

COLUMBIA UNIVERSITY
COLLEGE OF
PHYSICIANS & SURGEONS

ANNUAL REPORT 2009



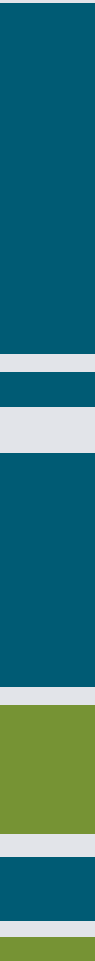


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ANNUAL REPORT 2009

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Our mantra as a medical school, research institution, patient-focused medical center, and good neighbor is **grow, grow, grow.**

Many of our top accomplishments of 2009 have seeded our future for growth

A Message From the Dean

Fiscal 2009 was a year of remarkable achievements by our educators, researchers, and students, and we are pleased to present this year's summary of accomplishments to show you the progress we made in strengthening our programs, facilities, and potential to sustain our excellence and equip us for future growth.

We have used traditional tools to strengthen our foundation – recruitment of the best faculty and students, competitive pursuit of federal research dollars, a redoubled focus on fundraising, and collaborations with like-minded partners in health care – but also have found innovative ways to turn old buildings into modern facilities, to repurpose single-minded research programs into collaborative consortia, and to redefine a medical education as a team-based effort combined with student exploration of individual goals.

We are particularly proud of our success in attracting new funding provided through the federal government's American Recovery and Reinvestment Act of 2009. Combined with our continued success in attracting multiyear NIH grants, this new stimulus funding will help us preserve our robust research portfolio and attract scientists across all of our disciplines.

Our mantra as a medical school, research institution, patient-focused medical center, and good neighbor is grow, grow, grow. Many of our top accomplishments of 2009 have seeded our future for growth:

- We opened a 30,000-square-foot Teaching and Learning Center on the two lower levels of Hammer Health Sciences Center, consolidating classroom, teaching, and study space and creating a new entrance into Hammer from Haven Avenue. We have plans to further grow this area into a new campus gateway, "Haven Square," that could soon incorporate a bookstore, sidewalk seating, a greenmarket, and street improvements. We recruit the best students from around the world, and we are happy to unveil a world-class facility for them.

- New faculty recruits include Thomas P. Maniatis, chair of biochemistry & molecular biophysics, from Harvard; Lawrence Schwartz, chair of radiology, from Memorial Sloan-Kettering Cancer Center; Megan Sykes, director of the Center for Translational Immunology and director of research for the Transplant Initiative, from Harvard; Tomoaki Kato, surgical director of liver and intestinal transplantation, from the University of Miami; Sheldon Feldman, chief of breast surgery, from Beth Israel Medical Center; Paulette Bernd, director of the gross anatomy course, from SUNY Downstate; Charles S. Zuker, renowned Howard Hughes Medical Institute researcher, from the University of California, San Diego; Emile Bacha, chief of pediatric cardiothoracic surgery, from Children's Hospital Boston and Harvard; and Susan Rosenthal, vice chair of pediatrics, from the University of Texas Medical Branch in Galveston.
- Amelia J. Alverson, formerly vice president of development at Stanford University Hospital and Clinics, was named vice president for development for CUMC.
- The Class of 2013 is the index class for our new medical school curriculum and its emphasis on team-based learning, innovation, individual specialization, and early clinical experiences.
- Our new Columbia-Bassett Program has accepted its first 10 students for enrollment in August 2010. The program developed over the past year will attract students with an interest in combining the strong foundation of a P&S fundamentals education with the kind of longitudinal medicine practiced at Bassett. Like their New York City-based classmates, P&S students in the Columbia-Bassett Program will explore an area of special interest, culminating in a scholarly project.
- Investments in new primary care practices on the east and west sides of Manhattan and strategic investments in the growth of ColumbiaDoctors, our faculty practice organization, will assure that our clinicians – the best

in New York City by any formal or anecdotal measure – continue to offer cutting-edge prevention and treatment to our patients.

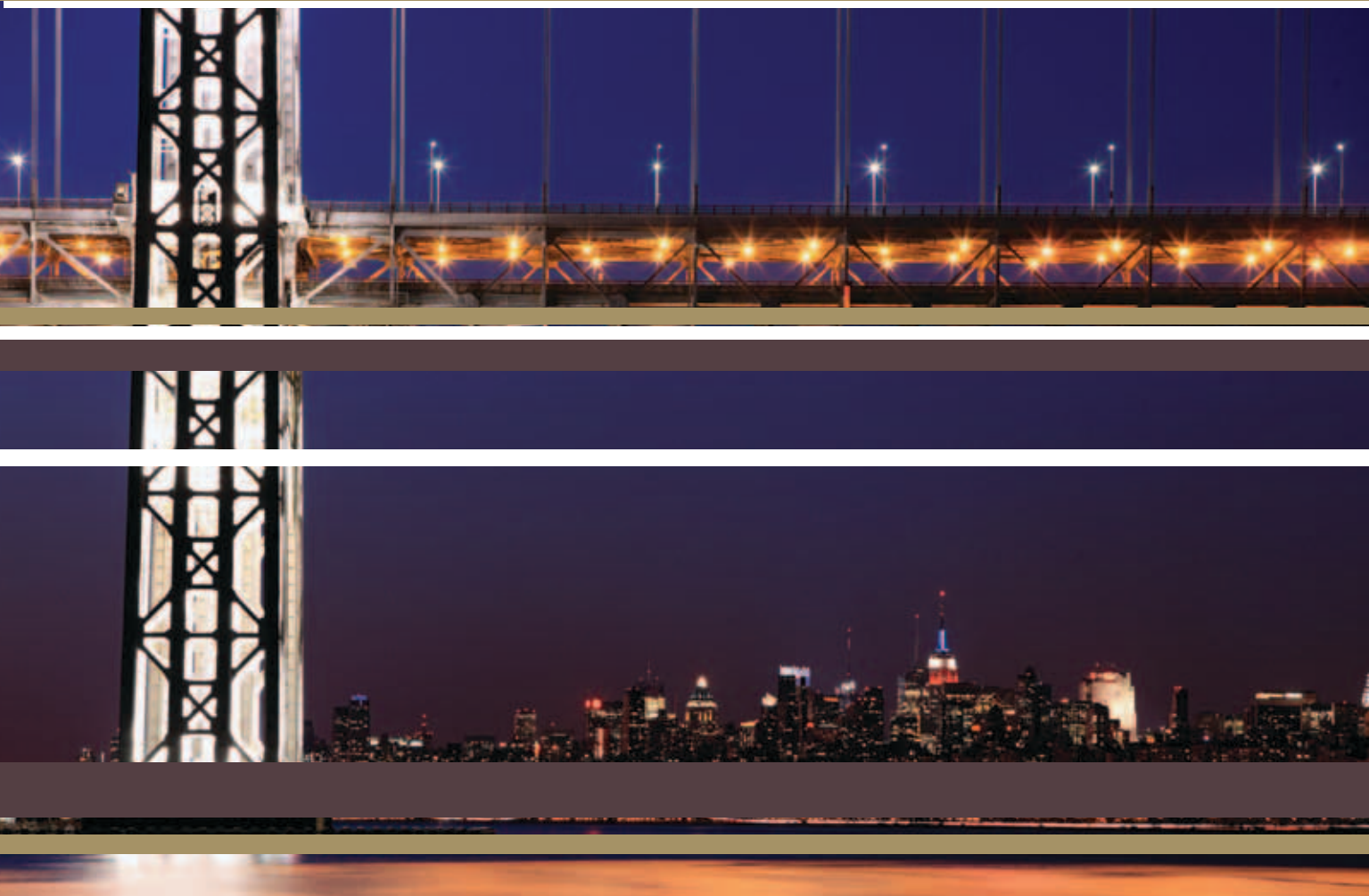
Although this message customarily looks forward while celebrating the past year's achievements, we also want to acknowledge our gratitude for the men and women who contributed to our legacy. During the past year we lost two of our most active faculty leaders, Allan Rosenfield, longtime professor of obstetrics & gynecology and public health and former dean of the Mailman School of Public Health, who died in October 2008, and I. Bernard Weinstein, who led our comprehensive cancer center from 1985 to 1996 and held appointments in medicine, genetics, and public health at the time of his death in November 2008.

In their memory we rededicate ourselves to the work this report celebrates, the accounts of major accomplishments and daily triumphs that define the past year at P&S and inspire possibilities for greater achievements in the years to come.



Lee Goldman, M.D.

PROGRESS AND PARTNERSHIPS



Just like other academic medical centers, Columbia University College of Physicians and Surgeons has targeted financial challenges on all fronts: redoubling our fundraising efforts, improving our efforts to attract federal grants, growing our faculty practice, and judiciously cutting costs. This combination of efforts has enabled us to maintain the college's commitment to our students, patients, and neighbors. We also have been able to expand many programs, launch new initiatives, and hire a truly impressive number of new faculty who are pre-eminent in their fields.

Even as philanthropy shrank in the midst of the recession, P&S once again significantly outpaced fundraising goals for fiscal year 2009, surpassing the \$1 billion goal for our Defining the Future campaign far ahead of schedule. The performance of our endowment – though affected by the economy – is among the best in the country. Faculty practice revenue is also on a consistent upward trajectory. And we continue to receive the most funding from the National Institutes of Health among all academic medical centers in the state. The recruitment of a new vice president for development has added to our confidence in maintaining and exceeding our successful fundraising results.

Luminaries Join Faculty

From this position of strength, we have been able to add a truly dazzling constellation of new faculty to our team.

Molecular cloning pioneer **Thomas P. Maniatis, Ph.D.**, the creator of the first human DNA library, now chairs the Department of Biochemistry & Molecular Biophysics after a long career at Harvard.

Lawrence Schwartz, M.D., renowned in the field of oncologic imaging and an authority on the development and validation of imaging biomarkers, brings his research and clinical expertise from Memorial Sloan-Kettering Cancer Center to chair our Department of Radiology.

Transplantation biology expert **Megan Sykes, M.D.**, until recently an associate director of the Transplantation Biology Research Center at Harvard, was appointed director of the Center for Translational Immunology at P&S and director of research for the growing Transplant Initiative at CUMC.

Tomoaki Kato, M.D., a world-renowned specialist in multiple-organ transplantation, pediatric, adult and liver transplantation, previously with the University of Miami, joined us as surgical director of liver and intestinal transplantation.

Sheldon Feldman, M.D., a leading authority in minimally invasive breast cancer surgery and cancer prevention and formerly chief of the comprehensive breast service at Beth Israel Medical Center, has been named chief of breast surgery at CUMC.

Paulette Bernd, Ph.D., an award-winning teacher recruited from SUNY Downstate, joined the Department of Pathology & Cell Biology as professor of clinical pathology and cell biology and director of the gross anatomy course for P&S students.

Charles S. Zuker, Ph.D., whose research focuses on taste as a way to study how the brain processes sensory experiences, joined the faculty as professor of biochemistry & molecular biophysics and of neuroscience. He was formerly the Kevin and Tamara Kinsella Chair of Neurobiology and Distinguished Professor at the University of California, San Diego.

Susan Rosenthal, Ph.D., formerly director of adolescent and behavioral health at the University of Texas Medical Branch in Galveston, joined us as vice chair of the Department of Pediatrics, with joint faculty appointments in pediatrics and psychiatry.

In addition to these leaders, who have joined us from top schools and medical centers, a number of our current faculty members have been named to important new positions during the past year.

Donald Landry, M.D., Ph.D., a nationally recognized researcher and clinician in nephrology and critical care, was named chair of the Department of Medicine after serving as the department's interim chair.

Neuroscientist **Steven A. Siegelbaum, Ph.D.**, whose research is at the forefront of understanding the role of neural circuitry in learning, behavior, and memory, was named chair of the Department of Neuroscience. A member of the P&S faculty since 1981, Dr. Siegelbaum served as vice chair since the formation of the department in July 2007.

Ron Drusin, M.D., was named vice dean for education. Dr. Drusin, who has been a part of the P&S community since his medical school days, led the task force that developed our new medical school curriculum and oversaw the ongoing renovations that have resulted in our modern Teaching and Learning Center in the Hammer Health Sciences Center.



Systems Biology Initiative Launched

To capture our full potential in systems and computational biology, P&S has launched a Systems Biology Initiative, which includes the Judith P. Sulzberger MD Columbia Genome Center and the Center for Computational Biology and Bioinformatics. Directed by Andrea Califano, Ph.D., professor of biomedical informatics, the initiative is the fourth multidisciplinary initiative created in the past few years; the others are the Transplant Initiative, the Cardiovascular Research Initiative, and the Stem Cell Initiative.

New Names, Broader Purpose for Departments

Two P&S departments have been renamed to reflect their growing missions and expanded portfolios. The Department of Microbiology is now the Department of Microbiology and Immunology, in keeping with the department's broadening scientific emphasis on immunology, which includes cancer biology, infectious diseases, and autoimmune diseases. The Department of Rehabilitation Medicine is now the Department of Rehabilitation and Regenerative Medicine, reflecting an expanded commitment to exploring new technologies and approaches in regenerative medicine, such as stem cells, to improve the care of patients with disabilities resulting from injury or disease.

Stroke Center Reports Progress to Congress

Columbia stroke researchers met with U.S. House of Representatives staff in October 2008 to report the progress to date on the three major research efforts funded by a five-year \$12 million NIH grant. The Specialized Programs of Translational Research in Acute Stroke (SPOTRIAS) grant supports one of the first clinical trials of high-dose statin medication as a potential acute stroke treatment, an imaging study of brain reorganization to promote recovery of function, and a novel stroke educational and behavior modification program. Approximately 2,000 patients are enrolled in SPOTRIAS research studies at Columbia; the program is part of a network of eight stroke centers nationwide that conduct early phase clinical trials and share data.



Major Anniversaries for Leading Programs

Several of the most prominent programs at P&S celebrated major anniversaries during the past year. The Neurological Institute of Columbia University Medical Center and NewYork-Presbyterian Hospital hosted a daylong neuroscience symposium to mark a century of progress in treating neurologic disorders. The Center for Liver Disease and Transplantation celebrated its 10th anniversary and passed the 1,000th transplant milestone in December 2008; participating physicians and many of the center's liver transplant recipients and living donors were present. In October 2008, the Naomi Berrie Diabetes Center, founded by a gift from the Russell Berrie Foundation, observed its 10th anniversary as the only comprehensive, multidisciplinary diabetes center in New York City. The Harkness Eye Institute celebrated 75 years of preserving the sight of generations of patients and making important contributions to understanding and treating diseases of the eye.



Angelica Berrie, center, with

Professional Schools Diversity Fellowships

Faculty members representing three CUMC schools were awarded Columbia University Professional Schools Diversity Research Fellowships, part of a \$2 million initiative by Columbia President Lee Bollinger to promote and develop careers of diverse junior faculty. P&S, Mailman School of Public Health, and College of Dental Medicine fellowship recipients, who received \$25,000 cash awards to support their research, are investigating topics ranging from how parental imprisonment impacts psychiatric diagnosis in children to novel drugs for patients with relapsed or refractory HTLV-1 related adult T-cell leukemia/lymphoma.

Gerstner Scholars Pursue Interdisciplinary Research

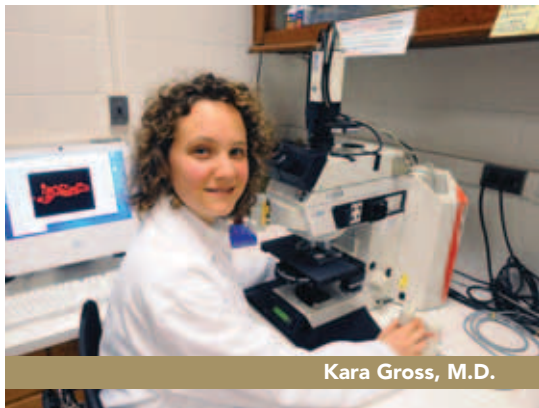
We created the Louis V. Gerstner Jr. Scholars Program to help young P&S physician-scientists conduct translational research and develop new treatments. Funded by a \$5 million gift from the Gerstner Family Foundation, the Gerstner Scholars Program awards yearly stipends of \$60,000 for up to three years to conduct research. Four Gerstner Scholars are chosen every year; the inaugural group of Gerstner Scholars exemplifies the pioneering work these scholarships are funding:

Howard Fine, M.D., medical director of the Louis V. Gerstner Clinical Research Center and Helen & Martin Kimmel Assistant Professor of Clinical Ophthalmology, is pursuing advanced robotic surgery techniques in an effort to clear obstructed retina vessels, one of the most common causes of blindness in the United States.

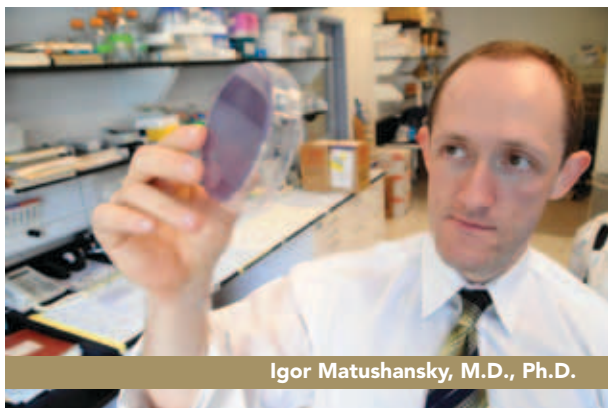
Adam Ratner, M.D., M.P.H., assistant professor of pediatrics and microbiology, is working to prevent premature birth by studying genital tract bacteria that are suspected to cause about a quarter of all such deliveries. He predicts that understanding these bacteria and eliminating the risk associated with their infections could prevent about 100,000 preterm births, about 6,000 infant deaths, and severe neurological disability in 6,000 more children.

Kara Gross, M.D., assistant professor of pediatrics-gastroenterology and nutrition, is studying the role of neurotransmitters in inflammatory bowel disease, hoping to find a solution for the many children who don't respond to medical treatment and require an ostomy bag.

Igor Matushansky, M.D., Ph.D., assistant professor of medicine, hopes to cure sarcoma by turning malignant cells back into normal cells through a process called "differentiation therapy," which has been used in blood cancers, such as leukemia, but has remained unexplored by solid tumor researchers.



Kara Gross, M.D.



Igor Matushansky, M.D., Ph.D.

Strengthening Infrastructure

P&S continues to build on its commitment to becoming a state-of-the-art organization in all meanings of that phrase. In information technology, we are making the best use of electronic classrooms, electronic health records, and the latest in computerized research tools.

Our biggest infrastructure retooling this past year was in our educational mission. A major reconfiguration of the medical school curriculum, detailed in this report's education section, joined the exciting development of a new program with our upstate affiliate Bassett Healthcare; the program is designed to allow P&S students to start their education in New York City then move to Cooperstown, N.Y., for their clinical training in a new track that could address the shortage of physicians choosing to practice in rural areas but also give students exposure to health systems that emphasize longitudinal patient relationships.

This year, we launched our new electronic health record, CROWN, within the ColumbiaDoctors faculty practice plan, a system that is integrated with NewYork-Presbyterian ancillary systems as well as with the hospital's inpatient electronic health record, Eclipsys. So far, 722 physicians, including residents and fellows, and 1,800 support staff are using the system with all modules fully activated, including e-prescribing, structured note documentation, computer provider order entry (CPOE), results and results verification, tasking, and scanning. Physician adoption of all modules, especially structured note documentation, is higher than all of our peer organizations. The organization also has launched its own branded Web site – www.ColumbiaDoctors.columbia.edu – that features a comprehensive searchable directory that can be downloaded to PDA devices.

"Our administration is committed to enabling everyone to do his or her job as productively as possible, with as few impediments as possible."

—Lisa Hogarty, Chief Operating Officer



The popular 5-Help system, which for years has served faculty, students, and staff struggling with computer problems, has taken on expanded roles this year. In addition to IT troubleshooting, 5-Help service representatives now offer answers for issues involving facilities, human resources, and student housing. "Our administration is committed to enabling everyone to do his or her job as productively as possible, with as few impediments as possible," said Lisa Hogarty, chief operating officer.

Our new Teaching and Learning Center in the Hammer Health Sciences Center takes maximum advantage of technology through classrooms designed specifically to inspire interactive and collaborative learning. Group tables are outfitted with a laptop for each student, and all of the center's classrooms have wireless Internet access and modern teaching tools. Each classroom has a system that creates a video podcast of any session with a single click of a button for same-day downloading.

Renovation of the center, accessible through Hammer's main entrance or a new entrance created on Haven Avenue, was done in keeping with Columbia's commitment to environmental stewardship, using green materials and repurposing old materials for new uses. This effort included using a composite made out of recycled stone and glass for hallway floors, using linoleum tiles based on renewable linseed oil for classroom floors, constructing wood paneling in lobbies and study rooms from bamboo, and repurposing metal shelves from the original library stacks to make new mobile bookshelves.

CARE AND COMPASSION



One out of every five of the best doctors in New York is affiliated with P&S, according to the latest best doctors rankings from New York magazine.

Our primary affiliated hospital, NewYork-Presbyterian, was ranked sixth in the nation – and first in the New York area – by U.S. News and World Report in its 2009 “America’s Best Hospitals” edition. NewYork-Presbyterian’s Morgan Stanley Children’s Hospital was also one of only 10 children’s hospitals in the nation to be ranked in all 10 clinical specialties by U.S. News.

We are honored by these distinctions, but not surprised. Our extraordinary faculty members are devoted to providing care to our patients that is as advanced as the latest robotic surgical techniques and as traditional and customary as offering a “baby friendly” atmosphere that promotes some of the highest rates of breastfeeding in the city. This combination of high tech and high touch is reflective of Columbia’s high standards for patient care.

Sickle Cell-Thalassemia Program Launched

More than 80,000 people in the United States have some form of sickle cell disease, and more than 1,000 babies are born with related conditions each year. These conditions can have a devastating lifelong impact, including strokes during childhood and progressive damage to the liver, spleen, lungs, kidney, heart, and other organs, followed by an early death. Unfortunately, sickle cell diseases like thalassemia, an inherited condition that impairs the ability of red blood cells to make hemoglobin, are often overlooked and underfunded in the medical system.

Columbia's new St. Giles Comprehensive Sickle Cell-Thalassemia Program, funded with a four-year \$1 million grant from the St. Giles Foundation, will alleviate the burden faced by many families who have loved ones with sickle cell disease. Led by Gary Brittenham, M.D., the James A. Wolff Professor of Pediatrics, professor of medicine, and director of pediatric hematology in the Department of Pediatrics, and by Robert DeBellis, M.D., associate clinical professor of medicine-hematology, the new thalassemia program will bring together experts in sickle cell disease to provide coordinated, comprehensive, and family-centered care that includes multidisciplinary management, genetic counseling, community outreach, and patient-centered support.

"The new St. Giles Comprehensive Sickle Cell-Thalassemia Program will help Columbia build on its strong pediatric foundation and, ultimately, expand the model to adult services, providing a continuum of care throughout the patient's life," said Dr. DeBellis.

Caring for Adults with Cystic Fibrosis

In 1970, only 10 percent of people with cystic fibrosis were over age 18. Although the inherited lung disorder remains incurable, advances in care have dramatically improved life expectancy and today almost half of all patients treated for cystic fibrosis are adults. In many places, however, cystic fibrosis care is still focused on pediatric patients.

Columbia has changed that with the opening of the Gunnar Esiason Adult Cystic Fibrosis and Lung Program, the New York metropolitan area's first state-of-the-art facility providing family-based care to adults with CF. The Boomer Esiason Foundation made a commitment to establish and endow the program after Boomer Esiason's son, Gunnar, was diagnosed with cystic fibrosis in 1993.

Recently selected as a site of the National CF Therapeutics Development Network for studying novel drugs for cystic fibrosis, the center combines comprehensive patient care and outreach with innovative basic and clinical research and specialty training in the expert care of cystic fibrosis. "We collaborate with specialists in almost every discipline at Columbia to develop individualized treatment plans for our adult patients," said Emily DiMango, M.D., associate professor of clinical medicine and director of the center.

Columbia's progress in cystic fibrosis care has kept pace with the amazing developments in research and treatment since the disease was first described at P&S in 1938 by pathologist and pediatrician Dorothy Andersen.



The March 2009 grand opening of the Gunnar Esiason Adult Cystic Fibrosis and Lung Program with, from left, Neil Schluger (chief of pulmonary, allergy, and critical care medicine), Gunnar Esiason, Boomer Esiason, Cheryl Esiason, Emily DiMango (program director), and P&S Dean Lee Goldman

"Our solution is to take out the organs just as you would in transplantation, remove the tumor, then re-implant the organs and repair and reconstruct the vessels. Our surgery shows this is possible and could potentially save the lives of dozens of adults and children every year."

—Tomoaki Kato, M.D.

Historic Surgery Removes Six Organs in Tumor Operation

In a worldwide first, a 7-year-old Long Island girl had six organs removed and partially re-implanted to enable surgeons to resect an otherwise inoperable abdominal tumor. Tomoaki Kato, M.D., professor of surgery at P&S and surgical director of liver and intestinal transplantation at CUMC, led a team of seven surgeons and eight other clinicians in the 23-hour surgery, which removed nearly every major organ in the girl's abdominal cavity: small and large intestines, liver, pancreas, spleen, and stomach. It was the first reported pediatric case of its kind.

The extensive surgery was necessary to remove a rare, inflammatory myofibroblastic tumor the size of a tennis ball, which had become tangled with vital organs and essential blood vessels. The liver and small and large intestines were re-implanted after the tumor was removed, but the girl's pancreas, spleen and stomach, non-vital organs that had been compromised by the tumor, could not be reimplanted. The patient went home, still facing serious medical challenges (such as diabetes from the loss of her pancreas), but with her life no longer in danger from the rapidly growing tumor.

"Any time a tumor wraps itself around an organ's blood vessel, it has been generally considered inoperable because in order to remove the tumor, you must cut the blood supply," Dr. Kato said. "Our solution is to take out the organs just as you would in transplantation, remove the tumor, then re-implant the organs and repair and reconstruct the vessels. Our surgery shows this is possible and could potentially save the lives of dozens of adults and children every year."

Delicate Surgery Saves Boy's Lungs from Dangerous Clots

When a 17-year-old boy from Morningside Heights was diagnosed with rare, life-threatening blood clots blocking his pulmonary arteries, he needed treatment fast. He could barely walk across the room and faced the risk of heart failure at any time.

In a complex, eight-hour surgical procedure called a pulmonary thromboendartectomy, thoracic surgeon Matthew Bacchetta, M.D., assistant professor of surgery, restored the boy's lung function. It was reportedly the first time this surgery has been performed on a pediatric patient in the New York metropolitan area. Today, the boy can walk well without oxygen and his long-term prognosis is excellent.

Dr. Bacchetta is one of an elite group of surgeons skilled in this surgery, having learned it from the technique's pioneers at the University of California, San Diego. The surgery is risky: It involves stopping the patient's heart, hooking the patient up to a heart-lung bypass machine, and cooling the body to 64 degrees Fahrenheit to reduce the need for oxygen. Only then can surgeons open the pulmonary artery, shut off the bypass pump to eliminate blood flow, and remove the clots. But it provides an attractive alternative to lung transplants for the right patients. "With transplantation, patients must wait for an organ, and then they require lifelong treatment with immunosuppressive drugs," Dr. Bacchetta said. This procedure is also associated with better long-term survival.

A complex surgical procedure called a pulmonary thromboendartectomy can restore lung function when life-threatening blood clots block pulmonary arteries. The specialized procedure is offered at only a few medical centers but provides an alternative to lung transplants for the right patients.

New Surgery for Disabling Arthritis

Bad falls caught with an outstretched hand and wrist can result in a serious wrist fracture. Left untreated, or not treated properly, wrist injuries can lead to debilitating arthritis in the damaged wrist. A new surgical option for people with advanced wrist arthritis is now available at CUMC, offered by one of the orthopedic surgeons who pioneered the procedure. OsteoChondral resurfacing in proximal row carpectomy can reduce pain and improve function for many people with wrist arthritis.

A common operation for wrist arthritis, proximal row carpectomy, involves excision of the first row of carpal bones. Although this offers relatively quick recovery and a good range of wrist motion, it has one drawback: It does not work well if the arthritis has already progressed to the capitate bone, because after the surgery, that bone is the point where the wrist articulates with the arm.

For patients whose arthritis has progressed to the capitate bone, the new procedure combines the primary surgical procedure with a cartilage-grafting technique. "The goal of this new procedure is to give the best possible outcome by improving the cartilage status of the capitate bone," said Peter Tang, M.D., assistant professor of clinical orthopedic surgery and a developer of the procedure. "This helps to reduce pain while at the same time increasing grip strength."



New York's First Six-Way Kidney Transplant

Six patients received new kidneys at NewYork-Presbyterian Hospital on March 19 and 20, 2009, in the largest "kidney swap" transplant surgery in New York metropolitan area history. The operations required 12 transplant teams with more than 60 clinicians working in 12 operating rooms. The cascade of transplants was made possible by a New Jersey man, who donated a kidney to an unknown recipient. His kidney went to a 54-year-old woman, whose nephew in turn donated his kidney to a 55-year-old woman. That woman's husband then donated his kidney to a 56-year-old woman, whose daughter donated to a 56-year-old man. That man's cousin-in-law donated to a 47-year-old woman, whose husband donated to a 70-year-old man on the organ waiting list.

"About four years ago, our hospital performed New York's first two-way kidney swap," said David Cohen, M.D., professor of clinical medicine and medical director of renal and pancreatic transplantation at CUMC. "Since then, 40 patients have received kidneys in 16 paired exchanges. As our kidney-swap program continues to expand, we will bring more kidneys to the patients who need them, and make them available sooner."

Today, NewYork-Presbyterian Hospital, including both Columbia and Cornell campuses, performs more kidney transplants than any other hospital in the nation.

Weight Loss Surgery with No Incision

In August 2008, the first New York-area patient received a new form of incision-free obesity surgery as part of the ongoing multicenter TOGA Pivotal Trial at CUMC. The transoral gastroplasty, like other obesity procedures, alters the patient's stomach anatomy to give them a feeling of fullness after a small meal. But unlike other procedures, TOGA uses endoscopic instruments passed through the mouth into the stomach to perform the surgery.

"The benefits of an endoscopic approach are less pain, quicker recovery, shortened hospital stay and decreased complications, as well as a lack of scarring," said Daniel Davis, M.D., assistant professor of surgery, who performed the surgery with lead investigator Marc Bessler, M.D., assistant professor of clinical surgery. "Eventually, TOGA may also be an option for patients who are unwilling or unable to undergo more invasive surgery."

A high-tech new robotic arm available at NewYork-Presbyterian/Columbia can help partially paralyzed stroke patients perform tasks like washing, getting dressed, and driving, giving survivors of stroke not only greater use of their arm but also greater independence.

On the Fast Track to the ER

Emergency room waiting times are a well-documented problem in emergency medicine. Now, the newly dedicated Con Edison Fast Track Suite at NewYork-Presbyterian Hospital/Allen Hospital will speed and improve emergency care for patients with urgent, yet uncomplicated, medical problems. "For example, someone with a cut requiring stitches would be cared for in the Fast Track. Someone having a heart attack would not," said James Giglio, M.D., associate clinical professor of medicine and director of emergency medicine at CUMC.



Robot Rehab for Stroke Survivors

About half of all stroke survivors experience partial paralysis on one side of their body, and only 5 percent of those who go through rehabilitation regain full control of their arm. But thanks to a high-tech new robotic arm available at NewYork-Presbyterian Hospital, many of these patients are now performing everyday tasks like washing, getting dressed, and driving, things they thought they would never do for themselves again.

The system senses electronic impulses in the muscles that indicate intended movement, and then gives the patient a motorized "boost" that helps them complete the task. A pilot study, published in 2008 by Joel Stein, M.D., our new chair of the Department of Rehabilitation and Regenerative Medicine, showed that stroke survivors with severe arm weakness improved arm movement by 23 percent after rehabilitation with the device. "As part of a comprehensive rehabilitation program, we believe that the device could be effective in helping our patients to achieve greater use of the arm and independence."

New Hope for Complex Aortic Aneurysms

Most abdominal aortic aneurysms can be repaired with minimally invasive surgery that installs a flexible plastic and metal stent to reinforce the arterial wall. But for the 5 percent to 10 percent of patients whose aneurysms lie perilously close to the arteries that supply the kidneys and intestines, such a procedure has long been deemed too risky, leaving them with few other options except careful monitoring and anxious waiting.

Now, vascular surgeons at P&S are implanting new experimental stents, called fenestrated grafts, that have holes punched in the sides allowing the device to seal off the aneurysm while preserving blood supply to the other organs. NewYork-Presbyterian Hospital is one of only three institutions nationwide currently approved by the FDA to implant these stents, which are custom-made for each patient using spiral CT measurements.

"Inserting a fenestrated graft takes more time and skill than the repair of standard aneurysms, but since both are minimally invasive, there is not much difference from the patient's point of view," said James McKinsey, M.D., associate professor of clinical surgery and interim chief of vascular surgery for both Columbia and Cornell. "Patients will usually be able to leave the hospital in a few days and return to normal activities in two to three weeks."

Harlem Hospital Honored as "Baby Friendly"

Harlem Hospital, a P&S affiliate, has become the first hospital in New York to receive a coveted "Baby Friendly" designation from Baby Friendly USA, a global initiative of the World Health Organization and UNICEF aimed at promoting breastfeeding through a 10-step process that includes babies rooming in with mothers, lactation counseling, and giving no food or drink except breast milk unless medically indicated. Breastfeeding exclusively for the first six months of an infant's life is associated with health benefits for both mother and baby, but only about 40 percent of U.S. infants are breastfed for that long, according to the CDC.

In the first quarter of 2008, 81 percent of the more than 1,100 children delivered at Harlem Hospital were being breastfed by their mothers when they were discharged from the hospital. "Baby Friendly is a perfect mesh with our efforts to promote overall health and wellness in our community," said Catherine Hansen, M.D., assistant clinical professor of pediatrics and chief of neonatology at Harlem Hospital. As of September 2009, 84 hospitals and birth centers in the United States had been designated "Baby Friendly."



New Stapling Option for Scoliosis

Tens of thousands of children each year are diagnosed with scoliosis, a painful curvature of the spine that can restrict breathing. Until recently, the standard treatment for children with moderate scoliosis has been the use of spinal braces, which can slow the curvature's progression but not reverse it.

Now, a new spinal stapling technique available at Morgan Stanley Children's Hospital of NewYork-Presbyterian may help reverse the curvature in children with progressive moderate scoliosis who are still growing. In a minimally invasive surgery, inch-long metallic staples are implanted across the growth plates of the spine, with the aid of a camera called a thoroscope. The incision is limited, and scarring is minimal.

"Spinal stapling not only stops scoliosis from getting worse, but can even correct the curve," said Michael Vitale, M.D., the Ana Lucia Associate Professor of Clinical Pediatrics and Orthopedic Surgery and chief of pediatric spine and scoliosis surgery at Morgan Stanley. "We are on the cusp of a new era in the treatment of scoliosis."

"Spinal stapling not only stops scoliosis from getting worse, but can even correct the curve."

—Michael Vitale, M.D.



Michael Vitale, M.D.

Skin and Laser Center Adds New Facility

In September 2008, the Skin and Laser Center opened a new state-of-the-art facility at Columbia Eastside on East 60th Street. Originally created in 2000, the Skin and Laser Center has grown so much in recent years that it has been difficult to keep up with patient demand. Now, with five new exam rooms and a host of technologically advanced options, including a Fraxel laser to improve wrinkles, sun-damaged skin and acne scars, and ultraviolet light boxes for phototherapy to treat psoriasis, severe dermatitis, and cutaneous T-cell lymphoma, patients will have greater access to a wide array of advanced skin care options.

Previously, the center could not add new lasers due to space limitations, but now the menu of cosmetic options at the center includes Botox and cosmetic filler injections, microdermabrasion, and laser treatments for hair and tattoo removal. Directed by Robyn Gmyrek, M.D., assistant clinical professor of dermatology, the center also offers a photographic "mole mapping" technique that monitors patients at high risk for melanoma by using digitized images on computers installed in each exam room.



Robyn Gmyrek, M.D.



Domestic Violence Outreach

A one-year \$50,000 grant from the Avon Foundation has funded new efforts by the NewYork-Presbyterian Hospital Ambulatory Care Network's Family PEACE (Promoting Education, Advocacy, Collaboration, and Empowerment) program to reach out and help community children exposed to domestic violence.

The Speak Out Against Domestic Violence grants support a mental health practitioner to offer one-on-one psychotherapy for severely traumatized children, lead workshops for battered women on how domestic violence affects children and how to protect them, and provide outreach education at public elementary schools.

A Web Tool for Pulmonary Disease

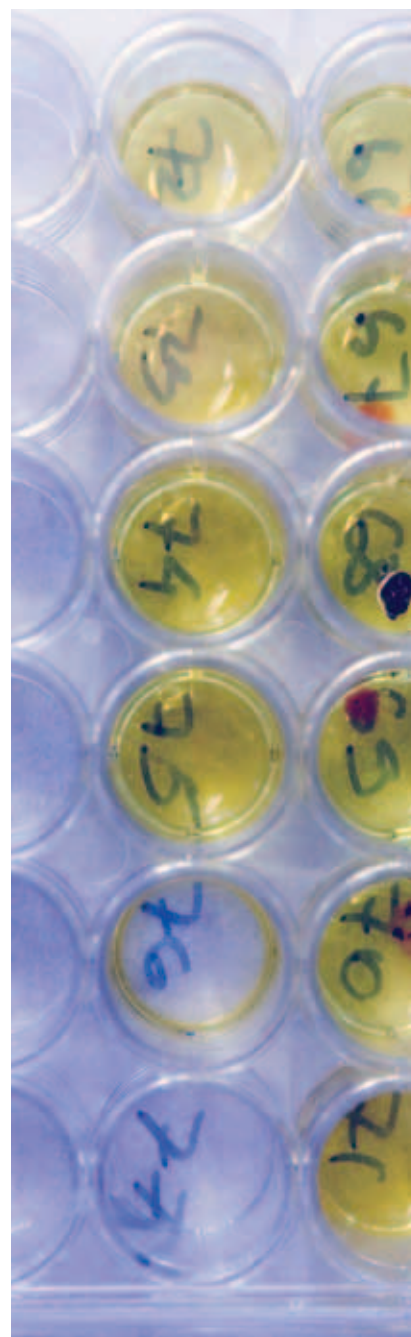
The Chronic Obstructive Pulmonary Disease Foundation, founded and chaired by Byron Thomashow, M.D., clinical professor of medicine-pulmonary, allergy, and critical care, has partnered with WebMD to launch a COPD online educational platform called the "Lung Health Check." It teaches users about the symptoms of COPD, informs them about their specific risks of lung disease, and recommends strategies for preventing and managing illness.

A new online tool, the "Lung Health Check," teaches the public about the symptoms of chronic obstructive pulmonary disease and specific risks of lung disease and recommends strategies for preventing and managing illness.

Record 100th Heart Valve Replacement Without Open-Heart Surgery

Using an innovative heart valve replacement and a catheter-based approach that requires no open-heart surgery, heart specialists at Columbia have implanted 100 new heart valves over the past four years, the most of any U.S. medical center to date.

Conducted as part of multiple clinical research studies of the Edwards SAPIEN transcatheter heart valve, made of bovine pericardial tissue leaflets hand-sewn onto a metal frame, the procedures are performed on a beating heart without the need for bypass and its associated risks. Patients face a recovery period of a few days, rather than the two to three months required with open-heart surgery. The technology could save the lives of thousands of patients with heart valve disease who have no other therapeutic options.



INNOVATION AND INVENTION



P&S researchers have benefitted from a 1.5 percent NIH funding increase for fiscal year 2010 plus the \$10.4 billion in stimulus funds set aside through the American Recovery and Reinvestment Act. The inclusion of biomedical research in federal stimulus funding was made possible by the ardent support of the Columbia community. Nearly half of the constituent comments that the Association of American Medical Colleges passed along to Congress came from Columbia faculty, staff, students, and alumni.

The additional funds provided by the stimulus package have already begun to bear fruit, with new grants coming in and a record number of faculty competing for the new NIH Challenge Grants in Health and Science Research. Even before this infusion of new funding, Columbia's research program was achieving extraordinary things in the midst of tight economic times.



Gene Therapy Shows Promise for Heart Failure

For years, scientists have sought solutions to some of medicine's most confounding challenges through gene therapy. The results of groundbreaking Phase I clinical trials in patients with advanced heart failure offer hope that gene therapy may live up to its promise.

Columbia was the first hospital in the New York City area to offer this therapy, as part of the multicenter CUPID trial (Calcium Up-Regulation by Percutaneous Administration of Gene Therapy in Cardiac Disease). Through a simple minimally invasive cardiac catheterization procedure, patients receive a specially engineered gene that stimulates production of an enzyme the heart requires to pump more efficiently.

Not only was the therapy found to be safe, but seven of the nine patients in the initial trial showed improvements in their condition. (The other two had pre-existing antibodies to the viral vector delivery system.) As part of the Phase II CUPID trial, Columbia will further assess the safety and effectiveness of gene therapy in advanced heart failure.

Artificial Liver, Real Benefits

Patients with acute liver failure, facing a shrinking window of survival time if they cannot find a donor organ, may soon have a new option that can extend their lives until a new liver can be found. As part of ongoing clinical trials, Columbia is one of only a handful of hospitals in the United States offering a new artificial liver system, the Extracorporeal Liver Assist Device (ELAD), which treats blood plasma, metabolizes toxins, and synthesizes proteins just as a real liver does.

Artificial livers have long been a goal of physicians treating patients with liver failure, but previous designs, which did not use human liver cells, ultimately failed because they could not filter toxins adequately. The ELAD system uses immortalized human liver cells and was found in earlier clinical trials to prolong transplant-free survival times.

The artificial liver may do more than just extend survival. "We're also interested to see if it can relieve the burden on the patient's liver enough so that it can regenerate and regain some of its function," said Robert Brown, M.D., the Frank Cardile Professor of Medicine and professor of pediatrics (in surgery), who directs the Center for Liver Disease and Transplantation.

Leading the Way with a New Heart Pump

In early 2009, three patients at Columbia became among the first in the nation to receive the DuraHeart Left Ventricular Assist System, a next-generation artificial heart pump that can sustain patients with severe left-ventricular heart failure, keeping them alive while they wait for transplants. Columbia is one of only three centers in the United States now enrolling patients in a trial studying the DuraHeart.

Led by Yoshifumi Naka, M.D., Ph.D., associate professor of surgery and director of cardiac transplantation, the trial aims to measure patients' quality of life while awaiting transplant. Ultimately, Dr. Naka suggests, "The DuraHeart may also prove to be a long-term solution, even for those ineligible for transplantation." Ultimately, the trial will enroll 140 patients at up to 40 centers nationwide.

Uncovering the Genetic Code of Epilepsy

Scientists at Columbia have identified the first gene linked to the most common form of childhood epilepsy. This form of the disorder, known as Rolandic epilepsy, is diagnosed in one of every five children with epilepsy. The gene, known as ELP4, is located on chromosome 11. This discovery holds promise for developing new interventions that target the underlying processes that lead to seizures, perhaps providing an alternative to current anti-epileptic medications that can come with cognitive and behavioral side effects.

Such genetic findings also are changing the conventional wisdom about the processes in the brain that lead to epilepsy. ELP4 is part of a group of genes that recently have been associated with other common forms of epilepsy, all of which appear to play a role in the organization of brain circuits as they develop. Scientists previously thought epilepsy might stem from changes in the brain's ion channels, but it now appears that the disorders may have their roots in the way neurons in the brain connect during development. "Seizures are one, but not the only, consequence of these children's slightly altered brain development," said Deb Pal, M.D., Ph.D., a research scientist in the Department of Psychiatry. "We shouldn't think of epilepsy as just about the seizures, but also about all the other brain impairments we see, like a delay in speaking, reading difficulties, and attention problems."



Modeling a Treatment for Bladder Cancer

Using a new mouse research model that replicates many aspects of human bladder cancer, researchers at P&S have identified a new investigational therapy for bladder cancer. This is one of the first mouse models for bladder cancer that truly replicates the invasive capabilities of the disease, the fifth most common malignancy in the world. At the same time, researchers were able to identify two major tumor suppressor genes – p53 and PTEN – that are inactivated in invasive bladder cancer.

The model uses a drug called rapamycin to disrupt a signaling pathway known as mTOR, a “switch” that is frequently turned on by many cancer mutations. This drug significantly slowed the progression of bladder tumors in mice, suggesting that drug developers should target the mTOR signaling pathway in bladder cancer therapies.

Meanwhile, the findings about p53 and PTEN could help oncologists target those patients whose disease is most in need of aggressive treatment, explained the study’s authors, Cory Abate-Shen, Ph.D., and Carlos Cordon-Cardo, M.D., Ph.D., both professors in the Department of Urology and the Department of Pathology & Cell Biology and associate directors in the Herbert Irving Comprehensive Cancer Center.

Drug-Eluting Stents

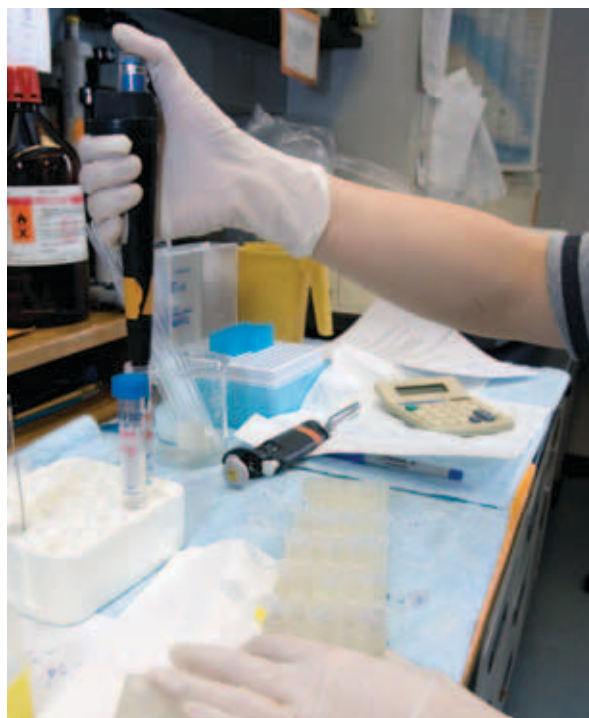
Drug-eluting stents are more effective than bare metal stents in reducing the rate at which heart attack patients’ arteries re-narrow, according to the landmark HORIZONS-AMI (Harmonizing Outcomes with Revascularization and Stents in Acute Myocardial Infarction) trial led by Gregg W. Stone, M.D., professor of medicine and director of cardiovascular research and education in the Center for Interventional Vascular Therapy. The study also found that the drug-eluting stents have a comparable safety profile to bare metal stents.

The HORIZONS-AMI trial, enrolling 3,206 patients at 123 centers in 11 countries, helps to clarify conflicting

results from previous trials comparing the two types of stents. “The findings will have a major impact on how decisions are made regarding drug-eluting and bare-metal stents in the highest-risk patients, those in the earliest hours of a heart attack,” said Dr. Stone.

Surgery Lowers Health Risk In Obese Teens

Laparoscopic gastric banding surgery, known as “Lap-Band,” for obese adolescents does more than just help them lose weight. A new study released by P&S pediatric endocrinologists has found that it also improves and even reverses metabolic syndrome, the deadly cluster of risk factors that puts people at high risk for cardiovascular disease and diabetes.



Six months after undergoing surgery, 24 morbidly obese adolescents showed a significant decline in body mass index, waist circumference, and blood lev-

els of C-reactive protein, lipids, and sugars. "An estimated 17 percent of all American adolescents are obese, and increasing numbers of them also have metabolic syndrome," said Ilene Fennoy, M.D., clinical professor of pediatrics and a co-author of the study. "Until recently, there have been few treatments capable of helping these young patients lose weight, much less improving their lifelong health prospects." The Lap-Band procedure remains investigational in adolescents, and follow-up studies are needed to validate results.

The current standard of treatment for Barrett's esophagus is to delay surgery until the first sign of cancer after a period of watchful waiting or surveillance. New research suggests radiofrequency ablation can completely reverse the pre-cancerous condition. Incidence of esophageal cancer has increased fivefold over the past three decades.

Surgery May Reduce Hypertension

Many people with high blood pressure are treated with a combination of medications and lifestyle interventions, including improving diet and getting more exercise. But in reality, only about a third of people with hypertension can control their blood pressure with medication and lifestyle changes alone. Many more patients have hypertension so severe that it resists those efforts, remaining stubbornly, life-threateningly high. These patients may have another option: surgery.

Results from a multi-center, 300-patient trial led by Columbia researchers show promise for the Rheos Baroflex Hypertension Therapy System, an FDA-approved technology that is implanted surgically under the skin in the neck and stimulates receptors in the carotid sinus that are responsible for regulating blood pressure. Basically, the system tricks the body into thinking it's even more hypertensive than it is, forcing it to respond by lowering blood pressure.

Although the trial is still ongoing, some patients with stubborn hypertension, unresponsive to a number of medications, are already seeing improvements in their blood pressure. "There is a vast segment of the hypertensive population that could potentially benefit from surgically intervening to alter the way baroreceptors function," said Daichi Shimbo, M.D., assistant professor in the Center for Behavioral Cardiovascular Health.

Reducing Cancer Risk by Targeting Barrett's Esophagus

Patients with Barrett's esophagus, a pre-cancerous condition of the tissue lining the esophagus that is often caused by prolonged gastroesophageal reflux disease (GERD), are at increased risk of developing esophageal cancer. In a trial hailed as a landmark study by the New England Journal of Medicine, which published the findings, researchers have found that radiofrequency ablation using targeted thermal energy can restore the esophagus and markedly reduce cancer risk.

Columbia was one of 19 centers involved in the nationwide trial, which found that just 1 percent of patients receiving radiofrequency ablation developed cancer, compared with 9 percent in a control group that received endoscopic surveillance and monitoring. For 77.4 percent of ablation patients, Barrett's esophagus was eradicated completely, compared with only 2.3 percent of the control group.

The incidence of esophageal cancer has increased fivefold over the past 30 years, and five-year survival is less than 15 percent. "The current standard of care for Barrett's esophagus has been watchful waiting or surveillance, delaying surgery until the first sign of cancer," said Charles Lightdale, M.D., professor of clinical medicine and a senior author of the study. "This study offers powerful evidence that treatment using radiofrequency ablation can help prevent esophageal cancer by completely reversing Barrett's esophagus."

Diabetes, High Blood Pressure Affect Survival for People with Alzheimer's

People who have Alzheimer's disease and also have diabetes or high blood pressure are at least twice as likely to die sooner than those who do not have one of those two conditions, according to P&S researchers. In a study of more than 300 people who eventually developed dementia, those with diabetes were twice as likely to die sooner than those without diabetes, and those with hypertension were two-and-a-half times more likely to die sooner.

People with Alzheimer's disease tend to live, on average, anywhere from three to nine years after diagnosis. "For that person and their caregiver, every minute counts. Here we have two controllable factors that may drastically affect how long that person can survive," said Yaakov Stern, Ph.D., professor of clinical neuropsychology in the Taub Institute for Research on Alzheimer's Disease and the Aging Brain and the Gertrude H. Sergievsky Center.

In Antipsychotic Medications for Adolescents, Newer Isn't Better

Two newer atypical antipsychotic medications are no more effective than an older drug in treating child and adolescent schizophrenia, according to a six-year, multi-site Treatment of Early Onset Schizophrenia (TEOSS) trial led by Jeffrey Lieberman, M.D., the Lieber Professor of Psychiatry, the Lawrence C. Kolb Professor of Psychiatry, and the chair of the Department of Psychiatry. The newer drugs, which often have been used to treat children with early-onset illness, also may come with more significant side effects. These results mirror the findings of the CATIE (Clinical Antipsychotic Trials of Intervention Effectiveness) trial, also led by Dr. Lieberman, which focused on adults with schizophrenia.

In the TEOSS trial, 50 percent of children taking molindone, the older drug, improved, while 46 percent of those taking one newer drug, risperidone, and 34 percent of those taking the other, olanzapine, improved. These improvement rates are considered comparable,

but the side effects differed widely. Children taking the two newer-generation antipsychotics gained an average of between eight and 13 pounds, while those taking molindone did not gain weight. The olanzapine group also showed potentially dangerous increases in cholesterol and other metabolic disruptions. "Doctors need to educate families about the potentially serious side effects these drugs can have so that strategies can be put into place to address them," Dr. Lieberman said.

Pinpointing Treatments for Childhood Anxiety

Anxiety disorders are among the most common mental conditions affecting children and adolescents and, left untreated, can jeopardize a child's school success, friendships, and family relationships. A new study led by Columbia researchers has identified three effective treatments for such disorders: cognitive behavioral therapy, which helps children face and master their fears; the antidepressant sertraline (Zoloft); and CBT combined with sertraline.

While combined treatment was most effective, yielding improvements in anxiety for 81 percent of those treated, CBT alone helped 60 percent, and sertraline alone led to improvements for 55 percent, compared with just 24 percent of participants taking a placebo. "The trial is the largest and only study to date comparing different modes of treatment for anxiety disorders in youth," said Anne Marie Albano, Ph.D., associate professor of clinical psychiatry and a senior investigator of the study. "It will help physicians and parents determine appropriate treatment for children and adolescents with these disorders, which can be debilitating."



New Drug Offers Hope for T-Cell Lymphoma

For patients with peripheral T-cell lymphoma, a diverse group of blood cancers that accounts for as many as 15 percent of non-Hodgkin's lymphoma cases in the United States, treatment options are limited. No drugs have been approved by the Food and Drug Administration specifically to treat T-cell lymphoma at any stage of the disease, so most patients undergo a range of systemic chemotherapies that do not directly target their disease. Average five-year survival is just 25 percent.

Phase 2 results from the largest trial ever conducted in patients with T-cell lymphoma show promise in treating the disease with a drug that partially works by mimicking folic acid. The international, multicenter PROPEL (Patients with Relapsed Or refractory Peripheral T-cell Lymphoma) trial led by Columbia researchers found that pralatrexate yielded a complete or partial response in 27 percent of patients with resistant or recurrent T-cell lymphoma, those whose disease has returned following previous treatments.

Pralatrexate, designed to look like the natural vitamin folic acid, selectively accumulates in tumor cells and then disrupts DNA synthesis, inducing programmed cell death.

Three Strikes, Neurons Are Out in Parkinson's

A combination of three factors acting in concert is responsible for killing brain cells in Parkinson's disease, according to Columbia researchers. Three molecules – the neurotransmitter dopamine, a calcium channel, and a protein called alpha-synuclein – work together to destroy neurons as part of the disease process.

According to a study published in April 2009, the calcium channels lead to an increase of dopamine inside the cell; the excess dopamine reacts with alpha-synuclein to form inactive complexes; and the complexes interfere with the cell's ability to dispose of waste that builds up over time, waste that eventually kills the cell.

If just one of the three factors is missing, the neurons will survive, suggesting new options for treatment. "It may be possible to save neurons and stop Parkinson's disease by interfering with just one of the three factors," said Eugene Mosharov, Ph.D., associate research scientist, who with David Sulzer, Ph.D., professor of neurology and of psychiatry, led the research. It may be that a drug already in clinical trials, which blocks the culprit calcium channel, could slow or stop disease progression in Parkinson's, something no other treatment has so far been able to achieve.

Anti-Angiogenesis Drug Takes Aim at New Target

Anti-angiogenesis drugs, designed to shrink tumors by cutting off their blood supply, have become a major component of cancer treatment over the past decade. But almost all of these drugs focus on one growth factor, VEGF, which tumors release to provoke the construction of new blood vessels. But VEGF inhibitors do not shrink all types of cancer, and even those that do respond to the drugs sometimes become resistant to them.

Columbia researchers have identified a new drug that also disrupts a tumor's blood supply, this time by blocking an entirely different target: an angiogenic receptor called Notch. Notch is required to construct normal arteries and it also is needed to build blood vessels that feed growing tumors. The new drug, Notch1 Decoy, has successfully disrupted blood vessel growth and shrunk tumors in mice with breast cancer. "The goal of anti-angiogenesis therapy is to shrink the tumor to a benign state, so these results are promising," said Jan Kitajewski, Ph.D., professor of clinical pathology (in OB/GYN) in the Institute for Cancer Genetics and the Herbert Irving Comprehensive Cancer Center. "In the future, with two different ways to cut off blood supply to tumors, we may be able to deliver a more potent one-two punch."

EDUCATION AND EXCELLENCE



As P&S maintained its extraordinary standards for faculty, research achievement, and clinical care in the midst of economic challenges, so too did P&S, one of the oldest medical schools in the United States, maintain its historic commitment to excellence among its students and innovation in education. Once again, P&S was among the top five most selective medical schools in the country, as measured by a combination of MCAT scores, GPAs, and acceptance rate for our entering classes.

Our students are passionate about research, if the Class of 2009 is any indication: 72 percent did research with faculty, 14 percent received prestigious fellowships, such as those from the Howard Hughes Medical Institute and the Doris Duke Foundation, and 21 percent took an extra year to pursue research projects. Our students are committed to global health: nearly 40 percent of the Class of 2009 took an elective abroad, nearly half of those in developing countries. Our students recognize the importance of a broad-based education for tomorrow's physician leaders: 15 percent earned a second degree such as an M.P.H. or Ph.D. And perhaps most gratifying, our students find a home at Columbia: nearly one-third of those entering the residency match matched right here at CUMC.

Meanwhile, the highly regarded U.S. News and World Report ranking of U.S. medical schools continues to place P&S among the top institutions in the country. Ranked at No. 10 overall, with a cumulative score up four points from 2006, we had several particularly high-ranking specialties. Our drug and alcohol abuse program was third in the nation, our AIDS program fifth, our women's health program eighth, and internal medicine ninth.

New Curriculum, New Facilities

Our latest outstanding cadre of students, the Class of 2013, arrived at P&S in the fall of 2009 to find both a curriculum and a campus transformed. They are the first class to pursue their M.D. degree under our re-designed curriculum, the first major restructuring since 1991.

The new curriculum offers the flexibility that is essential to contemporary medical education, through a fundamental reorganization that replaces the old designations of first, second, third, and fourth years with a new three-step system: fundamentals, major clinical year, and electives and selectives.

What had been two years of preclinical instruction is now compressed into 18 months, running from late August through January of the second year, including a summer vacation. The courses involved, "Molecular Mechanisms," "The Body in Health and Disease," "Foundations of Clinical Medicine," and one semester each of anatomy and psychiatric medicine, take a combined organ systems approach to teach both normal structure and function and the impact of disease.

The major clinical year is designed to promote continuity and interaction, rather than separate "clerkship silos," through a system of pairing clerkships. For example, pediatrics and obstetrics/gynecology will share the same 12-week block, as will psychiatry and neurology. Clerkship directors will work as a team to develop a common set of tools and groundwork for students.

What has been known simply as the fourth year is now called "Electives and Selectives" and has been expanded to 14 months. It includes eight months of clinical electives (including a one-month course called "Back to the Classroom" that re-emphasizes basic science), a four-week senior medicine clerkship, and a four-month scholarly project in one of six areas of academic concentration.

"Using up-to-date technology and teaching techniques, we're encouraging our students to be curious, find answers, and critically evaluate the information they find," said Ron Drusin, M.D., vice dean for education. "It's a curriculum that fosters the team-based ap-

proach that is an essential element of medicine today, while at the same time allowing students to explore their individual goals in medicine."

Students will be able to explore those goals in an exciting new facility that they helped design, the Teaching and Learning Center within the Hammer Health Sciences Center, which opened after a 14-month renovation. It is the first space at P&S designed and built according to the needs of integrated education, rather



than space limitations, and perfectly complements the new curriculum, with its emphasis on team-based learning and early clinical experiences.

The new center adds 30,000 square feet of classrooms and 24-hour study space – double the amount of campus space previously dedicated to education – in contemporary classrooms designed to promote group learning. The facilities include 24-hour study lounges, group study rooms, and individual study carrels, as well as 15 new classrooms and a renovated library reading room that can be used as study space when not in use.

The three largest classrooms incorporate design elements that encourage interactive and collaborative learning, such as group tables outfitted with a laptop for each student. All classrooms have wireless Internet access and come equipped with the capability to create a downloadable video podcast of any session with a single click of a button. Some have flat-screen monitors and writing tablets that allow instructors to annotate their presentations on screen.

New Degree Program Focuses on Rural Medicine

Not only have the P&S curriculum and its learning environment been redesigned, but we also have added an entirely new program in partnership with Bassett Healthcare, a nationally recognized health care system based in Cooperstown in upstate New York. This new rural Columbia campus introduces a new model of medical training, designed to alleviate the national shortage of physicians practicing in rural areas. In addition, it will educate a new generation of doctors capable of leading health systems that promote both quality of practice and cost-effective delivery of care.

P&S will offer up to 10 top-ranked students the opportunity to participate in the first class of the groundbreaking Bassett program, with significant scholarship support. Eventually 14 students could be enrolled. The four-year program will graduate its first class in 2014. Students will spend their first year and a half at the P&S Manhattan campus, focusing on the basic sciences. They will then move to Bassett for the rest of their medical education, in a distinctive longitudinal program consisting of a required one-year experience followed by a year and a half of electives and pursuit of an area of concentration utilizing the full array of opportunities at both campuses. At Bassett, students will have the opportunity to manage the care of individual patients over time and through different types of medical problems. The new campus has been hailed as a potential demonstration model for a much-needed new paradigm in medical education.



Telling the Story of Illness and Health

A first-of-its-kind master's degree program in narrative medicine has started through a partnership between P&S and Columbia's Morningside campus. Narrative medicine is an emerging clinical discipline that fortifies the practice of doctors, nurses, social workers, therapists, and other caregivers with the knowledge of how to interpret and respond to patients' stories.

This innovative interdisciplinary master's curriculum teaches narrative theory, skills of close reading, reflective writing, interpretation of illness narratives, and the philosophic underpinnings of developing empathic relationships between clinicians and patients. Specialized seminars focus on topics such as narrative genetics and stories about living and caring for people at the end of life. Students can complete the 38-credit program in one full year or two years of part-time study.

Rita Charon, M.D., Ph.D., director and founder of Columbia's pioneering Program in Narrative Medicine for medical students, which is a national leader in this innovative model for medical education and health care, will teach in the graduate program.

First Lang Program Graduates Enter College

The first six students from the Lang Youth Medical Program at NewYork-Presbyterian Hospital/Columbia University Medical Center have graduated from high school and are beginning their higher education at four-year colleges. Founded by philanthropist Eugene M. Lang, the program features six intensive years of study, from seventh grade through high school, offering students from Washington Heights and Inwood an education in science and medicine. The pioneering six, many of whose families are first-generation immigrants to America, paved the way for more than 50 students who are now in the program. P&S students have participated as advisers and mentors since the program began.

The six graduates have received more than \$330,000 in grants and scholarships at their universities: College of New Rochelle, College of St. Rose, SUNY-Stony Brook University, Fordham University, Suffolk University, and Vanderbilt University.

Medical Education Day Honors Steve Miller

Five years after his death in a Missouri plane crash, beloved teacher Steve Miller, M.D., has been honored with the designation of an annual Steve Miller Medical Education Day in the Department of Pediatrics. Dr. Miller, the Arnold P. Gold Associate Professor of Clinical Pediatrics, received five teaching awards during his career at P&S, including Columbia's 2001 Presidential Award for Outstanding Teaching. Steve Miller Education Day was created to focus attention on two of the guiding principles of Dr. Miller's career: excellence in medical education and humanism in medicine.

At the event, the Department of Pediatrics announced the new Steve Miller Fellowship in Medical Education, which will annually support P&S students conducting innovative research related to fostering the best training of young physicians. The first fellowship recipients will present the results of their research at next year's Steve Miller Education Day.

A new master's degree program in narrative medicine teaches the skills of narrative competence to help health care professionals master the leadership required to develop and implement narrative-based learning and practice in clinical settings. Narrative medicine is an emerging clinical discipline that fortifies the practice of doctors, nurses, social workers, therapists, and other caregivers with the knowledge of how to interpret and respond to patients' stories.

First Hospitalists, Now Surgicalists?

A new acute care surgical service rotation has been introduced to P&S students as part of the five-week general surgery clerkship. This rotation allows students to learn the coordinated team care approach that the acute care surgery service provides to its patients.

Launched in 2008, the acute care surgery service is one of only a handful of such services on the East Coast and the first in the New York metropolitan area. The acute care surgery team performs emergency surgeries to treat acute conditions, such as appendicitis, intestinal obstructions, hernias, and cholecystitis. It also provides rapid surgical response for critically ill inpatients, such as those with a perforated colon, rather than requiring the intervention of the colorectal surgical service. Acute care surgery takes cases previously seen by different divisions in the hospital and streamlines them into one service, an approach that research shows decreases length of hospital stays, reduces complications, and improves patient experiences.

During the rotation, in which students learn this new approach to treating acute surgical cases, students learn more about diagnosis than on other surgical clerkships, where patients usually have already been diagnosed. They also have the opportunity to follow the patient preoperatively, operatively, and postoperatively to gain a broader perspective on surgical problems.



Glenda Garvey Teaching Academy Advances Global Health

A grant from the Glenda Garvey Teaching Academy has made possible a series of videoconference lectures bringing together students at P&S in New York with those at the Medical School for International Health in Beer-sheva, Israel. The first in the series, "Nutrition in Global Cardiovascular Disease: Why and What Matters," was presented in September 2008 by Richard Deckelbaum, M.D., director of the Institute of Human Nutrition, and Yaakov Henkin, M.D., of Ben-Gurion University of the Negev.

These interactive, Web-based seminars allow students in Manhattan and Israel to speak to one another and ask questions of the presenters, strengthening the relationship between the schools as well as enhancing the global health programs at both institutions.

Teaching Emergency Medicine in Montenegro

For the third year in a row, a team of physicians and nurses from P&S and Jacobi Medical Center in the Bronx traveled to the seaside town of Ulcinj, Montenegro, to teach and assist in emergency medicine. The small seaside town is regularly overwhelmed by summer tourists from Europe, and its small clinic cannot handle the influx of patients. The clinic has only one physician trained in emergency medicine but 50 or more patients may visit the clinic each day in July and August with complaints ranging from heart attacks to trauma to near-drowning.

The team, co-led by Alan Ross, M.D., Ph.D., assistant clinical professor of pediatrics-emergency medicine, works with medical leadership in Montenegro to strengthen ties between the small emergency clinics and larger hospital, hoping to create a model for regional emergency care and to encourage young Montenegrin physicians to pursue emergency medicine. In 2008, members of the team helped organize and participate in the first Montenegrin-American Medical Conference.



Dean's Day for Research

Every year at P&S, the Dean's Day for Medical Student Research offers students who perform research while at P&S the opportunity to highlight their findings through a poster presentation event. The 2009 event, held in May, featured presentations from 34 students. Three of the poster presenters were honored with the Dr. Alfred Steiner Award for Best Medical Student Research for their work.



Students Find REMEDY for Health Gaps

Every year, P&S students renew their commitment to public service through an ever-growing array of projects that offer the opportunity to meet the health care needs of communities in our Washington Heights neighborhood or half a world away.

One of the strongest ongoing programs is the P&S chapter of REMEDY, in which students recover unused and surplus medical equipment for the developing world. Students involved in REMEDY, which is part of the International Health Organization at P&S, recover materials from NewYork-Presbyterian and partner hospitals and ship them to clinics and hospitals in the developing world. Students run the organization in collaboration with faculty advisers and the Al-Shifa Foundation of North America.

P&S students also volunteer and complete clerkships at the Charles B. Wang Community Health Center in Chinatown. This year, the Asian-Pacific American Medical Student Association chapter launched a counseling project there for children and teenagers with asthma. Each week, several P&S students spend time educating kids about managing their asthma and provide information to parents.

"The international nature of New York City offers numerous opportunities for students to develop as physicians skilled in understanding and treating patients from diverse backgrounds and cultures."

— Lisa A. Mellman,
Senior Associate Dean for
Student Affairs

A Changed Environment for Graduate Students

Changes in graduate programs implemented since 2007 have resulted in structural reorganization and substantive revision of core curricula. Ph.D. programs at P&S now are offered in five divisions: an integrated program in cellular, molecular, and biomedical studies; biomedical informatics; neurobiology and behavior; basic cell and molecular biology; and molecular basis of health and disease. The latter two are umbrella divisions that each incorporates several department-based programs.

Students who entered graduate school in 2009 were the first to fully matriculate under the new environment. They benefitted from the updated curriculum, which includes a completely revised year-long course in biochemistry and molecular biology that is required of many of the incoming students. In addition, the Office of Graduate Affairs was instrumental in implementing,



with the assistance of faculty from the Mailman School of Public Health, a new core course in biostatistics that addresses the need among our students of additional training in quantitative aspects of modern biomedical research. Finally, a new course addressing mechanisms of disease was developed as a core requirement for the programs within the division of molecular basis of health and disease, but the course also is taken by many students from other programs. This one-semester course will now be expanded to a full year under the auspices of a recently awarded HHMI Med into Grad training grant.

The 2009 entering class of 58 students represents almost 40 U.S. undergraduate institutions in more than a dozen states plus overseas institutions. What graduate school administrators have seen with increasing frequency in recent years is applicants taking time between undergraduate and graduate school. Just more than half of the 2009 incoming class entered two or more years after finishing undergraduate school. "Often this time reinforces or ignites discovery of a commitment to a career in biomedical research," says Richard B. Robinson, Ph.D., associate dean for graduate affairs. The flexible organization of our graduate programs and the revised curriculum intended to provide practical tools and knowledge in quantitative and translational biology should appeal to this more mature and focused graduate student population.

Development Highlights

2008-2009

The College of Physicians and Surgeons received gifts and pledges totaling more than \$100 million during fiscal year 2009. Our donors play a key part in keeping the medical school fiscally strong during a challenging economic environment. Their support is the mainstay that enables P&S to provide excellent, ethical patient care; to translate exciting research discoveries into new treatments; and to offer the finest education to future medical leaders.

Listed below are some of the many significant gifts of the 2009 academic year. We extend thanks to all of our donors who share in the medical school's success. Their generosity continues to make an important impact on the outstanding work of our students, physicians, and research scientists.

Angelica Berrie and The Russell Berrie Foundation continued their generous support of the Naomi Berrie Diabetes Center for diabetes research and clinical care programs with new gifts and pledge payments. Their contributions are the latest in the Foundation's long legacy of funding for the Naomi Berrie Diabetes Center.

The Addie and Harold Broitman Foundation continued its support of research on posterior cortical atrophy in the Taub Institute for Research on Alzheimer's Disease and the Aging Brain.

The Carmel Hill Fund made an extraordinary commitment to the Division of Child and Adolescent Psychiatry to support the TeenScreen National Center for Mental Health Checkups, a school-based initiative dedicated to making the mental health of teens a priority.

The Sudhir Choudhrie Professorship of Cardiology was created through a generous gift from Strongheart Realty Inc. The first incumbent is Donna Mancini, M.D., director of the Center for Advanced Cardiac Care, the leading heart failure and transplant program in the nation, with the largest volume of transplants and the most successful outcomes.

The Einhorn Family Charitable Trust continued its commitment to support Columbia's Brain-Gut Initiative, a multidisciplinary research program that examines the neurobiological basis of nurture and focuses on developing new treatments for childhood developmental disorders.

The Gloria and Louis Flanzer Charitable Trust provided funding for the new Gloria and Louis Flanzer Vision Care Center, which opened in Spring 2010 in midtown Manhattan. The new center will provide comprehensive ophthalmological care.

The Sidney E. Frank Foundation has made a commitment to enhance the clinical and research capabilities of the Celiac Disease Center at Columbia University, one of a few centers in the United States that provide comprehensive medical care, including nutritional counseling, for adult and pediatric patients with celiac disease.

The Gatsby Charitable Trust Foundation continued to provide support for brain circuitry research in the Department of Neuroscience by advancing our understanding of how the assembly, organization, and function of neural circuits control defined behaviors.



Several friends, patients, and colleagues made gifts and pledges to fund the **Jerry I. Gliklich, M.D., Professorship of Cardiology in the Department of Medicine**. Dawn M. Greene and The Jerome L. Greene Foundation made the lead commitment to help establish and endow the professorship, which honors Dr. Gliklich's exemplary career at Columbia. Other major gifts and commitments were made by the Sol and Margaret Berger Foundation, G. Lynn Shostack, Judith Sulzberger, M.D., Budd Levinson, Richard Stock, M.D., Robert Horgan, Kenneth Avanzino, and Arthur Stamm.

The Hope & Heroes Children's Cancer Fund, whose sole mission is to support the Herbert Irving Child & Adolescent Oncology Center, made gifts to fund pediatric oncology treatment and research initiatives at the Center. The Integrative Therapies Program for Children, made possible by support from the Hope & Heroes Children's Cancer Fund, was the first of its kind to mainstream complementary medicine into a conventional program of surgery, radiation, and chemotherapy.

The inspiring generosity of **Mr. and Mrs. Herbert Irving** continues to have a profound impact on Columbia. The Irvings recently extended support to the Herbert Irving Comprehensive Cancer Center, the Department of Dermatology, and the Irving Institute for Clinical and Translational Research.

The Jaharis Family Foundation's support of the Department of Ophthalmology is helping doctors preserve the sight of patients by understanding and treating diseases of the eye. The Foundation also has provided significant support to the Cardiovascular Research Initiative, which is the intellectual home for CUMC's expanding initiatives in basic and translational cardiovascular research.

The Thomas L. Kempner Jr. Foundation has made a generous pledge to the Division of Endocrinology to establish the Thomas Kempner Osteoporosis and Metabolic Bone Diseases Imaging Research Fund.

An anonymous donor who is a longtime admirer of Dr. Clarice Kestenbaum provided support to the Division of Child & Adolescent Psychiatry to establish **the Clarice Kestenbaum, M.D., Professorship of Education and Training**. The donor's generosity will also fund a



fellowship in the division in honor of Dr. Kestenbaum.

Constance and Stephen A. Lieber and the Essel Foundation continued their support to advance schizophrenia research. The gift supports research to improve treatment options and quality of life for patients with schizophrenia and related disorders.

The Klingenstein Martell Foundation made a pledge to the Department of Obstetrics & Gynecology to support construction of the Center for Prenatal Pediatrics. The Center offers expert, comprehensive medical care to women who face complex, high-risk pregnancies.

Helaine Lerner and The New Tamarind Foundation continued their support of the Integrative Therapies Program in the Division of Pediatric Oncology. The program provides a new standard of care in complementary and alternative medicine for children with cancer.

The G. Harold & Leila Y. Mathers Charitable Foundation has made a commitment to support basic research in the Department of Neuroscience.

Jillian and Lawrence Neubauer made a commitment to establish the Garrett Isaac Neubauer Assistant/Associate Professorship Fund in the Department of Pediatrics. The professorship will be held by the director of the Neonatal Cardiac Care Unit in the Department of Pediatrics.

Carol and Stewart Rahr and **Kinray Inc.** provided support for the Columbia Eating Disorders Program in the Department of Psychiatry. The gift will help young faculty pursue promising avenues of research on the biology, diagnosis, treatment, and prevention of eating disorders.

Susan and Jack Rudin continue their generous funding of a nephrology professorship, a fellowship in cardiology, and a scholars program for young investigators. Additional ongoing support from the **May and Samuel Rudin Family Foundation** and the **Louis and Rachel Rudin Foundation** furthers research programs and financial aid for our students to help them pursue careers in health care.

A commitment from **Mr. and Mrs. Arthur T. Shorin** and **Mr. and Mrs. Scott Silverstein** has established the Shorin-Silverstein Family Scholars Program in Cardiology. Their gift will provide support for junior faculty members conducting clinical and research activities in the area of heart failure and transplantation.

P&S is enriched by the friendship and generous support of **G. Lynn Shostack**, who continues to provide funding for many programs, including the David A. Gardner New Initiatives Fund, the David A. Gardner PET Imaging Research Center, and the Jerry I. Gliklich, M.D., Professorship of Cardiology in the Department of Medicine.

The Spinal Muscular Atrophy Foundation continued to support research at the SMA Clinic and Motor Neuron Center at Columbia University Medical Center. The Foundation's commitment has an important impact on Columbia's efforts to discover an effective therapy for treating children with spinal muscular atrophy and for realizing our shared goal of curing and preventing SMA.

Two anonymous P&S alumni each committed \$1 million to the **P&S Alumni Campaign's Legacy Challenge Fund**. The new initiative, designated for scholarships, provides one matching dollar for every three committed through a planned gift to create a named scholarship in honor of the Challenge donor.

The Leonard and Claire Tow Charitable Trust Inc. continued to provide generous support for the Motor

Neuron Center at Columbia University Medical Center, furthering a legacy of commitment to the advancement of effective treatment, research, and education relevant to motor neuron biology and disease.

Helen and Clyde Y.C. Wu, M.D., '56, and their family continue to provide valuable support to P&S which has bolstered Columbia and advanced the understanding and treatment of disease. Their recent unrestricted support affords the means to implement programs that are vital to the success of the medical school.



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College of Physicians & Surgeons 2009

Enrollment, Fall 2009

M.D. program	580
M.D./M.P.H.	6
M.D./Ph.D. program	91
Other M.D. programs	32
Graduate programs	792

<i>Total faculty</i>	<i>4,423</i>
<i>Full-time faculty</i>	<i>1,914</i>
<i>Part-time faculty</i>	<i>2,509</i>
<i>Living M.D. alumni</i>	<i>7,200</i>
<i>Budget (FY10)</i>	<i>\$1.43 billion</i>
<i>Endowment</i>	<i>\$1.14 billion</i>
<i>Endowed chairs</i>	<i>193</i>
<i>Research support (FY09)</i>	<i>\$366.1 million</i>

Degrees granted, July 2008 to June 2009

M.D.	158
M.D./M.P.H.	4
M.D./ Ph.D.	15
M.D./ M.B.A.	1
Ph.D.	87
Doctor of physical therapy	40
M.S. in occupational therapy	36
M.S. in nutrition	62
Certificate in psychoanalysis	4

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2009 Annual Report

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