrics), ultimately serving as Chief Resident.

Dr. Seth Orlow Chosen Chairman of Dermatology

SETH J. ORLOW, M.D., PH.D., Professor of Dermatology, Cell Biology, and Pediatrics, has been appointed Chairman of the Ronald O. Perelman Department of Dermatology. He replaces Nicholas A. Soter, M.D., who served as Interim Chairman after illness required longtime Chairman Irwin M. Freedberg, M.D., to step down prior to his death in 2005. Dr. Orlow, a member of the faculty since 1990, was founding Director of the Pediatric & Adolescent Dermatology unit, and has been Vice Chairman for Research since 2004. He holds the first named chair in Pediatric Dermatology in the country, having been appointed the Samuel Weinberg Professor of Pediatric Dermatology in 2002.

Internationally recognized for his clinical expertise in childhood, congenital, and genetic disorders affecting the skin, hair, and nails, Dr. Orlow has been a principal investigator on major grants from the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) and the National Eye Institute (NEI) in the areas of melanoma therapy and the molecular and cellular biology of skin and eye pigmentation. He has also been an investigator in numerous clinical trials.

Dr. Orlow serves on the editorial boards of *Archives of Dermatology* and *Pediatric Dermatology*. He is a Fellow of the American Academy of Dermatology and the American Academy of Pediatrics, and a member of the Society for Pediatric Dermatology and the Society for Investigative Dermatology. He was elected to the American Dermatological Association, and has been honored with a lifetime achievement award from the American Skin Association.

DR. SETH J. ORLOW

Dr. Orlow received his A.B. magna cum laude from Harvard University. He earned his M.D. and Ph.D. (in molecular pharmacology) at the Albert Einstein College of Medicine. Following an internship in pediatrics at the Mount Sinai Medical Center, he completed his residency and fellowship training in dermatology at the Yale University School of Medicine.

PHOTOGRAPHY: RENÉ PEREZ (OPPOSITE PAGE, BOTTOM; THIS PAGE, BOTTOM)

Dafna Bar-Sagi, Ph.D., To Head Biochemistry

Dafna Bar-Sagi, Ph.D., has been named Chairwoman of the Department of Biochemistry. One of the country's leading molecular biologists, she is widely known for elucidating the cellular pathways involved in controlling the growth of cells. Dr. Bar-Sagi previously headed the Department of Molecular Genetics and Microbiology at the State University of New York (SUNY) at Stony Brook. A native of Israel, she earned her undergraduate and master's degrees from Bar-Ilan University and her Ph.D. from SUNY at Stony Brook. After receiving her doctorate, she joined Cold Spring Harbor Laboratory on Long Island as a postdoctoral fellow, eventually serving as a Senior Staff Investigator there. She then joined SUNY as an Associate Professor in the Department of Molecular Genetics and Microbiology, ultimately serving as Chairwoman of the Department.

A prolific researcher, Dr. Bar-Sagi has published more than 100 peer-reviewed research papers in leading journals on a wide range of topics centered on the molecular mechanisms underlying tumor and blood vessel formation, and survival of cells. Dr. Bar-Sagi has devoted considerable research to ras proteins, essential elements in complex pathways that control cellular growth. Ras proteins have captured the interest of cancer researchers for many years because abnormal forms of the proteins are present in many types of tumors.

Dr. Bar-Sagi has received many prestigious grants, including most recently a MERIT award (for Method to Extend Research in Time) from the National Institutes of Health. This highly competitive grant frees researchers who are widely recognized as leaders in their fields from the need to reapply for funding every three or four years. The award allows her to concentrate on ras proteins and their role in pancreatic cancer, which is her main research focus.

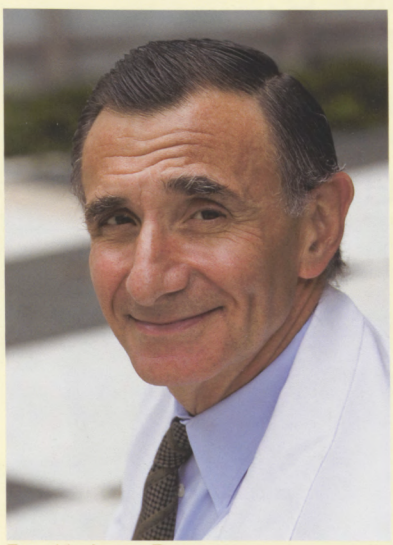
Dr. Dafna Bar-Sagi

Dr. Bar-Sagi is an editor of *Molecular and Cellular Biology* and serves on the editorial boards of other journals and on the board of scientific counselors for the National Cancer Institute. She follows Dr. Nigel Godson, who led the department through its transition into the era of molecular biology, genomics, and proteomics. He will remain a professor in the department. ●

H. Leon Pachter, M.D., Named Chairman of Surgery

H. Leon Pachter, M.D., has been named Chairman of the Department of Surgery. His roots at NYU School of Medicine stretch back to his days as a student and Chief Resident in the early 1970s. Dr. Pachter has an unbroken record of outstanding contributions—as Director of the Trauma Service at Bellevue Hospital from 1978 to 1998 and Executive Director from 1999 to 2006, Director of Bellevue's Surgical Intensive Care Unit from 1978 to 1997, Interim Chairman of the Department of Surgery, Chairman of the Medical Board of Tisch Hospital, Vice Chairman for Faculty Affairs, Division Chief of General Surgery, author and clinical scientist, and master laparoscopic surgeon.

Known for his passion, energy, and skill, Dr. Pachter has perfected a number of life-saving techniques over the years, among them a method of salvaging severely damaged livers and spleens that drastically reduced the mortality rate for such injuries. In 1975 he was awarded a fellowship by the American Cancer Society. By introducing advances in minimally invasive surgical techniques, Dr. Pachter has played a key role in making NYU's surgical service one of the finest in the country.



Dr. H. Leon Pachter

The author of more than 100 peer-reviewed publications and numerous book chapters, Dr. Pachter serves on the Editorial Board of *The Journal of the American College of Surgeons* and *The Journal of Trauma and Critical Care*. The American College of Surgeons has designated him a mentor for young female academic sugeons in the U.S.

Dr. Pachter, now the George Stewart David Professor, succeeds Thomas S. Riles, M.D., who, as Associate Dean for Medical Education and Technology, is pursuing novel approaches to surgical education. ●

PHOTOGRAPHY: RENÉ PEREZ (OPPOSITE PAGE, BOTTOM; THIS PAGE, BOTTOM)

Dr. Malaspina New Chairwoman of Psychiatry

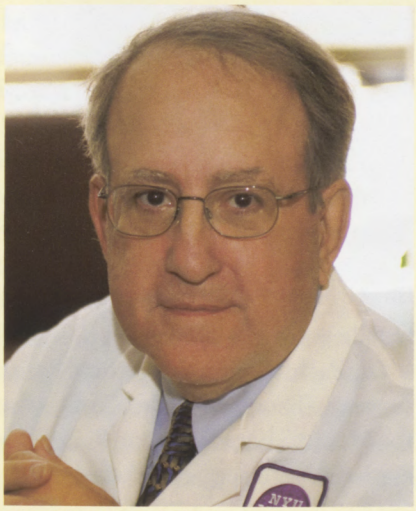
Dolores Malaspina, M.D., M.P.H., has been appointed Chairwoman of the Department of Psychiatry, which is world renowned for the depth and breadth of its expertise. Previously, she was Professor of Clinical Psychiatry at the Columbia University College of Physicians and Surgeons, and Director of the Clinical Neurobiology Division in Medical Genetics at New York State Psychiatric Institute. There she established an inpatient schizophrenia research unit and opened an outpatient center aimed at preventing psychotic disorders by treating early symptoms.

After earning her medical degree from the University of Medicine and Dentistry of New Jersey, Dr. Malaspina did postgraduate training at Columbia University Medical Center, where she served as Chief Resident in psychiatry and received its Horowitz Award for Clinical Excellence. She later did an extramural NIMH Schizophrenia Clinical Research Fellowship. Dr. Malaspina earned an M.P.H. in epidemiology from the Columbia University Mailman School of Public Health and an M.S. in zoology from Rutgers University. She did her undergraduate work at Boston University, where she studied environmental biology.

Dr. Malaspina was the first to identify and explain the significant association between increasing paternal age and a child's risk for schizophrenia, a factor now known to account for up to a quarter of all cases. She has also elucidated a variety of other risk factors for psychiatric diseases, including prenatal exposures and family history. In 1990 she received an NIMH Schizophrenia Academic Award to support her development as a researcher, academician, and administrative leader. •

Dr. Dolores Malaspina

Mariano J. Rey, M.D., Named to Two New Positions



Dr. Mariano J. Rey.

Mariano J. Rey, M.D., has been appointed to the newly created positions of Senior Associate Dean for Community Health Affairs and Director of the Institute for Community Health and Research. The Office of Community Health grew out of the Dean's Council on Institutional Diversity. Its mission is to provide solutions for health disparaties in minority populations by better understanding their root causes.

For 25 years Dr. Rey has been a member of the Department of Medicine and its Division of Cardiology, as well as the Department of Physiology and Neuroscience. For the last six years he has served as Dean of Students, taking individual care of the personal and academic needs of some 700 students. He has also helped modify the curriculum, shape the residential environment, and develop the Master Scholars Program. In 2002 he received the Best Dean of Students Award from the Medical Society of New York.

In 2003 Dr. Rey created the Centers for Health Disparities Research (now incorporated into the Institute for Community Health and Research), which rapidly became a national model for its comprehensive approach to examining the possible genetic, environmental, and socioeconomic causes of health disparities. The institute's centers are largely supported by the NIH, and also by New York City and State, with a total of some $20 million in grants, which Dr. Rey and his colleagues have obtained in just over two years. •

Name _____ Class _____

Address _____

City _____ State _____ Zip _____

E-MAIL _____

This is my: Home address ☐ Office address ☐

TELEPHONE: Home ( ) _____ Office ( ) _____

___$25,000 Named Apartment in Greenberg Hall ($5,000 per year for five years)

___$15,000 Plaque in Alumni Plaza ($3,000 per year for five years)

___$2,500 Jerome S. Coles Associates

___$1,500 Samuel D. Leidesdorf Associates

___$1,000 Senior Member of the Dean's Club

___$ 750 Dean's Club

___$ 500 Sustaining Contributor

___$ 250 Annual Membership

___$ 100 Young Alumni Club

Enclosed is my contribution to the **NYU SCHOOL OF MEDICINE ALUMNI CAMPAIGN.**

Payment by (minimum credit card gift is $50):

___Check ___American Express ___MasterCard ___VISA

Card number _____ Expires _____

Signature _____ Today's date _____

___ My company will match this gift. ___ My Matching Gift form is enclosed.

I wish to pledge $_____ to the **2006–2007 ALUMNI CAMPAIGN.**

My initial contribution of $_____ is enclosed.

The balance will be remitted in _____ (Month/Year).

___I have included NYU School of Medicine in my estate plans.
___I would like to learn more about making a bequest or planned gift that will benefit NYU School of Medicine.

Appeal Code MY106

Please make your check payable to **NYU SCHOOL OF MEDICINE.**

NYU SCHOOL OF MEDICINE ALUMNI & ALUMNI OF OUR RESIDENCY PROGRAMS:

Help us to update your friends and colleagues in a future edition of NYU Physician. *Just e-mail the information requested below, and a copy of your curriculum vitae, to* alumni@med.nyu.edu, *or mail them in the attached business reply envelope.*

Name _____ Class _____

First *Middle Initial* *Last*

Address _____

City _____ State _____ Zip _____

HOME TELEPHONE ( ) _____ OFFICE TELEPHONE ( ) _____

E-MAIL _____

Address above is Home ☐ Office ☐

AWARDS RECEIVED SINCE JAN. 1, 2006

PAPERS PUBLISHED SINCE JAN. 1, 2006

(Please include title and publishing journal with issue number and date of publication.)

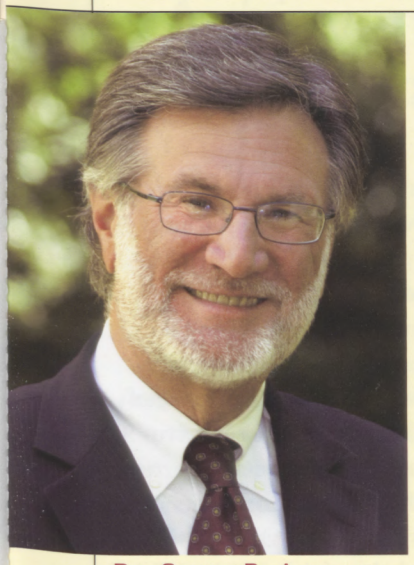
BOOKS AUTHORED SINCE JAN. 1, 2006

(Please include title, publisher, and publication date.)

OTHER PROFESSIONAL ACCOMPLISHMENTS AND PERSONAL MILESTONES

Please return this questionnaire and one copy of your current curriculum vitae to the Office of Alumni Relations.

Dr. Abramson Becomes Vice Dean for Education, Faculty, and Academic Affairs



DR. STEVEN B. ABRAMSON

STEVEN B. ABRAMSON, M.D., Professor of Medicine and Pathology, has been appointed Vice Dean for Education, Faculty, and Academic Affairs. He formerly served as Vice Dean for Medical Education and Associate Dean for Curriculum.

At the Hospital for Joint Diseases, he was Chairman of the Department of Rheumatology and Medicine and Physician in Chief. He is currently Director of the Division of Rheumatology at NYU School of Medicine. Since 2004 Dr. Abramson has served as Associate Dean for Clinical Research.

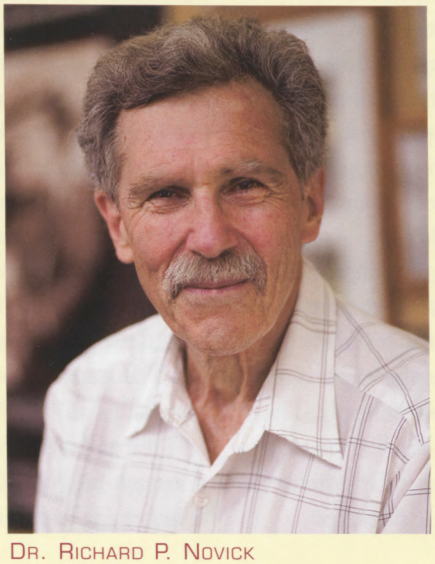
A summa cum laude, Phi Beta Kappa graduate of Dartmouth College, Dr. Abramson earned his M.D. from Harvard Medical School, and was elected to the Alpha Omega Alpha honor society. He arrived at NYU Medical Center and Bellevue Hospital for his internship in 1974, and later served as Chief Resident in Medicine. He trained in Rheumatology at NYU under his mentor, Dr. Gerald Weissmann. Dr. Abramson joined the faculty in 1979, rising to the rank of Professor in 1996.

The Vice Dean for Education, Faculty, and Academic Affairs oversees faculty affairs, including appointments, promotions, tenure issues, and departmental reviews; undergraduate, graduate, and postgraduate education, including ongoing reforms that continue to enhance the role of humanism and technology in the medical curriculum; continuing medical education; pre-college programs; the admissions process; and the School's accreditation. ●

Richard P. Novick, M.D., Elected to National Academy of Sciences

RICHARD P. NOVICK, M.D., Professor of Microbiology and Medicine, has been elected to the National Academy of Sciences. Membership in the National Academy is widely considered one of the highest accolades that can be accorded to a scientist. A leader in the field of molecular pathogenesis, Dr. Novick has devoted his career to the study of *Staphylococcus aureus,* a bacterium that causes a wide variety of illnesses and is the leading cause of hospital-acquired infections. In recent years the bacterium, which is resistant to most commonly used anitbiotics, has infected an increasing number of people outside hospitals as well, posing a serious public heath risk. Dr. Novick's laboratory is dedicated to understanding the mechanisms by which the bacterium causes disease, and to devising ways to block its effects. His laboratory discovered and characterized a master gene, or global regulator, which controls a signaling pathway in the bacterium that is responsible for the production and release of its toxins and many other disease-causing products.

Dr. Novick earned his M.D. with honors in microbiology from NYU School of Medicine in 1959 and was a postdoctoral fellow at the National Institute for Medical Research in London. After completing his residency at Vanderbilt University Hospital, he became a special postdoctoral fellow at The Rockefeller University. Dr. Novick was Director of the Public Health Research Institute in New York from 1982 to 1992. An adjunct professor at the School for many years, he joined the faculty in 1993. A recipient of the Solomon Berson Medical Alumni Achievement Award, he has served on many committees and advisory boards, including the Board of the Aaron Diamond AIDS Research Center in New York. ●



DR. RICHARD P. NOVICK

PHOTOGRAPHY: RENÉ PEREZ (THIS PAGE, BOTTOM) JULIANA THOMAS (OPPOSITE PAGE, BOTTOM; THIS PAGE, TOP)

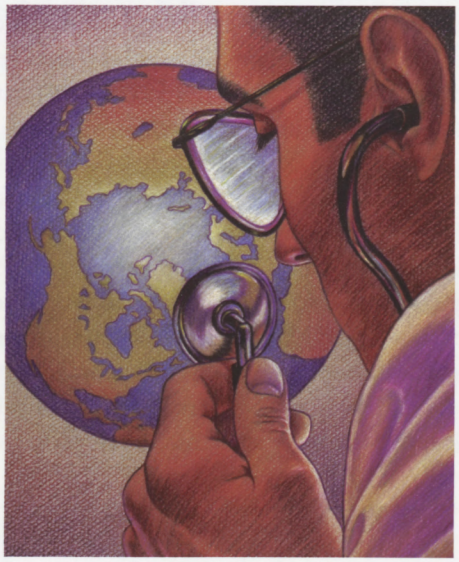
Seeking Cures for the World's Ills

OVER THE PAST SEVEN YEARS, more than $35 billion has been committed to fighting the diseases of the world's poor, yet infectious diseases continue to claim the lives of some 13 million people each year, accounting for 50 percent of deaths in developing countries. The chief reason, according to experts, is the lack of linkage between numerous and varied relief efforts.

"There is no effective architecture of global health," explains Jo Ivey Boufford, M.D., Professor of Public Service, Health Policy, and Management at NYU's Wagner Graduate School of Public Service. "There are multiple intergovernmental organizations, thousands of nongovernmental organizations and national, multilateral, and foundation donors, and special initiatives, but because so many are single-issue groups, the challenge is achieving greater synergy at a global level."

To help bridge the gap between the haves and the have-nots, NYU has launched a Master's Program in Global Public Health. The program will prepare professionals with advanced degrees in various disciplines to take leadership roles in promoting global health through improved research, practice, and policymaking.

The program is the only one of its kind in the country to focus exclusively on global public health. It's also the first at NYU to harness the expertise and resources of multiple schools. The University considers this collaborative effort among the schools of Medicine, Dentistry, Social Work, Education, and Public Service a model for research, education, and service in the field of global public health. More than 60 faculty members are participating, contributing expertise in fields ranging from human rights to toxicology.



The program's Co-Directors are Dr. Boufford, who is also Clinical Professor of Pediatrics, and Karen P. Day, Ph.D., Chairwoman of the Department of Medical Parasitology and Professor of Medicine. With their colleagues, they are seeking to build "connective tissue" among existing disciplines rather than to create a new discipline in its own right. The new endeavor, they explain, is "global" (versus "international"), because it is not just about going "over there" but also about addressing migration issues and problems here at home.

"There is tremendous interest among young people," says Dr. Day. "They want to help. In fact, they sought us out. The faculty are excited too, and we're all giving it our utmost."

"What we've accomplished," says Robert Berne, Ph.D., NYU's Senior Vice President for Health, "is to take the nation's largest private university and minimize the boundaries between our schools. This means that our students have the entire university at their disposal. We expect other schools to join us as they see the value of this."

In addition to studying seven core courses in basic public health competencies, ethics, informatics, and qualitative/field research methods, students must complete 150 hours of fieldwork and a yearlong capstone project, in which teams of students diagnose and address a real-world problem.

The first group begins classes this fall. Its members represent numerous disciplines: law, medicine, nursing, dentistry, economics, international relations, education, social work, and public policy. One in four of the class hails from abroad.

NYU School of Medicine has been in the vanguard of public health since the 1860s, when one of its physicians, Stephen Smith, M.D., undertook the first survey of health conditions in New York City, leading to the creation of the Department of Health. He later became the first president of the American Public Health Association. In 2000 Dean & CEO Robert M. Glickman, M.D., established the School's Institute for Urban and Global Health, now led by Dr. Day. ●

—Dee Nelson

Solomon A. Berson Medical Alumni Achievement Awards for 2006

On Alumni Day, April 22, 2006, alumni and faculty of the School of Medicine were recognized for their outstanding achievements. The awards were presented by Dean Robert M. Glickman, M.D., who greeted more than 400 alumni and guests.

Award in Basic Science

Ronald Hoffman, M.D. ('71), currently serves as Director of the Cancer Center and the Eileen Hendrik Professor of Oncology at the University of Illinois. He has made landmark contributions to our understanding of stem cell biology and blood cell development. Among them are his defining of immune mechanisms at progenitor cell level that cause aplastic anemia; and identification of the key regulatory factors for erythropoiesis and megakaryopoiesis. He holds a U.S. patent on methods to increase the number of blood stem cells by special culture techniques, and thus has paved the way for the potential of stem cell therapy to transform medical therapy through cell and tissue regeneration.

Award in Health Science

Jerome Lowenstein, M.D. ('57), Chief of the Nephrology Division, has been a member of the faculty of the School of Medicine for nearly 30 years. Director of the Program for Humanistic Medicine, the first of its kind in the world, he is nationally and internationally recognized for his dedication and commitment to humanism. He personifies the humanistic physician, and has inspired an entire generation of medical students and house staff to follow in his footsteps to become caring healthcare professionals.

Award in Clinical Science

Bernard Cohen, M.D. ('54), is the Morris B. Bender Professor of Neurology at Mount Sinai School of Medicine. Dr. Cohen has spent his research career studying eye movements and the vestibular system of animals and humans. He was the first to demonstrate the eye movements and patterns of eye muscle activation that are produced by individual semicircular canals. He also discovered velocity storage, a process in the vestibular system that is responsible for important characteristics of the vestibulo-ocular reflex (VOR).

Faculty Member Inducted as Honorary Member of the Class of 2006

Jan T. Vilcek, M.D., Ph.D., Professor of Microbiology, has served on the faculty of the School of Medicine for more than 40 years. He is the co-inventor of Remicade, a monoclonal antibody directed against TNF that has revolutionized the treatment of rheumatoid arthritis and other inflammatory diseases. Last year, he made the School of Medicine an extraordinary gift of $105 million—the largest sum ever donated to the School, and one of the largest ever given to a school or healthcare institution in New York City.

Julia Zelmanovich Young Alumni Award

Felicia M.T. Lewis, M.D. ('98), was the recipient of the Julia Zelmanovich Young Alumni Award for general excellence. Since July 2004 she has been serving as an Epidemic Intelligence Service Officer for the Centers for Disease Control and Prevention (CDC). A volunteer in Haiti and Madagascar, she is also participating in epidemiology research with the Philadelphia Department of Public Health and the CDC. •

"Hope Amid Horrors"

On the morning of September 2, 2003, Benjamin Wan, M.D. ('00, Res. '03), became a witness to civil war. As a member of the international relief organization Médecins Sans Frontières, or Doctors Without Borders (DWB), 29-year-old Dr. Wan had been working in northern Liberia. Days before, when the fighting drew near, he had been evacuated. But he drove back daily to the area where he served as the only doctor for more than 70,000 displaced people.

On that particular morning, however, Dr. Wan's car was swallowed by a human river. Some 50,000 people fleeing from the violence had spilled onto the roadway, engulfing it. It was the harsh reality of a people who had grown accustomed to life on the run, a reality that made relief work a difficult and dangerous endeavor.

Founded in 1971 by a group of French physicians, DWB is the world's largest independent international medical relief agency. It has come to the aid of victims of war, epidemics, and natural and man-made disasters. Each year, more than 2,500 DWB volunteers work with 15,000 locally hired staff to provide medical assistance in more than 80 countries.

The organization's humanitarian goals are a perfect fit with NYU School of Medicine, says Mary Ann Hopkins, M.D., M. Phil., Assistant Professor of Surgery, who first volunteered with DWB in 1996. She credits the Dean's Office with creating "an atmosphere where international public service is sponsored and encouraged." She adds that the international patient population of Bellevue, NYU's primary teaching affiliate, "expands our view of who our patients are and makes us want to go into the world community."

Dr. Wan says that these patient interactions, as well as the hands-on training he received at Bellevue, taught him the flexibility he needed to adapt to new circumstances, which proved invaluable in Liberia. A pediatrician by training, Dr. Wan treated adults as well as children during his six-month mission. With only three blood tests and urinalysis available to him, he frequently had no choice but to make a diagnosis based on his best guess. All too often, he says, kids died who could easily have been saved with basic medicines and equipment. During such moments, he says, he had to remind himself that "for every child who dies, you've saved a hundred." His efforts did not go unappreciated. Two Liberian women named their babies after him during his stay.

A Hong Kong native who moved to California when he was 15, Dr. Wan had traveled extensively through Asia and Europe with his family. The opportunity to go to Africa through DWB came when he heard Sonia

Cheng, M.D. (Res. '00), speak to his residency class about DWB. "It encompassed everything I wanted to do: to be a doctor and help people in need," he says.

Dr. Cheng, also a pediatrician, had just returned from her first DWB mission, a six-month stint in Huambo, Angola. She, too, had learned about DWB from an NYU alumnus, a returning volunteer named David Schnadower, M.D., (Res. '00).

When Dr. Cheng heard Dr. Schnadower's lecture as a medical student, she thought to herself, "This is what I'm going to do with my life." After her residency, she stayed true to her goal. In 2001 Dr. Cheng helped run a therapeutic feeding center for more than 100 children, caring for them and teaching local staff how to treat malnutrition, a chronic problem among the Angolan population. The country, which has been plagued by civil war since 1975, has virtually no healthcare system.

Like Dr. Wan, Dr. Cheng had few resources at her disposal. One day she examined a one-year-old boy whose heart was beating on the wrong side of his chest—the result of one lung being filled with so much pus that it had displaced his heart. The treatment was to stick a needle into his chest and drain the lung. In a hospital, the procedure would have required X-rays, monitors, and backup ventilators. In the field, she had only herself to rely on for a procedure she had no experience performing. Just one mistake, and the result would be a collapsed lung and certain death. As Dr. Cheng's hands shook, a nurse reminded her to take deep breaths. Thanks to her bold action, the boy survived.

Even success, says Dr. Cheng, was often bittersweet. When patients recovered and left, she wondered what would happen to them. "I released them into a country full of land mines, where they were chased by army and rebel forces, and risked getting their limbs blown off. That became very hard to deal with." Two years after her service in Angola, Dr. Cheng volunteered to work in Sudan, at an orphanage with a mortality rate of 75 percent. The DWB team hired more local staff to take care of the babies, put medical and referral systems in place, and created a hygiene system that involved washing 1,500 diapers daily. When Dr. Cheng left six months later, the mortality rate had dropped to 20 percent.

Dr. Cheng is now Associate Professor of Pediatrics at the Children's Hospital of Philadelphia's Primary Care Center of South Philadelphia, where she treats an inner-city population. She plans to volunteer for DWB missions for the rest of her career. She is also working with a peer support network to help fellow volunteers readjust when they return. "It's harder to come back," she says, "than it is to go."

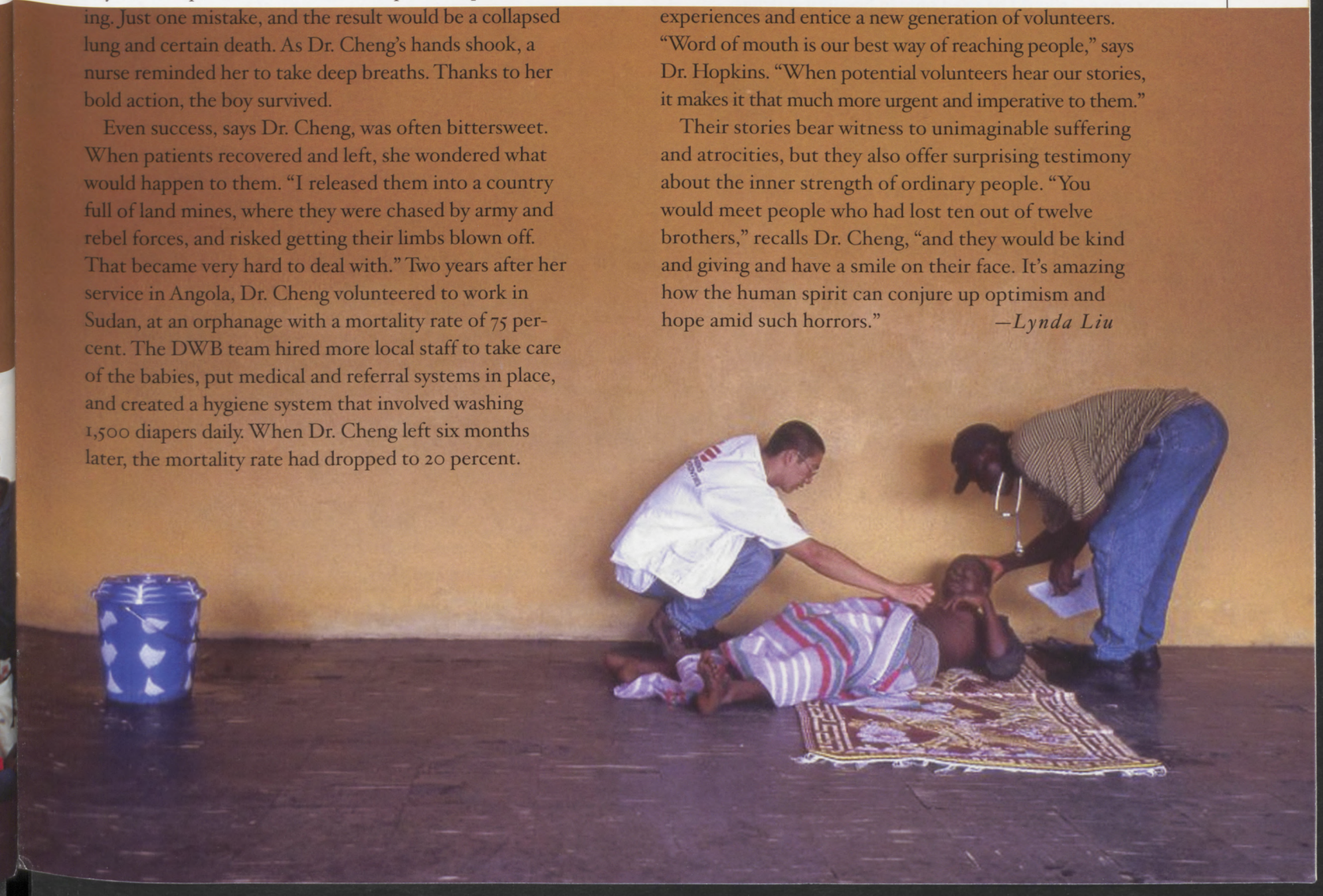
Dr. Wan agrees. He calls his return from Liberia back to the material abundance of the West "a shock." The practice of medicine also feels different to him. He places a much higher premium on the physical exam than he did before Liberia.

During the winter of 2005, Dr. Wan also volunteered to go to Sudan to the tiny town of Niertiti, located in the middle of three warring factions. As the only doctor in the area, he tended to refugees and ran an outpatient clinic, an inpatient unit, and a feeding center. Dr. Wan is now in private practice in San Francisco, where he makes good use of his Chinese language skills among the city's large Chinese population.

Even after their missions end, DWB physicians typically find other ways to continue their volunteerism. One recent evening at NYU School of Medicine, Drs. Cheng, Wan, and Hopkins appeared before an audience of medical students and residents to discuss their DWB experiences and entice a new generation of volunteers. "Word of mouth is our best way of reaching people," says Dr. Hopkins. "When potential volunteers hear our stories, it makes it that much more urgent and imperative to them."

Their stories bear witness to unimaginable suffering and atrocities, but they also offer surprising testimony about the inner strength of ordinary people. "You would meet people who had lost ten out of twelve brothers," recalls Dr. Cheng, "and they would be kind and giving and have a smile on their face. It's amazing how the human spirit can conjure up optimism and hope amid such horrors."

—Lynda Liu



1940s

Melvin Hershkowitz, M.D. ('45), retired in May 2004 from the Voluntary Clinical Faculty in the Department of Medicine at Brown Medical School. In April 2005 he published an article entitled "Time Stresses in the Lives of Physicians" in *Rhode Island Monthly* magazine.

1950s

Herbert I. Goldman, M.D. ('50), received an M.S. in nutrition in May 2005, becoming the oldest graduate of Columbia University's Institute of Human Nutrition. He has been a pediatrician and neonatologist for more than 40 years and is currently in private practice in New Hyde Park, NY.

Ira J. Gelb, M.D. ('51), was honored by the Charles E. Schmidt College of Science for his tireless work toward the development of the medical education program at Florida Atlantic University, where he is Clinical Professor and Director of Clinical Programming.

Eugene Braunwald, M.D. ('52), was featured in an August 23, 2005, article distributed by Knight Ridder–Tribune Information Services. Dr. Braunwald assembled a panel of physicians for Scios, a unit of Johnson & Johnson, which determined that Natrecor—a biotech substitute for nitroglycerine—should be used only in hospital settings.

Edwin S. Robbins, M.D. ('52), a psychiatrist, and his wife, Lillian Robbins, Ph.D., a psychologist, made two presentations at the Oxford Roundtable on Women's Leadership in August 2005: "Reflections on the Current Status of Women in American Higher Education" and "The Pitfalls and Pleasures of an Academic Marriage."

Salvatore V. Ambrosino, M.D. ('53), recently purchased a plaque in Alumni Plaza that honors all the NYU School of Medicine graduates in his family: himself, daughters Antoinette Ambrosino ('80) and Barbara Ambrosino ('84), and son Michael Ambrosino ('82).

Paul R. Packer, M.D. ('55), Associate Clinical Professor at Albert Einstein College of Medicine, has patented a balloon device, currently in clinical trials, to control postpartum hemorrhage.

Ralph G. DePalma, M.D. ('56), has published his memoir, *Practicing and Other Stories.*

Stephen C. Finestone, M.D. ('56), has retired as Professor of Anesthesiology at the University of Pittsburgh School of Medicine. He is Past President of the Pennsylvania Society of Anesthesiologists.

Harold T. Becher, M.D. ('59), has retired after 39 years of psychiatric practice. He lives in Boulder, CO.

Sandra R. Wolman, M.D. ('59), who ran a large diagnostic service lab, has written more than 200 research papers, mainly on genetic markers in cancer, and has edited several books during her career. She lives in Potomac, MD.

1960s

Mark A. Belsey, M.D. ('60), has spent most of his career at the World Health Organization (WHO) in Geneva, Switzerland. He recently published *AIDS and the Family: Policy Options for a Crisis in Family Capital* (United Nations Department of Economic and Social Affairs).

Henry Roth, M.D. ('60), was given the Marriott Lifetime Achievement Award at the Arthritis Foundation's 2005 Arts for Arthritis Gala, held in Washington, DC, on November 19, 2005.

Howard E. Voss, M.D. ('61), is Medical Director of the Volunteers in Medicine Clinic at Martin Memorial Medical Center in Stuart, FL.

Eugene Wallsh, M.D. ('61), retired in 2004 as Professor of Surgery and Chief and Professor of Thoracic and Cardiovascular Surgery at Texas Tech University. He lives in Tenafly, NJ.

Richard F. Edlich, M.D. ('62), received the 2005 Distinguished Alumnus Award from the University of Minnesota, where he completed his residency in general surgery in 1971.

John Kastor, M.D. ('62), recently published *Specialty Care in the Era of Managed Care: Cleveland Clinic vs. University Hospital of Cleveland* (The Johns Hopkins University Press).

Stephen G. Silberstein, M.D. ('62), retired and is a farmer in Vacaville, CA.

Felicia B. Axelrod, M.D. ('66), Carl Seaman Family Professor of Dysautonomia Treatment and Research, and Professor of Neurology and Director of the Dysautonomia Treatment and Evaluation Center at NYU Medical Center, will be honored by the Dysautonomia Foundation, which is creating the Felicia B. Axelrod Professorship for Dysautonomia Treatment and Research at NYU Medical Center.

Maurice D. Levy, M.D. ('66), retired after 23 years of service with the Department of Veterans Affairs. He lives in Tallahassee, FL.

Alan L. Rubin, M.D. ('66), has authored *Diabetes for Dummies, Diabetes Cookbook for Dummies, Thyroid for Dummies, and High Blood Pressure for Dummies.* He lives in Tiburon, CA.

Robert A. Morantz, M.D. ('67), is a Clinical Professor of Neurosurgery at the University of Kansas School of Medicine.

Thomas E. Strax, M.D. ('67), is the 2005 recipient of the Frank H. Krusen Award from the American Academy of Physical Medicine and Rehabilitation. Recipients of this gold medal are selected on the basis of their outstanding contributions to the field.

Alan F. Schatzberg, M.D. ('68), won the Distinguished Service in Psychiatry Award from the American College of Psychiatrists. He has been Chairman of the Department of Psychiatry and Behavioral Sciences at Stanford University School of Medicine since 1991.

1970s

Robert O. Bates, M.D. ('70), is the local county health officer and a consultant to maternal and child health programs in Davis, CA.

Jordan Goodstein, M.D. ('70), is Chief of Surgery and Chief of Staff at Brotman Medical Center in Culver City, CA.

John L. Schwartz, M.D. ('70), was the subject of a June 2005 article in *Psychiatric Times,* a publication he founded in 1985 and for which he has served as Editor In Chief. In 1988 he closed his private practice and started the U.S. Psychiatric & Mental Health Congress. Dr. Schwartz serves on UCLA's Board of Governors, the board of UCLA's Center on Aging, and the advisory board for an adult stem cell company.

Victor M. Zion, M.D. ('71), has retired from retinal surgery at the age of 55. He lives in Miami Beach, FL.

Joan Gluck, M.D. ('72), is President of the Miami Pediatric Society and the Florida Allergy Society.

Paul Gluck, M.D. ('72), is President of the Dade County Medical Association, the Florida Ob-Gyn Society, Miami Ob-Gyn Society Florida Section, and ACOG chair of the National Patient Safety Foundation. He lives in Miami, FL.

Martin J. Blaser, M.D. ('73), Chairman of the Department of Medicine at NYU School of Medicine, has been elected President of the Infectious Diseases Society of America (IDSA) for a one-year term.

Dr. Richard Levin Named Dean of McGill

PHOTOGRAPHY: RENÉ PEREZ

After more than 30 years of service to NYU School of Medicine, Richard I. Levin, M.D. ('74), Vice Dean for Education, Faculty, and Academic Affairs at NYU School of Medicine, has left his alma mater to become Dean of the Faculty of Medicine and Vice Principal for Health Affairs at McGill University in Montreal, Canada. Dr. Levin will be the Faculty of Medicine's 26th Dean since its founding in 1829.

"Dr. Levin's contributions have illuminated every facet of our School," said Dean & CEO Robert M. Glickman, M.D. Dr. Levin has served as Senior Chief Resident in Internal Medicine at Bellevue, Director of the Training Program in Cardiovascular Disease, Director of the Laboratory for Cardiovascular Research, and Professor of Medicine in the Leon H. Charney Division of Cardiology.

Susan R. Horowitz, M.D. ('74), created rotations in family violence for the pediatric residency program at the Naval Medical Center in San Diego. She teaches physicians, attorneys, judges, and law enforcement personnel about the medical aspects of child abuse.

Marilyn Cozzens Kessler, M.D. ('74), spent 21 years in private practice in Ob-Gyn in Stamford, CT. She is currently a full-time faculty member at Northwestern University Medical School.

Steven R. Goldstein, M.D. ('75), Professor of Obstetrics and Gynecology, Director of Gynecologic Ultrasound, and Co-Director of Bone Densitometry at NYU School of Medicine, has been elected to the Board of Trustees of the North American Menopause Society. He is also First Vice President of the American Institute of Ultrasound in Medicine. Dr. Goldstein is Past President of the NYU School of Medicine Alumni Association.

Theodore A. Stern, M.D. ('75), has been selected by NYU School of Medicine's Alumni Association Honors and Awards Committee as the Boston reunion honoree in recognition of his scientific and professional achievements.

Donald H. Hulnick, M.D. ('77), married Nancy Moore on July 2, 2005, at Tappan Hill in Tarrytown, NY. The groom is a radiologist and partner in three offices: in Carmel, NY, Danbury, CT, and Newtown, CT.

Betty W. Chang, M.D. ('78), Service Chief of the Department of Allergy at Kaiser Permanente Medical Center Midatlantic States, is the mother of one of our future alumni, Christopher Chang ('07).

Ruth Falik, M.D. ('78), is the recipient of the 2005 Fulbright and Jaworski Award for Excellence in Teaching and Evaluation at Ben Taub General Hospital/Baylor College of Medicine in Houston, TX.

1980s

Ellen Roy Elias, M.D. ('80), is a chamber music violinist as well as a physician in Denver, CO.

Scott D. Woogen, M.D. ('81), of Mechanicsville, VA, is the 2005 Amateur Driving Champion of the Harness Racing Museum and Hall of Fame. For the past four years he has been taking time from his gastroenterology practice to participate in amateur harness races in the United States and Europe.

Edward D. Agura, M.D. ('82), is Director of Bone and Marrow Transplantation Services at Baylor College of Medicine. He lives in Arlington, TX.

Deborah A. Driscoll, M.D. ('83), has been appointed Chairwoman of the Department of Obstetrics and Gynecology at the University of Pennsylvania School of Medicine.

Lee Ann Baggott, M.D. ('84), who enjoys mentoring, would welcome hearing from any graduates in Augusta, ME. Her specialty is Pulmonary Critical Care, and she is a board member of the National Lung Association.

Michael Levin, M.D. ('84), who specializes in child and adolescent psychiatry and pediatric psychopharmacology and teaches at the University of California, Berkeley, co-authored *The Reading Lesson: Teach Your Child to Read in 20 Easy Lessons* (Mountcastle).
Michael J. Giordano, M.D. ('86), is one of 22 people selected for the first class in Yale University's Executive M.B.A. program for future leaders in healthcare.
C. (Charlotte) Joy Steele-Morris, M.D. ('86), returned to pediatrics and settled in Indianapolis after earning a Ph.D.
Douglas H. Barlow, M.D. ('89), flew from Boca Raton, FL, to Baton Rouge, LA, during the aftermath of hurricane Katrina, and became part of one of the largest MASH units in U.S. history, set up on the floor of a sports arena.

1990s

Brian Herts, M.D. (Res. '92), is Section Head of Abdominal Imaging at the Cleveland Clinic Foundation.
Danielle Ofri, M.D., Ph.D. ('93), Assistant Professor of Medicine at NYU School of Medicine, has published her second book, *Incidental Findings: Lessons from My Patients in the Art of Medicine* (Beacon Press). It describes her life as an attending physician at Bellevue Hospital.
Stephanie R. Bialek, M.D. ('96), married Richard P. Winston in Staatsburg, NY, on August 28, 2005.
Edith R. Lederman, M.D. ('97), is a Fellow in the Epidemic Intelligence Service at the Centers for Disease Control and Prevention, where she works on poxviruses, including molluscum, orf, monkeypox, and vaccinia. She is also enrolled in a M.P.H. program.
Gena M. Cobrin, M.D. ('98), recently joined Gastroenterology Associates of Fairfield County and is on staff at St. Vincent's Medical Center in Bridgeport, CT.
Michael A. Pollack, M.D. ('98, Res. '03), is in private practice in Montclair, NJ, where he works with several former NYU residents.
Eric D. Flisser, M.D. ('99), married Jennifer L. Tudisco on November 5, 2005.
Eugene K. Hong, M.D. ('99), who recently completed a residency in Urology at NYU, is now with Kaiser Permanente Medical Center in Walnut Creek, CA.
Tsao-Wei Liang, M.D. ('99), a neurologist, is Co-Director of the Movement Disorders Program at Thomas Jefferson University Hospital in Philadelphia.

2000s

Shirley Bassiri, M.D. ('02), and her husband, **Omid Rahmani, M.D.** ('95), are the proud parents of Gabriel, born on August 8, 2005. Dr. Bassiri is a fourth-year resident in diagnostic radiology at Beth Israel Medical Center in New York, and Dr. Rahmani is a vascular surgeon in private practice with Vascular Associates of Long Island.
Jennie Johnson, M.D., Ph.D. ('04), married Tom Byrne on October 15, 2005. She is a second-year resident in psychiatry at Mount Sinai Hospital in New York, where she is conducting her own PMRI study on attention and memory in schizophrenia.
Joel Bauman, M.D. ('05), recently married Melissa Rethy and moved to Philadelphia.

Faculty Deaths

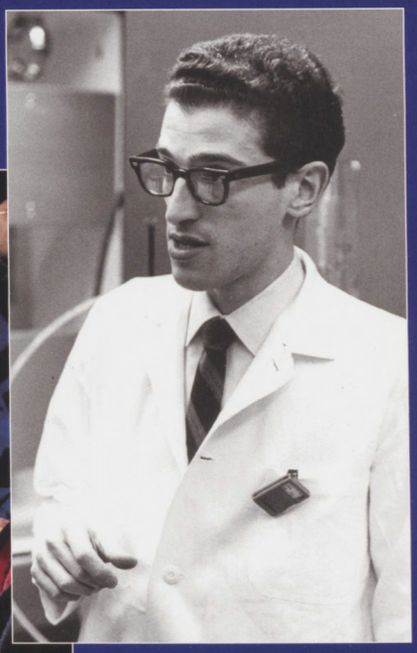
Alan W. Bernheimer, Ph.D., Professor Emeritus of Environmental Medicine
Vincent J. Fontana, M.D. (Res. '53), Associate Professor of Pediatrics
Joseph H. Hersh, M.D. ('35), Clinical Professor of Otorhinolaryngology
Theodore J. Kneip, M.D., Professor of Environmental Medicine
Kelvin C. Lee, M.D., Associate Professor of Otolaryngology
Hans R. Lehneis, Ph.D., Professor of Rehabilitation Medicine
Arturo Pena, M.D., Clinical Associate Professor of Orthopaedic Surgery
Lawrence Sabot, M.D., Clinical Associate Professor of Psychiatry
Meyer Texon, M.D. ('34), Associate Professor of Forensic Medicine

Alumni Deaths

Meyer Texon, M.D. ('34)
Joseph H. Hersh, M.D. ('35)
Tibor J. Greenwalt, M.D.('37)
Manuel D. Zane, M.D. ('37)
Emmett Stevenson Lupton Sr., M.D. ('38)
H. Harold Friedman, M.D. ('39)
Aaron (Bob) Kaycoff, M.D. ('40)
Amy Cattley Rock, M.D. ('41)
Clifford J. Sager, M.D. ('41)
Walter Ira Spinrad, M.D. ('41)
Jack J. Kirschenfeld, M.D. ('43D)
Leroy S. Lavine, M.D. ('43D)
Daniel S. Martin, M.D. ('44)
Joseph C. Mucci Jr., M.D. ('46)
David J. Rose, M.D. ('46)
Eugene V. Calvelli, M.D.('47)
Edward R. McGovern, M.D. ('47)
Leonard Hollander, M.D. ('48)
Morris Ziff, Ph.D., M.D. ('48)
Edmund J. Brennan Sr., M.D. ('51)
Eric (Benjamin) Bobrow, M.D. ('53)
David K. Jordan, M.D. ('57)
Leonard C. Thomas, M.D. ('72)
Kevin S. Young, M.D. ('87)

the Gift *of a* Lifetime

PHOTOGRAPHY: TERI BLOOM



Alan Rutner, Ph.D., M.D., working in a biochemistry lab at NYU School of Medicine in 1969.

ALAN RUTNER, PH.D., M.D. ('73), A FORMER FACULTY MEMBER in the Department of Biochemistry, earned his medical degree from NYU thanks to a full scholarship and grants-in-aid that he received from unknown donors. In gratitude to the entire NYU medical community, Dr. Rutner will establish a scholarship fund by naming the School of Medicine as a beneficiary of his retirement plan. NYU's status as a nonprofit institution will protect these assets from estate and income taxes.

DR. RUTNER'S LEGACY WILL HELP A NEW GENERATION OF STUDENTS meet the financial challenges of a medical education. You too can make a difference at NYU through your will, trust, retirement plan, or other planned giving opportunity. You may designate your support for scholarships, research, fellowships, professorships, or for the School's unrestricted use.

FOR MORE INFORMATION,
please use the attached postage-paid envelope or contact in confidence the Office of Gift Planning at 800-422-4483 or 212-404-3653, or email plannedgiving@med.nyu.edu.

AS A MEMBER
of the John Revere Society, you will be invited to luncheons and lectures by noted physicians and scientists, and you will receive valuable estate-planning publications.

NYU Medical Center

A Room With a View

PHOTOGRAPHY: RENÉ PEREZ

The new Joan and Joel Smilow Research Center commands sweeping views of the East River and beyond, thanks in large part to its 12-foot-high floor-to-ceiling windows. From the northeast corner of the upper floors, the eye can take in a breathtaking 220-degree vista that embraces the northern edge of the campus, the FDR Drive, the 59th Street Bridge, the boroughs of Queens and Brooklyn, and—along the way—the river that is its constant companion.

SCHOOL OF MEDICINE

NEW YORK UNIVERSITY

550 First Avenue
New York, NY 10016