Weill Cornell
theScope

News of the Joan and Sanford I. Weill Medical College and Graduate School of Medical Sciences of Cornell University

March • April 2004

Exterior view of the new WCMC-Qatar building designed by architect Arata Isozaki.

Khalid A. Al-Marzouqi

Inaugural Celebrations: WCMC-Qatar and Cornell's 11th President

Within one week in October, inaugural ceremonies for the opening of the new educational facilities for Weill Cornell Medical College in Qatar and the "triple" inauguration of Jeffrey Lehman as the 11th president of Cornell University were jointly celebrated in Qatar, New York City, and Ithaca.

The dedication of the new building for WCMC-Q and President Lehman's first inaugural address took place in Qatar's "Education City" in the capital city of Doha on October 12. Joining participants and guests from Qatar and Weill Cornell in celebrating the occasion were Congresswomen Carolyn Maloney and Sheila Jackson Lee. The State of Qatar also celebrated the official dedication of Education City at ceremonies held on October 13.

Unveiling of the plaque commemorating the dedication of the new building for WCMC-Qatar with Her Highness Sheikha Mouza; Sanford Weill, chairman of Weill Cornell's Board of Overseers; Jeffrey Lehman, president of Cornell University; Dr. Antonio Gotto, dean of Weill Cornell Medical College; and other guests.

On October 15 in New York City, Weill Cornell hosted the second inaugural ceremonies for President Lehman. The day began with a breakfast hosted by Dr. Antonio Gotto, dean of the Medical College, with guests including Mayor Michael Bloomberg, university trustees and Weill Cornell overseers, faculty, students, and many others. At a symposium following breakfast, special guest Dr. Anthony Fauci (class of 1966), director of the National Institute of Allergy and

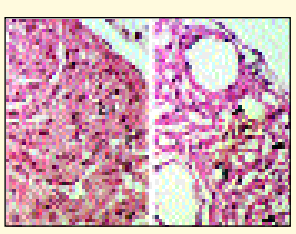
>>> page 3

The Center for Vascular Biology
Multidisciplinary Approach Aids Translation from Bench to Bedside

First of two articles highlighting Weill Cornell's Center for Vascular Biology

After nearly a decade of work at Weill Cornell's Center for Vascular Biology, Dr. Barbara Hempstead is closing in on the quarry: a growth factor that appears to spur blood vessel growth in specific areas of the body — namely the heart and skeletal muscles. Other well-known growth factors enhance blood vessel growth regardless of location in the body. Dr. Hempstead's research seeks to elucidate whether this growth factor, by stimulating healthy, new blood vessel growth in the heart or limbs, could eventually be used to treat patients with vessels damaged by diabetes or atherosclerosis.

The factor is called BDNF, or brain-derived neurotrophic factor, a protein studied almost exclusively in the nervous system. So why is a brain factor being studied in a center that aims to combat diseases of the vasculature? Dr. Hempstead herself is a hematologist/oncologist. Her background is typical of many of her colleagues in the Center for Vascular Biology — she is using her training and education in another field to get a unique perspective on issues that may affect heart disease, circulation, and other problems affecting the circulatory system.



MOUSE HEART EXPOSED to excess BDNF (right) exhibits a two-to-three-fold increase in blood vessels (black arrows) compared with normal mouse heart (left).

"This is certainly the strength of this Center for Vascular Biology — its multidisciplinary thrust," said Dr. Hempstead, the O. Wayne Isom Professor of Cardiovascular Medicine. "I would say that 95% of the people who work on neurotrophins are neurobiologists. It was really the Center for Vascular Biology and strong and supportive colleagues in cardiovascular research that allowed this work to move forward," she said.

Weill Cornell's Center for Vascular Biology was established in 1995 by the Board of Trustees of Cornell University. Its first director, Dr. David Hajjar, the Frank H.T. Rhodes Distinguished Professor of Cardiovascular

>>> page 2

Weill Cornell research team: Drs. Sabine Ehrt, Heran Darwin, and Carl Nathan.

Amelia Panico

Closing In On TB: Proteasome Function Revealed

TUBERCULOSIS, WHICH AFFECTS ONE-THIRD OF THE WORLD'S population – is particularly deadly because the bacteria, *Mycobacterium tuberculosis (Mtb)*, can linger in the body for years or even decades, popping up at any time to cause the life-threatening lung infection.

New research by Drs. Heran Darwin, Sabine Ehrt, and Carl Nathan in the Department of Microbiology and Immunology and collaborators at Millennium Pharmaceuticals (Cambridge, Massachusetts) has revealed an important mechanism that helps the bacteria evade the immune system.

Mtb, the investigators discovered, has a "garbage disposal" mechanism known as a proteasome – which may protect *Mtb* by eliminating used and damaged proteins that could kill the bacteria.

>>> page 3

Lupus and Atherosclerosis

Research helps explain premature heart attacks in many patients

Lupus erythematosus, an autoimmune disease, is so-named because a French doctor thought its characteristic rash looked like the bite of a wolf (*lupus*). Nowadays, the wing-shaped rash on a patient's face is more likely to be compared to a butterfly than a wolf's bite, but the disease, which can affect many parts of the body, is just as serious.

Lupus is known to be associated with premature heart attacks. Now, Weill Cornell researchers have discovered that the disease can accelerate the process of atherosclerosis. They found that lupus patients develop atherosclerotic lesions earlier and more often than other patients, and the link is independent of cardiovascular risk factors, which contradicts earlier hypotheses.

In another surprising finding that will probably affect future treatment of the 1.5 million people in the U.S. with the disease, the researchers found that lupus patients treated with certain immune-suppressing drugs were less likely to have atherosclerosis than patients not treated with those medications.

The researchers reported their findings in the December 18 issue of the *New England Journal of Medicine*.

"Lupus is best known for leading to kidney, neurologic, skin and brain disease. Now we know that lupus is also directly responsible for plaque build-up that may result in heart attack, stroke and other adverse cardiovascular outcomes," said principal investigator and first author Dr. Mary Roman, a cardiologist and professor of medicine.

In the case-control study, 197 patients with systemic lupus erythematosus were matched to 197 lupus-free patients with a similar age and cardiovascular risk profile. The researchers performed carotid ultrasonography to assess the amount of plaque in the carotid arteries.

"The presence of carotid plaque is a potent predictor of future heart attack," Roman said.

Overall, 37.1% of lupus patients had signs of atherosclerosis compared with 15.2% of their healthy counterparts. The findings suggest that lupus increases the likelihood of atherosclerosis by 140%.

While the higher risk of atherosclerosis in lupus patients was thought, previously, to be due to conventional risk factors (such as hypertension, elevated cholesterol, smoking and diabetes), the new research suggests otherwise. While immunosuppressive drugs can exacerbate those risk factors, lupus patients taking prednisone, cyclophosphamide, and hydroxychloroquine were actually less likely to have atherosclerosis than patients not treated with the medications.

"The current study's results underscore the need for more focused and effective treatments that address more than just the disease's symptoms," said Dr. Roman and co-investigator Dr. Jane Salmon, a rheumatologist, Weill Cornell professor of medicine, and director of the Mary Kirkland Center for Lupus Research at the Hospital for Special Surgery.

Amelia Panico

Dr. Mary Roman

"Further clinical studies are needed to determine the best biomarker for the propensity to develop plaque as well as the best treatment — whether it is immunosuppressant drugs, statins, or other types of medications," said Drs. Roman and Salmon. "However, the negative correlation between atherosclerosis and immunosuppressive treatments suggests that more vigorous therapy might decrease the likelihood and burden of atherosclerosis in lupus and perhaps in other chronic inflammatory diseases as well." n

In addition to Drs. Roman and Salmon, co-authors included Dr. Richard Devereux, Dr. Ronit Simantov, Dr. Michael Lockshin, Dr. Lisa Sammaritano, Dr. Mary Crow, Dr. Stephen Paget, Beth-Ann Shanker, and Adrienne Davis (from Weill Cornell and the Hospital for Special Surgery) and Dr. Joseph Schwartz of the State University of New York at Stony Brook.

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<<<from page 1

Vascular Biology

Biology and Genetics, presides over a cohesive, critical mass of investigators. Dr. Hajjar's research has focused on the role of inflammation in the pathogenesis of cardiovascular diseases. His research at the Medical College has spanned 25 years and has focused on the role of infectious agents and scavenger receptors in atherosclerosis. (Dr. Hajjar is also vice provost and executive vice dean of the Medical College and dean of Weill Cornell's Graduate School of Medical Sciences.)

The center coalesced a group of researchers from many different departments, to work on issues affecting the heart and vessels. "Cornell decided to formalize the large group of people working on original concepts in vascular biology," said Dr. Hajjar. "There was a merging of faculty from the hypertension, arteriosclerosis and thrombosis groups, to form the vascular biology group."

Amelia Panico

CENTER FOR VASCULAR BIOLOGY RESEARCHERS include Drs. Shahin Rafii (Genetic Medicine), Steven Gross (Pharmacology), front row; Barbara Hempstead (Medicine), David Hajjar (Biochemistry, Pathology and Laboratory Medicine), William Muller (Pathology and Laboratory Medicine), second row; Domenick Falcone (Pathology and Laboratory Medicine, Cell and Developmental Biology), Andrew Nicholson (Pathology and Laboratory Medicine), Rita Upmacis (Pathology and Laboratory Medicine), Katherine Hajjar (Cell and Developmental Biology), third row; Roberto Levi (Pharmacology), Frederick Maxfield (Biochemistry), and Jay Edelberg (Medicine), fourth row.

This multidisciplinary approach is one of the best ways to move basic science out of the research laboratory and into patients as quickly as possible, he said. "A high priority for research today is translational research — taking research from the bench to bedside. How do you translate basic concepts like structural genomics, neurophysiology, genetic medicine, and nanomedicine and really get them to work for the benefit of health and understanding disease processes?"

"Our vascular biology initiatives have helped in understanding a number of issues — how fat is cleared from the blood so it does not accumulate in arteries, how blood clots are prevented in the short term to avoid strokes, and how nerve growth factors affect cell migration to avoid cell proliferation in vessel walls — all of these processes have made significant impacts on understanding atherosclerosis and thrombosis," he said.

The center currently has 22 faculty working on a number of different projects. "The Center for Vascular Biology brings together individuals with very diverse scientific and clinical backgrounds," said Dr. Hempstead. "We have investigators who are interested in protein and lipid trafficking within the cell, we have lipid and leukocyte biologists, we have nitric oxide biologists, we have stem cell biologists."

Other principal investigators in the center include Drs. Craig Basson, Jay Edelberg, Domenick Falcone, Steven Gross, Katherine Hajjar, Roberto Levi, Aaron Marcus, Frederick Maxfield, William Muller, Andrew Nicholson, and Shahin Rafii. All have used the resources of the center at one time during their tenure at the Medical College.

The center has three National Institutes of Health program project grants, one on the mechanisms responsible for the atherosclerotic lesion, one on cell signaling, and the other on angiogenesis (formation of new blood vessels). Together, these large grants provide almost $4 million per year to fund the vascular biology program. There is also other federal funding.

"The vascular biology group is one of the most well funded entities in this medical center," Dr. Hajjar said. All investigators have multiple NIH R01 grants and/or scientific society awards. Dr. Hempstead's research is funded by a Burroughs Wellcome translational science award, a national award given to only five or six scientists every year.

"Overall, Weill Cornell is probably in the top five of the outstanding centers of vascular biology across the country," said Dr. Hajjar. "That's a wonderful testament to the people who are working in the center and to our school because Weill Cornell is a small medical school compared to these other universities." n

The second article on research in the Center for Vascular Biology will focus on work being done by other members of the center.

Making the Most of New Discoveries

NITRIC OXIDE SYNTHASE INHIBITORS

In biomedical research, the development of a commercial product can sometimes take a long and winding route. In the late 1980s, Dr. Steven Gross, professor of pharmacology, and Dr. Owen Griffith, then associate professor of biochemistry (now at the Medical School of Wisconsin), and a collaborator at the University of Texas (Dr. Robert Kilbourn) showed that the nitric oxide synthase enzyme in blood vessels caused the production of nitric oxide (NO) from L-arginine.

In the course of their NO studies, the researchers developed materials, methods and therapeutic reasons for inhibiting NO synthase — which led to a stream of patent applications beginning in 1989.

Burroughs Wellcome (BW) optioned these technologies and began a developmental program, leading to clinical trials of a NO synthase inhibitor for septic shock in the late 1990s. Although the Phase II trial showed effectiveness, when Glaxo Smith Kline (GSK) acquired BW, it decided to use a different protocol for the Phase III trial. When the Phase III results with the new protocol were disappointing, the company decided, in 1999, not to license this technology.

The inventors, however, strongly believed the drugs would have succeeded with the original protocol and could also be used for other indications. They had enough faith in the technology that they were able to convince investors to back the formation of a new company, ArgiNOx, to develop these drugs.

After negotiations with Weill Cornell's Office of Technology Development and the other institutions jointly owning the technology, ArgiNOx licensed the many patents involved and is now conducting clinical trials with its lead NO synthase inhibitor for cardiogenic shock and cytokine induced hypotension.

Recently, ArgiNOx merged with Juventis, a start-up company that uses NO synthase inhibitors in stem cell applications, further expanding the potential market for products based on this technology.

ALGORITHMS FOR CT LUNG SCANS

Weill Cornell scientists have developed methods for using low-dose helical computed tomography (CT) scans for the early detection of lung cancer. Recently licensed to General Electric, this technology is currently available to practitioners everywhere.

Weill Cornell scientists have developed methods for using low-dose helical computed tomography (CT) scans for the early detection of lung cancer.

A collaborative initiative led by Dr. Claudia Henschke and Dr. David Yankelevitz, professors of radiology, and two Cornell University scientists in the Department of Electrical and Computer Engineering (associate professor Anthony Reeves and William Kostis, formerly an assistant professor of electrical and computer engineering in Weill Cornell's Department of Radiology) yielded new algorithms and methods for processing the data generated by spiral CT chest scans to accurately detect and measure nodules in the lungs.

The image-processing algorithms create reconstructions of the nodules that are measurable in three dimensions. With these accurate measurements, nodules in scans obtained at different times, including relatively short intervals, can be compared to accurately determine growth rates—or lack of growth, which could be equally significant. n

<<<from page 1

Inaugural Celebrations

Infectious Diseases, spoke about the global impact of infectious diseases in the 21st Century, and President Lehman presented his second official inaugural address to the Weill Cornell community, emphasizing the increasing cross campus collaborations between faculty and students in Ithaca and New York City and the university's many other programs in the city. Following the symposium, President Lehman hosted a luncheon at Weill Cornell attended by other university presidents.

Back in Ithaca on October 16, President Lehman completed his triple inauguration with an address in Barton Hall. Special guest speaker at the ceremonies in Ithaca was U.S. Supreme Court Justice and Cornell University alumna Ruth Bader Ginsburg (class of 1954). n

Khalid A. Al-Marzouqi

DR. ANTONIO GOTTO, DEAN OF WEILL CORNELL MEDICAL COLLEGE, speaking at the dedication of the new building for WCMC-Qatar in Education City (Doha, Qatar).

Robert Barker/Cornell University Photo

PRESIDENT JEFFREY LEHMAN DELIVERS HIS "SECOND" INAUGURAL ADDRESS at Weill Cornell in New York.

<<<from page 1

Closing In On TB

The researchers' findings, which could lead to new and more practical treatments for tuberculosis, were published in the December 12 issue of *Science*, which also published an editorial "Perspective" on the significance of the research by commentators from the University of Basel (Switzerland) and Harvard Medical School.

Current therapy for tuberculosis requires patients to complete a stringent course of antibiotic therapy for six to nine months to eliminate the bacteria completely.

"There is a desperate need for new treatment strategies, in part because resistance to existing drugs is spreading and in part because you can't eliminate a pandemic if you have to treat each person every day for 9 months; it's just administratively impossible," said Dr. Nathan, chairman of the Department of Microbiology and Immunology.

TB's proteasome pathway provides a new drug target in the protein cycle — protein "degradation" — in contrast to some of the traditional anti-tuberculosis antibiotics like streptomycin, which target protein synthesis.

"It is better to think of the whole cycle of protein birth and death. There may be synergy when classic antibiotics that inhibit protein synthesis are combined with a drug that inhibits the degradation of denatured proteins," said Dr. Nathan.

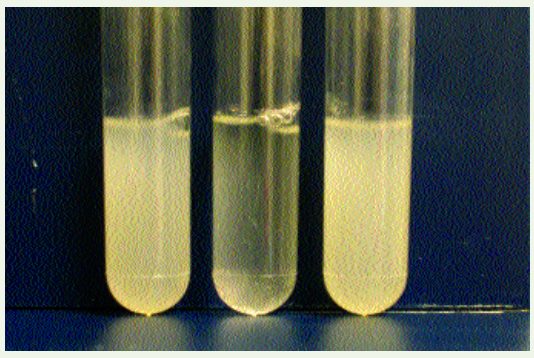
The researchers made their discovery in a series of experiments in which they looked at more than 10,000 individual transposon mutants of *Mtb*. "A transposon is like a little virus that jumps almost at random into a genome and sits, disrupting the gene in which it has landed," said Dr. Nathan.

They looked specifically for tuberculosis bacteria that were more likely to be damaged by nitric oxide or related substances, which are critical components of the body's immune system attack on *Mtb*. They found a total of 12 gene mutations that increased sensitivity to nitric oxide, including 5 in proteasome-associated genes. An inhibitor designed to work against the human proteasome protease sensitized *Mtb* to death by nitric oxide.

These findings suggest that a malfunctioning proteasome (induced by new drug therapies) might be lethal for the invading germ. Indeed, mice infected with a proteasome-deficient tuberculosis strain had a much milder infection than mice infected with non-mutant tuberculosis bacteria.

Inhibitors of proteasomes — at least the type found in human cells — are a growing area of research. Earlier this year, the FDA approved a human proteasome inhibitor, Velcade™ (bortezomib), for the treatment of certain multiple myeloma patients. However, research in tuberculosis has not involved Velcade. Additional research is required to identify and develop an appropriate proteasome inhibitor for the treatment of tuberculosis.

While the human proteasome has been much studied, very little is known about proteasomes in bacteria. Indeed, only a handful of bacteria — now including *Mtb* – are even known to have this machinery.



***MTB* GROWTH IS CURBED WHEN EXPOSED TO THE ACTIVE proteasome inhibitor (center), while bacterial growth is unchecked in normal solvent (left) and when exposed to an inactive version of the proteasome inhibitor (right).**

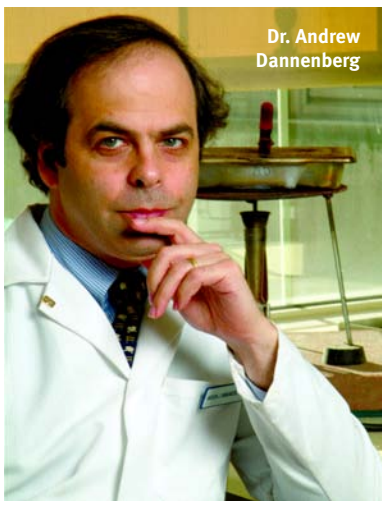
"From a biological point of view, it is exciting," said Dr. Darwin, first author of the article in *Science*. "People have seen the proteasome in bacteria and not really understood why it is there. Now we know that it helps *Mtb* deal with oxidative and/or nitrosative stress."

"These results are gratifying," said Dr. Nathan. "When I first started this line of research, I submitted a grant to find genes in *Mtb* that confer nitric oxide resistance, and I had preliminary evidence for several. One critique was that since there were so many candidates, they must all be wrong; there should not be more than a few. The belief was that nitric oxide was a single stress and so *Mtb* must only need a single way to deal with it. Now, asking this question in a non-prejudiced way, we were able to identify at least six different pathways that *Mtb* uses to deal with nitric oxide attack."

This research was supported by the National Institutes of Health. The Department of Microbiology and Immunology also receives support from the William Randolph Hearst Foundation. n

Joining the Weill Cornell team as co-authors of the article in Science were Jose-Carlos Gutierrez-Ramos and Nadine Weich from Millennium Pharmaceuticals.

Lung Cancer:
Curbing COX-2 May Help Chemotherapy


Dr. Andrew Dannenberg

Amelia Panico

The newest anti-inflammatories to hit the market, COX-2 inhibitors, are being studied as a possible addition to chemotherapy for a number of cancers.

Now a recent study conducted by Weill Cornell researchers suggests that a COX-2 inhibitor, celecoxib (Celebrex), can cut prostaglandin levels in the tumors of patients with non-small cell lung cancer and possibly boost the efficacy of preoperative chemotherapy.

Prostaglandins have been associated with tumor growth in a number of cancers, including non-small cell lung cancer.

Whether or not the drop in prostaglandin translates into a sustained clinical benefit, however, still remains to be seen, said study co-author Dr. Andrew Dannenberg, the Henry R. Erle, M.D.-Roberts Family Professor of Medicine at Weill Cornell and co-director of the Cancer Prevention Program at Weill Cornell Medical Center.

"In my opinion, this is an interesting study with hopeful findings, but by no means definitive, said Dr. Dannenberg. "There is suggestion that there is a benefit; but it's a small, single-center, one-arm trial versus a historical control."

The study, published in the *Journal of Clinical Oncology* (June 2003), included 29 patients with stages IB to IIIA non-small cell lung cancer. During the phase II trial, patients were treated with two preoperative chemotherapy cycles of paclitaxel and carboplatin and daily doses of 800 mg of celecoxib. Levels of prostaglandin E2 (PGE2) in the tumors and adjacent lung tissue were measured in 17 study patients and 13 controls who received paclitaxel/carboplatin without celecoxib.

There were no complete pathologic responses, or a complete lack of tumor tissue on histologic examination. However, seven patients, or 24%, had minimal residual microscopic disease, which compares favorably with historically reported response rates.

Laboratory studies had suggested that taxanes, such as paclitaxel, could induce COX-2 and prostaglandin synthesis in tumors, potentially decreasing the efficacy of the chemotherapy drugs. The researchers theorized that co-administration of a COX-2 inhibitor might make paclitaxel more effective.

"This study shows that celecoxib, by decreasing COX-2 derived PGE2, may be useful when given in combination with chemotherapy," said principal investigator Dr. Nasser Altorki, professor of cardiothoracic surgery. "Remarkably, for patients taking celecoxib, the amount of PGE2 present in the tumor was equivalent to amounts in a non-cancerous lung."

A placebo-controlled trial is underway to confirm the results.

"This was the first study to demonstrate that the dose, 400 mg BID of celecoxib, was sufficient to abrogate COX-2 function in any human tumor, so that is very significant," Dr. Dannenberg said. "Whether it's of clinical benefit, which is ultimately what we all care about, is of great importance but is not answered by this study."

The study was supported by a grant from Pharmacia Oncology and Pfizer. n

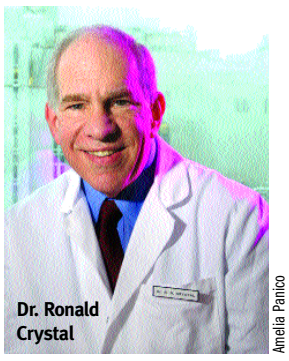
Co-authors of the article in the Journal of Clinical Oncology were Dr. David Yankelevitz, Dr. Kotha Subbaramaiah, Dr. Jeffrey Port, Dr. Roger Keresztes, Dr. Robert Korst, Dr. Douglas Flieder, Dr. Daniel Libby, Dr. Mark Pasmantier and Cathy Ferrara, R.N.

Anthrax Vaccine Developed with Genetic Engineering

Researchers in Weill Cornell's Department of Genetic Medicine have created a single-shot anthrax vaccine that could one day be used to rapidly protect people in the event of a bioterrorism attack.

Their research, conducted in an animal model and published in *Human Gene Therapy* (November 20, 2003), suggests that the experimental vaccine may act more quickly and effectively than a recombinant protein vaccine being developed by the U.S. military.

The new Weill Cornell vaccine consists of genetically engineered anthrax toxin linked to human adenovirus, a common respiratory virus. The adenovirus is crippled so that it is unable to cause an infection, but the virus-toxin combination spurs the immune system to recognize and attack the toxin produced by the deadly anthrax bacterium.


Dr. Ronald Crystal

Amelia Panico

Dr. Ronald Crystal, chairman of genetic medicine, and his colleagues report that the adenovirus-based vaccine gave mice nearly three times the level of protection one month after immunization as the U.S. military vaccine: about 72 percent of mice exposed to anthrax a month after receiving the adenovirus vaccine survived, while only 27 percent of mice given the U.S. military vaccine survived.

Even when anthrax exposure occurred just 11 days after vaccination, the adenovirus-based vaccine offered some protection: 27 percent of the mice survived, while none of the mice given the military vaccine survived.

While anthrax can be treated with antibiotics if caught early enough, treatment is not always successful. Mortality rates from inhalation anthrax can approach 80 percent even with antibiotic treatment.

An older anthrax vaccine, developed in the 1960s, requires six injections over an 18 month period and an annual booster to confer protection.

After the postal mail attacks in 2001, which caused 22 cases of anthrax and resulted in 5 deaths, the need for a better vaccine became clear. "Anthrax spores can be obtained and weaponized relatively easily," said Dr. Crystal.

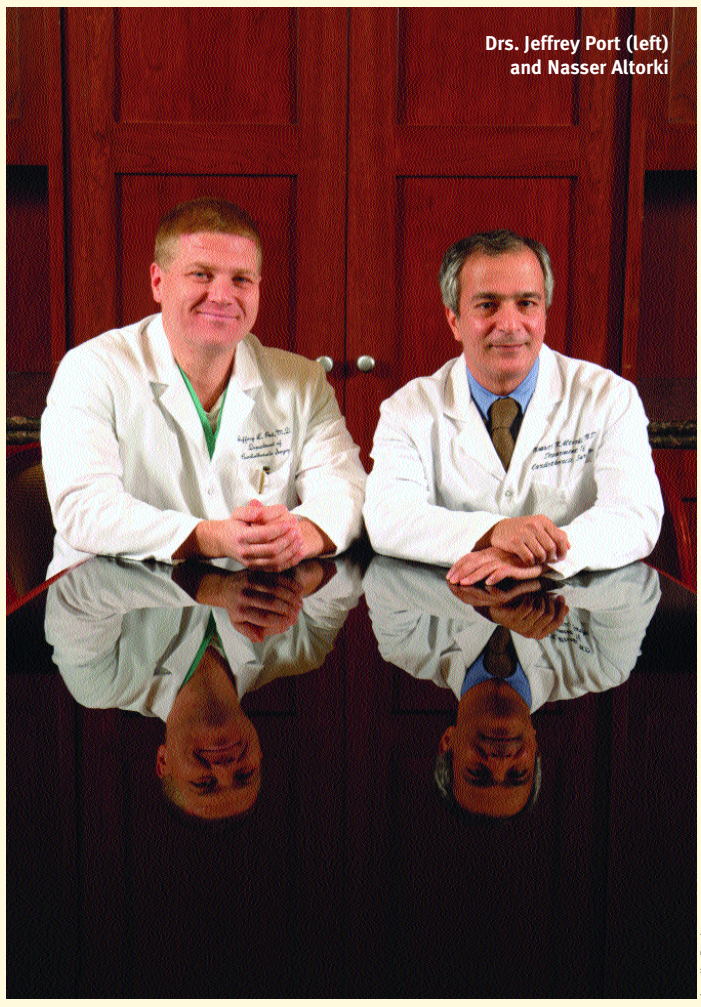
"Biotechnology gives us the weapons to protect ourselves, and vaccines are important components in that armamentarium," he said.

The adenovirus-based vaccine developed at Weill Cornell could be used alone or in combination with either the existing U.S. anthrax vaccine or the one being developed by the U.S. military, said Dr. Crystal. "The data presented demonstrate that adenovirus-based vaccines represent a highly effective, safe, and inexpensive format that should be considered for future vaccine design."

The new vaccine now needs to be tested in humans. Since 30-50 percent of people are already immune to the type of adenovirus used in the vaccine, it is not clear how this would affect efficacy of the vaccine, which is one of the questions to be answered in further studies.

The research at Weill Cornell is funded by the National Institute of Allergy and Infectious Diseases/NIH Northeast Biodefense Center, as well as by a generous donation from the Robert and Renee Belfer Family Foundation. n

Co-authors of the article in Human Gene Therapy were Drs. Yadi Tan (first author), Neil Hackett, Julie Boyer, and Dr. Crystal.


Drs. Jeffrey Port (left) and Nasser Altorki

Amelia Panico

Size Does Matter —
Especially in Lung Cancer

Even at earliest stage, the smaller the lung tumor, the better

A WEILL CORNELL STUDY OF EARLY-STAGE LUNG CANCER suggests that the smaller the tumor at diagnosis the better the prognosis — even in the very earliest stages of the deadly disease.

Lung cancer is the number one cause of cancer death in the U.S. — with an overall survival rate of less than 20%. Mortality is so high because lung cancer causes few symptoms in its early stages; when symptoms occur and the cancer is diagnosed, it is often too advanced to be successfully treated.

The new research at Weill Cornell bolsters the theory that early detection of asymptomatic lung cancer could significantly increase patients' chances for survival. Currently, less than 15% of lung-cancer patients present with stage I disease.

"These findings support the concept of CT screening, which can detect tumors smaller than one centimeter," said Dr. Nasser Altorki, professor of cardiothoracic surgery and director of the Division of Thoracic Surgery, who was principal investigator of the study.

The study, reported as the lead paper in the November 2003 issue of *Chest*, included 244 patients with non-small cell lung cancer (NSCLC), the most common type of lung cancer. The patients, who all had stage IA tumors, were treated at NewYork Weill Cornell Medical Center between 1991 and 2001.

The researchers, led by Dr. Jeffrey Port, assistant professor of cardiothoracic surgery and first author of the study, found that tumor size could predict survival, even at this early stage. Patients with a tumor less than or equal to 2.0 cm had a 5-year survival probability of 77.2%. Those with tumors greater than 2.0 cm had a 5-year survival probability of 60.3%. Disease-specific survival was 81.4% for those with smaller tumors, and 63.4% for those with larger tumors.

"We found that a tumor's size has an important impact on survival, leading us to believe that further substaging of stage IA lung cancer is necessary to ensure patients in this stage are receiving the most effective treatment," Dr. Altorki said.

The current staging system notes a distinct survival advantage for patients with nonmetastatic stage I cancer that have a tumor size of less than 3 centimeters (IA) compared with those with tumors greater than 3 cm (IB).

"Further investigation may identify a tumor-size threshold below which there is minimal or reduced risk of tumor metastases," said Dr. Altorki. A refinement in the staging system "would better clarify which patients might benefit from novel adjuvant or neoadjuvant therapeutic interventions." n

In addition to Drs. Port and Altorki, co-authors of the study in the November issue of Chest are Dr. Michael Kent, Dr. Robert Korst, Dr. Daniel Libby and Dr. Mark Pasmantier.

Refractory high blood pressure? It could be neurogenic.

More than half of all patients treated for essential hypertension don't respond to their first blood pressure-lowering drug, and a startling 40% don't get their pressure under control using standard medications alone or in combination.

Patients resistant to treatment with such drugs may be experiencing a type of hypertension that is often overlooked — neurogenic hypertension — according to Dr. Samuel Mann, associate professor of clinical medicine. Using anti-hypertensive drugs that target neurogenic hypertension may help patients who don't respond to other types of treatment.

"This non-response to standard therapy indicates that we need to widen our scope of investigation and look at other mechanisms that may be causing the hypertension. Different causes require different drugs," said Dr. Mann, who addressed the issue in a review article in the *American Journal of Hypertension* (October 2003).

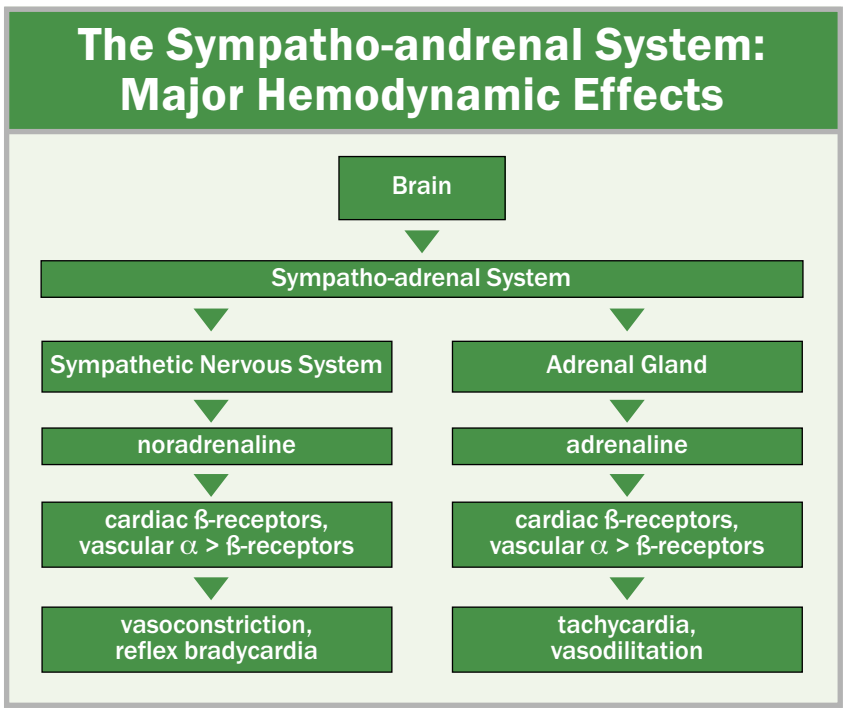


ILLUSTRATION OF THE HEMODYNAMIC EFFECTS OF THE SYMPATHO-ADRENAL SYSTEM (SAS) involved in neurogenic hypertension.

Many drugs, including diuretics, ACE inhibitors, and angiotensin receptor blockers (ARBs), target blood volume or the renin-angiotensin system (RAS).

Neurogenic hypertension, on the other hand, is linked to the sympathetic nervous system and adrenal glands, or sympathoadrenal system (SAS).

While both the RAS and SAS systems can interact and play a role in hypertension, neurogenic factors include constriction of systemic arteries and a boost in cardiac output due to the so-called stress hormones. The most prominent effect of epinephrine is stimulation of cardiac beta receptors, increasing heart rate, stroke volume and cardiac output; norepinephrine more prominently stimulates vascular alpha receptors, constricting systemic arteries.

"Patients with neurogenic hypertension do not respond well to the recommended first-line therapy — diuretics — because their condition is not driven by blood volume or salt," said Dr. Mann. "However, they do respond to other medications, such as beta blockers and alpha blockers, which only makes sense considering the involvement of alpha and beta receptors in SAS-mediated hypertension."

Amelia Panico

Dr. Samuel Mann

Currently, Dr. Mann noted, most patients with refractory hypertension are not offered treatment with a combined alpha and beta blockade. But some of these patients, who may have neurogenic hypertension, could respond well to such therapy, he says.

Identifying patients with neurogenic hypertension can be difficult. The condition may be more common in patients with sleep apnea, obesity, rapid heart rate, alcohol abuse, or immediately after stroke, conditions that can boost both SAS tone and blood pressure. Hypertension that has uncommon features, such as severe, refractory, or paroxysmal hypertension, is a possible indicator of neurogenic hypertension, as is onset at a young or advanced age.

"It is important to recognize that neurogenic hypertension does exist, and that we need more clinical trials designed to identify patients with neurogenic hypertension and their response to different anti-hypertensive regimens," said Dr. Mann. n

Enzyme may help curb effects of myocardial ischemia

Weill Cornell researchers have discovered an essential enzyme in the heart that may one day be useful in curbing the devastating effects of myocardial ischemia.

The enzyme is called ectonucleotidase, and it breaks down ATP, a neurotransmitter that can worsen myocardial ischemia by promoting norepinephrine release, said Dr. Roberto Levi, professor of pharmacology at Weill Cornell. While ectonucleotidase was known to be produced by the endothelial cells lining blood vessels, Dr. Levi and his colleagues have demonstrated for the first time that the enzyme is present in the sympathetic nerves in the heart.

In a series of experiments using guinea pig hearts, they found that a recombinant version of ectonucleotidase, CD39, completely suppressed the four-fold surge in ATP release from sympathetic nerve endings after a 10 minute period of ischemia. They published their findings last year in the *Journal of Pharmacology and Experimental Therapeutics* (April 3, 2003).

The release of ATP from sympathetic nerves in the heart can be particularly deadly in ischemia, because it leads to excessive production of norepinephrine, said Dr. Levi.

"Norepinephrine is released in great quantities in myocardial ischemia and it's cardiotoxic in the sense that it causes arrhythmias that can be severe enough to cause sudden cardiac death. It can constrict the coronary vessels, so they have less flow, and worsen the ischemia," he said.

"Norepinephrine speeds up the heart, so not only you have arrhythmias, but you have tachycardia, so you consume more oxygen, and oxygen is what is already missing in the ischemic heart."

Curbing the release of norepinephrine can help protect the heart, said Dr. Levi.

"So what this enzyme does is destroy the ATP that feeds back into the nerve and increases norepinephrine release," he said. "This ectonucleotidase is very important because it terminates the action of ATP."

The molecule, first discovered by study co-author Dr. Aaron Marcus, professor of medicine at Weill Cornell, and his co-workers, has already been studied in porcine and murine animal models as a potential stroke treatment.

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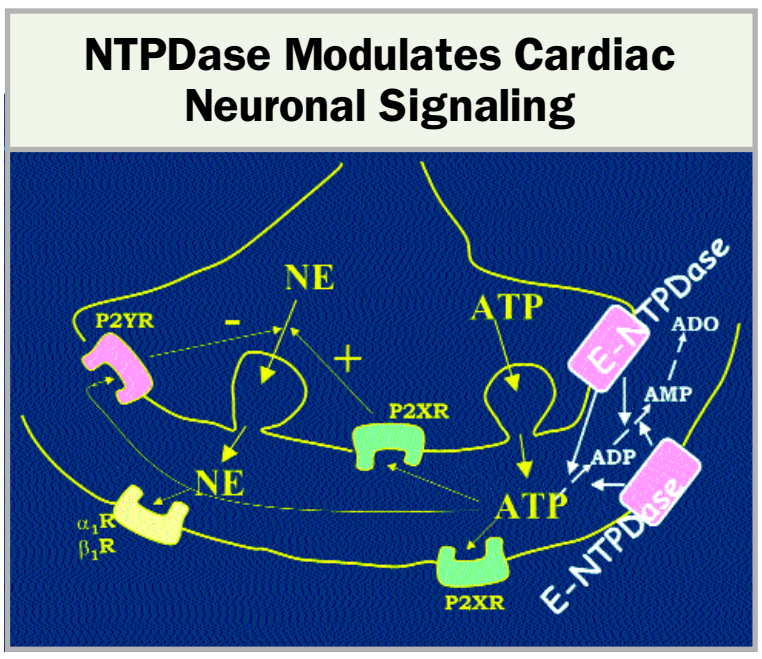
DR. ROBERTO LEVI (SEATED LEFT) WITH WEILL CORNELL COLLEAGUES from the VA New York Harbor Healthcare System, Dr. Aaron Marcus (seated right), Dr. M. Johan Broekman, and Dr. Joan Drosopoulos.

Such studies have had some very positive results, in terms of reducing the effects of stroke, said Dr. Levi.

"When ectonucleotidase is present in the endothelial cells, one of the things it does is prevent platelet activation, which is when platelets form clumps and tend to occlude vessels, producing a heart attack or stroke," said Dr. Levi. "But we think ectonucleotidase also has additional protective effects because of this interaction with ATP liberated by the nerves and the consequent reduction in norepinephrine release.

"It is very promising," he said. n

In addition to Drs. Levi and Marcus, Weill Cornell co-authors were Drs. Casilde Sesti (first author), M. Johan Broekman and Motohiro Koyama.



SCHEMATIC ILLUSTRATES PROPOSED ROLE OF AN ECTONUCLEOTIDASE (E-NTPDase) in the modulation of norepinephrine (NE) release from cardiac sympathetic nerve endings.

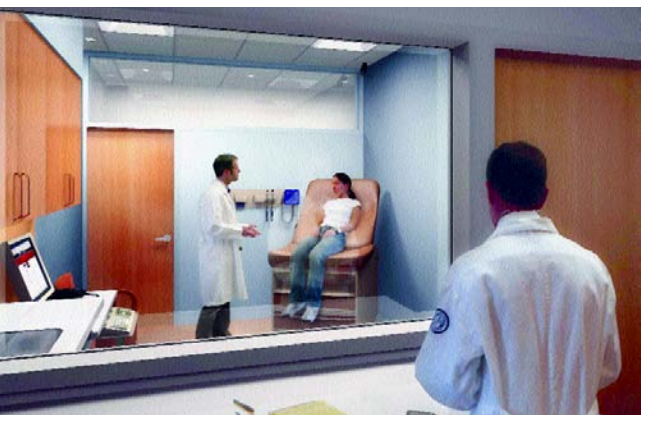
advancingthe clinicalmission

Building A Better Doctor

Innovative Center Will Improve Students' Clinical Skills

Anticipating the increase in diagnostic care in the ambulatory setting, Weill Cornell Medical College is committed to improving medical students' ability to communicate with patients and perform routine medical procedures. As part of the campaign for *Advancing the Clinical Mission*, Weill Cornell will establish a Clinical Skills Center in the soon-to-be-constructed ambulatory and educational building at York Avenue and East 70th Street.

The 10,500-square-foot, state-of-the-art teaching facility will provide students the opportunity to practice clinical skills in a controlled environment by integrating standardized patients, virtual-reality technology, and computer controlled patient simulators. By employing realistic alternatives to training on actual patients, the center will address several needs, including standardization of simulated medical encounters, enhanced patient and student safety, and improvement of physician communication skills in preparation for the new clinical skills component of the U.S. Medical Licensing Examination in June 2004. The center will enable students to start patient interaction training during their first year of medical school rather than the third year.



VIEW OF AN EXAMINATION ROOM IN THE CLINICAL SKILLS CENTER, where a one-way window permits observation and evaluation of students and physicians interacting with standardized patients.

The focus of the center will be the clinical assessment lab, designed to provide an optimal environment for instructing students in the basic clinical skills of history-taking, physical examination, and interpersonal abilities by simulating a clinical environment. This space will consist of a central observation viewing area and twelve mock, but realistic, examination rooms — each equipped with video cameras, microphones, an intercom system, and a one-way mirror to permit observation and recording of doctor-patient interaction for subsequent review.

Standardized patients, trained individuals who can portray a specific medical scenario repeatedly, in exactly the same way, will be employed to provide students an ideal transition from the classroom to real patient contact. This controlled patient encounter allows each student to experience the same scenario, and be evaluated systematically with respect to how well they performed. Additionally, the videotaping and observation of these encounters enables immediate and candid feedback among patients, students and faculty. These safe surroundings greatly enhance the students' confidence and skills as they proceed in their medical education.

"We are trying to teach beyond the facts found in books," said Dr. Yoon Kang, assistant professor of medicine and director of Weill Cornell's Standardized Patient Programs. "Communication is key to being a good doctor, from the initial understanding of the patient's ailment to communicating treatment options."

The center will also house a self-study lab where students can work individually on a variety of medical procedures at their own pace and repeat an exercise in order to master a skill. It is anticipated that this lab will eventually offer the latest in medical education technology, such as virtual procedure models and computer controlled patient simulators. In addition, the self-study lab may be used by physicians of all levels of experience for continuing education. n

graduateschoolnews

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ALUMNA RUTH ATHERTON, PH.D., J.D., discusses opportunities in the legal field.

Beyond the Bench: Alumni Add J.D.s to Ph.D.s

THE GRADUATE SCHOOL'S CAREER PATHWAYS PROGRAM RECENTLY hosted a talk by two alumni who have pursued alternative career tracks.

After earning their Ph.D.s, Ruth Atherton ('99) and Craig Rochester ('96) became law clerks for legal firms specializing in biotech patent litigation. While working full-time at their law firms during the day, they also went to law school in the evening.

Despite the heavy work and school schedule, they spoke highly of the program that allowed them to develop skills as attorneys-in-training at a law firm, while simultaneously studying for their law degrees. A particularly attractive incentive was the full tuition that their law firms paid for their legal education. After receiving their law degrees in four years, they became associate attorneys at their law firms.

The career decisions that Drs. Atherton and Rochester made are part of a growing trend by graduates to look beyond the bench for careers in science.

Graduate students and postdoctoral fellows who attended the presentation in December had specific questions about the requirements for law school and how Atherton and Rochester made the transition from science to law.

Many had questions about career satisfaction and wanted to know if working in the law offered as much intellectual stimulation as science. "At first, there was some trepidation, realizing that I would not be a scientist once I became an attorney. But I'm happy to report that the law is just as fulfilling as science. There is the same stimulation of the laboratory, without being at the bench," said Dr. Atherton. n

academicaffairs andappointments

Dr. Peter Schlegel: Chairman of Urology

Amelia Panico

DR. PETER SCHLEGEL has been appointed chairman of the Department of Urology. He had been serving as acting chairman since 2001.

A leading authority on male infertility, Dr. Schlegel is co-director of the Center for Male Reproductive Medicine and Microsurgery in Weill Cornell's Institute of Reproductive Medicine. "Dr. Schlegel's expertise in male reproductive medicine and surgery has earned him an international reputation," said Dr. Antonio Gotto, dean of the Medical College. He has made significant contributions to research on genetic abnormalities in male infertility and has developed innovative treatment techniques that have been widely adopted in the field.

Dr. Schlegel received his M.D. from the University of Massachusetts and did his residency in urology at Johns Hopkins. He joined The New York Hospital-Cornell Medical Center as a clinical fellow in 1989 and joined the Cornell faculty in 1991.

Dr. Shahin Rafii: Belfer Professor of Genetic Medicine

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DR. SHAHIN RAFII, professor of genetic medicine, has been appointed the first Arthur B. Belfer Professor of Genetic Medicine.

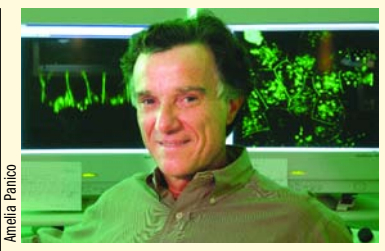
The Belfer Professorship was established in 1998 as part of a $4 million gift to the Medical College from the Arthur and Rochelle Belfer Foundation and family members Mr. and Mrs. Robert Belfer, Mr. and Mrs. Jack Saltz, and Mrs. Lawrence Rubin. The gift also supported the construction of the Arthur and Rochelle Belfer Gene Therapy Core Facility.

"The Belfer family have been longtime friends and supporters of the medical center and have endowed two other professorships at Weill Cornell," said Dr. Antonio Gotto, dean of the Medical College.

Dr. Rafii, who joined the Medical College in 1994, is an internationally recognized physician-scientist and expert in stem cell biology, tumor angiogenesis, and acute leukemia therapeutics. His research has contributed to major advances in these fields. Dr. Rafii also devotes significant time to teaching in both the clinical and basic science programs of the Medical College and Graduate School of Medical Sciences.

Dr. Enrique Rodriguez-Boulan: Dyson Professor in Ophthalmology Research

THE MEDICAL COLLEGE HAS established the Charles and Margaret Dyson Professorship in Ophthalmology Research, and Dr. Enrique Rodriguez-Boulan has been named to the chair.



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Dr. Enrique Rodriguez-Boulan

The Dyson Professorship has been endowed by funds raised by the Department of Ophthalmology and a generous gift from the Dyson Family Foundation, established by Charles and Margaret Dyson.

Dr. Rodriguez-Boulan is scientific director of the Margaret M. Dyson Vision Research Institute at Weill Cornell. The institute, which was established in 1991 with a gift from the Dyson Family Foundation, has been a national leader in research on the biology of sight and the factors that lead to vision disorders.

Dr. Rodriguez-Boulan received his M.D. from the University of Buenos Aires and joined Cornell University Medical College in 1984 as associate professor of cell biology and anatomy. He became professor of cell biology and anatomy in 1989. Dr. Rodriguez-Boulan has previously held the Joseph C. Hinsey Professorship in Cell Biology and Anatomy (1990-1995) and the Jules and Doris Stein Professorship of Cell and Developmental Biology in Ophthalmology (1995-2003).

LOUIS AND GERTRUDE FEIL PROFESSORSHIPS IN MEDICINE AND NEUROLOGY ESTABLISHED

The Medical College has established two endowed professorships in medicine and neurology with gifts received from the Feil Family Foundation in honor of Louis and Gertrude Feil, parents of Weill Cornell overseer Jeffrey Feil.

Dr. R.A. Rees Pritchett: Feil Professor of Medicine

Marie Wallace

DR. R.A. REES PRITCHETT has been named the first Louis and Gertrude Feil Professor of Medicine.

Dr. Pritchett, a longtime member of the voluntary faculty, has had a

Medical Students Focus on Research

Weill Cornell medical students learned about research opportunities available in the basic or clinical sciences through a series of special activities held December 2-9.

At "The Student/Faculty Research Mixer" held in the Griffis Faculty Club on December 2nd, first-year medical students interested in research interacted with faculty research mentors. The idea for this inaugural mixer was conceived by the Advanced Basic Sciences Committee, chaired by Dr. Marcus Reidenberg, professor of medicine, pharmacology, and public health.

The "Second Annual Student Research Day" was held in Weill Auditorium on December 3rd, followed by a reception and poster session in Archbold Commons. The program was planned by the Medical Student Executive Council and organizers of "Student Research Day."

On December 4th, the "First Annual Pediatric Interest Group Research Day" took place in Archbold Commons. Students interested in careers in pediatric medicine and first-years looking for a summer research opportunity attended. A poster session of student research was featured, and handbooks detailing student abstracts and research opportunities within the Tri-Institutional community were distributed.

Finally, on December 9th, fourth-year medical student John Pena, a current Howard Hughes Medical Institute (HHMI) fellow, spoke to first-, second-, and third-years about the HHMI-NIH Research Scholars Program at the National Institutes of Health and the HHMI Research Training Fellowships available at non-NIH institutions.

At "The Student/Faculty Research Mixer" first-year medical students interested in research interacted with faculty research mentors.

"Research investigation is a vital part of medical education at Weill Cornell. Many of the faculty have made important investigative contributions to the medical sciences and are willing to assist students in their research efforts," said Dr. Carol Storey-Johnson, senior associate dean of education. n

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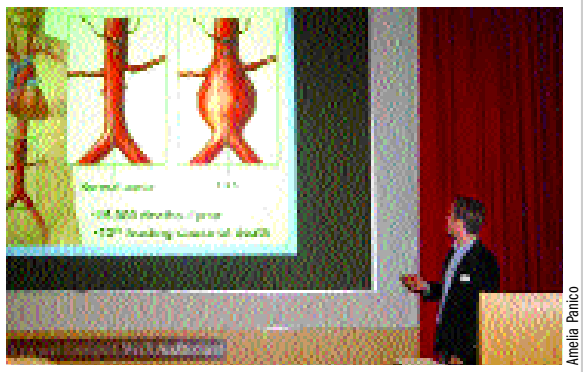
MEDICAL STUDENTS MAYA KATZ (LEFT) AND JEFFREY LOH WITH Dr. Carol Storey-Johnson, senior associate dean for education, at the December 2nd "Student/Faculty Research Mixer."



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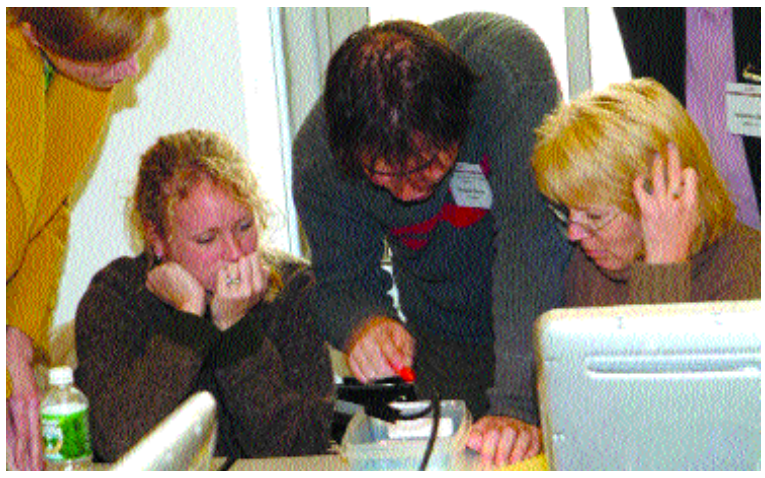
SECOND-YEAR STUDENT PETER HENDERSON PRESENTS RESULTS of his study concerning endovascular surgery for abdominal aortic aneurysms ("Type II Endoleaks Require Perfusion from Paired Side Branch Vessels to Maintain Patency and Pressure Transmission").

Graduate Students Help Train Teachers



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GRADUATE STUDENT MICHAEL BRUNO (center) discusses the results of the "DNA Profiling" lab with high-school teachers who participated in the lab.

Weill Cornell graduate students shared their skills at the annual "November Workshop for Biology Teachers"—a one-day professional development event for NYC high-school teachers sponsored by the Pfizer Foundation. Organized by Dr. Brian Turner, director of outreach at Weill Cornell's Graduate School of Medical Sciences, more than 85 teachers from all five boroughs packed Weill Auditorium on November 15, where they attended lectures and labs on cutting-edge biomedical science and learned methods of presenting to high-school students. Lectures were given by faculty from the Sloan-Kettering Institute and Columbia University, and graduate students and alumni teachers from previous workshops presented hands-on labs.

Teachers were given the opportunity to enhance their knowledge of topics they regularly present to their students. A lecture on "Dopamine and Disorganized Thinking" was presented by WCGSMS alumna Dr. Sara Glickstein, assistant professor of clinical psychiatry at Columbia University. Dr. Glickstein discussed the incidence and molecular basis of schizophrenia. Her lecture was followed by "Chemical Biology: Introducing the Power of Interdisciplinary Science to High School Students," presented by Dr. Derek Tan, Tri-Institutional assistant professor, who focused on the introduction of chemistry into the biology curriculum of high-school students. Teachers also participated in hands-on labs designed to facilitate their use of labs in the high-school classroom. n

distinguished career as an internist and cardiologist. He served as physician to Louis and Gertrude Feil for many years.

Dr. Pritchett received his medical degree from Cornell and did his graduate training at The New York Hospital-Cornell Medical Center. He joined the faculty in 1952. From 1989 to 1992, he served as a member of the Medical College's Board of Overseers, representing the voluntary faculty.

In 1998, Dr. Pritchett received the medical center's highest honor, the Maurice R. Greenberg Distinguished Service Award, in recognition of his exceptional contributions to the medical center in patient care, teaching, and institutional development.

Weill Cornell Photography

Dr. John Caronna: Feil Professor of Neurology

DR. JOHN CARONNA HAS BEEN named the first Louis and Gertrude Feil Professor of Neurology.

Dr. Caronna received his medical degree from Cornell and completed his graduate training in neurology at The New York Hospital-Cornell Medical Center. He joined the Cornell faculty in 1973.

"During his distinguished career, Dr. Caronna has been an outstanding practitioner of clinical neurology, beloved by patients and highly respected by his colleagues," said Dr. Antonio Gotto, dean of the Medical College. Among Dr. Caronna's patients have been members of the Feil family.

Dr. Caronna has been active in alumni affairs and served as president of the Alumni Association (1998-2000). As president of the Alumni Association, he became the first alumni representative to serve as a member of Weill Cornell's Board of Overseers.

Dr. Mary Beth Walsh: Associate Dean (Burke Rehabilitation Hospital)

DR. MARY BETH WALSH, associate professor of clinical medicine, has been appointed associate dean of the Medical College representing the Winifred Masterson Burke Rehabilitation Hospital (White Plains), where she serves as chief executive officer and executive medical director. As associate dean, Dr. Walsh succeeds Dr. Fletcher McDowell, who has retired.

Dr. Walsh received her M.D. degree from Dartmouth Medical School and completed her residency in medicine at The New York Hospital-Cornell Medical Center. After completing a fellowship at the Hospital for Special Surgery, she joined the faculty of the Medical College in 1979 as assistant professor of medicine.

Lynch Professorship of Urologic Oncology Established

THE MEDICAL COLLEGE HAS established the Ronald P. Lynch Professorship of Urologic Oncology in honor of the late Mr. Lynch, who was a dedicated supporter of the Medical College.

Mr. Lynch, who died in 1996, was managing partner and CEO of the investment firm Lord, Abbett & Company. An alumnus of Cornell University, he served on the university's Board of Trustees and Weill Cornell's Board of Overseers.

Endowment of the Lynch Professorship grew out of the earlier establishment of the Ronald P. Lynch Fellowship in the Department of Urology. Gifts received from Weill Cornell overseer Charles Lee and Susan Lynch, widow of Mr. Lynch, provided the additional funds to endow the professorship.

"Groundbreaking research is being conducted in the area of urologic oncology. This endowed professorship will enable Weill Cornell to provide support for a leading expert in this field," said Dr. Antonio Gotto, dean of the Medical College.

The Lynch Professor of Urologic Oncology, who is to be recruited, may hold either an M.D. or Ph.D. degree and may hold the Lynch Professorship in any of the Medical College's basic science or clinical departments.

Brine Professorship in Cell and Developmental Biology Established

THE MEDICAL COLLEGE HAS received a gift from Madeline and Kevin Brine to establish an endowed professorship in cell and developmental biology to be named for Mr. and Mrs. Brine.

A leading fundraiser for Weill Cornell, Mr. Brine currently chairs the capital campaign for *Advancing the Clinical Mission* and also chaired the previous campaign, *New Horizons for Medicine*.

"Since his appointment to the Board of Overseers in 1996, Mr. Brine has demonstrated outstanding dedication and loyalty to the Medical College and the advancement of scientific and medical scholarship," said Dr. Antonio Gotto, dean of the Medical College.

Research in the Department of Cell and Developmental Biology focuses on understanding the dynamic function of cells as they are born, grow, replicate, differentiate, communicate, regress, and die — with important implications for the treatment of disorders affecting all parts of the body. n

Students in Qatar and New York Meet via Videoconference on Student Government

The first-ever videoconference student government meeting was held on November 16 between students at Weill Cornell Medical College in New York (WCMC-NY) and Weill Cornell Medical College in Qatar (WCMC-Q).

This historic event began when Charles Paragg, director of student affairs at WCMC-Q, contacted Joseph Habboushe, student overseer (WCMC-NY class of 2006). Together with current Medical Student Executive Council-New York (MSEC-NY) president Rafael Vazquez (WCMC-NY class of 2006), and former MSEC-NY president Jillian Polis (WCMC-NY class of 2005), Paragg and Habboushe discussed ways of establishing a student government at WCMC-Q. The result was the first Medical Student Executive Council-Qatar (MSEC-Q) elections held the week of November 10. An 8-member student body was formed, with Ibrahim Sultan elected as the first MSEC-Q president.

WEILL CORNELL STUDENTS in New York and Qatar hold a video conference to discuss student government.

The videoconference was arranged at WCMC-Q's New York satellite office on 61st Street. For more than an hour, MSEC-NY and MSEC-Q members discussed the pros and cons of student government and how to establish student groups.

> "This initiative will lay the groundwork to bring our students closer together."

In addition, MSEC-Q members provided an update on Weill Cornell's newest campus and newest group of fellow students.

"This initiative will lay the groundwork to bring our students closer together," Habboushe said. He continued, "we are a part of a project that is making history, establishing a new standard for medical education around the world. While our campuses may be 6,000 miles apart, we are one Weill Cornell—and one student body. Technology, such as videoconferencing, will serve as a basis of communication between the students as the campuses continue to grow closer." n

sciencebriefs

Amelia Panico

Dr. Alexis Te

Laser therapy for enlarged prostate speeds recovery time

ABOUT HALF OF MEN OVER THE AGE OF 50 HAVE BENIGN PROSTATIC hyperplasia (BPH), and up to 90% of men over age 80 experience the frequent urination and other problems that accompany the condition.

Now, Weill Cornell researchers are studying a new laser therapy for BPH, called photoselective vaporization of the prostate (PVP). During PVP, a high-powered laser is used to vaporize prostate tissue. The procedure lasts 20 to 50 minutes and can be done on an outpatient basis under IV sedation with monitored local anesthesia.

"The new laser procedure removes prostate tissue with little bleeding, resulting in faster recovery and better early results," said lead investigator Dr. Alexis Te, associate professor of urology at Weill Cornell and director of the Brady Prostate Center in the Department of Urology.

"Not all men are candidates for the PVP laser technique as the size and condition of the prostate and bladder as well as severity of disease are key determinants," said Dr. Te.

The study was funded by Laserscope of San Jose, CA, makers of the GreenLight Laser System used to perform PVP. n

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