PENN Medicine

SUMMER 2007

HOW TO BUILD A TEAM

A Neuro-Orthopaedist in Action
Crossing Boundaries with Mitchell Blutt
The Standard in Biomedical Studies
Revisiting the New Curriculum

Teamwork

It's not always easy getting a group of medical students together. After all, with their busy schedules, there are probably many other things they could be doing than gathering for a photo shoot. So I was happy when Maria Ciocca, a first-year student, was able to round up the other six people in her team for an early-morning shoot in April.

This year, getting seven students together may not have been as difficult as in the past. The difference is that the students who entered the School of Medicine last August are the first to be grouped – officially – into teams of six or seven. So there was already a bond among the students in Maria's group.

Because of the tight schedule and the need for an assistant to help with lighting, I came along with photographer Daniel Burke to the first floor of Stemmler Hall. Stemmler has some handy classrooms where we could recreate some "group learning." It also has a spacious hallway with flags from earlier medical classes and portraits of prominent faculty members of the past – a possible backdrop to suggest contrasts between then and now. But for me, the pressure was on. I had to hold Dan's Nikon SB-800 flash for back-lighting – keeping it pointed in the right direction and steady. If the students were concerned about the obvious inexperience of the photo assistant, they were gracious enough not to comment. And they played along with our suggestions. Yes, it's unlikely that all seven teammates would gather around a computer monitor to view a slide, but the resulting photograph is a stylized version of reality.

I believe it was Maria who recalled the "falling" exercise meant to build trust among team members. It was one of the options presented during last year's orientation program. So, gamely, Sean Fedyna, Karen Revere, Nikhil Singh, Justin Ziemba, David Alonso, and Sophie Woolston formed two rows as catchers in a Stemmler classroom. Maria was volunteered to be the catchee. And catch her they did, several times, like a smooth-working team, while Dan took shot after shot with his Nikon D2X. Then it was time for class. I am happy to report that I returned Dan's lighting equipment without damage.

As our cover story explains, the School of Medicine worked out the concept of grouping its students into teams with the help of The Wharton School. It is not the first time scholars from Wharton have shared their expertise with the medical school. One long-term collaboration is Penn's Leonard Davis Institute of Health Economics, where many senior fellows are drawn from Wharton and the School of Medicine. Another collaboration, involving Wharton, Leonard Davis, and the Department of Surgery, was the PENN Medicine Patient Safety Leadership Academy (2003-2004), a pilot program designed to improve patient safety by improving the leadership skills of surgical teams.

More recently, Katherine J. Klein, Ph.D., a professor of management at Wharton, was one of the authors of "A Leadership System for Emergency Action Teams: Rigid Hierarchy and Dynamic Flexibility." Funded by the U.S. Army Research Institute, the project involved observing the Shock Trauma Center in Baltimore as a way to analyze team leadership in diverse settings. As described in *Wharton Alumni Magazine* (Winter 2005), the traditional view of leadership is usually based on "dominant" or "transformational" models that emphasize the leader's "inspirational" role in motivating followers and that assume a long-term relationship between leader and followers. That form of leadership does not apply fully on the trauma unit. There is a team of specialists (including nurses and anesthesiologists) that changes frequently as individual members cycle on and off the floor. The three most senior members, in order, are the attending surgeon, the surgical fellow, and the admitting resident, but the active leadership role shifts frequently and fluidly. The researchers found the system "paradoxical" – a dynamic and flexible system within the rigid hierarchy ingrained in the field of surgery. Ultimately, as they put it in their study, leadership "is not a product of a leader's individual differences, but of any organization or unit's norms, routines, and role definitions."

Interestingly, while the School of Medicine is adopting the team concept from Wharton, a recent news item suggests that ideas about teamwork remain somewhat fluid. This year's incoming students at Penn's School of Medicine were encouraged to take at least some tests as a team, but that was certainly not the case at Duke University's business school. Twenty-four students were found guilty of cheating ("inappropriate collaboration") on a take-home exam this spring. When the incident was first reported, a professor of leadership at the George Washington University School of Business, James R. Bailey, commented to *The Chronicle of Higher Education*. "They were enterprising, they took initiative, and they worked together," he said, perhaps with tongue partly in cheek. "Aren't those all the qualities we're trying to encourage of business-school students?"

Apparently, even with teams, there are some lines that cannot be crossed. ■

Cover: Standing l-r: teammates Sophie Woolston, Karen Revere, Maria Ciocca, Sean Fedyna, and Justin Ziemba. Kneeling: David Alonso and Mikhil Singh. Photo: Daniel Burke

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HOW TO BUILD A TEAM *By Dawn Fallik*

The Wharton School groups its M.B.A. students into teams and teaches them communication and leadership skills. Why shouldn't Penn's medical students, who are likely to work in hospitals, large practices, and other systems, learn the same valuable interpersonal skills? Now, with some help from Wharton, they will.

A MODEL PROGRAM: BIOMEDICAL STUDIES AT PENN *By Nicole Gaddis*

Overseeing seven highly interdisciplinary – and interschool – graduate groups, the Biomedical Graduate Studies program continues to set the standard for teaching basic science. It's a model that has been followed by other centers and institutes at Penn, as well as by other universities.

Departments

A PROMISING ANNIVERSARY *By Thomas W. Durso*

Last fall, experts gathered in Germany to celebrate the 100th anniversary of the discovery of Alzheimer's disease. Two Penn researchers, John Trojanowski and Virginia Lee, were among the invited speakers. Trojanowski reports a sense of optimism about future developments.

MARY ANN KEENAN CAN MAKE A MUSCLE DO ANYTHING *By Sally Sapega*

The only full-time neuro-orthopaedist in the nation can often help patients who have had strokes regain their physical capabilities when other approaches have failed. According to Keenan, the patients she sees "are one of the most underserved populations in this country."

CROSSING BOUNDARIES WITH MITCHELL BLUTT *By Mark Gaige*

An internist, venture capitalist, entrepreneur, philanthropist, and Penn trustee, Mitchell Blutt, M.D., M.B.A., has excelled in a variety of roles. In his "spare time," he has a few hobbies, too.

TEN YEARS OLD AND GOING STRONG *By John Shea*

Launched in 1997, Curriculum 2000 promised to equip medical students more effectively for the health-care world they'd be working in. The Vice Dean for Education gives an update on what's worked and how the original version has been improved to meet developing student interests.

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School of Medicine: A Ten-Year Streak

For the 10th year in a row, the School of Medicine was ranked in the top five among research-oriented medical schools in the annual *U.S. News & World Report* survey of graduate and professional schools. And for the second year in a row, Penn's school was ranked third, behind only Harvard and Johns Hopkins. Penn was also ranked 16th among medical schools for students going into primary care.

U.S. News weighs peer assessments, assessments by residency directors, research activity, student selectivity, and other factors.

Penn was also ranked in the top 10 in four specialty programs: Internal Medicine (#4), Drug/Alcohol Abuse (#6), Women's Health (#3); and Pediatrics (#1).

Following Penn in the annual rankings were Washington University in St. Louis and the University of California at San Francisco.

In a memo announcing the survey results to faculty and staff, Arthur H. Rubenstein, M.B., B.Ch., executive vice president of the University of Pennsylvania for the Health System and dean of the School of Medicine, wrote: "Our ranking as one of the top three medical schools in the United States is a reflection of the commitment and dedication to excellence exemplified by our faculty, students, and staff. While it is important to bear in mind that such reputational surveys must be kept in their proper perspective, it is always nice to be recognized so publicly for our successful efforts."

New Center Focuses on Ovarian Cancer

George Coukos, M.D., Ph.D., has no hesitation in describing the reason for a new center on the Penn campus. "There was a tremendous need for this center and to advance the fight against ovarian cancer," said Coukos, director of the recently established Center for Research on Early Detection & Cure of Ovarian Cancer. "The need for early detection is crucial to win this fight. If caught in Stage I, the five-year survival rate of ovarian cancer is over 90 percent. If caught in Stage III, the survival rate drops to less than 30 percent." Under Coukos, the center will focus on developing better detection methods and new treatment therapies, while improving the quality of life for women with ovarian cancer.

The Center for Research on Early Detection & Cure of Ovarian Cancer features three research programs:

George Coukos, M.D., Ph.D.

* Early Detection and Prevention
* Advanced Therapeutics
* Biology and Pathogenesis

Coukos, who did an internship, residency, and fellowship at Penn, now holds the Celso Ramon Garcia Associate Professorship of Obstetrics and Gynecology and serves as director of gynecologic oncology research. One of his areas of research is tumor vasculature, and his laboratory recently discovered the unique molecular make-up of vascular cells in ovarian cancer. Because these molecules are bound to the surface of tumor blood vessels, they can be used to visualize tumors in the body using molecular imaging or even to attack tumors with specially designed "killer bullets" – a form of targeted therapy. And because some of these molecules may be shed into the blood stream and detected using a blood test, the lab's discovery may lead to developing early detection tools.

Christina S. Chu, M.D. '95, G.M.E. '99, assistant professor of obstetrics and gynecology, is leading an effort to develop vaccines for preventing ovarian cancer. The first trial uses dendritic cells loaded with Her-2 and hTERT. Another promising approach is being taken by Coukos and Carl June, M.D., professor of pathology and laboratory medicine and director of translational research for the Abramson Family Cancer Research Institute. June's lab is engineering lymphocytes to redirect them against tumor cell targets. The hope is that the lymphocytes can be made to recognize tumor vascular targets, so they can destroy the tumor vasculature that is crucial for the survival and growth of a tumor beyond 2-3 millimeters.

According to Deborah A. Driscoll, M.D., chair of the Department of Obstetrics and Gynecology, the new center will also serve as "a catalyst to unite existing talent at Penn, recruit new investigators, and promote interdisciplinary collaboration in the field of ovarian cancer."

The center was launched by the Department of Obstetrics and Gynecology, the Center for Research on Reproduction and Women's Health, the Abramson Cancer Center, and the University of Pennsylvania Health System.

A Guided Missile That Targets Brain Tumors

Phil Marfuta and his fiancée, Judy Law.

Physicians initially diagnosed Phil Marfuta, 28 years old, with tension headaches, which seemed reasonable to him because he was a busy graduate student studying physics at Princeton University. As the days went on, however, his headaches did not subside. When a CT scan and an MRI revealed two tumors, Marfuta underwent emergency surgery at HUP.

Marfuta's biopsy revealed that one of his tumors was a grade IV glioblastoma multiforme (GBM), the most aggressive form of primary brain tumor. Typically, once a patient is diagnosed with GBM, the median survival time is 12 months.

"That kind of news is the kind you don't want to have to call your family and tell them about," says Marfuta.

Marfuta's tumors had stopped responding to traditional chemoradiation treatment and to a clinical trial that added an immune modulator to his therapy. That's when he learned of the Cotara® trial.

Kevin Judy, M.D.

HUP is one of four sites participating in the clinical trail of Cotara, a biological "guided missile" for the treatment of GBM, which is newly diagnosed in more than 10,000 Americans each year.

Cotara is a monoclonal antibody that targets the DNA of cancer cells and carries a radioactive isotope to them, literally destroying the cancer cells from the inside out. GBMs are complicated to treat because filaments of malignant cells spread out like fingers from the tumor and take root deep in the surrounding tissue, making it difficult to remove them without damaging healthy brain cells. The new approach targets the cancer cells, while sparing healthy tissue in the brain.

According to Myrna R. Rosenfeld, M.D., Ph.D., chief of Penn's Division of Neuro-Oncology, another challenge in treating brain tumors is the difficulty of delivering therapeutic agents to the brain through the blood-brain barrier (BBB). Cotara is delivered through a method called convection enhanced delivery, which uses a catheter to bypass the BBB and target the specific tumor site in the brain. "This method enables us to treat GBMs with local therapy that does not have side effects elsewhere in the body," says Robert Lustig, M.D., clinical associate professor of radiation oncology at Penn.

In November, 2006, Marfuta was the first patient in the U.S. to be treated in this clinical trial of Cotara.

The first step was a stereotactic MRI to place the catheters accurately. As Kevin Judy, M.D., professor of neurosurgery, explains, "This is a fine-cut MRI that has undergone a three-dimensional reconstruction that is then registered directly on the patient's head. In this way, the brain tumor can be accurately localized from outside the skull."

Judy made two burr holes into Marfuta's skull and placed the catheters into position inside the tumor.

"It involved just catheters, so compared to a craniotomy, that sounded quite nice," recalls Marfuta. "When I came to, I had almost no pain. I was shocked at how easily the surgery went." To date, his GBM has been stabilized.

The Phase 2 clinical trial is designed to evaluate a single Cotara infusion in patients with a first or second recurrence of GBM. The primary endpoints of the trial are to confirm safety and determine median survival time and median time to progression in patients treated with Cotara. Cotara has been granted orphan drug status and fast track designation by the U.S. Food and Drug Administration for the treatment of GBM.

— Kate Olderman

Honors & Awards

Abass Alavi, M.D., professor of radiology, received an honorary degree from the University of Bologna in Italy for his outstanding achievements in "Medicine and Surgery." The university is considered the world's oldest institution of higher learning. Alavi and his team introduced Fluorodeoxyglucose (FDG) Positron Emission Tomography, and he performed the first human studies with this methodology in August 1976.

Giulio J. D'Angio, M.D., emeritus professor of radiation oncology, and **Eli J. Glatstein, M.D.**, vice chairman and professor of radiation oncology, have been named fellows of the American Society for Therapeutic Radiology and Oncology (ASTRO). Fellows must have been part of the society for at least 20 years, have served in a leadership role for the organization, and have made a significant contribution to the field of radiation oncology.

Dwight L. Evans, M.D., chair of the Department of Psychiatry and the Ruth Meltzer Professor of Psychiatry, was named Psychiatrist-in-Chief of the University of Pennsylvania Health System. The appointment recognizes his significant contributions in building and maintaining world-class clinical, research, and educational programs in psychiatry since his appointment as chairman. Under his leadership, the department established Penn Behavioral Health to provide structure and marketing focus to its wide array of psychiatric and behavioral-health clinical services and to expand its offerings.

Stuart Fine, M.D., professor and chair of the Department of Ophthalmology and director of the Scheie Eye Institute, was one of six recipients of the Lifetime Achievement Award from the American Academy of Ophthalmology for his contributions to the academy and to the profession.

Clara Franzini-Armstrong, Ph.D., professor of cell and developmental biology, has been named the recipient of the 2007 Founders Award, presented by the Biophysical Society for outstanding achievement in biophysics. She was cited for her significant contributions to the understanding of the excitation-coupling mechanism of striated muscles through her ultrastructural analyses of muscle.

Mark Greene, M.D., Ph.D., the John Eckman Professor of Medical Science in the Department of Pathology and Laboratory Medicine, was awarded the 22nd annual J. Allyn Taylor International Prize in Medicine by Robarts Research Institute. He was honored for his pioneering work that led to the development of Herceptin, the breast cancer drug that defines a new class of targeted cancer therapies. Greene and his colleagues have discovered how to disable breast cancer tumors without harming adjacent non-cancerous cells, which can happen in chemotherapy or radiation.

Shiriki Kumanyika, Ph.D., M.P.H., a professor of epidemiology who serves as associate dean for health promotion and disease prevention, received a Red Dress Award from *Woman's Day* magazine. She was one of three women to be recognized nationally for making an exceptional contribution to fighting heart disease in women, the nation's leading killer. A longtime supporter of the American Heart Association, Kumanyika has been especially concerned about the impact of heart disease on African-American women. She most recently studied programs to prevent or treat obesity among African-American children and adults.

The Leukemia & Lymphoma Society honored **Peter Nowell, M.D.** '52, G.M.E. '56, emeritus professor of pathology, in Washington, D.C., in March. He is one of the two discoverers of the "Philadelphia chromosome" in chronic myelogenous leukemia. According to the society, that

discovery changed the way scientists looked at cancer: "This discovery meant that for the first time ever, scientists had discovered a genetic abnormality linked to a specific kind of cancer, setting off other research into the genetic causes of cancer." Nowell was presented with the Society's Return of the Child Award, which recognizes researchers "who take inordinate risks and work tirelessly to find a cure, and to improve the quality of life of patients."

In the fall, Nowell was honored by the School of Medicine, which held a reception for him as well as a symposium, "The Legacy of the Philadelphia Chromosome: From Discovery to Therapy."

Hedi Schelleman, Ph.D., a postdoctoral researcher in the Center for Clinical Epidemiology and Biostatistics, has won the Roger R. Williams Award for Genetic Epidemiology and the Prevention of Atherosclerosis. She presented her winning abstract at the annual Conference on Cardiovascular Disease Epidemiology and Prevention in March.

Correction:
In the previous issue, an honor bestowed on **Brian L. Strom, M.D., M.P.H.**, the George S. Pepper Professor of Public Health and Preventive Medicine and chair of the Department of Biostatistics and Epidemiology, was garbled. He received the Sustained Scientific Excellence Award, presented by the International Society for Pharmacoepidemiology. The award was presented in Lisbon, Portugal. Strom also serves as director of the Center for Clinical Epidemiology and Biostatistics, as well as associate vice dean of the School of Medicine and associate vice president for strategic integration for the Health System. We apologize for the error.

Seeking Nominations

The **Distinguished Graduate Award** is the highest honor that the School of Medicine bestows upon an alumnus. The Awards recognize alumni for their outstanding service to society and to the profession of medicine, as well as for notable accomplishments in biomedical research, clinical practice, or medical education. The accomplishments must have resulted in national or international recognition. Each year, the Award is presented during the Medical Alumni Weekend festivities to two alumni.

You are invited to submit nominations for recipients of the 2008 Distinguished Graduate Awards. All graduates of the School of Medicine and its residency training programs are eligible to receive this honor. Please forward names and supporting documentation to Melissa Fikioris in the Office of Alumni Development and Alumni Relations, 3535 Market Street, Suite 750, Philadelphia, PA 19104-3309, or fax to 215-573-2992. Nominations must be received no later than September 1, 2007.

HUP Earns Magnet Status

On June 22, some 150 HUP employees gathered to hear the long-anticipated decision coming by telephone through an overhead speaker: "Congratulations! Your hospital has been designated a Magnet organization."

The announcement meant that HUP had joined a select group of U.S. hospitals – only 4 percent – to receive nursing's highest honor from the American Nurses Credentialing Center, a subsidiary of the American Nurses Association. It becomes the first academic medical center in Pennsylvania to receive Magnet status.

The Magnet process is rigorous. HUP's 2,000-page application filled 10 volumes. Once the documentation satisfied the Center's requirements, surveyors came in April to visit every patient care unit in the hospital.

Letters

Flawed Excellence?

The excellent article on Benjamin Franklin's medicine [Winter 2007] has one important flaw.

The illustration on page 17 is not an example of how people were inoculated against smallpox. This is a picture of the lesion of cowpox, as was found on the hand of the milkmaid Sarah Nelmes and from which Jenner obtained the material to inoculate young Phipps, thus immunizing him against smallpox.

The procedure was called vaccination, after *vacca*, which is the Latin for cow.

Donald F. Kent, M.D. '40, Ph.D. (College '35)
Maplewood, N.J.

The editor replies: Stanley Finger, Ph.D., from whose book *Doctor Franklin's Medicine* we took our excerpt, is not responsible for any of the images we used to accompany his text. We took the illustration cited by Dr. Kent from "Smallpox: A Great and Terrible Scourge," an on-line feature from the National Library of Medicine. The section called "Variolation" shows the illustration with this caption: "In contrast to Asians and Africans who inoculated by blowing dried smallpox scabs up the nose, Europeans and their American cousins tended to inoculate through a puncture in the skin." My reading of the caption was that the illustration showed the inoculation. The exhibit can be found at http://www.nlm.nih.gov/exhibition/smallpox/sp_variolation.html.

How to Build a TEAM

by Dawn Fallik

With a vital assist from The Wharton School, the School of Medicine has taken the bold step of organizing its students into teams. The patients they will go on to care for are likely to benefit.

Photographs by Daniel Burke

A Safe Landing: Maria Ciocca's team demonstrates a trust-building exercise as she falls into the arms of the other six students.

When David Chacko started medical school at the University of Pennsylvania, he didn't expect that hula hoops would be part of the curriculum.

But there he was, not even a week into his first year, standing with a group of eleven other students and trying to figure out how to move the hoop from their shoulders to the ground without dropping it, using only their fingers. Chacko, a former business major and investment banker, first thought it seemed silly, but he came to see that it taught a serious lesson about working together.

"It sounds like an easy task at first," he said. "But when people start, and one person starts too slow, or someone else is raising their hand too much, it makes it impossible."

The hula hoop challenge is all part of a new three-year "team building" program, taught in conjunction with The Wharton School and inspired by a former student. The aim is to give would-be physicians better tools for communicating, brainstorming, and solving problems in teams – first at school and eventually in the hospital.

Today, according to Gail Morrison, M.D. '71, G.M.E. '77, vice dean for education in Penn's School of Medicine, "physicians are working in large groups, or in heath-care systems, and they're less out there on their own. But in medical school, have you been taught to work in a system? You got a certain grade on a test, and it was every man or woman for him or herself."

The idea for building teams started less than two years ago and was implemented for the current academic year – fast action for a university. Maybe it was because the step seemed like such a common-sense one for the medical school to take.

But it took a student to get things moving. Arvind Saini was enrolled in Penn's joint M.D.-M.B.A. program in 2006 when he found that many of the business skills he was learning at Wharton also came in handy in medical school, particularly when it came to working with others.

"I generally feel that doctors are risk averse by nature and that medicine is a very individual pursuit until one actually arrives at the level of the senior resident or attending," he said. At that point, he noted, on a hospital floor as head of a health-care team, a person needs to know how to motivate the rest of the team.

For the most part, a medical-school curriculum was based on individual achievement. Students took tests and completed projects mainly on their own, were graded individually, and moved ahead in their own worlds.

And that's the way it's always been, said Russell Kaufman, M.D., director of The Wistar Institute, the University of Pennsylvania's longtime basic science neighbor. Kaufman was one of the faculty members involved in developing the Penn program. "When I went through medical school and through my training, medicine was different in a lot of ways," he said. "One way was that the individual physician took responsibility for the whole team and for the patient."

While that individual approach might have served the students well when it came to grades, it did not necessarily benefit patients in the hospital. Patients often had more than one medical issue that required multiple doctors and a multi-team approach.

According to Morrison, mistakes could often be traced back to poor communication, from operating on the wrong limb to giving the wrong blood type. As the medical professionals wondered what they could do better to im-

As Jeffrey S. Berns, M.D., puts it: "The plane doesn't get off the ground and it doesn't land unless everyone is doing their job and understands what each other's roles are. You could be the best pilot in the world, but if the maintenance guy is not doing his job, there's a problem."

prove communication and performance, a growing body of research about teamwork in corporate America found that teams that worked well together had better results than those who did not.

So when professors and administrators at the two Penn schools got together to develop the program, they had specific goals in mind. They also understood that they would be dealing with a different class of students than found in an M.B.A. program: on average, younger and with less experience in the workplace.

"Medical students are sharp and brilliant, but they don't always play well with each other," said Evan Wittenberg, former director of Wharton's Graduate Leadership Program, who now does similar work at Google. "It's not enough just to be technically good, because no matter how smart they are, medicine is too complex and one person can't do everything."

Residents often watched and learned a very autocratic style of leadership, Wittenberg noted: I tell you what to do to, you do it, and you don't ask questions. But that kind of training on the hospital floor led to problems in today's increasingly complicated health care, where several teams of five to 10 people each could be involved in caring for a patient.

And in Wittenberg's view, that reality means that it's more important than ever that communication skills are taught – and just as important that people on the team feel able to ask questions and confirm decisions. As Wittenberg put it, "The patient gets better care if the pharmacist feels like part of a team and if the nurses feel like part of the team."

That was the context, then, when Arvind Saini approached Wittenberg and Morrison about applying business skills to medicine. Both of them were enthusiastic and immediately realized the potential in cooperating.

Combining Brain Power: From left to right, Maria Ciocca, Sophie Woolston, and Sean Fedyna examine a model of the human brain.

"If there was a school that could develop a program to tackle true medical leadership, . . . it was Penn," Saini wrote in an e-mail interview. That leadership, he went on, would go beyond medical research to include "all of the challenges that will face the 21st-century medical practitioner." Penn has the opportunity to produce "a physician that was not simply trained in fear of failure, but one who created new health-care initiatives and outreach programs."

For his part, Wittenberg said he was impressed by how quickly the medical school took on the new idea. "No medical school had ever done anything like this before," he said. "Academic institutions don't usually change very quickly, but that wasn't the case here."

As a result, on the third day of medical-school orientation last fall, all 150 first-year students were conveyed off campus to Lafayette Hill, outside Philadelphia, and divided into groups of six or seven. Accompanying them were 12 faculty members who would serve as mentors – all of them trained by Wharton personnel. The students will remain in these groups for the next three years of school. As part of the program, students not only work together during the orientation, they go on to take tests together and create projects and perform tasks together.

The plan is for the groups to move next fall into the "real-world" environment, where they will observe different teams working together in the Health System's hospitals.

"When they start being exposed to patients, all of a sudden the challenges will be great," said Wistar's Kaufman.

"It's a different type of communication, and it's a major transition to go from the classroom, where they haven't had any kind of patient experience."

The new team-building program begins at the very start of orientation. For two full days last fall, the students learned about each other and went through a variety of exercises, each aimed at developing different skills, from listening to decision-making.

At a conference center in Lafayette Hill, the teams were brought to a grassy stretch about 20 feet long, provided with two six-foot wooden planks and pieces of string, and shown the starting and stopping points. "We had to cross the area of grass," without touching the grass directly, said Maria Ciocca, 24, from Buffalo, "and if anyone fell off, you had to start again.

"The groups had a lot of fun, but it was interesting to see how people approached it very differently," she said. Ciocca's team decided to have all members stand with one foot on each plank, using the string to tie their shoes to the plank. "Then one person called, '1-2-3, left,1-2-3, right,'" she explained, and the teammates moved ahead in a synchronized manner. That, at least, was the theory, but, as Ciocca recalled, "We sort of ended up in a pile on the grass!"

Still, despite the occasional goofiness, Ciocca believes most of the students were very focused. It helped that the orientation was offered at the beginning of the term, she explained, before the students knew each other and no one wanted to offend anyone or take control. Because the exercises were not graded and were outside the classroom, said Ciocca, it was a low-stress way to get to know each other.

Many of the team-building challenges were based on the work of Bruce Tuckman, an educational psychologist, whose influential model of team development included four separate stages: forming, storming, norming, and performing. (He later added a fifth: adjourning.) One of the most important areas, Penn's professors and administrators agreed, was learning how to disagree and move forward without "making it personal."

"Task conflict should be recognized as something positive that can lead to innovation for new ideas," said Lynn Krage, associate director of Wharton's Graduate Leadership Program. "What we don't want to happen is that task conflict be mistaken for interpersonal conflict or disintegrate into interpersonal conflict."

With this framework in mind, the students had to come up with a set of rules to help their teams function. The rules ranged from requirements that everyone show up on time to boundaries for handling disagreements. Often the rules were created to deal with particular personalities on the team. For example, if one member tended to talk too much, the team might impose a time limit – for everyone – on speaking.

"There have been some funny ones, like having to do a push-up for every minute that you're late – or everyone else has to do push-ups while the late person watches," said Wittenberg said. "One team had people put a dollar into a kitty if they were late, and at the end of the year, all the money went for a team party."

At Wharton, students are placed into teams during the first year and allowed to choose their own teams the second. Often, said Krage, students ask if they can return to the random set-up. It will be different for the School of Medicine.

After the orientation, said Morrison, the medical students have continued to work together throughout the year. They took tests together, have had lab together, and have made presentations together.

For Ciocca, who is in a group of seven, one of the most interesting challenges involved a group exam in which the team had to identify body structures and answer questions – with a time limit. For a start, the group had to decide how to take the test. They could have everyone look at every body part as a group of seven; or they could split up based on individual expertise and trust each other for the answers.

Ciocca's team came into campus one Saturday morning to do a practice run of their idea: in the interest of time, they

Sharing Expertise: From left to right are Sean Fedyna, Karen Revere, Nikhil Singh, Maria Ciocca, Justin Ziemba, David Alonso, and Sophie Woolston.

would break the larger group into three minigroups. At least two of the minigroups would answer every question. And when test time came, the whole team felt they needed to show their unity.

"We decided to wear every bizarre article of clothing, from knee-high socks to Mardi Gras beads and sweatbands on our arms," Ciocca said. "Another group took scrubs and made Braveheart costumes."

But even beyond the finery, the group's grades were "superb," said Ciocca, and they learned more than anatomy. "It helped us realize that, really, seven heads are far better than one," she said. "And the only way to get there is to do this kind of productive activity."

According to Krage, one of the groups did not get along because of personality issues. At a certain point, the students came to the School of Medicine faculty and asked to be disbanded and moved into other groups. The answer was no.

"At Wharton, that happens and we say, 'Sorry, that's the whole point. You have to learn how to resolve these situations, and that's why we're putting you on teams," said Krage. "You have this opportunity in school to make mistakes – it's an environment where it's safe."

For Jeffrey S. Berns, M.D., associate professor of medicine and director of clinical nephrology, learning how to handle disagreements and move ahead as a team is one of the most crucial lessons of all. One of the faculty mentors for the new program, Berns emphasized that it is necessary to understand what happened when things have gone wrong.

Taking the metaphor of the doctor as pilot, Berns explained: "The plane doesn't get off the ground and it doesn't land unless everyone is doing their job and understands what each other's roles are. You could be the best pilot in the world, but if the maintenance guy is not doing his job, there's a problem."

The team-building program, in its first year, is a work in progress. But the basic approach has been validated at The Wharton School for a long time. Other medical schools have used groups and taught team dynamics. What Penn's School of Medicine has that none of the other medical schools have is the association with Wharton and its business principles. As Carol Aschenbrener, M.D., executive vice president of the Association of American Medical Colleges, put it, "Inter-school partnerships and programs such as this one alert medical students to the 'real world' context of the practice of medicine." As currently planned, next semester the student teams will be able to observe real-life teams in action, from the emergency room to the dialysis units. The expectation is that students will be able to evaluate how the professional units work and learn the skills of evaluation in general so they can apply them to their own situations.

Morrison made it quite clear that the students will likely see a wide range of activity. In her own experience, transplant teams worked very well together. But, as she added, when the student groups evaluate the health-care teams, "they are going to be surprised that some of them do not work as well as we think teams should work. There tends to be more of a hierarchy in the hospital system" – with a single person as leader.

"We're trying to make the next generation of physicians, and most of us believe that health care is all going to be very much system driven," said Morrison. "It's important to understand the difference between being a good team leader as opposed to being part of a group, and we're starting with this generation and saying, 'this is what will make you different out there.'"

Chacko, the former investment banker who is now a medical student, said he thinks the three-year exercise will prove very important in the long-run. Learning how to take different roles in a group, developing listening skills, making use of basic communication tips – all these and more will have an impact on the medical students' careers.

"It's just important to keep an open mind," said Chacko, confidently predicting that "everyone will see, soon enough, that it's a very valuable experience." ●

New Meets Old: The team poses in front of class flags and faculty portraits.

October 20, 2007

SAVE the Date

October 20, 2007

Homecoming 2007
October 20th!!!!

8:00 a.m. to noon
Faculty seminars

Noon to 2:00 p.m.
Penn vs. Yale Football Game

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From 8:00 a.m. to noon:

- new approaches to cancer treatment
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An official invitation will be mailed in the fall, but please mark the date on your calendar as this is an event you do not want to miss!

Questions?
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PENN Medicine

A PROMISING anniversary

By Thomas W. Durso

It is the most common type of dementia, affecting 4.5 million Americans.

It is a truly devastating disease, one that mercilessly robs its victims of their memories and cognitive capacity while forcing their loved ones to watch helplessly as they gradually lose the ability to function on a daily basis.

It costs the county more than $100 billion per year. If current models hold, the number of sufferers and the cost to treat them could quadruple in the next 40 to 50 years.

Yet when the world's foremost Alzheimer's disease researchers and leaders in the field met in Tübingen, Germany, in November to commemorate the centennial of the disease's discovery, the prevailing mood was one of optimism. That was the view of John Q. Trojanowski, M.D., Ph.D., G.M.E. '80, director of Penn's Institute on Aging and of the Alzheimer's Disease Center.

"We have now been at work for 100 years trying to solve Alzheimer's disease," says Trojanowski, the William Maul Measey-Truman G. Schnabel Jr., M.D., Professor of Geriatric Medicine and Gerontology, who was an invited participant at the gathering. "You could write off the first 50 or 70 years of that as having been modestly effective in advancing understanding. The last 20 years have been a phenomenal success. . . . There really has been a revolution."

In 1906, Alois Alzheimer, a German psychiatrist, presented his findings on a patient, Auguste D., whom he described as having suffered from an unusual brain disorder of the elderly. The woman had died earlier that year in her mid-50s, and what Alzheimer discovered when he examined her brain were the plaques and tangles emblematic of the disease that now bears his name.

"Alzheimer: 100 Years and Beyond" celebrated the achievements of the last century and featured presentations on the latest developments in virtually every aspect of the disease. Among the scientists who presented were Trojanowski and Virginia M.-Y. Lee, Ph.D., M.B.A. '84, professor of pathology and laboratory medicine, the John H. Ware 3rd Professor in Alzheimer's Research, and director of Penn's Center for Neurodegenerative Disease Research. Trojanowski and Lee, who are married, together have written numerous well-regarded papers on neurodegenerative diseases.

From Alzheimer's discovery in 1906 until the early 1980s, "things were being done, . . . but not very much," says Trojanowski. "The beginning of the molecular era was probably 1984, with the Glenner and Wong discovery of the amyloid beta peptide that forms the plaques in Alzheimer's disease. That put a molecular face on a pathology. It was like finding the virus that causes AIDS or the prions that cause mad cow disease."

Beginning with that discovery, researchers have spent the last couple of decades honing findings on Alzheimer's to the extent that what has been learned through basic science is now being translated to drug discovery.

"In 1984, when this discovery was made, there were no disease-modification therapies," Trojanowski notes. "Now there are 60 clinical trials of drugs that are directed at various targets in the disease pathways. Maybe it'll be our bad luck that none of them will work, but I can't believe that will be the case."

Trojanowski was by no means the only scientist at the centenary conference to exude such optimism.

"All of us went there mindful of the

TAKING THE INITIATIVE AGAI

Established in 2004 through a gift of $6 million from Marian S. Ware, a longtime supporter of the University, the Marian S. Ware Alzheimer Program is a set of collaborative initiatives between PENN Medicine and the School of Nursing to advance drug discovery, clinical research, and patient care related to Alzheimer's disease. The drug discovery initiative seeks to identify novel compounds that may prevent or ameliorate the onset or progression of Alzheimer's disease.

Heading drug discovery for the program are John Q. Trojanowski, M.D., Ph.D., G.M.E. '80, and Virginia M.-Y. Lee, Ph.D., M.B.A. '84, both of whom were invited guests at November's centennial observance of the discovery of Alzheimer's disease in Germany. According to Trojanowski, "Many of us feel there's enough information now, which is very different from 20 years ago, to be very deliberate in pushing drug discovery." At this point, he

Last fall, Virginia Lee and John Trojanowski visited the home of Alois Alzheimer as part of the centennial celebration. A plaque honoring Alzheimer is visible behind them.

At the conference commemorating the centennial of the discovery of Alzheimer's disease, one Penn representative finds that optimism prevails.

opportunities and of the progress that has created these opportunities," he says. "We were full of enthusiasm that in our lifetime serious drugs with the possibility of modifying the disease's onset and progression will emerge. For scientists that is exhilarating." He concedes that treatment for Alzheimer's disease has not reached the stage of AIDS treatment yet, "but I remember the AIDS epidemic at the very beginning, and the sense of pessimism that it would be a long time before therapies were developed. Now people are living longer and longer" with the virus.

Actually, people are living longer and longer, period, which helps to explain why treating Alzheimer's disease is so important. In the century since the disease was discovered, life expectancy has risen from about 50 to the mid-to-late 70s. Alzheimer's once was a rare occurrence simply because people did not live long enough to develop it. No more.

As Trojanowski observes, "This is what has gotten many people's attention – not just the scientists in the room, but also politicians, demographers, sociologists, and so forth. If you think about 20 million people who for 10 or 20 years will need caretakers to take care of them, that will be an enormous cost."

And so, according to Trojanowski, therapies that delayed onset of Alzheimer's by as little as half a decade could have enormous benefits, in terms of both "the human price" and the enormous costs of treating those with the disease. "There are models that show you would reduce incidence and prevalence by 50 percent."

The key to delaying the onset of Alzheimer's, Trojanowski notes, is to determine the likelihood that it would develop in a person as early as possible. Once the disease takes hold, it is irreversible.

"We need to identify people before the nerve cells are gone. What was clearly something we all agreed at this meeting was important to do was to look for preantecedent markers of the disease so we can identify someone age 40 or age 50 and say, 'You've got a 90-percent risk of Alzheimer's, and do this and this and this and take this drug.' There's a lot of interest in that."

While those who attended the conference spent a good deal of time looking forward, there was also considerable retrospection regarding Alzheimer himself.

"This guy was just a regular doctor," says Trojanowski, marveling. "He had the insight and the good fortune to be in the right place at the right time to make this discovery that was obviously of seminal importance. Maybe five years later someone else would have made the observation, but you have to give credit where credit was due."

Alzheimer "could have been off playing golf all the time," but instead chose to conduct research, using his wife's fortune to fund it. Those who study Alzheimer's today continue that legacy with "this sense of mission that this is such an important disease to do something about that we have devoted our lives to it."

"What I hope is that 100 years from now, we're celebrating the fact that hardly anybody remembers Alzheimer's disease," he says. As Trojanowski imagines it, this scenario could indeed happen if society decides to apply "all available resources" to curing the disease.

"There is reason for optimism, but we have to get our act together. We have to wake up and do something now, because the natural disaster that Alzheimer's disease will bring to our nation far exceeds Katrina or any other natural disaster you and I know." ●

NST ALZHEIMER'S DISEASE

continues, "while basic science still should be supported to advance understanding, we all feel there should be a road map, increased efforts to try to translate insights into Alzheimer's disease into therapies. That will happen at pharmaceutical companies, but now universities are much more engaged in drug discovery."

In the Ware program, "We're trying to come up with targets that are 'druggable' and then trying to identify drugs that will hit those targets."

One promising approach makes use of a robotic system to screen tens of thousands of compounds for their ability to inhibit the formation of Tau fibrils, which Lee and Trojanowski believe play a crucial role in the development of Alzheimer's disease. The high-capacity screen produces many "hits," which are being evaluated and then chemically modified to produce potential candidates for clinical testing.

Mary Ann Keenan

Mary Ann Keenan performs a total knee replacement on a patient who had suffered traumatic brain injury and was paralyzed on one side of the body.

Can Make a Muscle Do Anything

By Sally Sapega

THE ONLY **FULL-TIME NEURO-ORTHOPAEDIST** IN THE COUNTRY CAN OFTEN HELP PATIENTS WHEN OTHER APPROACHES HAVE FAILED.

Each year, 700,000 people suffer a stroke in the United States. Thanks to medical advances over the past several years, their survival rates have significantly improved. What has not kept pace, however, are the resources to help these patients regain the physical capabilities they need to live a fuller, more satisfying life.

Mary Ann Keenan, M.D., chief of neuro-orthopaedics and professor of orthopaedic surgery at Penn, is working to change that situation, one patient at a time. Operating on muscles and tendons, she has helped straighten hands, feet, and limbs that had been curled or twisted by neurologic conditions.

It's a simple mechanical approach, she explains. "You ask yourself, 'Is this a muscle whose force I can redirect to gain useful function? Or should I eliminate its action because it's causing a deformity?' You can't fix a brain or spinal cord, but you can sometimes relax or redirect a muscle to give the patient a better quality of life." As she puts it, "You can make a muscle do anything."

Keenan approaches each case with a general perspective. "You have to understand how a weakness or deformity in one area affects the whole system," she says. "I had one patient whose arm kept pulling up. After assessment, I discovered that his arm pulled up because his foot was crooked and he struggled to walk. As soon as I fixed his foot, the stimulus to make his arm pull up went away." As a result, she adds, "I never had to operate on his shoulder."

Keenan used the same approach with Elizabeth Lewis, a 45-year-old special education teacher and mother of three who suffered a stroke in September 2003 and became her patient a year and a half later. According to Keenan, the stroke left Lewis with right-sided paralysis, she had developed a club foot, and her right arm frequently dislocated from the weight of her shoulder.

"I had to wear a boot on my right foot all the time to keep it straight, and I walked with a cane," says Lewis. "And I was very depressed."

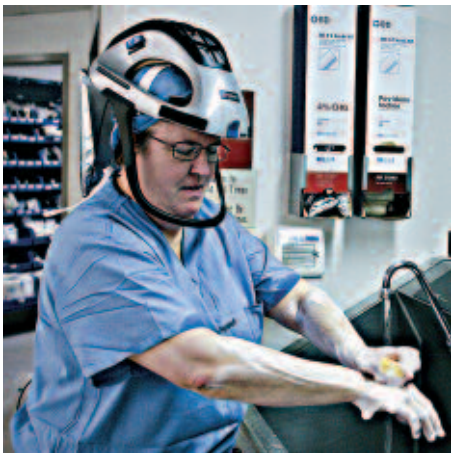
Keenan's first step with Lewis, as with all her patients, was to determine how much control her brain retained over the affected muscles. Keenan used dynamic EMGs to record Lewis's multiple muscle activities simultaneously. "If some control remains, I can manipulate the muscle so it's more useful," she explains. But even if the brain no longer sends signals to muscles, "I can relieve contractual deformities, which can improve the patient's ability to function."

Keenan notes that a clubfoot deformity generally results from a muscle imbalance. Correcting the deformity involves making the overactive muscle relax and doing tendon transfers to redirect the force of the muscles. To relax the muscle, she cuts it where the tendon and muscle overlap and stretches the muscle a small amount. "Lengthening muscles help them relax, but you still want to maintain strength. I use a specific technique which allows the muscles to self-adjust."

Fixing Lewis's club foot allowed Keenan to see that the patient's "stiff knee gait" had nothing to do with the knee joint itself. It resulted from the quadriceps muscles, as Keenan puts it, "turning on at the wrong time."

This discovery exemplifies the importance of diagnosing the neurologic impact accurately. "If you do a total joint in a patient with a stroke but don't understand that it's a neurological problem, it could actually make it worse for the patient,"

Photographs by Addison Geary



Keenan soaps up before operating.

says Keenan. "But if you know in advance, you can treat the spasticity with lengthenings or other procedures and have the joint replacement afterwards, if it's needed."

The next step in improving Lewis's ability to walk was to perform a tendon transfer at her knee. That procedure would allow the knee to bend while walking and would lengthen two other "overactive" muscles in that area, allowing them to relax. Keenan's summary: "In less than a year, she went from barely able to walk to having a functional gait without the need for a brace."

Keenan also performed a procedure to help Lewis keep her right shoulder in its socket – and to alleviate the pain she felt every time it slipped out. Lewis is now undergoing rehabilitation to help her regain some motion in her fingers.

An Underserved Population

Although surgery can bring positive results for patients any time after a neurologic injury, Keenan says that "the sooner it's done, the less weakness, contracture, and fixed deformity."

In Keenan's experience, a patient has to wait a sufficient period after a stroke or brain injury to gauge the extent of any spontaneous recovery. "That's when temporary treatments, such as Botox injections, work well," she says. "But after six months, the recovery slows or ends."

Keenan does not see the neuro-orthopaedic procedures she performs as a substitute for other options. "It's not a question of 'Do we do surgery or something nonsurgical?' You're looking at a combination of treatments – injections, rehab, surgery, brace – that works best for the patient and his problems."

Keenan is the only fulltime neuro-orthopaedist in the country. "There aren't many people in this field. In fact," she adds, "these patients are one of the most underserved populations in this country." The question most patients ask after seeing her is "Why didn't someone send me to you years ago?"

That was certainly Elizabeth Lewis's response. "I want to tell everyone about the amazing things that Dr. Keenan can do," she says. "There are so many people stuck in wheelchairs who might be helped. I can't begin to explain what she's done for me."

Last August, Keenan gained some national attention when she was named one of the recipients of the first annual *Ladies' Home Journal* Health Breakthrough Awards. The new award recognizes leading medical professionals who are making life-saving and life-enhancing discoveries in research, treatment, and diagnostics that have significantly helped women and families. Keenan was selected from a candidate

Keenan displays her Health Breakthrough Award from *Ladies' Home Journal*. She accepted her award from Diane Salvatore, center, the *Journal*'s editor in chief, and actress Sally Fields.

Courtesy of Ladies' Home Journal

A CALL FOR A PROFESSORSHIP

At the reception in September to salute Mary Ann Keenan, M.D., as one of the recipients of the *Ladies' Home Journal* Health Breakthrough Award, Arthur H. Rubenstein, M.B., B.Ch., was lavish with his praise. He also had a brief tale to tell about a relationship that illustrates how valuable private philanthropy can be.

Last year, Frederick Kaplan, M.D., one of Keenan's colleagues in the Department of Orthopaedic Surgery, announced the discovery of the gene that causes fibrodysplasia ossificans progressiva (F.O.P.), a catastrophic bone disorder. Ten years earlier, Diane Weiss, a trustee of the University of Pennsylvania, had endowed the Isaac and Rose Nassau Professorship, named after her parents. That professorship was very valuable in allowing Kaplan to devote himself to his research.

"This kind of relationship," said Rubenstein, "enables medical professionals to take the thoughtful risks that sometimes yield great discoveries. I hope that Mary Ann's recent well-deserved exposure will inspire another partnership."

For more information about creating an endowed professorship, please contact Heather Wiley Starankovic, Senior Major Gifts Officer for PENN Medicine Development, at (215) 898-0578.

list of more than 100 accomplished medical professionals and joined six other doctors and researchers at the award luncheon in New York City. All recipients were profiled in the magazine's September issue.

In September, Keenan was guest of honor at a Penn reception that recognized her award. Speaking of her achievements, Arthur H. Rubenstein, M.B., B.Ch., dean of the School of Medicine and executive vice president of the University of Pennsylvania for the Health System, said, "Mary Ann has broken new ground by developing surgical techniques that reanimate limbs deformed or paralyzed by brain injury. Hands that were clenched or feet that were turned inward are, through her surgical technique, relaxed and made open to new possibilities."

For her part, Keenan took the opportunity to thank both her colleagues and her patients, many who came to the reception. "You have taught me much about living life with a strong and positive outlook," she said to the patients. "You have challenged me on many occasions and in many ways to be innovative in seeking solutions to some rather unique and perplexing problems." Keenan again noted that the population whose problems she confronts is "greatly underserved," and she hoped to develop Penn's program in neuro-orthopaedics. (In an average year, Keenan operates on 230 patients and performs up to 700 procedures.)

In surgery, Keenan is assisted by Gregory Deirmengian, M.D. '04, a resident in orthopaedic surgery.

Keenan and Karen Boselli, M.D., an orthopaedic surgery resident, examine the leg of William O'Neil.

At the reception, Dean Rubenstein also noted Keenan's role as a trailblazer within the medical profession. She is the first woman to achieve the rank of professor in orthopaedic surgery at the School of Medicine. Before coming to Penn, she was the first woman to chair an academic department of orthopaedic surgery at Albert Einstein Medical Center.

Helping patients recover a lost quality of life is a constant goal for Keenan, but a related ambition is "to get this field established here at Penn so we can train more people. I want it to become as common as a joint replacement."

As for Lewis, she's planning to undergo speech therapy and ultimately return to teaching special education. And she's moving ahead physically. "I've even gone rock climbing!" she says, adding that she plans to take up running again. ●

Lights and action: New York City offers Mitchell Blutt the variety he has sought in his professional life. Here he takes a break in Times Square.

CROSSING BOUNDARIES

WITH MITCHELL BLUTT

BY MARK GAIGE

Mitchell Blutt, M.D., M.B.A., has never met a boundary line he liked. He designed his own undergraduate major at Penn by combining psychology, biology, anthropology, and statistics. He established a hybrid career path in business and medicine. He has funded a visiting professorship in entrepreneurism and medicine in Penn's School of Medicine. He is exploring his own artistic muse in the genre-crossing interface between rock, folk, R&B, and rap. Blutt seems to have lived out the lyrics to "Don't Fence Me In" on a more or less literal level.

A board-certified internist, venture capitalist, entrepreneur, denizen of corporate and non-profit boards (including several years with the Michael J. Fox Foundation for Parkinson's Research), philanthropist, and budding singer-songwriter and poet, Blutt is also a Penn man

WITH UNDERGRADUATE, MEDICAL, AND BUSINESS DEGREES FROM PENN, MITCHELL BLUTT HAS EXCELLED IN SEVERAL FIELDS – AND IS NOW EXPLORING NEW INTERESTS.

PHOTOGRAPHS BY TOMMY LEONARDI

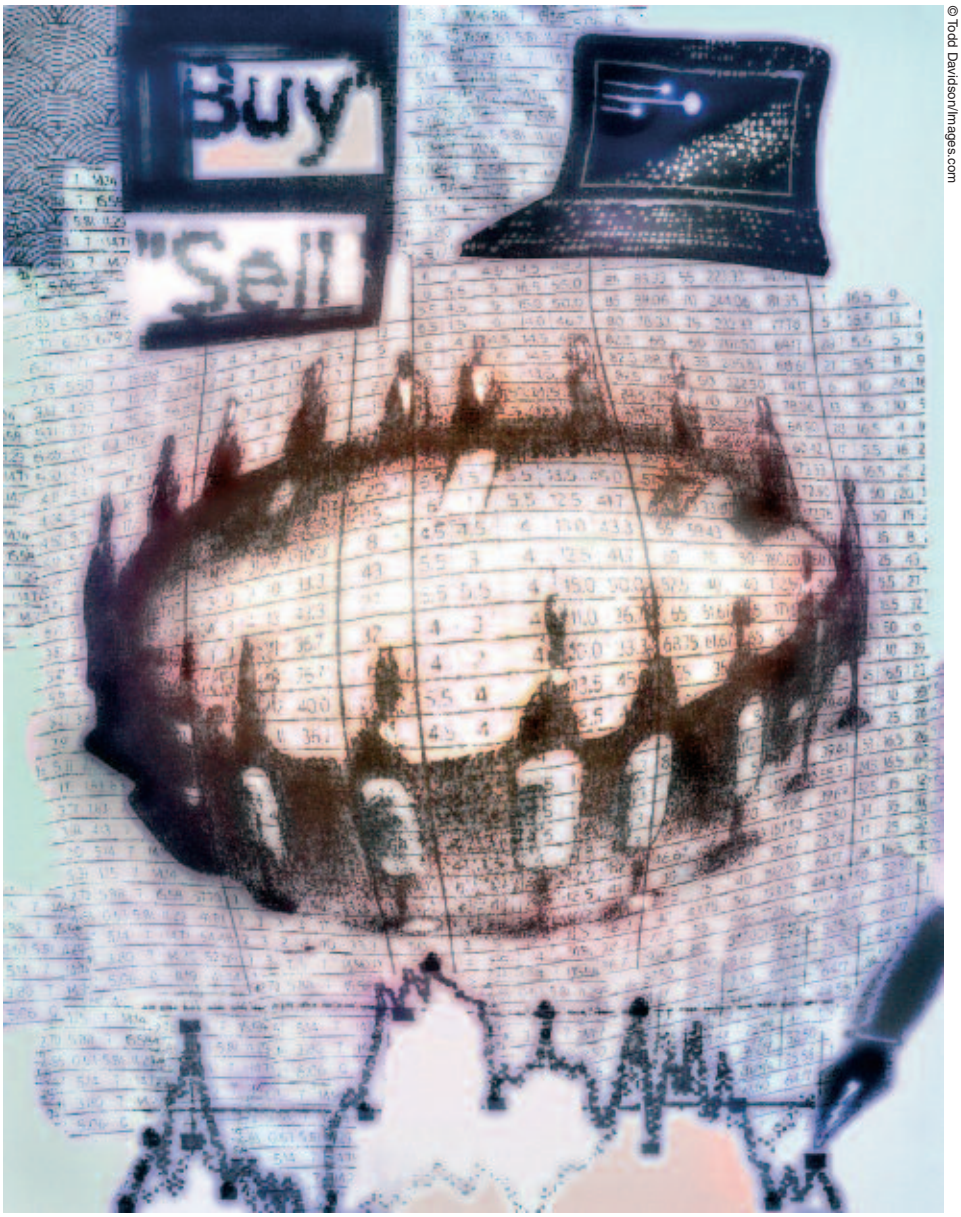
through and through. He earned his undergraduate degree in 1978, his M.D. degree in 1982, and his M.B.A. in 1987, as a Robert Wood Johnson Clinical Scholar. He's gone on to become a trustee of the University, an overseer of the School of Arts and Sciences, and a member of the PENN Medicine board. For someone who has just turned 50, he has packed more into his years than any number of combined, highly accomplished lifetimes.

In the 1980s, Blutt quickly became an attention-getter in the business world as one of the first physicians to play a prominent role on Wall Street. He vaulted into the second-ranking executive slot at Chase Capital Partners (the venture capital arm of Chase Manhattan) and helped build it into a multi-billion-dollar business. In that role, he spearheaded the Chase investments in hundreds of health-care companies worldwide. These included pharmaceuticals, medical publishing, orthopaedic devices, the first portable defibrillator (now in restaurants and workplaces around the globe), clinical services such as radiology and imaging for long-term care facilities, health services for colleges and universities, the largest clinical lab company in Brazil, and ophthalmic surgery centers in China.

Relying on his medical training to help identify potential successes, Blutt worked exclusively on health-care businesses for the first five years of his Wall Street career. But the urge to cross boundaries proved indomitable. True to form, he began to explore everything from high-technology Israeli firms to show-business enterprises.

Blutt's role in helping to bring promising businesses to fruition was, as might be expected, multi-pronged. He explains: "The investment bankers would introduce businesses for us to consider investing in. I spoke with the company's managers, employees, and investors, really dug deep into the product or service they were offering, scrutinized the company's financials, researched possible competitors, and talked to the company's intended market to see how they would view the product or service. I would then make recommendations on which of these that we should consider investing in or even purchasing. The process took months for each company, and I racked up a lot of frequent flier miles – but it's the only way to proceed if you want to increase your chances of picking a real winner." The process was indeed arduous: he recommended that Chase invest in less than one percent of the thousands of possibilities he investigated. Blutt clearly was doing something right, because his reputation for targeting winning ventures spread quickly, generating profiles in the national and international business press, speaking engagements, and guest lectures.

So what was the key to his success? Blutt modestly gives the lion's share of the credit to his training. "I was quite fortunate in being prepared so well by my education. First, being a physician



gave me a solid framework to evaluate the health-care products and services that were being presented. Second was the marketing benefit of being a physician. Many companies chose to work with us because they felt comfortable that a physician was involved in the process of generating resources for their company. Third was the professional network that I developed in medical school and afterward. When I was evaluating a product or service in an area outside of my medical specialty, I had friends and colleagues from medical school and beyond whose judgment I trusted that I could turn to for their assessment." What type of person was he drawn to? "To me the technical knowledge, while of course important, was secondary. If someone was honest, experienced, and clearly a hard worker with a demonstrated track record, I would choose to work with him over someone who had a cure for cancer but was a poor manager or egotistical."

As Blutt tells it, there were three distinct elements that served as professional inspirations: his beloved Uncle Sydney, an encouraging high school teacher, and a bottle of wine (in that order).

Sydney Cohen, M.D., was a psychiatrist at U.C.L.A. who, among other professional activities, was one of a number of scientists who studied the use of innovative therapies in combating problems such as schizophrenia and autism. "People aren't aware of it today," says Blutt, "but by 1965, researchers had published more than 2,000 papers describing the treatment of 30,000 to 40,000 patients with non-traditional compounds." Cohen, Blutt's great-uncle, was a cardinal role model; so much so that Blutt traces his undergraduate (self-created) major at Penn – the precursor to today's Biological Basis of Behavior interdisciplinary major – and his early interest in a potential medical career as a psychiatrist directly to him. "Up until a few years ago, I even provided medical care for members of my extended family, much as Uncle Sydney used to do for us."

Robert Blake, a high-school biology teacher in Windsor, Connecticut – with a very good memory– was a second inspiration. While a student of Blake's, Blutt spent a year writing a 162-page paper on Tay-Sachs disease. During the course of that project, the teacher encouraged his student to consider a career in medicine. "That encouragement really meant a lot to me. It helped me to forge ahead into the medical world. I know first hand the importance mentors can play in young lives."

One of the first physicians to play a prominent role on Wall Street, Mitchell Blutt spearheaded the Chase Capital Partners venture into health care. To determine which businesses to invest in, Blutt "really dug deep" into the product or service. In the end, he recommended that Chase invest in less than one percent of the thousands of possibilities he investigated.

Where does Blake's memory come in? In 1999 Blutt and some colleagues were relaxing after completing a challenging deal. After a while, as sometimes happens, there was a certain amount of boasting. According to Blutt, "My contribution was to humbly suggest that after some 25 years, my high-school biology teacher would still remember my paper on Tay-Sachs. So we dialed information, tracked down Mr. Blake in his office, and I asked him if he remembered my paper." Unprompted, the teacher said, "Remember it? I still keep a copy in my office to this day. It remains the best paper any of my students have ever written." Blutt admits being moved by Blake's response.

Then there was that bottle of wine. After medical school, Blutt began his residency at Cornell's New York Hospital. One of his teachers, a professor of infectious diseases, was conducting clinical trials for a new antibiotic. The professor, clearly an expert in motivating young adults, promised that residents identifying patients who fit the enrollment criteria would receive a bottle of wine. As Blutt notes, "That was an exciting prospect at that point in my career. Seriously, I had already been thinking about research as a career path" – the influence of Uncle Sydney. "At the time I believed medical science was advanced by the physician-scientist experimenting in a lab. But the more I read and talked to people, the clearer it became that in most cases, new drugs come from the pharmaceutical industry, not physicians in medical institutions." As he put it in an interview in *Penn Arts & Sciences*, "These giant businesses spend billions of dollars trying to find the next compound that will have clinical efficacy and be a successful product. I decided that if I were to have an impact on this profession and this industry, I would have to understand the business side of health care."

That realization led Blutt to pursue a Wharton M.B.A. degree, which in turn led to an 18-year career on Wall Street that began at Chase and culminated when he became executive partner at J. P. Morgan Partners, one of the world's largest private-equity firms. Blutt was part of the general leadership of the latter firm and had particular responsibility for overseeing its Life Sciences and Health Care Infrastructure Group. "I thoroughly enjoyed my years as a private-equity investor. I was able to identify and help provide financial resources to many companies that had ter-

rific ideas for improving people's health. That, of course, meshed perfectly with why I entered medical school in the first place." Not that he stopped practicing medicine. For years he worked on the investor side of the ledger four days a week, leaving one full day to see patients and teach medical students. Even then he often returned to his business office after his day duties as a physician ended to make sure no promising investment opportunities slipped through. Eventually the demands on his time forced him to give up his medical practice.

Tom Cooper, M. D., a partner in Aperture Venture Partners, a health-care venture capital firm and a lecturer at the Columbia School of Business, has known Blutt for more than 20 years. He has run several health-care companies that Blutt's investment firms have backed. "Mitchell and I bonded so well because we had taken rather unique career paths: physicians who moved full force into the business world. He is by far the most gifted businessman I have ever met."

According to Cooper, who has served on the boards of four health-care companies with Blutt, he was not the only one to feel that way: "When Mitchell began to say something at board meetings, the music just stopped. His business sense was so sharp that people wanted to hear every word he said." For example, Cooper cites Blutt's careful reading of the business plan for a portable EKG machine. The device was being touted as something physicians would love because it was easy to transport. But Blutt pointed out that physicians wouldn't respond to that marketing message because they weren't the ones who actually conducted individual EKGs – special technicians did.

Les Cross, president and CEO of dj Orthopedics, initially met Blutt when J. P. Morgan Partners invested in his company. Cross notes that J. P. Morgan was one of 13 investment firms interested in working with his business. "These were all talented people, and it was difficult to choose among them," said Cross. "But what sold me on J. P. Morgan was Mitchell Blutt. Not only was he obviously very astute, he was also a physician, someone who knew that our business was about helping people. He has a genuine talent for really listening to people, addressing their concerns, and then bringing in remarkable insights of his own."

dj Orthopedics became a publicly traded company in 2001 at an opening value of $17 per share. A year later, partially in light of the stock market contraction, its share price was down to $3. "It's easy to be a good business partner when times are easy," says Cross. "It's when things get tough that you see the true mettle of a person. And when things got tough for us, we saw that Mitchell was a man of his word. He lived up to his commitment to help us manage through the good times and the bad. In fact, he was my number one personal cheerleader through the tough times." One of Blutt's major contributions during those tough times was his ability to identify high-quality managerial and leadership talent. "We were able to bring in an excellent team to support the company and help it weather the storm," Blutt recalls. "Their products were absolutely first rate, so we really believed in them. They just needed additional experience in some areas, and we were fortunate enough to identify the right people to fill those slots."

Today, dj orthopedics is the largest public company in the nation that specializes in non-surgical orthopaedic supplies. Its current stock price? $40 per share! "After Mitchell retired from J. P. Morgan, that could have been an opportunity for us to part ways," says Cross. Instead, the company invited Mitchell to be on its board, "where he sits today and where I hope he will continue to sit long into the future, helping steer this company to greater heights."

Blutt's board stints don't end with dj orthopedics (now DJO Incorporated) and the other businesses that he helps direct. Through his service on the PENN Medicine board, he has witnessed what strong leadership can accomplish. In his view, PENN Medicine's financial turnaround of the last few years "is the most impressive business management of any health-services entity that I have ever seen, including the private sector. Dr. Arthur Rubenstein and Ralph Muller have been superb." Indeed, he jokingly asked the UPHS leaders, "When can we take it public?" And Blutt practices what he preaches: when his 85-year-old father, Herbert, recently became ill, Blutt made sure they came down from Connecticut to be treated at what he calls the "Mecca of Medicine," Penn. "I'm very attached to the entire Penn enterprise," says Blutt. As he sees it, "Penn and I are partners."

Blutt has shown his gratitude to Penn beyond serving on boards. Among his multi-million dollar contributions to the University is establishing the Mitchell Blutt, M.D., Visiting Professorship in Entrepreneurism and Medicine in the School of Medicine. "As an investor specializing in the health-care industry, I've spent my career in the dual worlds of medicine and business," he says. "There is no other place that combines these fields nearly as well as Penn." When Blutt's recent gift was announced, Amy Gutmann, Ph.D., the University's president, said, "Like Penn, Mitchell Blutt is truly interdisciplinary, in perspective as well as accomplishment." The visiting professorship will begin in this spring – and Blutt will deliver the inaugural lecturer. It will feature full-day seminars, workshops, and lunch discussions for Penn medical students with experts in health-care industries. The goal is to teach the students leadership and teamwork skills as well as practical aspects of the business side of medicine. Four sessions per year are planned.

In May, for support of this kind, Blutt

Room with a (Very Nice) View: From his office, Mitchell Blutt has a good perspective on New York.

received the School of Medicine's Alumni Service Award.

Blutt's previous philanthropy at Penn includes gifts to create the Mitchell J. and Margo Krody Blutt Endowed Scholarship, and the Mitchell J. and Margo Krody Blutt Challenge for undergraduate financial aid. (Margo Krody Blutt, a former ballerina in the New York City Ballet, and Blutt were married in 1993. They have three children: Gillian, 11; Eliza, 9; and Emerson, 5.) Part of his most recent gift will fund three music-related programs. And those point to another of Blutt's developing interests.

Blutt has long had a keen interest in the arts. Building on a life-long fondness for writing poetry, he recently has moved into the realm of writing song lyrics and recording songs under the registered moniker of BLUTT. His songs appeared in two films last year: *Kettle of Fish*, a romantic comedy, and *Secrets of the Code*, a documentary about the *Da Vinci Code* phenomenon. The music Blutt creates is, not surprisingly, as eclectic as his professional life, a fusion of rock, folk, R&B, and rap (the latter, Blutt emphasizes, free of violence, obscenity, or misogyny). The name of his music publishing firm suggests a sense of humor on his part: Hobby Gone Haywire. Rap may seem an unlikely direction for Blutt, but he explains: "As someone who enjoys writing metrical poetry, I'm very impressed with the poetic and rhyming achievements of so much of rap. It's an art form that provides a ready match for my style of composition."

Blutt attributes his wide-ranging interests to what he calls "a militant curiosity." That curiosity has now led him all the way to taking voice and piano lessons. "I enjoy singing and rapping, though my skills are still very rough," he says. "I hope to complete a full album's worth of material in the near future. And at some point, I'm hopeful of performing live. With the guidance of my music partner, Nona Hendryx, my aim is to introduce my music to an audience slightly larger than my current one, which is essentially my three kids."

The connection with Nona Hendryx came about through a social encounter. "We were at a party together," Blutt recalls, "and she had sat down to play the piano and sing, and I was so impressed with her that I introduced myself and we chatted for a while. Later, when I wanted to make a recording of some of my poetry for my wife, I contacted her for help." According to Hendryx, who was a member of the group Labelle and who has collaborated with such artists as Prince, Talking Heads, and Peter Gabriel, "Mitchell obviously has a passion for writing and is clearly very good at it. I was also impressed with his desire to learn a new craft. So I was happy to help him. I guide him in the honing of his songwriting, and he shepherds me in aspects of investment and business in which he excels. But more important, we've become good friends."

As much as he enjoys it, however, Blutt knows that music is and will always remain a creative outlet. He considers the world of investing to be his primary focus. For instance, he recently founded Consonance Capital, an investment firm focused chiefly on the health-care industry. Located in New York City, the firm invests principally in the public equity markets. "When I retired from J. P. Morgan Partners, it was because I needed to try new things. Eighteen years is a long time, and I was seeking a fresh challenge. At first I was investing out of my home; now I've ramped things up a bit by hiring employees and getting an office. I'm excited about what the future holds for this firm. We bring a private equity approach to public as well as private health-care companies. By that I mean that, unlike a lot of investors, we spend a great deal of time researching a public company before we invest in it – indeed, about as much as we spend before we decide to invest in a privately held firm. While that obviously takes more time, we find that the superior results justify the extra effort. I think this gives us a fantastic competitive advantage."

Another reason Blutt decided to professionalize Consonance Capital was to help his children understand what their father does for a living. "They knew I was a doctor, but they saw me at home working from the family computer, so they were understandably confused about what it is that Dad actually does." Despite his many interests, Blutt doesn't hesitate in naming his most important priority. "It's definitely my family. I have a terrific wife and three great kids. They represent the easiest reasons in the world for me to frame my ambitions in the right context." ●

Susan Ross, Ph.D., director of Biomedical Graduate Studies, observes the lab work of student Dionne Robinson.

A Model Program: BIOmedical STUDIES at PENN

By Nicole Gaddis

Twenty years ago, when Penn established the Biomedical Graduate Studies (BGS) program, few people were familiar with the concept of broad-based training that transcended academic departments and schools. Today, however, many institutions are discovering that research and education can be more effective when spread across multiple disciplines and departments.

Photographs by Candace diCarlo

Speaking at the BGS anniversary celebration

in November, Arthur H. Rubenstein, M.B., B.Ch., dean of the School of Medicine and executive vice president of the University of Pennsylvania for the Health System, called the program "one of the jewels of our institution."

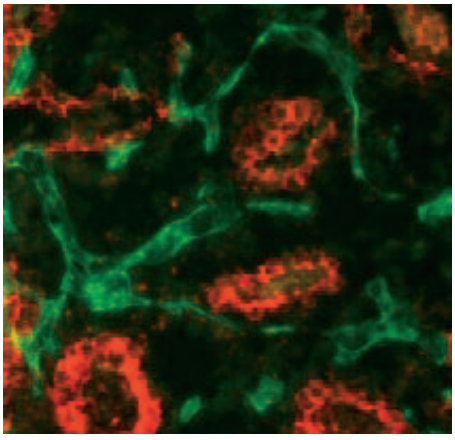
Led by Susan R. Ross, Ph.D., professor of microbiology, the BGS program today includes seven highly interdisciplinary graduate groups that are no longer based in academic departments. Since its founding, the program has more than doubled in size and applications have more than tripled. The faculty members – around 600 – come from more than 30 departments across seven of the University's schools: Medicine, Veterinary Medicine, Dental Medicine, Arts and Sciences, Engineering and Applied Science, Wharton, and Nursing. The program also has affiliations with other institutions, including the Children's Hospital of Philadelphia and the Wistar Institute.

"Frankly, it's right that we are very proud of the Biomedical Graduate Studies program and its students," said Glen N. Gaulton, Ph.D., executive vice dean and chief scientific officer at the School of Medicine. Gaulton, a professor of pathology and laboratory medicine, served as director of the program from 1995 to 1998. "We have the unique opportunity to think very broadly about science, to think *differently*, and make a real change in research."

To help celebrate 20 years of Biomedical Graduate Studies, Ross and her staff invited five distinguished graduates of the program to present their current work at the anniversary event in November. The event also included a poster session featuring the work of current students. As the program administrators point out, many of its graduates accept prestigious academic postdoctoral fellowships and often go on to faculty positions. Other alumni find positions in the biomedical industry, in government agencies, or in professions such as patent law and science journalism. Graduates are not necessarily in research science, Ross noted, but they definitely are using their science education.

The first of the five graduates to present at the anniversary event was Blossom Damania, Ph.D. '98. She is now associate professor of microbiology and immunology at the Lineberger Cancer Center of the University of North Carolina at Chapel Hill. Her laboratory is investigating Kaposi's sarcoma-associated herpesvirus (KSHV/HHV-8), which is associated with three types of human cancers. As Damania told the newsletter of The V Foundation for Cancer Research, "KSHV encodes more than 80 genes, so we're trying to figure out which of these genes is responsible for KSHV's ability to induce cancer in its host." The 2003 recipient of the American Herpes Foundation Research Award, Damania also was awarded an Investigator in Pathogenesis of Infectious Disease award from Burroughs Wellcome Fund last year.

Robert Wechsler-Reya, Ph.D. '95, is now an associate professor of pharmacology and cancer biology at Duke University. He investigates the molecular mechanisms that regulate cell growth and the genesis of tumors in the nervous system. In particular, he studies the role of the



Sonic hedgehog signaling pathway in the development of the cerebellum and in the genesis of a brain tumor called medulloblastoma. In 2007, he received Duke's W. K. Joklik Award for Excellence in Cancer Research and was named one of the first six Duke Med Scholars, an award that recognizes rising stars in science and provides additional financial support for their research.

The third anniversary presenter was Laurence Eisenlohr, V.M.D. '83, Ph.D. '88, professor of microbiology and immunology at Thomas Jefferson University. His research interests lie in how T cells recognize antigens. Antibodies can prevent interaction with cellular receptors (the first step of infection) by binding to the surface of the pathogen, which makes the pathogen a target for phagocytes to engulf and destroy the pathogen/antibody complexes. In 2004, the Leukemia & Lymphoma Society honored Eisenlohr as one of five scientists to receive its Stohlman Scholar Award for outstanding contributions to the advancement of blood cancer research. As the society put it, his work investigates "the rules of engagement between microbes and the immune system, subsequently using them as a reference when targeting cancers."

Karyn T. O'Neil, Ph.D. '98, earned her doctorate in biochemistry and molecular biophysics. She is now director of protein optimization at Centocor, Inc., a biomedicine company that seeks innovative ways to treat cancer and immune-mediated inflammatory disorders such as rheumatoid arthritis and psoriasis. She is investigating protein engineering of antibody-based therapeutics.

The last presenter was Mark Shlomchik, M.D.-Ph.D. '89, professor of laboratory medicine and immunology at Yale University. His long-term interest has been the development and regulation of B lymphocytes, and his lab focuses on

autoimmunity, B cell memory, and transplant-related immunopathology. Shlomchik was named Scientist of the Year for 2006 by the S.L.E. Lupus Foundation.

Making Medical Education History

To the modern eye, having an interdisciplinary science program in a medical school seems almost like common sense; treatments are now turning towards targeted therapies and personalized medicine based on an individual's genetic makeup.

But exactly why is it common sense?

Gaulton's encapsulated history of biomedical research in the twentieth century suggests the answer.

"When modern molecular science began – generally from the 1930s to the 1950s, and then onwards – people were studying whole organisms," he said. "People weren't studying the molecular mechanisms behind the development of fruit fly eyes, for example; they were literally *looking* at fruit fly eyes.

"In other words, they were working with the technology and knowledge they had available at the time. So the scientific disciplines, and therefore academic departments, were very 'siloed.' Because knowledge was so limited, everyone was building very little domains."

It was the discovery of DNA and the growing interest in molecules that helped drive collaboration across fields. As researchers moved away from discrete organisms – bacteria infected by a certain virus – and could focus on individual mechanisms – studying the virus itself – they found that they had more common knowledge to share.

Funding was also a strong influence: the National Institutes of Health was originally founded to train medical researchers for its own organization, not to provide biomedical research funding. But as funding started to match the molecular direction that science was taking, there was finally a boom in funded biomedical researchers – new, bright minds in the field.

That same kind of development is occurring in genetics. "At the time when I received my graduate degree, in the 1980s, there were only two or three human genes that were known and had been identified," said Gaulton. "So, for the most part, if you wanted to understand about gene regulation, you studied bacteria – not to understand bacterial pathogenesis, but to study the genes that you inserted into the bacteria, because they were easy to work with."

Now researchers can directly study individual genes, viruses, and bacteria in humans. As spheres of knowledge in these fields continued to grow, they began to overlap – and people could start truly working together. Techniques developed in one field could be more easily applied to answer questions in another.

These changes in science began to accelerate in the 1970s and especially in the 1980s. And it was in the fall of 1984 that Penn appointed a director of Biomedical Graduate Studies, Saul Wine-

Susan Ross meets with Judy Jackson, center, administrative

THE RISE OF A MICROBIOLOGIST

Susan R. Ross, Ph.D., had a wealth of graduate program experience behind her when she was appointed director of the Biomedical Graduate Studies program in 2003. Ross had played an active role in graduate education and directly supervised more than 25 graduate students and fellows during her years at the University of Illinois Collage of Medicine at Chicago and at Penn.

"I've always been very interested in training, in education," said Ross. "In some ways, that's the most important thing that a scientist can do: train the future generations of scientists. The long-lasting legacy of a scientist's work is who she trains."

In accepting the position of director, she explained, "I was interested in training from a higher level – going beyond one-on-one teaching."

Ross's particular goal as director was to improve admission rates of under-represented minorities. She spent much of her time developing a recruitment strategy; she launched a summer internship program for (largely minority) undergraduate students from other, smaller schools.

"I also wanted to generate enthusiasm among other faculty members to go outside the campus and do recruiting," said Ross. She is proud to report that minority enrollment in BGS has increased dramatically, with rates increasing every year for the past five years.

Ross sits on the steering committee for the Association of American Medical College's GREAT Group (Group on Graduate Research, Education, and Training). She has also served on the review panel for a program, at the Howard Hughes Medical Institute, that provides research training fellowships for medical students.

Her own research interests and activities also cross departmental lines, and she is a member of many graduate groups and centers. "Before coming to Penn, I was struggling to get an interdepartmental graduate training program going. At Penn, there is a philosophy that research is *not* bound to any one department. BGS offers that philosophy in action."

director of BGS, and student Chenere Ramsey.

grad, M.D. '56. His primary role was to provide leadership and to coordinate the activities of 13 graduate groups that had, until then, operated autonomously. The School of Medicine provided administrative oversight, financial support, and office space for program staff. For the first two years, BGS was a "virtual" program – the first students arrived in 1986.

In addition to providing a common experience in the fundamentals shared by practically all contemporary biomedical research, the BGS program provides a wide range of areas for research in greater depth: Biochemistry and Molecular Biophysics; Cell and Molecular Biology; Epidemiology and Biostatistics; Genomics and Computational Biology; Immunology; Neuroscience; and Pharmaceutical Sciences. There are also affiliated graduate groups in Biology (Arts and Sciences) and Bioengineering (Engineering and Applied Science). The program's history, structure, and nature have given it the ability to respond as new fields and subfields arise in biomedical science.

"A very good example of how and why the structure of BGS changes, through our graduate groups, is in genomics," said Ross. "That's a field that is truly cross-disciplinary: it involves computer scientists, it involves biologists, it involves people in the medical field, it involves geneticists. Here we already had these people working together in other graduate programs and they saw the need to train students in this specific field. And the structure to do it was already there."

But, continued Ross, "The program isn't just about receiving training in a particular specialty. You're being trained in an approach to science that is cross-disciplinary. There are many medical questions where it really doesn't matter which

An example of how the interdisciplinary approach of BGS can work to help solve a medical mystery involves HIV, an area of research that Ross knows quite well.

At BGS, some faculty members and students focus on how the virus enters a cell – which may lead to a way to develop inhibitors. Others are focusing on gene therapy and developing better vectors for delivering the therapy. Without knowing how the viruses used for gene-therapy vectors actually work, Ross pointed out, "we would never be able to get to the point where we would be able to use them in the clinic."

Ross was one of the first investigators to use transgenic mice to study virus gene transcription, infection, and pathogenesis; in the 1990s, she and her colleagues demonstrated that mice retain endogenous super antigens (formerly known as minor lymphocyte-stimulating loci) in their genome as an antiviral defense mechanism. It was this discovery that initiated her current research of using genetics to investigate interactions between hosts and viruses, the immune response to retroviruses, and mouse models of breast cancer.

More recently, Ross and her research team were also first to show that a mouse protein, APOBEC3, whose human equivalent is related to defense against HIV-1, inhibits the infection and spread of a mouse tumor virus. The study, which appeared online January 28, 2007, in advance of its print publication in *Nature*, provides a new model for the discovery and evaluation of anti-HIV drugs. HIV-1, like the mouse tumor virus, is a retrovirus that infects immune system cells. Unlike HIV-1, however, the mouse virus causes breast cancer in mice.

"Although this study was performed with mice and used a mouse tumor virus for which there is no human counterpart, the mouse model of infection we have developed may be useful as a test system for evaluating drugs that augment the role of human APOBEC3 in defending against HIV," said Ross. Since its discovery in 2002, the human equivalent to mouse APOBEC3 has been shown to defend some cell types against HIV-1 infection.

Currently, Ross holds four research grants sponsored by the N.I.H. and has published 75 articles and reviews. She has served on the N.I.H. Experimental Virology Study Section; was a board member of the Leukemia Research Foundation; and served as chair of the Molecular Biology & Genetics Panel of the Department of Defense Breast Cancer Research Grants Program.

A B. Kenneth West University Scholar at the University of Illinois, 1992-94, Ross held the American Society for Microbiology Wellcome Visiting Professorship at Lehigh University for 1998-99 as well as the Society's International Professorship at the Academia Nacional de Medicina in Buenos Aires in 2001. The following year, she was elected a Fellow of the American Academy of Microbiology.

"Basically, once you're in the lab," Ross said with a smile, "you know that's where you belong."

discipline you're doing that research in – you can apply that method, that approach, to any discipline.

"And it's really an apprenticeship: you're under the direction of faculty and the senior staff in the lab. They're all helping you learn how to think, intellectually, about the question you're trying to answer."

Gaulton, too, believes that the personal development that accompanies academic growth is vital. "One of my great joys from working with graduate students at Penn is to see them develop over the years," he said. "These are clearly bright, talented students who must tackle scientific and medical questions that have never been answered – they have to do something completely new and not simply walk someone else's path.

"Every student is going to face a time when nothing in the lab works. To develop the perseverance and patience to finish the work – it's how medicine moves forward, and how students become scientists."

A Strong Backbone

In the early days at BGS, a number of initiatives were undertaken and committees formed. An advisory committee, consisting of the chairs of each of the graduate groups, was charged with discussing general policy. A single admissions committee formulated the principle that only students sufficiently distinguished to merit *full* support would be accepted to the program. A curriculum committee worked to identify new academic programmatic needs.

The sweeping re-organization was matched by developments in BGS's program of study. In 2000, for example, the Curriculum Reform Task Force developed a "core curriculum." These were basic courses that faculty and students felt provided some of the "broad-based" training that would make collaboration across specialized areas more fruitful. An "undeclared program" was introduced as early as 1986. This option allowed students to enter graduate training in biomedical science without having to designate a defined area of specialization for their first year.

The program established fully funded fellowships for all students (except those with professional degrees, such as M.D.s and Ph.D.s) in 1993. A second office was created to help administer funding and centralize payments for student stipends, tuition, and fees. There is central support for the development of training grant proposals and the financial administration of training grants. The School of Medicine's information services is currently helping to develop databases of student records and faculty teaching throughout BGS.

This "back-office," everyday support has been crucial. "One of the most important keys to the success of our program is having a unified administrative structure," said Ross. "It makes it actually quite simple to create new graduate groups and programs; we have formal processes in place."

The BGS structure also makes it easier for people to connect. Faculty are often members of multiple graduate groups, so dialogue flows between them. Students share lab space with those studying different disciplines. And all have a way of bringing new ideas to the program's various administrative committees.

Administrators saw this potential from the beginning. Back in 1985, even before the students arrived, Saul Winegrad explained in *Almanac*, the faculty newsletter, that the structure of BGS would allow it to adjust to changes in biomedical sciences without having to reorganize every three to five years. Already, Winegrad noted, other schools were visiting to look at this "Penn model."

The Penn model has to be considered in a larger context as well. While BGS was being developed, Penn was also

Andrew Lippa, a BGS student, is doing his thesis work in Susan Ross's lab.

demonstrating its commitment to biomedical research in bricks and mortar. In 1991, for example, the University trustees approved the Master Site and Facilities Concept Plan. The plan originally included seven phases – three of which led to the construction of biomedical research facilities. In fact, when Biomedical Research Building II/III opened in May 1999, many observers saw it as a state-of-the-art research site.

National Leadership and Recognition

At the celebration of BGS's 20th anniversary, Dean Rubenstein said, "BGS has a highly qualified body of students who learn from and are guided by an equally impressive range of faculty members. Indeed, it is a model for universities across the country."

"The Biomedical Graduate Studies program is about having departments 'without walls,'" said Neal Nathanson, M.D., associate dean for Global Health Programs and emeritus professor of microbiology. "It's something that we may take

for granted at Penn, thanks to strong support from the School of Medicine's administration, but it's something that other schools are *still* struggling to emulate."

Harvard, for example, launched a comparable program, Harvard Integrated Life Sciences, only three years ago.

"Penn is totally unique because all of its schools are located on the same campus," explained Ross. "Obviously most of our faculty and students come from the School of Medicine, but about 25 percent come from all of the other schools at Penn. It's not just about crossing academic department lines – the learning that happens at BGS takes in other professional disciplines and approaches. It's that structure that puts us at the head of the pack in biomedical graduate education."

Laurence Eisenlohr, one of the BGS graduates who presented at the anniversary event, has a keen appreciation of that fact. He teaches in the graduate program at Thomas Jefferson University. According to Eisenlohr, Robert Korngold, Ph.D. '79, who earned his doctorate in immunology through BGS, "essentially created the immunology program" at Jefferson. "So we're using our experiences from being at Penn's program." (Korngold is now chief of research at The Cancer Center at Hackensack University Medical Center.)

"Universities are learning that multidisciplinary approaches are now essential for many avenues of investigation," Eisenlohr continued, "and what made Penn's program particularly strong were the huge pools of talent that were brought into one place. I personally loved working with the faculty.

"For many years, it seemed that researchers in immunology were 'insulated' and faced many intellectual problems that may have remained unsolved. But one did have to reach deeply into other medical and scientific fields to find these answers, and at Penn, you felt that you were among the top echelon of experts in the field, and I believe they really laid the groundwork for modern immunology."

Continuing Quest for Excellence

Of course, the program continues to evolve and the success of BGS is clearly seen in the growing excellence of its student body. Not only has the number of applications increased, but GPA and GRE scores have risen steadily as well. Rubenstein, at the anniversary symposium, stated that he believes such quality in the student body spurs innovation in all the School's faculty.

His comments echo what Winegrad said more than 20 years earlier: "Bright and satisfied students drive the whole system."

Gaulton noted that scores are only part of the story. "An important point for me, while I was working with BGS, was to enroll students who would come out the other side – to share our faculty's expertise and provide an exceptional education to those who would be committed to finishing the program."

Gaulton and his team had found that applicants with higher GPAs and GRE scores were actually more likely to complete the program; so the admission process was made even more competitive. It initially resulted in lower admission numbers, but, again, those numbers have risen – as has the quality of students.

Recently, BGS received a prestigious award from the Howard Hughes Medical Institute to fund a post-baccalaureate program: the "med into grad initiative." This program teaches would-be basic scientists more about human biology and medical issues and research while providing them with the additional laboratory experience they would need to be accepted into a prestigious graduate research program. It also helps them with the application process.

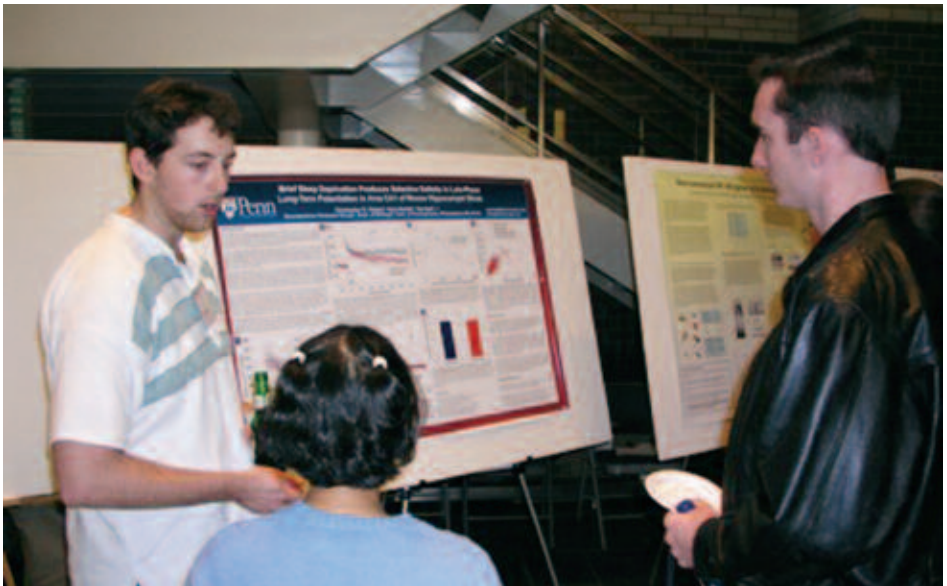
Another new master's program trains students interested in infectious disease or cancer biology in public health. Both programs train students for future research that bridges basic and clinical disciplines – taking what is learned at the bench and bringing it to the public health arena.

As Ross pointed out, without basic science discoveries, "there's nothing to translate to the bedside.

"You can't just train people on how to take your work at the bench and bring it to the patient. You need to train basic scientists to make those fundamental discoveries. If you don't have people doing that basic research, who knows what you may be missing down the line.

"I believe all scientists appreciate the importance of what they do at the bench – and what that means for human health." ●

Christopher Vecsey, in the BGS neuroscience program, presents his poster at the 20th anniversary event.



Ten Years Old and Going

Last October, Ezekiel J. Emanuel, M.D., Ph.D., chairman of the Department of Clinical Bioethics at the National Institutes of Health, published an essay in *The Chronicle of Higher Education* called "How to Redefine a Medical Education." In his piece, Emanuel began by citing the Flexner Commission's landmark report of 1910. He argued that medical education "must go beyond the biomedical sciences and be reformed once again, at both the graduate and undergraduate levels."

After running through several areas that he feels must be added to the curriculum, Emanuel ended his piece this way: "The changes I've recommended would better prepare students for medical school and for their professional careers in medicine."

Rick Cushman

At this year's Match, Neha Amin, Gauree Gupta, and Reshama Saralkar (left to right) found good news in their envelopes.

Q: Dr. Emanuel argues that "Medical students and physicians must be familiar with statistical concepts like sample sizes, odds ratios, specificity, and positive predictive values."

A: Right in the beginning in 1997, we put in biostatistics and epidemiology. We figured you've got to be able to understand when you read any kind of paper. Our students needed to read the literature – yes. They needed to do diagnostic tests – yes. Analyze data from research trials – yes. Interpret, evaluate – yes. [According to Emanuel, the Liaison Committee on Medical Education does not require statistics], but we've always felt we had to. It is more than just plain biostatistics. Our students started with biostats and epidemiology, and they do it around journal clubs and reading articles, so it's *application* – you're learning about statistics, but it isn't just learning *statistics*. "Let's look at this article and let's understand the methods that are used, and did they do it right, etc.?" Then the students move on to clinical decision-making, which is how do people, with all this information, then make decisions? It's risk/benefit ratios and all these kinds of things that come into play – to basically show students that doctors don't just sort of flip a coin when they don't have all the information. There really is a rationale to how you make a decision.

Then they move on to rational approaches to algorithms and how you make those decisions – don't box yourself in, always be able to come around to getting more information, etc. Then we have one more course that involves being able to assess information and analyze information clinically, all using biostats, epidemiology, and then clinical decision-making. That course runs basically for the entire first year of medical school. Then, when they go on to the clinics, they end up having small group discussions where they use these skills again. That's three years in the curriculum – it doesn't stop at the end of the first year and a half. We've had that since 1997.

The same thing with health-care economics. The students have that in the second half of the first year, learning about what *is* a health-care system and what is

Strong

GAIL MORRISON, M.D., VICE DEAN FOR EDUCATION, GIVES AN OVERVIEW OF CURRICULUM 2000, WHICH BEGAN IN 1997 AND REMAINS AT THE FOREFRONT OF MEDICAL EDUCATION PROGRAMS.

It may be time for other medical schools in America to start catching up with Penn. Ten years ago, the entering students became the first to begin their education in the School of Medicine's innovative new course of study, Curriculum 2000, which includes just about everything Emanuel called essential for helping to make "undergraduate and medical-school students better citizens and contributors to our country's health-care system and to our society as a whole." This May, the seventh class finished its four-year course of studies in the revised curriculum.

For a fuller perspective on the status of Curriculum 2000 a decade after it was instituted, John Shea of *Penn Medicine* interviewed Gail Morrison, M.D. '71, G.M.E. '77, vice dean for education. Morrison was able to show how Penn has already incorporated the areas cited by Emanuel: management; statistics; health economics; law; information technology; and ethics and communication.

Medicare and what is Medicaid and what's the British system, the Canadian system, the American system. What's insurance? What's reimbursement? What about payment for the uninsured? What are the incentives for reimbursement? What are the different payer systems?

Q: These are all matters that the individual practitioner of a few years ago didn't have to bother with.

A: We *don't* teach students how to set up their own practice. They're medical students, and our belief is that by the time they're ready, if they do go into a group practice or try to set up their own practice (I doubt most of them will set up their own practice), I don't *know* what's going to be there 5-7 years out. So we give them a major course on health-care economics, and we bring in people from the outside to talk to them. That's also been from 1997. Then there's the "law of the land." In Module 6 we have Paul Lanken [M.D., G.M.E. '77, professor of medicine] heading our whole bioethics curriculum. That runs for four years and deals with questions like terminating therapy; different religions and cultures and their beliefs; health laws and how they differ across different states – never mind different countries! – and what expectations are. We talk about abortion, abortion laws, conflict of interest, patient rights, and HIPAA [The Health Insurance Portability and Accountability Act]. That's also been in since 1997.

The next thing Emanuel cites is information technology. We put in a *virtual* curriculum at the same time we put in our new curriculum: audio, video, everything. We keep doing much more with information technology, so students learn how to use it, access information, etc. [A recent visit to the Virtual Curriculum site showed several on-line videotaped lectures that were accessible, including "Psychiatry Optional Review I"; "Health-Care Systems Payers Part II"; and "Pain Symposium V: The Pain of Childbirth and Its Managements," taught by faculty of the School of Medicine and the Wharton School; as well as several slide shows, including "Dynamic Human Anatomy."]

Tommy Leonardi

William Hiesinger prepares to sign the Alpha Omega Alpha book during the medical honor society's induction ceremony. Jon B. Morris, M.D., associate dean of student affairs, offers congratulations.

Q: The computerization of medical records is in the news again.

A: It's all relevant. Our kids are trained on Epic [integrated hospital software] and trained in HIPAA and trained on anything the house staff do or the faculty do. If it's a computerized record out on the outpatient floor where they use Epic, our students have to be trained on Epic so they can enter their notes as well.

Ethics and communication studies: we have a four-year course in professionalism and humanism and bioethics, and that's with Paul Lanken and Art Caplan [Ph.D., chair of the Department of Medical Ethics]. The students take the Hippocratic Oath at the time of the White Coat Ceremony. They learn about caring for the vulnerable populations, confidentiality, informed consent, end of life, resource allocation. They learn about health-care systems, as well as when they're on the wards. And then we have a whole communication skills program, which is basically learning how to talk to people.

Q: Do you use standardized patients for that?

A: We use standardized patients at the start of the first year of medical school. And it keeps going right through to the end.

Q: I saw a demonstration of a patient simulator recently. Even that will give you a little bit of feedback, like, "Ouch! Not so hard!"

A: Or you do something bad, and it dies or it bleeds! In the past, the belief was that if you just observe somebody, you're going to understand exactly what they're doing and how they interacted with the patient – that's probably the model that most of us came through. You watch some of the great practitioners that existed here, the Sylvan Eismans [M.D. '41, G.M.E. '50] of the world, talking with people. You tell yourself, "Gee, didn't he do that great? I've got to try that too."

Rick Cushman

Melissa Briggs couldn't wait to share where she will take her residency.

And now we realize that there really is a whole curriculum about how to talk to difficult patients, and angry patients, and patients with poor educational backgrounds, patients with different language skills, and how to use the interpreter. The only way you could be sure that every single student gets those types of patients before they leave medical school was to have standardized patients and a curriculum in which we could observe the students. So we can say all 150 students, before they leave medical school, had this kind of preparation. What Emanuel called for is what we're doing – and were doing in 1997.

Q: The Wharton School for many years has videotaped its M.B.A. students giving presentations. Do we use videotape or anything of that sort when the students deal with standardized patients?

A: When we use the standardized patients, the rooms all have microphones and cameras. We have VCRs or DVDs, and we have a main computer room where we can observe all twelve stations going at the same time. We have somebody review the videotapes of the students. If standardized patients said that someone didn't do a good job, we can go over the videotape with the student. It's a tremendous learning experience when students say, "Oh, they're wrong! I know I did that," or "I know I asked that question," or "I know I didn't roll my eyes," or "I know I didn't yawn in his face," etc. Then you can say, "Okay, now let's pull the videotape." So videotaping is really important. And it allows you to do fewer sessions because it's great for feedback. The reason you have them do all of these different things in medical school is in the hope they learn something for the next time they do it – and to do it differently or better or, if it's good, the same. With so many students, you can't have enough faculty observing every single student when they do every single thing. So you pick the things a student really must know how to do, and you train them how to do it formidably.

Q: Dr. Emanuel suggests that the biggest challenge in carrying out his recommendations would be to stimulate collaboration across professional schools.

A: We're lucky because we're located on a university campus. We stress that we are *one* university, with multiple graduate and professional schools all geographically together. That allows you to do a lot of things in an interdisciplinary way. It's something which is encouraged by our

president, encouraged by the dean/executive vice president. We have one health system, where the school and the health system are all together. Therefore, the faculty all work for the same master. Everybody's part of the system, and that really has tremendous advantages.

Q: The students still do clinical rotations in some of the affiliated hospitals and in the small practices of Clinical Care Associates?

A: And also in Kids First [the network of practices associated with the Children's Hospital of Philadelphia].

Tommy Leonardi

Natasha Wehrli, left, and Andrea Goldberg are two of this year's AOA inductees.

Q: Have you had feedback from the students who have gone through the four years? Have they told you, "Wow, I'm glad you taught me this" or "We didn't learn anything about this important subject."

A: We are going to be sending a survey out to everybody who graduated from our medical school from 1980 on. In that survey, we are going to be asking: what are you doing right now? We're particularly interested in what kinds of leadership roles you have played in medicine in any way: are you head of your safety board in your group practice, or are you a division chief, or are you a chairman of a department, or are you working for the Government, or are you working for a pharmaceutical company? Thinking back on your education, how well did we train you in basic sciences, in some of the clinical areas, in procedures, in communication and all the other things that we're doing now that we didn't do in 1980.

We want to know what they thought about their education now that they've been out five years, 10 years, or whatever, and looking back, what do they wish they had learned something about that they didn't, for whatever reason. It may be because we didn't *know* it had to be taught. They might say, "We should have had more genetics because genomics is important in diagnosing, prescribing, and treating today." But we could then say, "But nobody *knew* about the genome back in 1980."

We're particularly interested in the more recent graduates. Basically, how well were you prepared to go out and do what you do?

Q: What is different in today's curriculum?

The actual structure of the curriculum as far as what students do and these blocks or modules of curriculum – those have all stayed the same. But we've added a whole series of things, because we have such a flexible curriculum and dual degree programs. More students are getting master's degrees in an M.B.A. program with a dual M.D./M.B.A. We now have a master's in bioethics. We now have a master's in public health and in clinical epidemiology. There's probably going to be a master's in health policy. And we're probably going to have a five-year M.D. program that will allow you to get an M.D. plus a master's in translational medicine.

We wanted a flexible curriculum because we know people like to do time-out experiences and do research for a year funded by the Doris Duke Charitable Foundation or the American Heart Association or N.I.H. or the Howard Hughes Medical Institute. We had very few master's degree programs in 1997, primarily the M.B.A. program. We had some students that were interested in doing that back then, but this has now flourished.

The other program that has flourished has been global health – in Third World countries, among underserved populations. That program has been built up tremendously. We're trying to push global health with public health, global health with translational medicine, global health with clin-epi for outcomes – because if you put it all together, you could go run an NGO or work for the Bill and Melinda Gates Foundation. If these people are really interested, they could work for the World Health Organization or the CDC. These are things that can all help you down the line putting your career together. We call it the M.D.+ Degree. We've gotten *much* more aggressive in promoting the M.D.+ Degree because we happen to think the way we built the curriculum allows them to do lots of things within five years that would normally take people a lot longer. The students have been pretty happy, with good positions after graduating. ●

Development Matters

Penn Cardiovascular Institute: Catalyzing Discovery and

In 1918, America's leading cause of death was Spanish influenza.

For every other year since 1900, it has been cardiovascular disease, by a wide margin. According to the American Heart Association, nearly 80 million Americans – one in three adults – have some form of heart disease, and in 2004 it was the cause of death for nearly 900,000 people – more than cancer, chronic lower respiratory diseases, accidents, and diabetes mellitus combined. In 2004, nearly seven million inpatient cardiovascular procedures and operations were performed in the U.S.; the estimated cost of cardiovascular disease to our economy for 2007 is more than $430 billion.

"By 2020, as the world population ages, heart disease and stroke will overcome communicable diseases to become the leading cause of death, worldwide, for the first time in the history of humanity." That was how Michael S. Parmacek, M.D., director of the Penn Cardiovascular Institute, put it at the reception introducing the Institute, in January 2005.

Parmacek speaks passionately about the problem – and equally passionately about Penn's strengths in battling it. "I believe that given the breadth and quality of the faculty involved in cardiovascular research and medicine, Penn is uniquely positioned to fight the ongoing epidemic of cardiovascular disease around the world."

Parmacek cites an impressive list of areas where Penn is at the forefront of the practice of cardiovascular medicine, such as:

- Researching ways to raise the level of "good" HDL cholesterol, which may prevent coronary artery disease.

- Pioneering the use of mechanical assist devices in patients with end-stage heart failure who are not eligible for transplant. Penn is one of the only centers in the U.S. approved to use such devices as "destination therapy."

- Developing new strategies to diagnose and treat atrial and ventricular rhythm disturbances, including potentially curative therapies for atrial fibrillation.

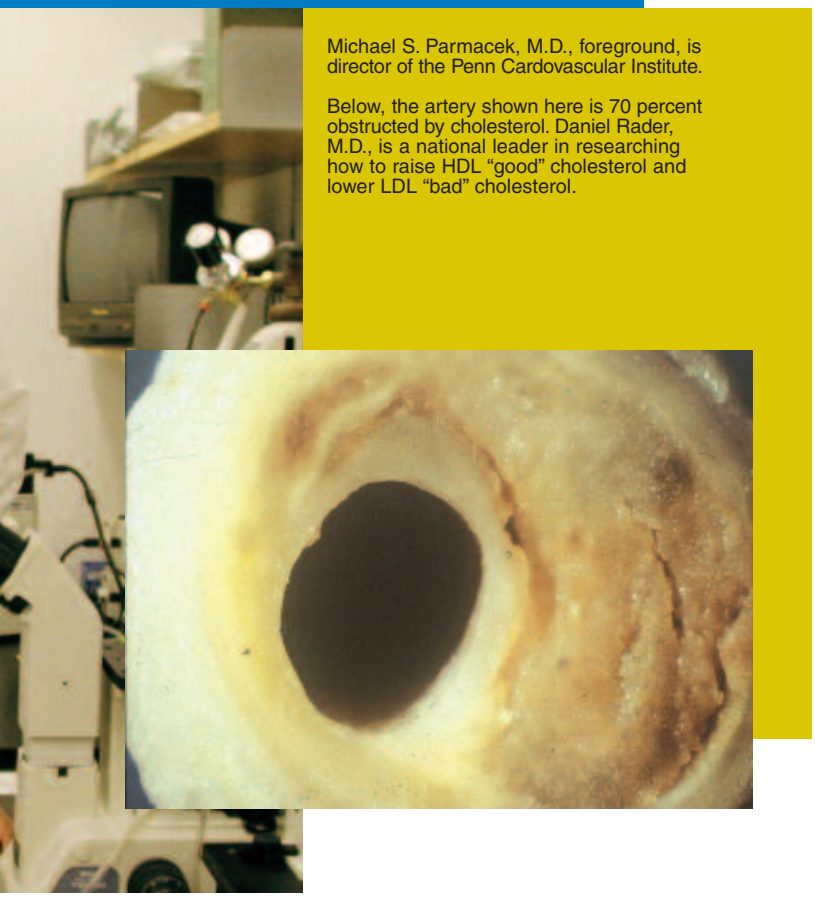
- Mapping the basic mechanisms of cardiovascular cell development and the molecular and genetic basis of congenital heart disease. Such studies offer promise for children with congenital heart defects as well as for adults who develop heart disease.

Why an Institute?

PENN Medicine is already a powerhouse in cardiovascular research and clinical care. Every year since 2002, it has received $50 million or more in funding from the National Heart, Lung, and Blood Institute – including $59 million in 2006. It has nationally recognized programs in cardiac surgery, cardiac electrophysiology, heart failure and transplantation, and invasive and non-invasive cardiac imaging. So how does the Cardiovascular Institute strengthen Penn's fight against heart disease?

"The Institute catalyzes research discovery and translation in three ways," Parmacek explains. "We provide state-of-the-art laboratory facilities, concentrated in one campus location. We provide our scientists with the administrative support they need to complete complicated grant and patent application processes. Most importantly, we are paving new avenues of communication: cross-pollination of ideas among scientists working on basic, translational, and clinical research that leads to innovative thinking and collaboration. The Institute is structured into six disease-focused programmatic units that bring together basic scientists and clinical investigators.

Improving Patient Care



Michael S. Parmacek, M.D., foreground, is director of the Penn Cardovascular Institute.

Below, the artery shown here is 70 percent obstructed by cholesterol. Daniel Rader, M.D., is a national leader in researching how to raise HDL "good" cholesterol and lower LDL "bad" cholesterol.

"Let me give you an example," he continues. "Recently, the Commonwealth of Pennsylvania asked for research proposals examining gene-environment interactions. Through our website [www.med.upenn.edu/cvi/index.shtml] we announced a meeting to discuss how we would respond to this opportunity. By the end of the day, we had a proposal with three exciting new projects, examining how genetic background and environmental factors such as alcohol use lead to coronary artery disease, diabetic vascular disease, and atrial fibrillation."

Research Discoveries of National Importance

In the two years since its founding, the Institute has established basic, translational, and clinical research core laboratories with specialized expertise that is available to all of its faculty members. These include a CVI-CCEB Biostatistics Core, CVI-Radiology Clinical and Translational Imaging Core Laboratories, Genetics Core Laboratory, Histology and Gene Expression Core Facility, Mouse Physiology and Microsurgery Core Laboratory, and Transgenic and Knockout Core Facility.

CVI faculty members have made discoveries that have affected cardiovascular health and disease on a national level, publishing several hundred journal articles in 2006. Following are just a few examples:

- The first human trial of mitral valve replacement without open heart surgery, reported in *Journal of the American College of Cardiology*.
- Identification of resistin as an inflammatory marker for atherosclerosis, reported in *Circulation*.
- Identification of a new gene associated with risk for heart attack, reported in *Nature Genetics*.
- Discovery of a way to remove cholesterol from cells and arteries, reported in *Journal of Clinical Investigation*.

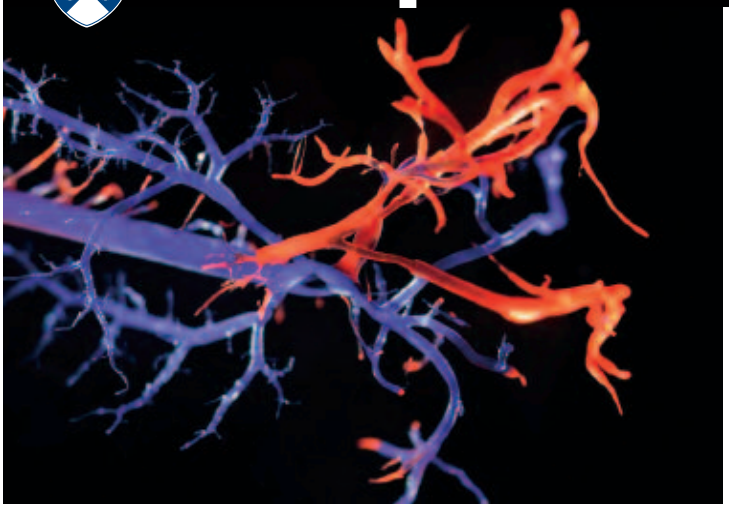
"The University of Pennsylvania has a long tradition of fostering research that cuts across departmental, disciplinary, and even school lines," says Arthur H. Rubenstein, M.B.,B.Ch., executive vice president of the University for the Health System and dean of the School of Medicine. "The Cardiovascular Institute does what centers and institutes can do more effectively than loose confederations of investigators – that is, encourage the interactions among researchers, physicians, trainees, and students more systematically."

While much of the Cardiovascular Institute's research is supported by NHLBI funding, the Institute itself has funded two important pilot projects:

- **The Penn Heart Failure Study**, launched in FY05, currently includes approximately 1,000 heart-failure patients who have been rigorously phenotyped and genotyped – already one of the largest genetic cohorts of heart-failure patients in the nation. At the same time, Thomas P. Cappola, M.D., who helped launch the study, collaborated with members of the Penn Genomics Institute and the Center for Clinical Epidemiology and Biostatistics to develop a new biostatistical methodology, called "transcriptional genomics," to identify a novel family of transcription factors that affect the progression of heart failure. His study was published in *Circulation*, and Cappola received an award as the Young Investigator of the Year from The Heart Failure Society of America.

- **PennCath Study** – In the late 1990s, Daniel Rader, M.D., established a protocol through the cardiac catheterization labs at both HUP and Penn Presbyterian Medical Center in which patients were recruited to donate blood to be saved for genetic and biomarker studies. The stored DNA for several thousand patients, which had

Development Matters



The plasticized arteries and veins illustrate the work of Jonathan Epstein, M.D., who researches the molecular and genetic basis for normal and abnormal heart and vascular development. These studies have implications for both children with congenital heart defects and adults who develop heart disease.

been phenotyped for several cardiovascular risk factors including the presence of type II diabetes, helped lead to two important discoveries by deCODE Genetics, a biopharmaceutical company based in Iceland. The first confirmed the link between a certain gene (*LTA4 hydrolase*) and myocardial infarction, and revealed that its association with MI is considerably stronger in African Americans than in Americans of European descent. The second discovery reinforced deCODE Genetics' previous finding that the gene *TCF7L2* is a major and important gene for the development of Type II diabetes. Both discoveries were published in *Nature Genetics*.

In addition to federal funding and that provided by the Institute itself, it has worked closely with the School of Medicine's Office of Corporate Alliances to establish partnerships with pharmaceutical and biotech companies. The partnerships have led to several collaborative CVI research projects with GlaxoSmithKline and Abbott Laboratories.

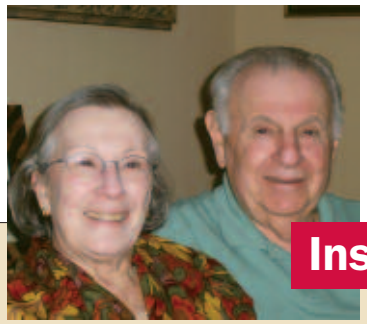
Increasing Patient Access and Quality of Care

Parmacek notes that the Institute is also enhancing Penn's ability to recruit the very best scientists because they know that they will have opportunities to collaborate within a very broad cardiovascular community. In FY06, new faculty members were hired with expertise in many priority areas.

"The majority of CVI-sponsored new faculty recruits possess outstanding skills in clinical cardiovascular medicine as well as in translational and/or clinical research," says Parmacek.

Accordingly, growth in clinical activity and patient access are also measures of success for the Institute. With new faculty, clinical activity of HUP Cardiology in the first seven months of FY07 has included a 15.2 percent increase in cardiology admissions and a 15 percent increase in interventional and noninvasive cardiology procedures. For FY06, comparable growth in the Cardiothoracic Surgical Program firmly positioned Penn's as the leading program of its kind in the mid-Atlantic region.

Also in FY06, Institute funds were used to support a Cardiology Quality nurse at HUP, who tracks the outcomes of all patients undergoing interventional and electrophysiology procedures. The goal is to emulate the Division of Cardiothoracic Surgery's excellent documentation of its outstanding clinical outcomes. Outcomes data is being collected in a new Cardiovascular Information System, for the benefit of both clinical and research programs.



Inspired by Science

Herbert and Doris Gunther have benefited from decades of American economic growth – and from PENN Medicine's cardiac care. Now, they are helping to expand our knowledge of cardiovascular health and disease, by supporting young researchers in the Penn Cardiovascular Institute.

"Economically, our generation is the luckiest in the history of mankind," Herb Gunther says, noting that the more-than-doubling of U.S. population since World War II fueled much wealth, including the Gunthers' success in residential construction and rental property ownership and management. "We were in the right place at the right time."

As the Gunthers were looking for ways to give back to society, PENN Medicine was a natural choice: they have been under the care of Penn physicians for years. The couple is particularly impressed with the dedication of their cardiologist, Gary Vigilante, M.D., and in 2001 they sought to learn more about Penn's work in cardiology and how they could support it.

Michael Parmacek, M.D., director of the Penn Cardiovascular Institute, showed them through several labs, arranged for a research presentation by Jonathan A. Epstein, M.D., and suggested that they support the work of young scientists. "Dr. Parmacek inspired us – and we felt research was the way to go. It's the future of medicine," says Doris Gunther.

With the substantial proceeds from the sale of real estate, the

"I'm very excited about all the discoveries we've made – and about the difference these novel therapies will make in the lives of today's cardiovascular patients and those to come," says Parmacek. "The Institute's $59 million in research funding from the National Heart, Lung, and Blood Institute is a wonderful measure of the quality and quantity of scientific knowledge we produce here, but it only provides support for our ongoing research projects. We remain critically dependent upon philanthropic support for the money to 'seed' new research, to build new facilities, and to endow professorships and fellowships that will bring the nation's brightest scientists to Penn and enable them to do their best work."

For information on charitable giving opportunities, please contact William Green, Director of Development for the Penn Cardiovascular Institute, at 215-898-0578.

Gunthers had set up a Charitable Remainder Annuity Trust, whose beneficiary they then designated as PENN Medicine. They receive annual payments from the trust, and its assets will belong to Penn upon their deaths. They did not have to pay capital gains tax on their profit from the property and received a sizable charitable deduction as well. "Financially, it did more for us than it did for Penn," Herbert Gunther explains.

Each year, they also make a cash contribution to the Cardiovascular Institute. In 2006, the Gunthers took advantage of the Pension Protection Act to make an IRA Charitable Rollover. Those over 70 and a half can take advantage of the act in 2007 as well and transfer up to $100,000 from their IRAs directly to charity without having to recognize it as income. (Donors do not receive an income tax charitable deduction on the rollover.) The Pension Protection Act was signed in August 2006 – and was particularly timely for the couple, as Doris Gunther had been treated for arrhythmia in April by Francis Marchlinski, M.D., a Penn cardiac electrophysiologist.

"We believe in and are inspired by science – the things we've seen in our lifetime are just astounding," Herbert Gunther says.

For more information on Charitable Remainder Annuity Trusts and the IRA Charitable Rollover, visit www.med.upenn.planyourlegacy.org or contact Marcie L. H. Merz, J.D., Senior Director of Planned Giving, at mmerz@ben.dev.upenn.edu or 215-898-9486.

Recent Gifts

Steven B. Atlass's $1 million gift supports the John H. Glick, M.D., Abramson Cancer Center Director's Professorship and the Abramson Family Cancer Research Institute Endowment.

Jack Albert Benaroya has made a $2.5 million gift establishing the Benaroya Family Parkinson's Program, a multidisciplinary approach to accelerating drug discovery and clinical trails of novel therapies for Parkinson's disease.

Plans for The Clyde F. Barker Transplant House, named for the Penn transplant surgery pioneer and former chair of the Department of Surgery, have been advanced with a $500,000 challenge gift from **The Board of Women Visitors**. The gift is the largest in the Board's 122-year history.

Recently nominated to the Medical Alumni Society Executive Council, **Philip D'Arrigo, M.D. '60, G.M.E. '64**, has contributed $125,000 to the Philip D'Arrigo, M.D., Scholarship Fund, which he established in 1997.

To commemorate his 50th reunion next year, **Richard Janeway, M.D. '58, G.M.E. '62**, has made a $250,000 planned gift in support of his class's scholarship fund.

With their $1 million gift, **James Maguire** and his wife, **Frances**, have established the Stephen J. Schuster, M.D., Lymphoma Research Program at the Abramson Cancer Center.

Jeffrey Rapp, M.D. '88, and **Neil Silverman, M.D. '84**, have given $25,000 to the Penn-Botswana Program, for sending School of Medicine residents to Botswana to enrich their training and expand their understanding of global health issues.

Mr. Timothy Wilmott and his wife, **Dr. Nancy Barna**, have made a $2 million gift establishing The Wilmott Family Professorship in the Division of Gastroenterology.

To make a gift to PENN Medicine, or for more information, please contact the Office of Development and Alumni Relations, 3535 Market Street, Suite 750, Philadelphia, PA 19104-3309, 215-898-8094.

Progress Notes

Send your progress notes to:
Jason B. Bozzone
Associate Director of Alumni Outreach and Reunions
PENN Medicine Development and Alumni Relations
3535 Market Street, Suite 750
Philadelphia, PA 19104-3309

'60s

Paul G. Killenberg, M.D. '63, emeritus professor of medicine in the Division of Gastroenterology at Duke University Medical Center, received a distinguished faculty award from the Duke Medical Alumni Association in October. According to the association, in his more than 30 years on the Duke medical faculty, Killenberg established himself as a national leader in the diagnosis and treatment of benign and malignant liver disease. He led the creation of Duke's liver transplant program, which was the first in North Carolina, and served as chief of liver service and director of the G.I. Clinical Laboratory. Killenberg is senior editor of *Medical Care of the Liver Transplant Patient*, now in its third edition. In recognition of his dedication to medical teaching, Duke's Division of Gastroenterology created the Paul G. Killenberg Medical Teaching Award in 2002, and he was the first recipient.

R. Barrett Noone, M.D. '65, G.M.E. '71, G.M.E. '73, Bryn Mawr, Pa., a plastic surgeon whose primary affiliation is with the Bryn Mawr Hospital, received the 2006 Distinguished Fellow Award from the American Association of Plastic Surgeons. One of 21 living Distinguished Fellows, Noone was recognized for his oversight of board certification and maintenance of certification programs in plastic surgery and for his leadership as the first executive director of the American Board of Plastic Surgery. He pioneered the development of breast reconstruction at the time of mastectomy, stemming from the program he and his colleagues began at Bryn Mawr Hospital in 1978. A clinical professor of surgery at PENN Medicine, he is the site director of the Penn Plastic Surgery Residency affiliation at Bryn Mawr Hospital, where he served as chair of the Department of Surgery 1991-2001.

Andrew C. von Eschenbach, M.D., G.M.E. '68, who was sworn in as the 20th commissioner of the U.S. Food and Drug Administration in December, received the Distinguished Service Award from the American Association for Cancer Research at its annual meeting in April. He was recognized for exemplary leadership as director of the National Cancer Institute during a time of flourishing scientific and technological advances with gradually diminishing resources. The association noted that, during his five-year tenure, von Eschenbach fostered new and productive inter-agency agreements among the F.D.A. and the Centers for Medicare and Medicaid Services that streamlined the development and delivery of new medicines to seriously ill patients with cancer.

Edward M. Copeland, M.D., G.M.E. '69, the Edward R. Woodward Distinguished Professor of Surgery at the University of Florida College of Medicine and a surgical oncologist, was installed as the 87th president of the American College of Surgeons in October. A fellow of the College since 1974, he has also served as chair of its board of governors and its board of regents. He has also been chairman of the American Board of Surgery and president of the Association for Academic Surgery. During his training at Penn, he was a research fellow in the Harrison Department of Surgical Research and a clinical fellow for the American Cancer Society.

'70s

Robert I. Grossman, M.D. '73, the Louis Marx Professor of Radiology and chairman of the Department of Radiology at New York University School of Medicine, was named dean of the school and CEO of the N.Y.U. Hospitals Center. He will assume both positions in July. A long-time faculty member at Penn, former associate chair of its Department of Radiology, and chief of neuroradiology, he joined N.Y.U. in 2001. Grossman was awarded the Javits Neuroscience Investigator Award by the National Institutes of Health in 1999 for his work on multiple sclerosis. From 1997 to 2000, he was chair of the Diagnostic Radiology Study Section at N.I.H. In 2004, he became the first recipient of the Outstanding Contributions in Research Award from the American Society of Neuroradiology Education and Research Foundation in recognition of lifelong accomplishment and consistent excellence in clinical neuroscience. He is currently president of the American Society of Neuroradiology, a fellow of the American College of Radiology, and a fellow of the International Society for Magnetic Resonance in Medicine. Author of *Neuroradiology: The Requisites*, he is editor-in-chief of the *American Journal of Neuroradiology*.

'90s

Michele A. (Burkardt) Kettles, M.D. '90, Dallas, Texas, a physician at the Cooper Clinic, is a board-certified specialist in preventive medicine who focuses on exercise for better health and fitness. She is a co-author of *Women's Health and Fitness Guide*, available through Human Kinetics publishers and online at www.cooperaerobics.com.

Michael D. Cabana, M.D. '93, M.P.H., Mill Valley, Calif., associate professor of pediatrics, epidemiology, and biostatistics, has been appointed director of the Division of General Pediatrics at the University of California at San Francisco. He has also joined the core faculty at the Institute for Health Policy Studies. Cabana's research focuses on improving the quality of care of pediatric asthma, as well as the primary prevention of asthma.

OBITUARIES

Tyrrell R. Seager, M.D. '34, W. Jordan, Utah, a retired physician; September 8, 2006. He did his medical training at Salt Lake General Hospital, becoming the first doctor to receive a medical residency from a hospital in the state of Utah. After 10 years associated with mining businesses, he moved to Vernal, Utah, where he practiced for the next 30 years in general, industrial, and surgical services. He served as president of the Vernal area Chamber of Commerce and was a board member and officer of numerous other organizations. He was honorary president of the Utah State Medical Association in 1976. In 2003 he and his wife, Dorothy, donated the major cost for a replica of an allosaurus, placed outside the Utah Field House of Natural History in Vernal.

John A. Grove, M.D., G.M. '41, McPherson, Kansas; August 25, 2006.

Herbert P. Harkins, M.D., G.M. '42, Gladwyne, Pa.; July 4, 2006. A retired head of otolaryngology and broncho-esophagology at Hahnemann University, he had also served on the faculty of Penn's School of Medicine. He had been on the staff at Bryn Mawr, Lankenau, Presbyterian, and Coatesville Veterans hospitals. He was a former president of the American Society of Ophthalmology and Otolaryngology as well as a trustee of Lafayette College, where he earned his undergraduate degree. During World War II he had served as a commander in the U.S. Navy, stationed in New Guinea.

Kenneth M. Carroll, M.D.'44, Dunedin, Fla., a retired internist and medical administrator; July 22, 2006. For more than 20 years he was in a group practice in Lancaster, Pa.; from 1971 to 1980, he was medical director of St. Joseph's Hospital. For the next 10 years he held executive positions, including medical director and president, with Health Care Plan of New Jersey in Cherry Hill, which later merged with Health Insurance Plan (HIP) of New York. After retiring in 1990, he served as a consultant for HIP in Fort Lauderdale for five years. A jazz enthusiast, he helped found the Pennsylvania Jazz Festival in Lancaster, which benefited St. Joseph's Hospital.

Russell W. Pfeil, M.D. '46, G.M.E. '50, Montoursville, Pa.; August 5, 2006. A general practitioner who had maintained a practice from 1949 until his retirement in 1989, he had served on the staff of Divine Providence and Williamsport hospitals. He was on the Williamsport board for two terms. During World War II, he served in the U.S. Army as a captain on hospital ships in the Pacific.

Charles W. Thacker, M.D. '47, Coolville, Ohio, a retired pathologist; January 9, 2007.

Cletus W. Schwegman, M.D., G.M.E. '48, Ph.C., Gladwyne, Pa., emeritus professor of surgery at the University of Pennsylvania; December 8, 2006. He worked as a pharmacist while earning a medical degree from the University of Cincinnati, then served in the Navy Medical Corps during World War II. Chief surgical resident at HUP, he joined the hospital's staff and the medical school's faculty in 1946. He continued to perform surgeries until he was 70. For almost 25 years, Schwegman was secretary of the American Board of Surgery and traveled around the country giving oral boards to surgical candidates.

Arthur L. Warner, M.D. '48, Denver, Colo., a specialist in public health and pediatrics; August 8, 2006. He worked many years to promote community health locally and globally. He was a conscientious objector to war.

Joseph J. Toland III, M.D., G.M.E. '49, Philadelphia, a retired orthopaedic surgeon; June 18, 2006.

Walter Patterson, M.D., G.M.E. '50, Warwick, R.I.; June 26, 2006.

John J. Helwig Jr., M.D. '54, G.M.E. '60, Worcester, Pa., a retired cardiologist; October 1, 2006. He was chief of cardiology at the former Germantown Hospital for almost 30 years until the early 1990s and remained on the staff until his retirement in 1998. He served on the board of the Pennsylvania Medical Society and was president of the Philadelphia County Medical Society from 1978 to 1979. While society president he appeared on a weekly program on WCAU-TV to discuss medical subjects. He headed the catheterization lab at Penn and then was associate director of the Cardiovascular Research Center before joining Germantown Hospital in 1965.

Francis E. Rosato, M.D., G.M.E. '65, Gladwyne, Pa., a retired professor of surgery at Jefferson Medical College and retired chief of surgery at Thomas Jefferson University Hospital; October 18, 2006. After earning his medical degree from Hahnemann Medical College, he completed a five-year residency in surgery at HUP. He also taught there and became head of its solid tumor program and codirector of the neoplastic chemotherapy clinic. He taught at Hahnemann Medical College and, for a few years, at Eastern Virginia Medical School. In 1978, he was named professor of surgery at Jefferson and chief of surgery at Thomas Jefferson University Hospital. He performed the Philadelphia region's first liver transplant there in 1984. "His surgical techniques doubled the life spans of patients with pancreatic cancer," said James W. Fox IV, M.D., chief of reconstructive surgery at Jefferson. Rosato wrote several books and more than 250 scientific papers on cancer. He was the recipient of numerous professional awards. Among his many relatives with degrees from Penn is a brother, Ernest F. Rosato, M.D. '62, G.M.E. '66, a professor of surgery at Penn.

Harold S. Orchow, M.D., G.M.E. '70, Las Vegas, former medical director at Montevista Hospital; February 25, 2006.

Hans Herlinger, M.D., G.M.E. '72, Haverford, Pa., a renowned gastrointestinal radiologist for 25 years at HUP; August 4, 2006. Born in Graz, Austria, Herlinger was sent into exile in Italy after the Nazis invaded Austria in 1938. While dispossessed, he practiced medicine without a degree from 1938 to 1942 in East Africa. After World War II, he studied to be a pediatrician. Herlinger also studied tropical medicine and practiced in Guyana, South America, for several years in the 1950s. In 1960, he became head of radiology at St. James's University Hospital in Leeds, England. He developed a technique called enteroclysis – a radiographic technique to detect abnormalities of the small intestine. Herlinger wrote a widely used textbook, *Clinical Radiology of the Small Intestine*, and lectured around the world. When he was 63, nearing mandatory retirement age, he was invited to HUP to conduct research and teach. He worked at HUP until retiring in 2003. In 1990, the University of Graz presented him with an honorary medical degree. In 1996, he received the Cannon Medal from the Society of Gastrointestinal Radiologists, considered the highest honor in the field. In December, he published *A Dream Surpassing Every Impasse: Becoming a Doctor Against All Odds: As an Austrian Jew, On the Eve of World War II, A Memoir (Xlibris)*, written with Laurel Marshfield.

Truman G. Daughtridge, M.D., G.M.E. '73, Rocky Mount, N.C.; August 6, 2003.

Victor Patin, M.D. '86, Hamden, Conn.; July 12, 2006

John W. Jung, M.D. '06, WG '06, Philadelphia; August 27, 2006.

FACULTY DEATHS

Fredric D. Burg, M.D., Huntsville, Ala., emeritus professor of pediatrics; September 1, 2006. After earning his M.D. degree from Northwestern University, he took his residency at Children's Memorial Hospital in Chicago. He also served two years in Public Health Services in Cincinnati and was on the faculty of the University of Cincinnati and Northwestern. He served as associate director of the National Board of Medical Examiners. In 1974, he joined Penn's School of Medicine as assistant clinical professor of pediatrics. In 1982, he was promoted to professor of pediatrics at The Children's Hospital of Philadelphia. From 1980 to 1989, he served as the school's associate dean for academic programs, then became vice dean for education. He was a senior fellow at Penn's Institute for Research on Higher Education and a faculty associate at the Center for Bioethics. Burg left Penn in 1995 to serve as associate dean at the University of Alabama. He held that position until 2004. He was appointed by Governor Bob Riley to chair the Emergency Response Commission to Address the Health Care Crisis in Alabama.

Arnold Chait, M.D., former clinical professor of radiology; September 12, 2006. After earning his medical degree from the University of Utrecht in the Netherlands, he completed his residencies in pathology and radiology in hospitals in New York and began teaching radiology at SUNY Downstate Medical Center in 1962. He joined Penn five years later as an assistant professor of radiology. He was promoted to associate professor and then full professor. In 1976, he was appointed clinical professor while he practiced at Graduate Hospital and served as chairman of its radiology department. He left Penn in 1997 and retired from Graduate Hospital in 1999. In 1972, Chait was one of the 50 founding members of the Society of Cardiovascular and Interventional Radiologists, an organization formed by the first doctors to perform angioplasty.

Anna-Marie Chirico, M.D., Philadelphia, emeritus professor of medicine, February 4, 2007. After earning her medical degree from the University of Chicago School of Medicine in 1950, she was an intern at Philadelphia General Hospital, a hematology resident at Presbyterian Hospital, and an internal medicine resident at Temple University. She spent several years in private practice and in 1959 joined the HUP faculty. She retired in 1987. In addition to providing care to the most needy Philadelphians, she also cared for many University faculty members and their families, who considered her the "doctor's doctor." Among the positions she held at Penn was chair of the Medical Board. A recipient of the University of Pennsylvania's Lindback Award for Distinguished Teaching, she also received the Medical Student Government Award and was named by the students to the Teaching Honor Roll. She also received the Distinguished Alumna Leadership Award from her alma mater, Seton Hill College. For many years, Chirico volunteered at the Morris Arboretum, working in the micropropagation lab, where she produced plants for medical research from leaves, twigs, or roots using a form of cloning. The Chirico Horticultural Research Endowment helps fund the continuation of her work at the Arboretum.

Gertrude Henle, M.D., Newtown Square, Pa., an emeritus professor of virology in pediatrics in the School of Medicine; September 1, 2006. A pioneering virus researcher who worked at The Children's Hospital of Philadelphia, she collaborated with her husband, Dr. Werner Henle, in groundbreaking

research from 1941 until shortly before her husband's death in 1987. The National Library of Medicine, part of the National Institutes of Health, called the Henles "a prodigious force in virology, immunology, and viral oncology during the second half of the twentieth century." She earned her medical degree from the University of Heidelberg in 1936. She met Werner Henle in Heidelberg and married him after emigrating to the U.S. in 1937. Both joined Penn's Department of Microbiology. In 1943, the Henles demonstrated the effectiveness of an influenza vaccine. They also developed a diagnostic test for mumps and collaborated with Dr. Joseph Stokes Jr. in using gamma globulin to combat infectious hepatitis. Their work on viral infections laid the groundwork for scientists to discover interferon. The Henles were particularly notable for studying Epstein-Barr virus, first demonstrating that the virus was linked to mononucleosis and later showing that the virus contributed to two types of cancer. Gertrude Henle became an assistant professor of virology in 1951, a full professor in 1965. She was elected to the National Academy of Sciences in 1979, one of its few female members at that time. With her husband, she received many honors, including the Bristol-Myers Award for Distinguished Achievement in Cancer Research, the Mead Johnson Award for Research in Pediatrics, the Virus Cancer Program Award of the National Cancer Institute, and the Gold Medal of The Children's Hospital of Philadelphia, awarded in 1983.

Hans Herlinger, M.D. See Class of 1972.

Robert Kaye, M.D., Philadelphia, emeritus professor of pediatrics; July 14, 2006. After receiving his medical degree from Johns Hopkins University, he did his pediatric residency there, then became a fellow at the Harvard School of Public Health. He began his career at Penn in 1948 as an instructor in pediatrics, advancing to professor in 1956. He also held hospital and administrative appointments at The Children's Hospital of Philadelphia, where he served as deputy physician-in-chief. After leaving Penn in 1973, Kaye became chair of the pediatrics department at Hahnemann University Hospital. He later assumed the same position at the Medical College of Pennsylvania. An early recipient of the University of Pennsylvania's Lindback Award for Distinguished Teaching, he was a member of the Alpha Omega Alpha Honor Medical Society. Kaye was one of the authors of *The Core Textbook of Pediatrics*, a classroom standard for more than 20 years. He served on the board of the Philadelphia Chapter of the American Diabetes Association.

Donald B. Martin, M.D., Bryn Mawr, Pa., emeritus professor of medicine; November 1, 2006. After earning his medical degree at Harvard University and completing a residency in endocrinology at Massachusetts General Hospital, he became chief of the diabetes unit at Mass General. He studied in Paris on a Fulbright scholarship in 1962 and in Geneva on a Guggenheim fellowship in 1974. Recruited to Penn in 1979 as the founding director of the Rodebaugh Center for Diabetes Research and Education, he became associate chair of the Department of Medicine in 1985. He led the internal medicine residency program from 1985 to 1996, when he earned emeritus status. Known for his dedication to clinical education, he was equally devoted to his residents and stood at the forefront of a movement in medical education to make residency more humane for doctors during their training. Among his honors were the Donna K. McCurdy Department of Medicine Housestaff Teaching Award, the Penn Pearls Teaching Award for excellence in student teaching, and the Medical Student Government Teaching Award for Clinical Medicine. In 1996, the School of Medicine established the Donald B. Martin Teaching Service Award in his honor. He continued to teach until 2006. In 1997 the American College of Physicians board of regents awarded him a Mastership.

Francis E. Rosato, M.D. See Class of 1965.

Cletus W. Schwegman, M.D. See Class of 1948.

LEGACY GIVING

A Particular Joy

Charlotte Snyder and Douglas Fraker, M.D.

Thirty years ago, Penn legend Jonathan E. Rhoads, M.D., G.M.E. '40, gave Charlotte Snyder a gift unlike any other — six more years with her husband, Arnold. Inspired by the eminent surgeon's expertise and friendship, Mrs. Snyder created two charitable annuities and established a bequest supporting the Jonathan E. Rhoads Endowed Professorship in Surgery.

"Arnold and I talked it over and we knew that giving to this professorship was the ideal way to show our gratitude," she recalls. "I know my gift is not only a way to honor Dr. Rhoads, it is a way to honor Arnold."

Dr. Rhoads, a former Penn provost and chair of the Department of Surgery, died in 2002 at the age of 94. Today, the Rhoads professorship is held by Douglas Fraker, M.D., chief of the Division of Endocrine and Oncologic Surgery. Last October, Mrs. Snyder spoke with Dr. Fraker at an event celebrating endowed professorships. "He was wonderful," she says. "I can see that he has the same qualities that Dr. Rhoads had — a strong dedication to his work and his patients."

That evening Mrs. Snyder met other donors who support the more than 120 endowed professorships at the School of Medicine. "All of us are providing support for future research and medical education. It just brings me a particular joy that I can do this."

Another activity that brings Mrs. Snyder joy is learning more about planned giving. She regularly attends Charles Custis Harrison Society events. The Society is the parent organization of the Medical Legacy Circle, which honors individuals who name PENN Medicine as a beneficiary of a will, living trust, or other planned gift vehicle. "I love meeting other people who have the same philanthropic vision that I do."

Mrs. Snyder's bequest and charitable gift annuities are just two of many creative gift opportunities that benefit both the School of Medicine and its donors. As you chart your financial future, the Planned Giving Office is ready to assist in developing an appropriate strategy. Contact Marcie Merz, J.D., Director of Planned Giving, PENN Medicine, 3535 Market Street, Suite 750, Philadelphia, PA 19104-3309 or email: mmerz@ben.dev.upenn.edu. Also, check the Planned Giving Office's new web site: www.med.upenn.planyourlegacy.org.

Recruit, Retain, Endow

When we presented the Plan for PENN Medicine, our strategic roadmap, five years ago, we organized a wide array of aims and priorities under six major goals. One goal was "Develop World-Leading Programs in Selected Areas of Research." While praising the quality and breadth of research that PENN Medicine had achieved in the previous decade, the plan articulated the need to advance to an even higher level as an internationally recognized leader in biomedical research. Quite plainly, the plan spelled out the very first step to achieving the next level: "The first and overarching goal of PENN Medicine is to implement the highest standards of excellence for the recruitment, promotion, and retention of faculty." It made – and continues to make – perfect sense: for all its resources, no institution can be great without great people. They are the ones who attract other faculty members as well as the most highly qualified students. They are also the ones who tend to be most successful in garnering support from the government and the private sector. But how do we compete with other academic health systems that are just as eager to recruit or retain these leading figures? Not only that: we must compete with industry for the same faculty members.

Over the years, we've found that one of the most effective ways is to offer endowed professorships. These professorships, funded by individuals, families, and foundations, not only indicate the high esteem in which faculty members are held but also provide a valuable sense of stability for the holders and allow them to devote more time to their chosen area of scholarship. For example, Virginia M.-Y. Lee, Ph.D., M.B.A., who holds the John H. Ware 3rd Endowed Professorship in Alzheimer's Research, notes that the professorship "has enabled me to explore more cutting-edge areas of research, taking scientific risks with the potential of a high yield of results." Her words echo those of Jonathan A. Epstein, M.D., who was named to the William Wickoff Smith Professorship of

Cardiovascular Research in 2004. The endowed professorship, says Epstein, who subsequently became our chair of Cell and Developmental Biology, "has allowed me to take scientific risks, providing the freedom to explore new ideas and dreams."

The donors who endow the professorships may do so because a family member or friend has suffered from a particular disease. Sometimes, it's because they see a need and have the philanthropic resources to try to meet it. Whatever the donors' specific motivations, endowed professorships have a respected place in our School of Medicine. The very first dates back to 1877, when Sarah Rittenhouse Barton endowed the John Rhea Barton Surgical Professorship. Its first holder was D. Hayes Agnew, considered the leading surgeon of his day. Our current chair of the Department of Surgery, Larry Kaiser, M.D., holds that prestigious chair today. At present, there are nearly 110 endowed professorships in our school and another 10 or so shared with other schools in the University. To suggest the variety of these endowed chairs, let me cite a couple of the more recent ones.

Robert M. Kotloff, M.D., G.M.E. '91, professor of medicine and chief of the section of advanced lung disease and lung transplantation, is the first recipient of the Craig and Elaine Dobbin/Nancy Blumenthal Professorship of Advanced Lung Disease. Until his death last October, Craig Dobbin was a Canadian industrialist and a member of the board of PENN Medicine. One of the interesting aspects of this professorship is that it was partially named for Nancy P. Blumenthal, C.R.N.P., senior nurse practitioner for HUP's lung transplant program – and one of the essential people who make that program one of the nation's best. We believe this is the first endowed professorship to honor the crucial collaborative relationship between physicians and nurses. As for Dr. Kotloff, the professorship is an opportunity to explore new medical and surgical treatment options. The professorship, he says, "was established to promote research, education, and scholarship in this burgeoning field of advanced lung disease."

Kevin R. Fox, M.D., G.M.E. '85, professor of medicine and medical director of the Rena Rowan Breast Center at the Abramson Cancer Center, was recently named the first recipient of the Mariann T. and Robert J. MacDonald Professorship in Breast Cancer Care Excellence. As its name suggests, this endowed professorship is focused on clinical care. But as Dr. Fox notes, the MacDonalds' support also "will enable the Abramson Cancer Center to take another significant step toward providing new insights into the cause and treatment of breast cancer."

For 130 years, endowed professorships have helped sustain the excellence of our institution in research, education, and clinical care. They honor esteemed faculty members, memorialize family members, and recognize the achievements of admired colleagues – all the while providing invaluable support for the three-part mission of PENN Medicine. An endowed professorship is a legacy whose impact continues to be felt for many years. ▪

Arthur H. Rubenstein, M.B., B.Ch.
Executive Vice President of the University of Pennsylvania for the Health System
Dean, School of Medicine

For the first time last fall, the School of Medicine divided its incoming class into teams of six and seven. The idea is that, to be effective as doctors, students will have to learn how to work well in teams and learn how to lead them. Most health care today is not provided by solo practitioners; and in hospitals, patients are often cared for by multiple doctors and teams of professionals.

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