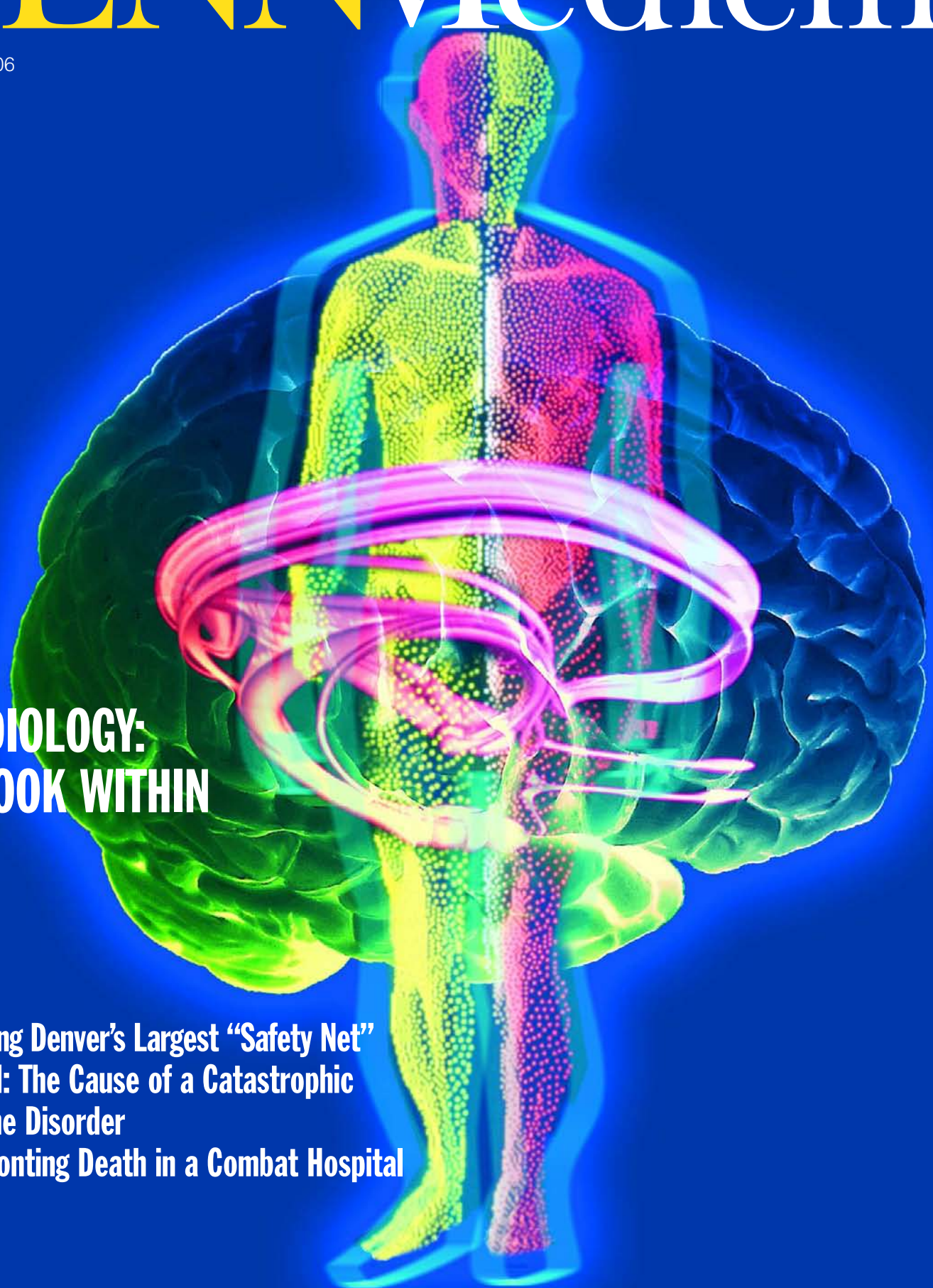


PENN Medicine

FALL 2006



RADIOLOGY: A LOOK WITHIN

**Heading Denver's Largest "Safety Net"
Found: The Cause of a Catastrophic
Bone Disorder
Confronting Death in a Combat Hospital**

Dr. Pepper's Busy Life

Who deserves the most credit for establishing the Hospital of the University of Pennsylvania? William Pepper Jr., M.D. Who became one of the most influential advocates of his time for the reform of medical education? Dr. Pepper. Who was appointed provost of the University of Pennsylvania when he was only 37 years old, given greater executive powers than his predecessors? Dr. Pepper. Who was responsible for – or, depending on your point of view, to blame for – extending Penn's medical curriculum to four years? Dr. Pepper. A busy man, indeed.

In August, Vincent Lo Re III, M.D. '97, G.M.E. '05, and Lisa M. Bellini, M.D., G.M.E. '93, published an article on Pepper, subtitled "Portrait of a Nineteenth-Century Medical Educator," in *Journal of Medical Biography*. For both authors, who have had a strong interest in medical history, writing about Pepper was a way to learn more about someone who maintains a presence on campus, in photographs, paintings, and indeed a statue that rests between College Hall and Houston Hall. Lo Re, who completed his training in internal medicine and infectious diseases at HUP, is an instructor in epidemiology and in infectious diseases at Penn. Bellini, associate professor of medicine at Penn, serves as the Department of Medicine's vice chair for education. Lo Re was the one who initiated the Pepper project. He began early in his Penn career by taking notes on Pepper, started writing the manuscript in 1999, and completed a draft four years later – in what he euphemistically calls his "spare time." The article was long in the making, but it must be very satisfying to be published by the Royal Society of Medicine.

From Lo Re's and Bellini's account, Pepper was both precocious and extremely hard working. He earned his medical degree from Penn in 1864 at the age of 21. By 25, he had been named a lecturer in pathology at the University of Pennsylvania. Two years later, he was appointed a lecturer in clinical medicine; at around the same time, he also became editor-in-chief of the *Philadelphia Medical Times*. The authors quote a letter from a medical student, written in 1886, describing Pepper's clinical lectures. The student's summary: "He is simply grand." But it wasn't only medical students who were impressed by Pepper's talents. William Osler, M.D., who worked at Penn with Pepper for five years, wrote: "I do not know of another instance in the profession in which a man at his time of life had made so favourable a start."

Pepper's role in establishing the Hospital of the University of Pennsylvania may be better known than some of his other achievements. What the new article does well is put that achievement in the context of Pepper's persistent efforts to improve medical education. In an address to Penn's Medical Alumni Society in 1870, he said, "Strengthening the scientific and clinical curriculum is necessary, and the creation of a university hospital could improve these deficiencies." Given Pepper's interest and experience in pathology, he was aware from the start of the importance of scientific grounding in medical education. Early on, Pepper had argued for a third year of curriculum; the University trustees agreed with his proposals in 1876. When he became provost in 1881, he an-

nounced that the medical school would create a voluntary fourth year of study, and he continued to push to make it mandatory. That went into effect in 1893. No wonder that, as Lo Re and Bellini put it, "After 13 years as provost, Pepper became tired of the incessant work and stepped down in the spring of 1894." He died only four years later.

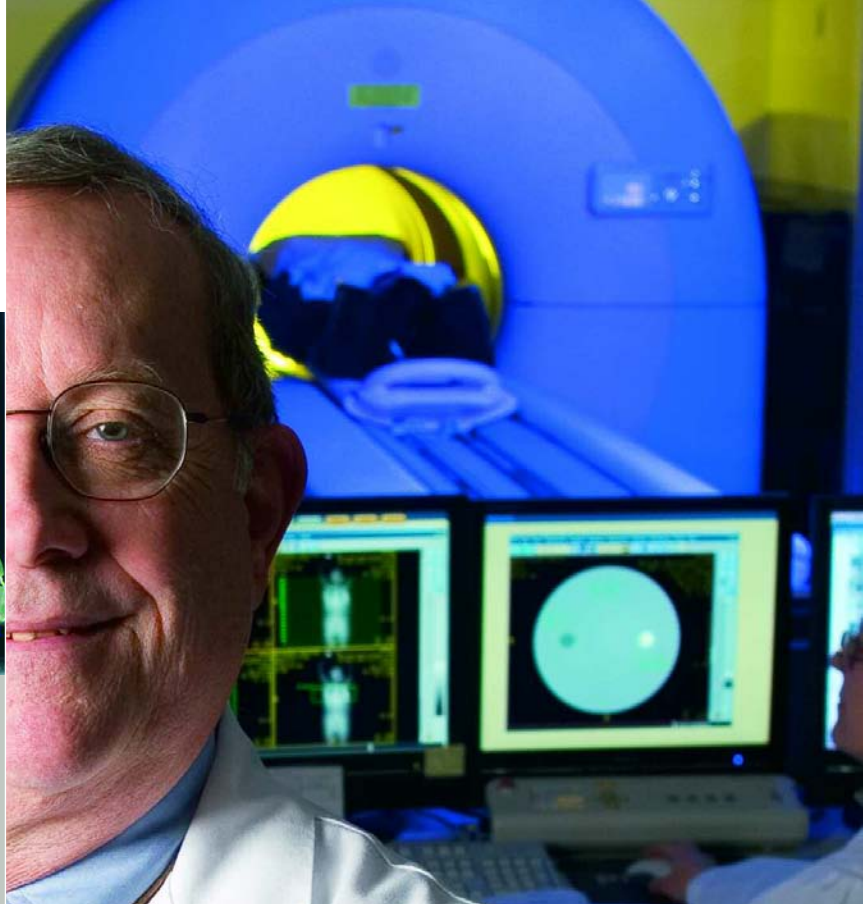
When I asked Lo Re if anything he learned about Pepper surprised him, he responded: "I was incredibly impressed by Pepper's breadth of activities and achievements – in medical education, public health, clinical medicine, research, and as an administrator. He worked constantly and had a very active and diverse mind. He was also a superb administrator who was clearly adept at fundraising, and this helped build the medical school in the latter part of the nineteenth century."

As the article makes clear, Pepper's reforms were not enacted without struggles. Faculty and administrators of the medical school were divided, and in fact the dean who had originally appointed Pepper as lecturer resigned in protest in 1877 when the trustees backed Pepper's recommendations.

In addition to the achievements mentioned above, Lo Re also highlighted Pepper's work as writer and editor. As Lo Re noted, "to better educate American physicians, he created one of the earliest multi-volume textbooks of medicine (called the "Pepper System of Medicine"), which preceded William Osler's far more famous *Principles and Practice of Medicine*."

Pepper seems to have been the complete package. Can a Dr. Pepper exist in today's academic medicine? Lo Re thinks so. "In fact, we need more like-minded individuals to help propel medical education forward in the 21st century." ■

John Shea



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DR. GABOW'S TREATMENT PLAN *By NICOLE BRANAN*
Patricia Gabow, M.D. '69, G.M.E. '73, began her career at Denver Health in 1973 as a nephrologist, caring for one patient at a time. Today, as CEO of the health system, she oversees the care of whole communities of patients. And for many of Denver's uninsured population, Denver Health is the principal "safety net."

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POSITIVE IMAGING *By LINDA BIRD RANDOLPH*

Under the leadership of R. Nick Bryan, M.D., Ph.D., the Department of Radiology has weathered some difficult times and undergone substantial growth and development. Armed with an array of cutting-edge imaging equipment, Penn radiologists are seeing more patients and advancing knowledge in the field. The department remains among the leading academic radiology departments in garnering research funding from the National Institutes of Health.

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THE SKELETON KEY

By KAREN KREEGER AND JOHN SHEA

Penn investigators have long sought the cause of F.O.P., an extremely rare condition in which the body's skeletal muscles and soft connective tissue turn into bone. This spring, they pinpointed a mutated gene involved in the embryonic formation and post-natal repair of the skeleton. The discovery raises hope not only for an eventual cure for F.O.P. but also for new treatments for more common bone disorders.

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DEATH OF A MARINE *By JOHN P. PRYOR, M.D.*

Earlier this year, Dr. Pryor, an assistant professor of surgery and trauma surgeon at the Hospital of the University of Pennsylvania, spent several months in Iraq on a tour of duty at the 344th Combat Support Hospital. What he experienced was "a horrific drama" that was much harder to bear than his usual work in the trauma bays at home.



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Dan Naylor

Taking the Reins: Craig B. Thompson, M.D.

Transitions at the Cancer Center

Craig B. Thompson, M.D., has been named director of the Abramson Cancer Center of the University of Pennsylvania and associate vice president for cancer services of the University of Pennsylvania Health System. The Abramson Cancer Center is one of only 39 designated as a Comprehensive Cancer Center by the National Cancer Institute and one of the top five in N.C.I. funding. Thompson replaces John H. Glick, M.D., who had announced his plans to step down from the position last fall.

As director, Thompson oversees some 600 active researchers and full-time physicians and faculty members who are involved in the prevention, diagnosis, and treatment of cancer, drawn from 41 departments in eight of Penn's schools. He is responsible for \$180 million in grant funding for cancer research and training, including \$83.4 million in N.C.I. funding. His additional clinical duties include heading the PENN Medicine Cancer Steer-

ing Committee and the University of Pennsylvania Cancer Network.

"Dr. Thompson was selected for this position because of his reputation for excellence as a pioneer in cancer research, an exceptional educator, and, above all, his career-long dedication to finding new approaches to treating and curing cancer," said 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.

Thompson joined Penn in 1998 as a professor of medicine and scientific director of the Leonard and Madlyn Abramson Family Cancer Research Institute, which is the basic science branch of the Abramson Cancer Center. A year later, he became the first chair of the Department of Cancer Biology. He will continue to serve in both positions in addition to his new appointment.

After graduate training at Dartmouth Medical School, Thompson received his M.D. degree from the University of Pennsylvania in 1977. He did clinical training

in internal medicine at Harvard University and in medical oncology at the Fred Hutchinson Cancer Research Institute at the University of Washington. His last position before coming to Penn was at the University of Chicago, where he was professor of medicine, investigator in the Howard Hughes Medical Institute and director of the Gwen Knapp Center for Lupus and Immunology Research.

Thompson currently serves as chairman of the medical advisory board of the Howard Hughes Medical Institute and as vice chairman of the GM Cancer Research Prize Committee. He is an associate editor of *Cell*, *Science*, *Immunity*, and *Cancer Cell*. Elected to the National Academy of Sciences last year, Thompson is also an elected member of the Institute of Medicine, the American Academy of Arts and Sciences, and the American Society for Clinical Investigation.

Among Thompson's first steps as director was naming Caryn Lerman, M.D., as deputy director and Joseph R. Carver, M.D., as chief of staff. Lerman joined Penn in 2001 as the Mary W. Calkins Professor in the Department of Psychiatry and the Annenberg Public Policy Center. For the last five years, she has served as director of the Transdisciplinary Tobacco Use Research Center at Penn and director of Cancer Control and Population Sciences in the Abramson Family Cancer Research Institute. Carver has been a clinical professor of medicine at Penn since 2003. Currently the senior administrative officer of the Abramson Family Cancer Research Institute and a member of the Division of Cardiology, Carver will continue to hold both positions.

Although Dr. Glick has stepped down after 21 years as director of the Abramson Cancer Center, he has assumed important new responsibilities. As vice president of the University of Pennsylvania Health System and associate dean for resource development at the School of Medicine,



Dan Naylor

A New Post: John H. Glick, M.D.

he will work to help increase external support for PENN Medicine's many initiatives. In a memo announcing Glick's appointment, he was described as "an extraordinary ambassador for Penn for more than 30 years" who has treated thousands of patients and been a strong fundraiser for the Perelman Center for Advanced Medicine and the Cancer Center itself. When Glick became director of the Cancer Center in 1985, its total research funding was \$10 million a year; today, funding has risen to more than \$180 million. In addition, Glick "is well recognized in Harrisburg and Washington, D.C., as an expert on the funding of cancer treatment and the broader purposes of PENN Medicine."

Glick was also instrumental in the establishment, in 1997, of the Abramson Family Cancer Research Institute, supported by a \$100 million commitment

from Madlyn and Leonard Abramson.

Glick will continue to serve as president and director of the Institute, and he remains the Leonard and Madlyn Abramson Professor of Clinical Oncology.

On Its Way: Proton Therapy

With the recent approval of the University trustees, Penn's Health System will begin construction on a proton therapy treatment facility to provide patients with the most advanced and sophisticated form of cancer treatment available. The Proton Therapy Treatment Center will cost approximately \$140 million and take about three years to complete. The first patient is expected to be treated in 2009. The center will be located adjacent to the Raymond and Ruth Perelman Center for Advanced Medicine and will be equipped by the Ion Beam Application, S.A., based in Belgium.

Proton therapy is the most precise form of advanced radiation therapy available to treat certain cancers and other diseases. Proton beams can be used to destroy tumors with an unequaled degree of precision, safety, and efficiency. Proton therapy reduces the destruction of surrounding normal tissue by up to 70 percent, thus resulting in fewer side-effects and clinical complications for patients; it also enhances the physician's ability to treat tumors close to critical organs and/or the spinal cord.

The treatment center will include a dedicated research room, up to five treatment rooms, one fixed-beam room, and four gantries; each of these gantries will house a massive, 90-ton rotational machine that will deliver the therapeutic beam at the precise angle prescribed by the physician. The center will also treat children suffering from pediatric cancers and will continue Penn's close relationship with The Children's Hospital of Philadelphia. When completed, the center is expected to be the world's largest and most advanced proton-therapy center.

N.I.H. Support Remains Strong

For Fiscal Year 2005, the University of Pennsylvania School of Medicine ranks second in the nation in terms of total research awards to academic medical schools from the National Institutes of Health. Penn received 924 total awards – including research and training grants – worth more than \$399 million. This total represents a 1.4% increase from the previous year. The N.I.H. is the single largest source of funding for biomedical research and training in the United States, and support from the N.I.H. is considered an important barometer of research strength.

"The N.I.H. rankings remain a testimony to our continuing efforts to maintain research excellence at Penn," said 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. "These awards help us to expand our excellent standards for faculty research and medical education, which ultimately benefit our patients."

Johns Hopkins University School of Medicine is the top recipient of total N.I.H. research and training awards in FY 2005, followed by the University of Pennsylvania School of Medicine. The third- and fourth-ranked medical schools are the University of California at San Francisco School of Medicine and Washington University School of Medicine.

Among the top 10 ranked schools, Penn had the most departments in the top five and top 10 in their respective disciplines. Both Biostatistics and Epidemiology and Pathology and Laboratory Medicine ranked first. Physiology, Dermatology, Psychiatry, and Radiology/Radiation Oncology (which the N.I.H. combines) ranked second. Pharmacology and Obstetrics and Gynecology ranked third. Other departments in the top 10 include: Neurosciences (5); Emergency Medicine

(7); Medicine (4); Neurology (7); Ophthalmology (5); Orthopaedic Surgery (7); Physical Medicine and Rehabilitation (10); and Surgery (4).

HUP Fares Well in National Survey

In its annual “Best Hospitals” survey, *U.S. News & World Report* ranked the Hospital of the University of Pennsylvania in the top 20 of a dozen specialty categories. The publication’s annual ranking lists the nation’s top 176 hospitals – only 3 percent – in 16 different medical areas. The ranking of hospitals’ quality of care is meant to help consumers make informed decisions when looking for hospital care.

U.S. News reports its rankings of the top 50 hospitals in the nation in each of its specialty areas. This year, HUP moved up significantly in cancer, going from No. 27 in 2005 to No. 19. In 2005, HUP was ranked 20th in heart and heart surgery and now ranks 13th. In addition, HUP went from 28th in 2005 in endocrinology (hormonal disorders) to 16th this year.

Overall, HUP improved or retained its ranking in 11 out of 16 specialty listings and is listed in the top 20 in 12 out of the 16 specialties. Of the hospitals included in the survey, HUP ranked best in the Philadelphia area in: heart and heart surgery; digestive disorders; ear, nose, and throat; endocrinology; gynecology; kidney disease; neurology & neurosurgery; respiratory disorders; rheumatology; urology; and psychiatry.

Although HUP had been named to the “Honor Roll” list in recent years, this year it was not included. To make the list, a hospital must rank at least two standard deviations above the mean in at least six of the 16 specialties. Only 14 hospitals nationwide made the “Honor Roll” list this year, none from the Philadelphia region.

In addition, Pennsylvania Hospital’s heart surgery program was rated as one of the best in the nation by *U.S. News*.

The cardiac program had the lowest medical and surgical mortality rate of the top 50 hospitals. Along with HUP, it was the only hospital in the Delaware Valley listed for cardiac care.

Honors & Awards

Katrina Armstrong, M.D., M.S.C.E., associate professor in the Department of Biostatistics and Epidemiology and associate professor in the Department of Medicine, was elected to membership of the American Society of Clinical Investigation. The society comprises more than 2,800 physician-scientists, from all medical specialties, who have outstanding records of scholarly achievement in biomedical research. Armstrong’s research program seeks to elucidate the complex relationship among the social environment, health care use, and health outcomes.

Frederic Bushman, Ph.D., professor of microbiology, received a Keck Futures Initiative Grant along with his co-principal investigator, Rob Douglas Knight of the University of Colorado. They were awarded \$75,000 for their research on the effects of disease on the composition of the gut flora. The Keck grants, which were awarded to 14 research projects around the country, aim to fill a critical gap between research on bold new ideas and major federal funding programs, which do not typically provide grants in areas considered risky or unusual.

Arthur L. Caplan, Ph.D., the Emmanuel and Robert Hart Professor of Bioethics who serves as chair of the Department of Medical Ethics and director of the Center for Bioethics, received an honorary degree from the University of Connecticut. He was recognized for serving on advisory boards for the United Nations, the President of the United States, and the U.S. Department of Health and Human

Services and for his regular column on bioethics for MSNBC.com.

Yongwon Choi, Ph.D., professor of pathology and laboratory medicine and investigator at the Abramson Family Cancer Research Institute, won the 2006 Ho-Am Prize for Medicine, known as the “Korean Nobel.” The prize was founded in 1990 by Kun-Hee Lee, chairman of Samsung, to help foster a spirit of public service in corporate culture. Choi investigates the molecular mechanisms by which the tumor necrosis factor superfamily regulates the immune system and bone.

Wafik S. El-Deiry, M.D. Ph.D., professor of medicine, genetics, and pharmacology, received the Littlefield-A.A.C.R. Grant in Metastatic Colon Cancer Research from the American Association for Cancer Research. With the \$250,000 grant, El-Deiry will seek to define the mechanisms in colon cancer that make tumor cells resistant to apoptosis, as well as to develop combination drug therapies that can reverse the apoptotic defect. He is a program leader in the Radiation Biology Program of the Abramson Cancer Center.

Harold I. Feldman, M.D., M.S.C.E., professor of epidemiology and medicine and director of the epidemiology unit in the Center for Clinical Epidemiology and Biostatistics, was elected to the Association of American Physicians. The association was founded in 1885 by seven physicians, including Dr. William Osler, for “the advancement of scientific and practical medicine.” Today, it is composed of about 1,000 active members and 500 emeritus and honorary members from the United States, Canada, and other countries.

Anna T. Meadows, M.D., professor of pediatrics, received the 2006 Pediatric Oncology Award from the American Society of Clinical Oncology at its annual meet-



ing in June. Meadows, nationally recognized as a leading researcher of surviving cancer, delivered a lecture at the meeting, “Cancer Survivors: Childhood and Beyond.” Meadows is the medical director of the Cancer Survivorship Program at The Children’s Hospital of Philadelphia. She leads the Cancer Survivorship Research Program at the School of Medicine and the Lance Armstrong Foundation Living Well After Cancer Program at Penn’s Abramson Cancer Center.

TRYING ON A WHITE COAT

Daniel Abravenel, a first-year student, receives some help from Gail Morrison, M.D. '71, G.M.E. '77, vice dean for medical education, during the White Coat Ceremony. After introducing themselves briefly and receiving their symbolic coats, the future doctors recited the Hippocratic Oath for the first time. As a new bonus, each student also received a stethoscope, donated to the class by Darryl Landis, M.D. '89.

LETTERS

The Effort to Improve

The Summer I issue of *Penn Medicine* is a great one. I especially was pleased to read the article re Human Professionalism (“Professing Humanism” and “Pondering Professionalism”). I must say that my experience with M.D.s today has largely shown a lack of this. Of course, the technical aspect of medicine is vastly different than during my active years. This effort to improve all this is gratifying to learn.

*Joseph F. Rorke, M.D. '43
Scottsdale, Ariz.*

A Special Person

I am writing in response to Nicole Gaddis’s article about Dr. Paul Lanken. I was a medical intern in Spring 1989, rotating through the medical ICU for a month. On our first day, Dr. Lanken was show-

ing us interns around, giving us the lay of the land, etc. The thing I will never forget is the casual, matter-of-fact way Dr. Lanken paused at one point, looked all of us in the eye, and said something along the lines of “Oh, and one other thing: do try to remember that it’s harder for us to find a replacement for a good ICU nurse than it is for us to find a replacement for one of you, so please don’t go around here annoying anyone with your command of ICU medicine . . .” or something like that. I’ve always told this story when people ask what it was like to be at Penn.

The point, and the reason for this letter, was the timing, the tone, the balance – it really was beautiful. I smile even now as I type this. I went on to do a psychiatry residency, so I never really had any particular reason to interact directly with

him; however, I was always aware when he was around. My feeling then, and now, is that he embodies those characteristics of the kind of leader who really does inspire others.

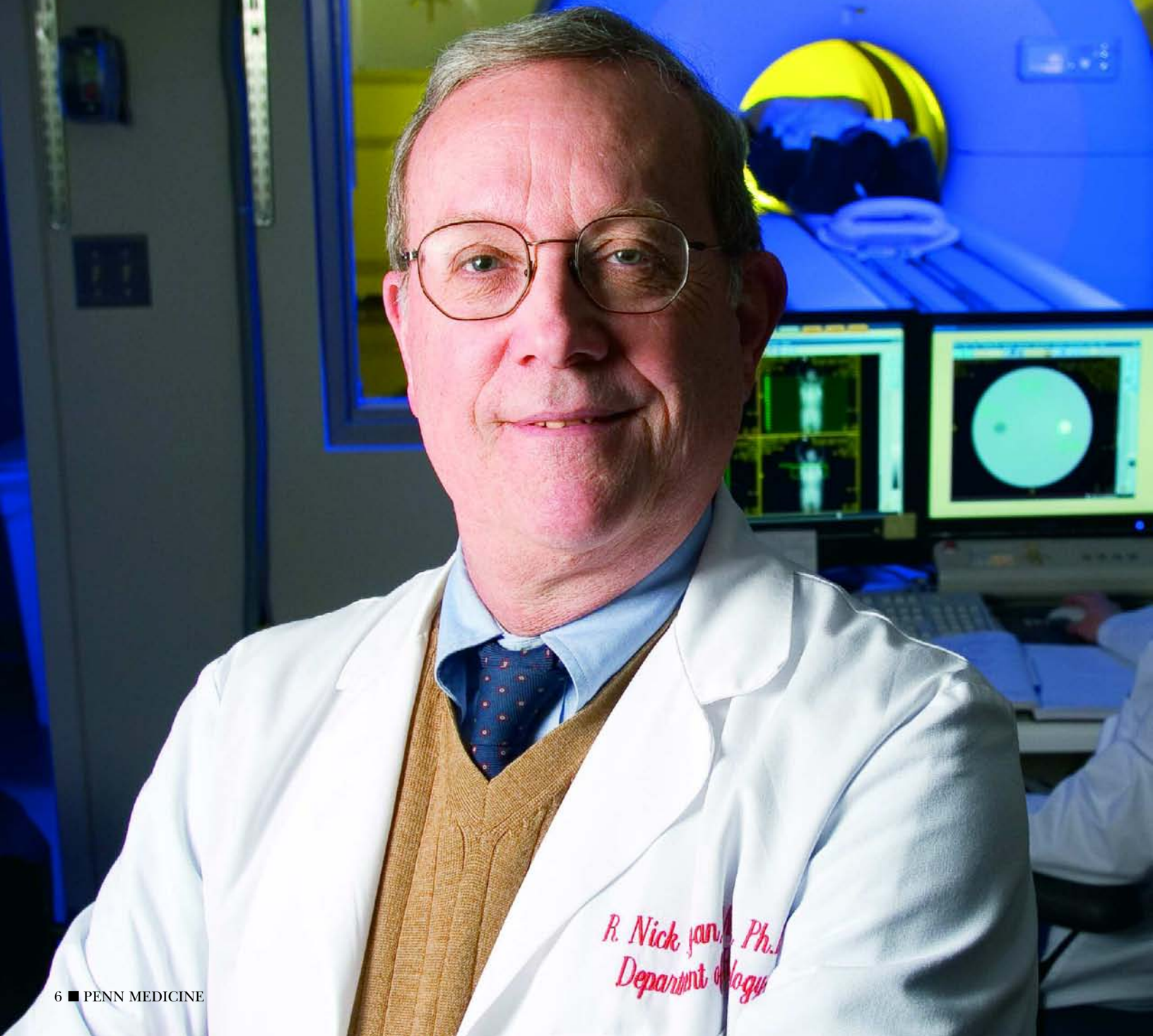
I always had this feeling that he was a special person, but I never really had any reason to discuss any of this with anyone, and then *Penn Medicine* arrived in the mail today.

If you’ve ever seen *Band of Brothers*, the company commander Richard “Dick” Winters seems to have similar qualities, in my opinion. Eighteen years later, I still try to envision Dr. Lanken’s attitude/behavior in my own dealings with patients and families, nurses and secretaries, etc.

*Raymond M. Shapiro, M.D., G.M.E. '94, Ph.D.
Gaithersburg, Md.*

Radiologic

POSITIVE IMAGING





Taking over a large department that had lacked a permanent leader during a troubled period, R. Nick Bryan, M.D., Ph.D., has helped the Department of Radiology to flourish.

By Linda Bird Randolph

For R. Nick Bryan, M.D., Ph.D., getting through his first few years as chair of Penn's Department of Radiology was a challenge. After all, his introduction to Penn came in July 1999, when the University of Pennsylvania Health System was in the midst of severe financial troubles. As a result, the mood was cautious. In addition, Bryan became chair on the heels of a long and awkward search for a permanent successor to Stanley Baum, M.D. Today, however, Bryan can point to substantial growth and development in the department. The faculty has expanded; educational and research opportunities are booming; and Penn's Health System is providing new technology and dedicated space, which, as everyone in academic medicine knows, is *always* at a premium.

"Bryan came in at a very difficult time," says David W. Kennedy, M.D., vice dean and senior vice president of the University of Pennsylvania Health System. "There were lawsuits and enormous strife within the department." To Kennedy, who was heading the search committee for a new chairperson back then, Bryan was a clear choice for the position. "Bryan was one of the first calls that I made," says Kennedy. At that early stage of the search, however, Bryan had just accepted but not yet taken a position at the National Institutes of Health.

Indeed, Bryan, who had been serving as vice chairman of radiology at Johns Hopkins University, went on to become director

According to R. Nick Bryan, M.D., Ph.D., there have been "some really fundamental changes" in imaging technology in the last several years.

Photographs by Addison Geary, unless noted.

of diagnostic radiology at the N.I.H. and associate director of its Radiologic and Imaging Sciences Program at the Magnuson Clinical Center. He remained in that position for two years – and Penn came calling again. This time, Bryan accepted.

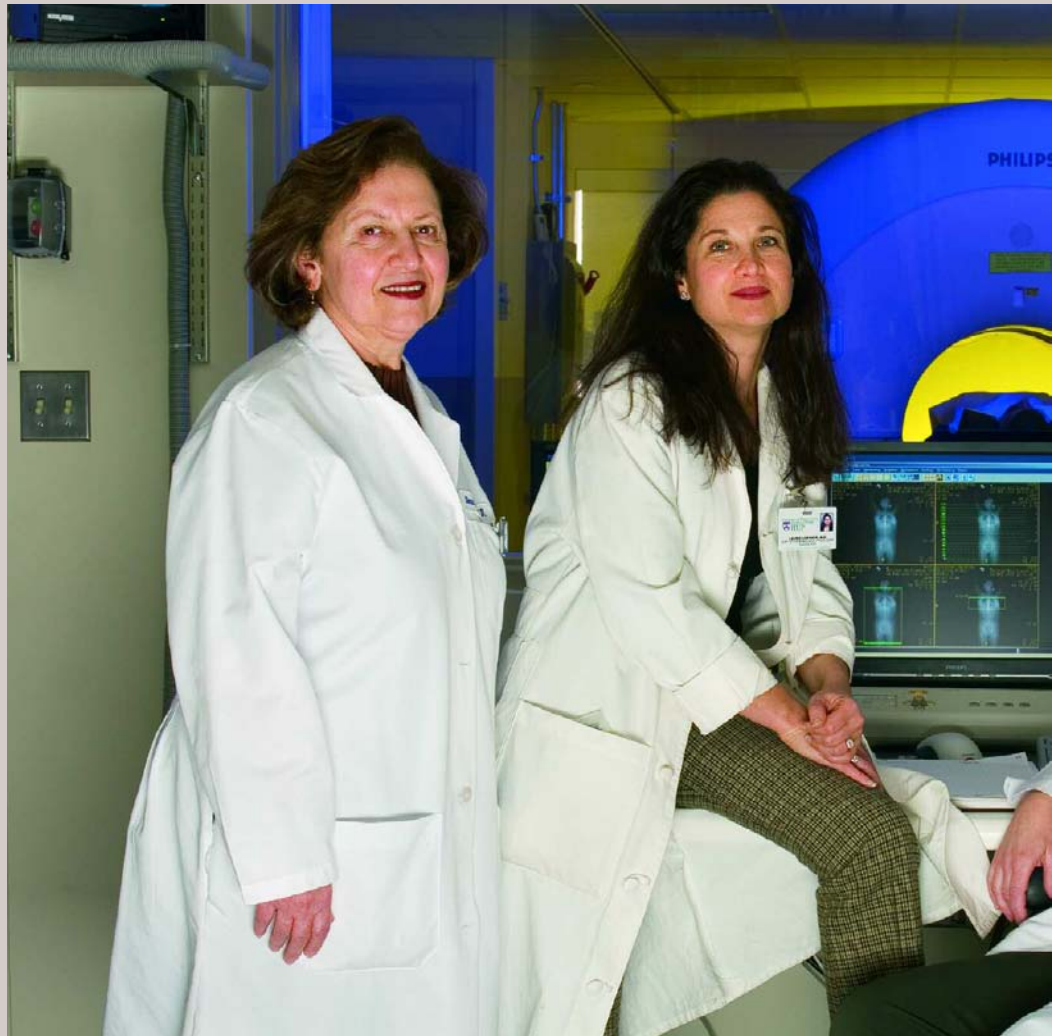
As it turned out, Bryan was fortunate in that the radiology department accomplished any necessary downsizing through attrition. Still, he reports, it is only with last year's budget that the department was able "to actually get the positions that we would need to deliver the level of care that we would like."

Numbers, Numbers, Numbers

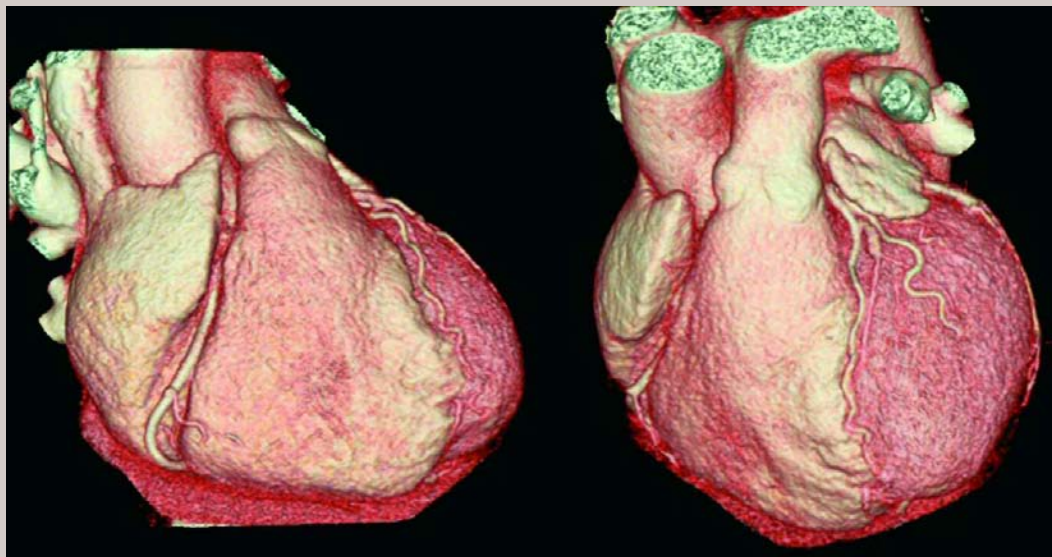
These days, Bryan – who has been president of the American Society of Neuroradiology, the American Society of Head and Neck Radiology, and the Radiological Society of North America – is settled into his multiple roles managing a department that has strong academic and clinical aspects. The Department of Radiology consists of two main divisions: one is the traditional academic program, which is clinically centered at the Hospital of the University of Pennsylvania, Penn Presbyterian Medical Center, The Children's Hospital of Philadelphia, and the Veterans Administration Medical Center; the other division is Community Radiology, which covers Pennsylvania Hospital, Phoenixville Hospital, Chester County Hospital, and eight outpatient imaging centers.

The radiology department is responsible for the radiology clinical services at all the hospitals within the Health System, as well as the radiology clinical services at Phoenixville Hospital and the Chester County Hospital. Six outpatient practices operate out of HUP and Penn Presbyterian.

According to Bryan, the department's clinical services "are a completely different organizational, structural, and financial model from our academic program here at HUP and PMC," functioning much like a private-practice component. Michael H.



Penn was the first clinical site in the world to have a Philips Gemini TF PET/CT system. Among those who use it are, from left: Simin Dadparvar, M.D.; Laurie Loevner, M.D.; and Janet Saffer, Ph.D., a PET physicist.



Examples of a reconstructed 3-D image of a normal heart and coronary arteries from a 64-slice CT scan.



Bleshman, M.D., vice chair of the Department of Radiology, serves as director of Community Radiology.

Overall, the department has about 50 radiologists at HUP and Penn Presbyterian and another 35 at Community Radiology and Pennsylvania Hospital, all in the Clinical Practices of the University of Pennsylvania. "In addition," says Bryan, "we have approximately 35 Ph.D. faculty." That adds up to an enormous number of patient examinations: in a year, Penn radiologists perform about 350,000 exams at HUP and Penn Presbyterian and about 450,000 at Community Radiology and Pennsylvania Hospital.

On the educational side, the numbers are also impressive. Nearly 30 members of the faculty teach the Clinical Clerkship in Radiology (RA300) elective, which more than 80 percent of Penn Med students take. The department's 40 residents are offered rotations in 16 radiology subspecialties and also have the opportunity to pursue personal interests in community radiology, research, and teaching.

The department also offers clinical fellowship opportunities to 36 fellows, in subspecialties such as body, cardiovascular, chest, interventional radiology, magnetic resonance imaging, musculoskeletal, neuroradiology, and pediatric radiology. The department's radiology program currently has 25 research fellows, and, according to Bryan, its MRI program is particularly sought after. Through the University's Biomedical Graduate Studies Program, eight Ph.D. students receive department faculty training.

In a coup last December, Penn was awarded a three-year, \$1 million grant by the Howard Hughes Medical Institute to establish an integrated graduate training program in clinical imaging and information sciences. The Institute is a partner in this effort with the N.I.H.'s National Institute of Biomedical Imaging and Bioengineering. Penn and the other nine recipients

of the awards were selected from a group of 132 applicants. Peter F. Davies, Ph.D., director of Penn's Institute for Medicine and Engineering and professor of pathology and laboratory medicine, is serving as program director, coordinating the interdisciplinary program with the Department of Radiology as well as several other departments in the School of Medicine, the School of Engineering and Applied Science, and the School of Arts and Sciences. The radiology department is providing additional funds to hire two new faculty members to support the program, which is designed to produce a group of scientists at the interface of biomedical, clinical, physical, engineering, and computational sciences.

For more than a decade, Penn's Department of Radiology has been among the leading academic radiology departments in the United States in garnering research funding from the N.I.H. – and that remained true even during its most stressful period. The department's major programs include oncology and cardiovascular and neurological diseases, as well as the development of new and improved imaging technologies. Bryan gives credit to Mitchell D. Schnall, M.D., Ph.D., associate chair of research, for his part in keeping the N.I.H. awards coming. In its annual total of funding, the N.I.H. combines diagnostic radiology (the Department of Radiology) and radiation oncology (which also has a very strong research program at Penn through its own department).

"Since I've been here," says Bryan, "we have been number one four out of six years."

A Time of Expansion and Advancement

N.I.H. rankings are not the only proof that the Department of Radiology is enjoying better health in recent years. As Bryan puts it, "The financial constraints of the Health System after the economic difficulties had a major effect obviously



Michael Bleshman, M.D., vice chair of the department, is director of Community Radiology.

on the entire system but particularly in terms of infrastructure and capital investment. Basically, the Health System just could not afford to invest in our department as we would like and as it should, as it acknowledged, for a number of years. However, with the upcoming plans for the next few years, there are going to be some remarkable investments in some new tech which will greatly improve our ability to deliver services to our referring physicians and patients.”

Bryan looks forward to the enormous opportunity for growth and expansion that the new Perelman Center for Advanced Medicine will provide the department a few years down the line. “We are planning to move all of our outpatient imaging into the new building, which will greatly improve patient satisfaction and access.” The highly anticipated center, opening in mid 2008, will house Penn’s Abramson Cancer Center, a new cardiology center, and an outpatient surgical pavilion.

This spring, the radiology department added three new state-of-the-art MRI scanners at HUP, housed in a new suite within the Devon Imaging Center. The MR instruments, made by Siemens Medical Systems, include a 3 Tesla magnet (capable of higher spatial resolution imaging and improved MR spectroscopy), which will especially benefit patients with neurological problems that require better anatomical and functional images of the brain. A second magnet, 1.5 Tesla, has enhanced gradients for optimized cardiac imaging.

According to Harold I. Litt, M.D., Ph.D., chief of cardiovascular imaging in the Department of Radiology, “This MRI receives 32 signals at once versus four or eight for the older ones. The more signals it receives – and reads – the faster it can image. So instead of just seeing one slice of a beating heart in a breath-hold signal, we’ll be able to see the entire beating heart.” The third new machine has a 1.5

Tesla magnet with an open-bore configuration to accommodate larger or claustrophobic patients and to make interventional procedures easier. The Devon project replaces HUP1, the hospital’s “granddaddy” MRI and oldest hospital-based MRI in the nation, as well as HUP2.

Two new rooms have opened for interventional radiology, which offers minimally-invasive alternatives to conventional surgery, and for neuroradiology. The gastrointestinal and genitourinary services have moved to renovated space on the ground floor of Dulles, allowing the interventional radiology rooms (with support space) to be installed in their place.

Among the several additions and advances, Bryan is particularly enthusiastic about a new 64-slice CT scanner to help with cardiac imaging. The scanner will offer physicians a non-invasive, faster, and less costly alternative to conventional angiography, which entails cardiac catheterization, to detect or rule out coronary artery disease. Located in HUP’s emergency department, the new scanner can also reduce unnecessary testing and hospital stays for



Beverly G. Coleman, M.D., heads the Ultrasound Section, which performs more than 20,000 examinations per year on patients.



Harold I. Litt, M.D., Ph.D., uses the 64-slice CT scanner from Siemens for extremely detailed images of the heart.

certain patients. The multi-slice CT scanner – the fastest available at this point – supplies experts with an extremely detailed three-dimensional image of the heart and the coronary arteries.

Litt explains that the emergency team first assesses the likelihood that the patient actually has coronary artery disease rather than a heart attack. Then, he says, “low-risk patients can have this CT scan quickly, and within two to three hours of arriving in the ED, we can tell whether or not the

patient has coronary disease and needs to stay in the hospital, or if he can be sent home. The test itself takes only about five minutes and can also show us many causes of chest pain not related to the heart.”

Bryan is also very enthusiastic about a combined PET/CT scanner that has been used for research since November but that is now in use for patients. Built by Philips Medical Systems, it is used primarily for cancer patients. “This is the first of its kind in the world,” said Bryan. Locat-

ed in the department’s Nuclear Medicine Section, the PET/CT scanner, in Bryan’s words, “offers the newest technology and will primarily be for cancer patients and the staging of their disease” – among them, cancers of the lung, head, and neck and lymphoma. Joel S. Karp, Ph.D., professor of radiology, led “the physics part of the research,” says Bryan. As Laurie Loevner, M.D., associate professor of radiology, puts it, the new unit is “where structure and function meet. . . . We can use this PET/CT to check for early indications of cancer or to see if the cancer has spread. We can also look to see if a particular therapy has been successful in treating the cancer.”

In October 2004, Beverly G. Coleman, M.D., chief of the Ultrasound Section, and Bryan accepted a check for more than \$735,000 from Karen Helm, chair of that year’s Philadelphia Antiques Show. Coleman’s section was the fortunate recipient of the proceeds from that year’s event. The money was used to buy three state-of-the-art ultrasound scanners for the department. Given that the Ultrasound Section performs more than 20,000 examinations per year on patients, the department was ready to put them to immediate use. The new scanners allow the health-care professionals to make critical decisions on a more timely basis.

Putting the Most Sophisticated Equipment to Good Use

Among the recent advances made by Penn’s radiology faculty was a study led by Chandra Sehgal, Ph.D., director of ultrasound research, and published in the October 2005 issue of *Ultrasound in Medicine and Biology*. For the first time, ultrasound is being used – in animal models – to treat cancer by disrupting tumor blood vessels. The researchers were able to see a tumor’s blood perfusion and then to treat it with a continuous wave of low-level ultrasound. “This approach is in keeping



Photo: Peter Lester

Given the heft of the three new MRIs, delivering them to HUP was a complicated and delicate process.



Photo: Philips Medical Systems

The new Philips Gemini TF combines PET and CT and improves the ability to check for early indications of cancer.

with the latest study of cancer treatment utilizing anti-angiogenic and anti-vascular therapies, in which we look for ways to stop the growth of the vessels supplying blood and nutrition to the tumors rather than develop methods to kill the tumor cells themselves.”

Andrew Newberg, M.D., a radiologist in nuclear medicine, is the lead author of a recent study on the effectiveness of simultaneously combining two different kinds of imaging – functional MRI (magnetic resonance imaging) and PET (positron emission tomography) imaging. “By using these two established methods, we now have an integrated way to look at the brain’s functions,” says Newberg. “We can now get a more comprehensive view of what’s happening in the brain at a particular time than we’ve ever been able to do before. We can look at more diseases and more activation states.” PET scanning looks at the glucose metabolism in the brain, while fMRI captures the blood flow

in the brain. Combining the two, explains Newberg, “you capture the exact same moment in the brain with both scans. It will help to show us what the relationship is between metabolism and

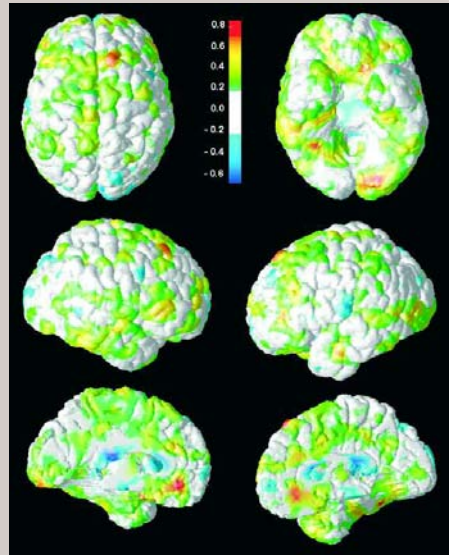


Image: Christos Davatzikos, Ph.D.

Using MRI, Penn investigators may be able to detect brain abnormalities that cannot be seen by the human eye. In these three-dimensional renderings of anatomical differences found between schizophrenia patients and healthy individuals, red and yellow represent areas of relatively reduced brain tissue volume.

blood flow.” He also hopes that the simultaneous fMRI-PET scan will help researchers understand the effect of certain medications on the brain and body.

One more example that demonstrates how variously productive Bryan’s faculty has been is a study published in the November 2005 issue of *Archives of General Psychiatry*. A team led by Christos Davatzikos, Ph.D., director of the radiology department’s Biomedical Image Analysis Section, and Raquel Gur, M.D., Ph.D., professor of psychiatry and director of Penn’s Schizophrenia Center, has shown that MRI may assist in the early diagnosis of schizophrenia. By using MRI to study the patient’s brain, researchers may be able to detect subtle brain abnormalities that cannot be seen by the human eye. As Davatzikos explains, “We used high-dimensional shape transformations in which we compared a brain image with a template of a normal brain. Through this comparison, we then determined where and how the patient’s brain differed from healthy controls.” As he points out, “Up until now, structural MRI has typically been used to diagnose physical abnormalities like stroke or tumors, but it has not been helpful for diagnosis of psychiatric diseases.” Using MRI as well as other tools before patients actually develop the disease, specialists can try to delay the onset of the disease. That could give patients a better outcome for the rest of their lives.

All of these advancements signify important changes, and Bryan says he is pleased. “For radiology, that is critical because we are very equipment- and capital-intensive,” he explains. In the last several years, there have been “some really fundamental changes to these instruments,” and much of the technology was not available. That has changed significantly. “We have expensive toys, if you will – but we have them take care of our patients. And we do offer the best care.” ♥

New to the Team

Twenty-one years ago, Chaitanya R. Divgi arrived in the United States from India, where he had earned his M.B., B.S. degrees from Bangalore University. After advanced training in both internal and nuclear medicine at some of that country’s preeminent institutions, he was offered a specialized residency in nuclear medicine at the Memorial Sloan Kettering Cancer Center in New York City. He followed that with two advanced fellowships at the Center, in nuclear medicine and in clinical immunology. In 1991, he officially joined the Center’s faculty and was appointed assistant professor at the Cornell University Medical College. In his 15 years as an attending physician at the Center, Divgi also served in various administrative positions within its Nuclear Medicine Service. He was promoted to associate professor at Cornell in 1996 and full professor in 2002.

In May, Divgi came to Penn as professor of radiology and chief of Nuclear Medicine and Clinical Molecular Imaging Section. Announcing Divgi’s appointment, Michael H. Bleshman, M.D., the department’s vice chair, cited Divgi’s “wealth of expertise relative to radioimmunotherapy and targeted therapy.” Divgi’s funded clinical research has been involved with the study of targeted molecules, primarily antigen-binding proteins, in the diagnosis and treatment of solid tumors, particularly colon, ovary, and kidney cancers. An active member of several professional organizations, he has served on scientific review committees for the National Institutes of Health. Currently, he is associate editor of *Clinical Nuclear Medicine*, the *World Journal of Nuclear Medicine and Molecular Medicine*, and the *European Journal of Nuclear Medicine and Molecular Imaging*.



"Being a doctor is perfect training for being an administrator."

Dr. Gabow's Treatment Plan

By Nicole Branan

A nephrologist by training, Patricia Gabow, M.D. '69, has led Denver Health since 1992. Because of her successful leadership, she has been named one of the "100 most powerful people" in American health care.

When Patricia Gabow was a little girl, her Italian grandfather told her that if she got an education in America, there was nothing she couldn't do.

It seems that his promise has held true: Gabow's career path leads from internationally known nephrologist and professor of medicine to medical director and CEO of one of the nation's largest public health-care systems.

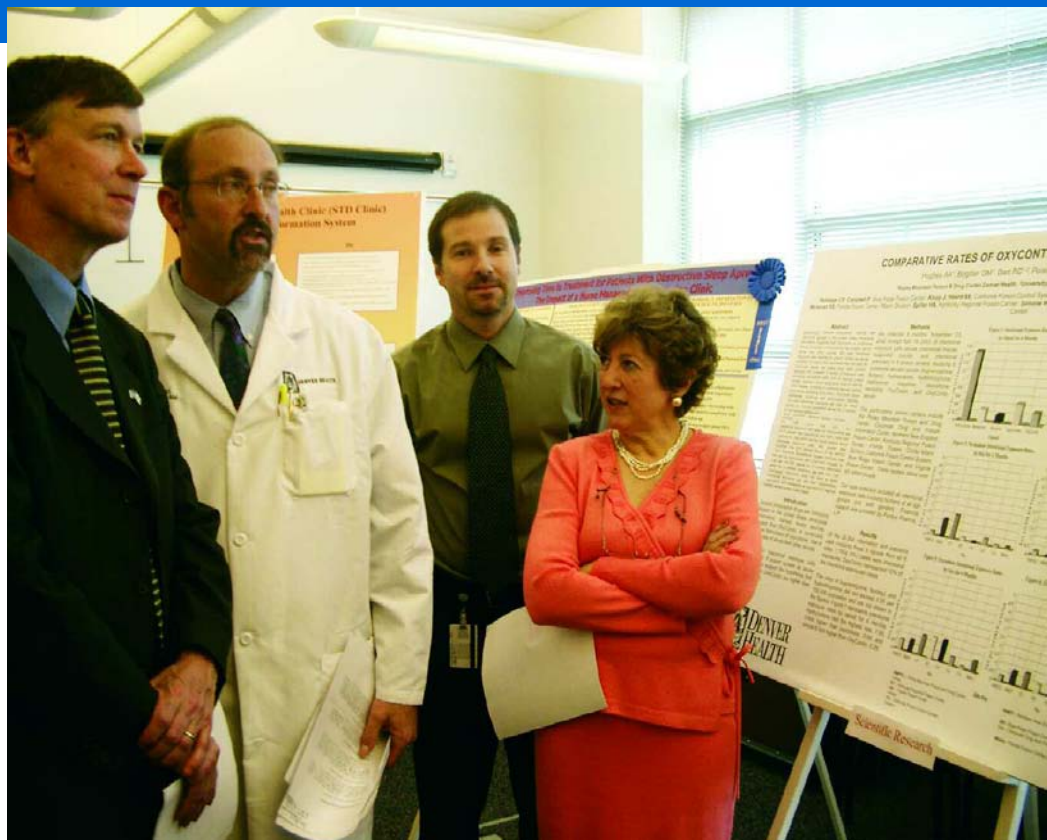
Although the positions she has held over the past three decades have had different job descriptions, Gabow, who earned her medical degree from Penn in 1969, had the same motivation for each of them: "I want to take care of patients."

As CEO of Denver Health, a city-wide community health system that

covers the entire continuum of care from hospitals to "911" medical-response systems, Gabow is responsible for providing care for more than 100,000 patients every year. And that is not an easy job. As the principal "safety net" institution for Colorado, Denver Health is the major provider of care for the uninsured; moreover, each year, it faces a growing number of low-income patients while receiving less funding from the city and the state.

But Gabow has shown herself up to the task: Since she became CEO in 1992, Denver Health has provided the equivalent of \$2.5 billion in care to

“OVERALL, WE HAVE DEMONSTRATED THAT IF YOU HAVE THE RIGHT SYSTEM, YOU CAN TAKE CARE OF EVERYBODY WITH HIGH QUALITY IN A COST-EFFICIENT MANNER.”



Gabow and Philip Mehler, M.D., associate medical director of Denver Health (white coat), meet with Denver's mayor, John Hickenlooper (far left), about a Rocky Mountain Poison and Drug Center project.

people without insurance while staying in the black every year. In fact, in an article on integrating a public hospital and community health centers, Gabow and two other Denver Health authors noted in 2003 that Denver Health provided 30 percent of all the uncompensated care for the entire state (*Annals of Internal Medicine*, January 21, 2003). In contrast, more than half of the country's public hospitals are running a deficit. Just as important, the institution's financial stability has certainly not come at the expense of quality; last year Denver Health landed on the *U.S. News & World Report's* annual list of the nation's best hospitals and ranked 23rd in respiratory disorders, and 46th, 47th, and 49th in hormonal disorders, kidney disease, and gynecology, respectively.

Last year, *Modern Healthcare* named Gabow one of the top 25 women in health care and a few months later placed her among the 100 most powerful people in

the field. (Others named to the latter list included Bill Gates, President George Bush, and U.S. Senator Hillary Rodham Clinton.) Then, in April of this year, *Modern Healthcare* included her among the most powerful physician-executives in health care, ranking her No. 27.

The secret of her success is a combination of confidence, persistence, and, most of all, love for the job.

“Denver Health is my life,” she says simply.

Philip Mehler, M.D., a professor of internal medicine at the University of Colorado Health Science Center, has had ample opportunity to observe Gabow in his role as associate medical director at Denver Health. “She has been a phenomenal leader for Denver Health,” he says. “She is passionate about the care of the vulnerable population, and she is passionate about what is going to happen to the safety-net hospitals in this country.” That means she must grapple with the

question of “how we are going to sustain them with all the outside forces that are cutting back care for the uninsured.”

So how does Gabow manage to keep the institution thriving while it receives no support from the state for care of the uninsured and the same dollar amount from the city since 1991?

By “printing money in the basement,” Gabow jokes. But the real reason for Denver Health's success, as she goes on to explain, is its complete organizational and functional integration. The entire institution is managed by a single administrative team, and all of Denver Health's components – including a 398-bed hospital, nine community health centers, 11 school-based clinics, and a poison center – are linked. A single electronic medical record and a single patient identifier optimize efficiency in patient care. According to Gabow, this integration helps get the patient to the right place in the right time for the right level of care, so patients won't

have to go to the emergency room. In general, as Gabow told *The Denver Business Journal*, “We can make our decisions very rapidly” (August 12, 2005).

The operational flexibility that was needed to achieve this level of efficiency became possible only after the health system became independent from the city. Under Gabow’s leadership, Denver General Hospital made a successful transition from what was a city agency to the independent governmental authority Denver Health in 1997. The transfer took persistence and negotiation skills. At the time, Denver General Hospital was the second-largest department of the city government.

“I worked on convincing former Mayor Wellington Webb for years, and it wasn’t easy,” says Gabow. “I was asking a mayor to give up a huge department and making him believe that it would be better off independent from him. Eventually he became a champion of the idea and made it happen.”

As Gabow puts it, “Health-care funding is very siloed, but because we are an integrated system we can get funding for all our different components. And there isn’t a federal dollar I don’t love.”

Another factor that plays an important role for the success of Denver Health is its commitment to information technology. Over the last 10 years, the institution has

invested more than \$200 million in sophisticated IT systems that link the billing process, medical records, and patient scheduling among all of Denver Health’s components, allowing the access of medical records at any time from any location. In Gabow’s view, that major investment has helped create “a robustness of the system” while enhancing patient safety, quality, and efficiency.

All full-time physicians at Denver Health are salaried employees, have hospital-admitting privileges, and are on the faculty of the University of Colorado School of Medicine. It was Gabow who established the formal affiliation with the University of Colorado. The benefits for Denver Health include access to certain subspecialists, research support, and training programs. In turn, Denver Health funds more than 100 residency positions through the university.

“Overall, we have demonstrated that if you have the right system, you can take care of everybody with high quality in a cost-efficient manner.”

Gabow came to Denver Health as a physician in 1973 after completing her renal fellowship at the Hospital of the University of Pennsylvania. Her husband, a computer science professor, had just accepted a position at the University of Colorado at Boulder. Within the year, she became chief of the renal division. In

1981, she advanced to chief of medicine and medical director. Eleven years later, she was appointed chief executive officer.

Sitting in her spacious, plant-filled office with a panoramic view of the Rocky Mountains, Gabow recalls some of the people who have had influence in her life. The first she cites is her grandfather. On her office wall is a large framed photograph of him, surrounded by a collection of his quotations.

Gabow’s father was killed in World War II when she was less than a year old, and she grew up with her mother, stepfather, and grandparents in rural Pennsylvania.

“For many immigrants such as my grandparents,” Gabow explains, “America was the land of opportunity, and my grandfather believed that the door that opened it was education.” Following her stepfather’s advice, she enrolled in Seton Hill College (now Seton Hill University), a small Catholic school in Pennsylvania. It was at the all-girls’ school that Gabow learned everything she needed to know to succeed in the male-dominated America of the early 1960s.

“I had a wonderful mentor at Seton Hill, Sister Florence Marie Scott, who was the head of the biology department and the only woman on the board of trustees of the Marine Biological Laboratory in Woods Hole, Mass. She took me with her in the summers to work in her lab, and that was a very good message: You don’t need to change who you are in order to enter an arena that women were not normally in.”

After graduating from Seton Hill in 1965 with a degree in biology, Gabow applied to medical schools.

She almost lost her chance to attend Penn when she was accepted to a different school. On the day her reply to the other school was due, she sent in her acceptance letter and check – against her mentor’s advice.

Gabow (second from right) helps break ground for Denver Health’s new community health center. The center will be the first in the country to be adjacent to an acute-care hospital.



“Sister Florence Marie Scott was adamant about me going to Penn and told me, ‘Don’t you dare reply before you hear from Penn.’”

No sooner had Gabow dropped her letter in the mailbox when she received a telephone call from Penn informing her that she had been accepted. “I immediately called the local post office and asked if I could get my letter back,” she says, laughing. And, indeed, the post office staffers in the small town of a few thousand residents went searching for the letter and sent it back to her.

Four years later, Gabow graduated as one of only six women in her class of 125 students. “We were at the front of the parade of women in medicine,” she says.

She began her career in nephrology by studying with Donna McCurdy M.D., in the renal division at Penn. “My life has really been a series of wonderful mentors,” says Gabow. “Dr. McCurdy was a wonderful teacher and one of the very few female faculty members at the time. When working in nephrology with her, I decided that that was for me.”

Throughout the following decades, Gabow became an expert in autosomal dominant polycystic kidney disease (ADPKD), the most common hereditary renal disease and the most common life-threatening disease in the United States. It enlarges the kidneys and interferes with their function because of multiple cysts. The disease affects 600,000 people in the United States and costs \$200 million a year for the treatment of end-stage renal disease alone. Among the more than 120 articles and book chapters Gabow has written are many in this research area. For example, in 1993, *The New England Journal of Medicine* published her review article on autosomal dominant polycystic kidney disease, which has been cited by more than 75 subsequent articles.

“When I started, polycystic kidney disease wasn’t even listed in the nephrology textbooks,” she says.

From 1985 to 2001, Gabow was the principal investigator on a study of the world’s largest population of adults and children with ADPKD. Her work has led to an understanding of the genetics and the manifestations of the disease, as well as new approaches to treating and educating hundreds of patients and physicians.

“I spent 15 years understanding this disease and taking care of families with the disease. That was very rewarding. One of the excitements about medicine is the ability to learn new things and to explore new frontiers. I started out as a doctor caring for one patient at a time. When I became medical director and CEO, I started thinking about caring for whole communities and populations of patients.”

For the past 14 years, Gabow has been developing new strategies to improve access to basic medical care for all Coloradans, especially the medically underserved, the majority of whom are members of ethnic minorities.

“Dr. Gabow has become a brilliant mind in legislative issues and policies and is a prophetic thinker in this regard – to find for the country what we need to do for the medically underserved population,” says Philip Mehler.

The job, she will admit, takes a lot of patience.

“My son said to me once, ‘Mom, you never come back and say you had a great day any more like you did when you were taking care of patients.’ I said: ‘When you take care of systems, it takes so long to fix them that you don’t have great days – you have great decades.’”

Still, Gabow’s enthusiasm and dedication to Denver Health have been an inspiration for the entire institution. In 2003, she reports, nearly 1,500 Denver Health employees volunteered to take leave without pay to save nearly \$2 million in expenses during a budget shortfall.

Working 16 to 18 hours a day, Gabow continues to find the time to exercise



Gabow listens to a presentation at Denver Health’s monthly directors of service conference. She is flanked by Richard Albert, M.D., chief of medicine (left), and Rick Dart, M.D., director of the Rocky Mountain Poison and Drug Center.

every morning and sometimes to play tennis with her husband, Hal.

They celebrated their 35th wedding anniversary this summer. The couple met during Gabow’s first ski vacation in 1970, when she was an intern at Penn.

Gabow is the mother of two adult children, both of whom live in Colorado. Her daughter, Tenaya, is pursuing a doctorate in organic chemistry at the Colorado State University, and her son, Aaron, works in the field of bioinformatics at the University of Colorado School of Medicine. Gabow enjoys preparing Italian meals at home for her family and riding her bike on Denver’s bike trails.

“But mostly I like to work,” she says. And she makes it sound credible.

“I STARTED OUT AS A DOCTOR CARING FOR ONE PATIENT AT A TIME. WHEN I BECAME MEDICAL DIRECTOR AND CEO, I STARTED THINKING ABOUT CARING FOR WHOLE COMMUNITIES AND POPULATIONS OF PATIENTS.”

In her tireless efforts to make Denver Health an even more successful and efficient institution, Gabow started a new project about two years ago. The Getting It Right Initiative is designed to study and imitate models of corporate efficiency, such as those of Federal Express,

Toyota, and the Ritz-Carlton hotel chain. With a \$350,000 grant from the Agency for Healthcare Research and Quality, Gabow put together an external advisory committee consisting of some of the nation's top experts on workplace design to create a plan to streamline the hospital's operations. Gabow and other officials of Denver Health made site visits to Federal Express and Dell and took a trip to Sweden to study the country's health-care system. In addition, Gabow conducted interviews with all of Denver Health's employees, starting with the institution's housekeepers, to determine how to make each job more efficient. She also invited different patient populations, such as English- and Spanish-speaking patients, to participate in focus groups. Denver Health is now using the same approach that the Ritz Carlton hotel chain uses to select employees.

“We are looking at a person's inherent characteristics and not just at their education and training,” she explains. “For example, a person who is not outgoing and a problem solver will never be well-

suited to work in the initial hospital registration, regardless of their education.”

The institution has also adopted Toyota production systems for their processes and has trained 50 employees, including some of the clinical physician chairs.

“Everybody is highly engaged,” Gabow says. “Our goal is to build a world-class health system that will be a model for health care for the entire nation.”

That's a lofty goal for someone who, as *The Denver Business Journal* has pointed out, had no background in business. But, as she told the *Journal*, “Being a doctor is perfect training for being an administrator because you treat a problem just like you treat a patient. First you make a diagnosis. Then you develop a treatment plan, and then you institute the treatment plan. And then you monitor the treatment plan, and if the outcome isn't what you expected, you either have to go back and change your diagnosis or change your treatment” (August 12, 2005).

In the meantime, *Modern Healthcare* magazine is far from the only body to recognize Gabow's accomplishments. In 2004, she was inducted into the Colorado Women's Hall of Fame; and in 2005, the Health Care for All Colorado Foundation named Gabow one of the Health Care Heroes of Colorado. Last year, she was also honored by the International Women's Forum, which named her as one of ten recipients of the Women Who Make A Difference award.

Philip Mehler, the associate medical director of Denver Health, reports that he met recently in Washington, D.C., with two U.S. Representatives from Colorado. “They quote Dr. Gabow as if she were their mentor and really look to her for advice about public health care issues.”

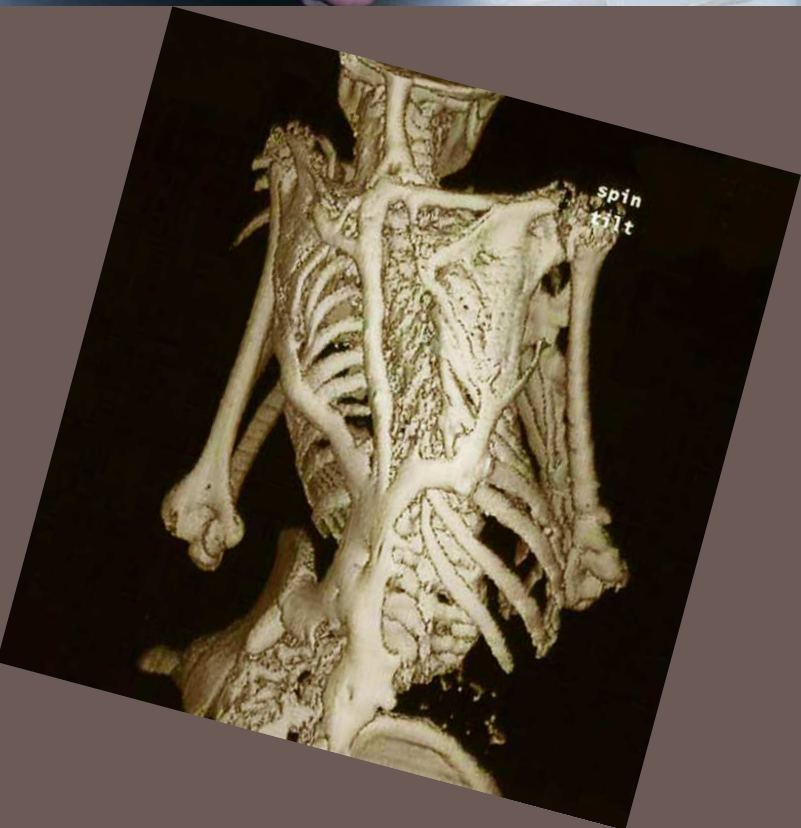
Looking back over the past four decades, Gabow says, “Medicine is a wonderful career, and it has certainly given me an opportunity to do everything I could possibly have dreamed to do.” ■

As part of Denver Health's Reach Out and Read program, Gabow reads to pediatric patients.



THE SKELETON

By Karen Kreeger and John Shea



KEY

FIFTEEN YEARS INTO THEIR SEARCH, INVESTIGATORS AT PENN HAVE DISCOVERED THE GENE THAT CAUSES ONE OF THE MOST DISABLING GENETIC CONDITIONS.

Clockwise from upper left: Eileen Shore, Ph.D., greets Stephanie Snow (Photo: Daniel Burke). Frederick Kaplan, M.D., examines Daniel Licht, one of his young F.O.P. patients. (Photo: Alessandra Sanguinetti, for *Newsweek*). Jeannie Peeper, described by Kaplan as "our inspirational leader" (Photo: Daniel Burke). The CT scan of the back of a 12-year-old child shows the extensive heterotopic bone formation typical of F.O.P. (School of Medicine)

Gathered in the auditorium of the Clinical Research Building, reporters from several news organizations, Penn administrators, professors, and students, and concerned family members had heard two exceptional biomedical investigators and a dean speak about a scientific breakthrough. But the two speakers who had the most emotional impact – the ones who made clear what the important new discovery meant in human terms – were Jeannie Peeper and Stephanie Snow. For both have fibrodysplasia ossificans progressiva (F.O.P.), a bone disorder that Frederick S. Kaplan, M.D., had earlier characterized as “a catastrophic sabotage of the skeletal system.”

Penn’s School of Medicine had arranged the media advisory in Austrian Auditorium because Kaplan, Eileen M. Shore, Ph.D. ’87, and their team of researchers had located the “skeleton key.” This particular gene, when damaged, causes the body’s skeletal muscles and soft connective tissue to undergo a startling metamorphosis into bone. The joints of the body progressively lock in place and render movement impossible, in effect imprisoning its childhood victims in a “second skeleton.” Identifying the gene that causes F.O.P., one of the rarest and most disabling genetic conditions known to humans, has been the focus at Penn’s Center for Research in F.O.P. and Related Disorders for the past 15 years.

Jeanie Peeper came to the stage in a motorized wheelchair. A 47-year-old woman who has spent a good part of her life helping to create an F.O.P. community, Peeper has been virtually imprisoned in

this second skeleton for many years. As she said in response to a reporter’s question, all her joints are locked into a fixed position, she is confined to the wheelchair, and she is “totally dependent.” On this day, however, she concentrated on the positive side, stating that “the first part of the puzzle has been solved.” The dis-

“F.O.P. BONE IS PERFECTLY NORMAL IN EVERY WAY, EXCEPT IT SHOULD NOT BE THERE,” EXPLAINS KAPLAN. “THERE ARE NO OTHER KNOWN EXAMPLES OF ONE NORMAL ORGAN SYSTEM TURNING INTO ANOTHER. IT’S LIKE A RUNAWAY FACTORY FOR MAKING BONE THAT JUST WON’T STOP.”

covery of the F.O.P. gene, she said, “gives families such hope.”

It was evident that Peeper was, as Kaplan had stated minutes earlier, “our inspirational leader,” someone who did not allow her condition to dominate her. In Kaplan’s words, she provided “the passion and the dream . . . to help the next generation of children.” Peeper was the founder and first president of the International F.O.P. Association, established in 1988. This association and the families of F.O.P. individuals have provided most of the funding to support the research of Kaplan and his team.

Minutes after Peeper spoke, Snow, a 15-year-old student from Santa Maria,

California, walked stiffly to the stage, showing the early effects of F.O.P. Like Peeper, she has known Kaplan and his team for many years. In fact, after Stephanie was diagnosed with F.O.P. at age three, her parents, Bob and Jennifer Snow, immediately contacted Kaplan. In 1995, they shared the family's story at the Second International Symposium on F.O.P., hosted by Penn's School of Medicine. And Kaplan, who has traveled far to meet personally with as many F.O.P. patients as he can, has enjoyed the Snow family barbecues on occasion.

Responding to the announcement of the scientific discovery, Stephanie Snow said, "I didn't think it would come this soon." Now, she continued, the F.O.P. community can "look forward to something." Like Peeper, Snow has not let her condition rule her life. A budding veterinarian, Snow has even been a cheerleader at school – but, for obvious reasons, she noted that she has not gone out for soccer. In a person with F.O.P., bumps and falls can trigger swellings; and when the swellings eventually recede, they leave behind bone.

Shore, an associate professor of orthopaedic surgery and genetics who earned her Ph.D. degree in cell and developmental biology at Penn, and Kaplan, the Isaac and Rose Nassau Professor of Orthopaedic Molecular Medicine, are senior authors of a report detailing their findings, published in the April 23 advanced online edition of *Nature Genetics*. Other authors are Meiqi Xu, George J. Feldman, and David A. Fenstermacher, all from Penn; Matthew A. Brown, from Princess Alexandra Hospital in Queensland, Australia; and researchers in the F.O.P. International Research Consortium. Their discovery of the F.O.P. gene was the result of painstaking work by the Penn scientists and their international colleagues over many years. A crucial

first step was identifying and clinically examining multigenerational families with F.O.P., often in remote regions of the world, then performing genome-wide linkage analysis. After identifying "candidate" genes, the researchers next did DNA sequencing and analysis of them. What they eventually found is that F.O.P. is caused by a mutation of a gene in the bone morphogenetic protein (B.M.P.)-signaling pathway. At the media briefing, Kaplan noted that it was Xu who finally located the elusive mutation.

ments, and skeletal muscle begin an inexorable transformation into an armament of bone. "F.O.P. bone is perfectly normal in every way, except it should not be there," explains Kaplan. "There are no other known examples of one normal organ system turning into another. It's like a runaway factory for making bone that just won't stop."

Children with F.O.P. appear normal at birth, except for telltale malformations of the great toes that look like congenital bunions. Early in childhood, painful swellings that are often mistaken for tu-



Short, malformed great toes at birth are early signs of F.O.P. Later indications include pre-osseous, soft-tissue lesions (left) on the neck and back.

One of the rarest conditions known to medicine, F.O.P. is found in only one in 2 million individuals. Of an estimated 2,500 total people with the condition worldwide, approximately 600 of them have been identified – and the F.O.P. research group at Penn knows nearly all of them. Says Kaplan, "They are our children, our family."

Early in life, because of a possible molecular short-circuit in the body's system for repairing wounds, the tendons, liga-

mors seize the skeletal muscles and transform them into bone. Eventually, ribbons, sheets, and plates of bone cross the joints, lock them in place, and render movement impossible. Attempts to remove the extra bone leads to explosive growth of new bone. Even the slightest trauma such as bumps, bruises, childhood immunizations, and injections for dental work can cause the muscles to turn to bone.

At present, there is no effective prevention or treatment for the molecular

sabotage that F.O.P. inflicts. Yet the discovery of the F.O.P. gene and the unique mutation that causes F.O.P. provides a highly specific target for future drug development and holds promise for altering not just the symptoms of the disease, but the disease itself.

The Penn team originally surmised that F.O.P. was caused by a mutation of a particular gene in the B.M.P.-signaling pathway. B.M.P.s are regulatory proteins involved in the embryonic formation and post-natal repair of the

IN F.O.P., THE GENE THAT TRIGGERS THE CONDITION IS DAMAGED BY THE SUBSTITUTION OF A SINGLE GENETIC LETTER AT A SPECIFIC LOCATION IN THE GENE – AS EILEEN SHORE, PH.D., EMPHASIZED, ONE OUT OF SIX BILLION NUCLEOTIDES.

skeleton. Indeed, the F.O.P. gene encodes a B.M.P. receptor called Activin Receptor Type IA, or ACVR1. These receptors are protein switches that help determine the fate of the stem cells in which they are expressed. F.O.P. is the first human genetic disease ascribed to ACVR1. According to Shore, “Our identification of ACVR1 as a critical regulator of endochondral bone formation during embryogenesis and in post-natal tissues will undoubtedly re-focus thinking and

stimulate new research directions. This discovery will have a major impact on the study of skeletal biology and regenerative medicine.”

In F.O.P., the ACVR1 gene is damaged by the substitution of a single genetic letter at a specific location in the gene – as Shore emphasized at the media briefing, one out of six billion nucleotides. ACVR1 is an important B.M.P. signaling switch in cartilage cells of the growth plates of growing bones, especially in the hands and feet, as well as in the cells of skeletal muscle. The researchers have found that every person with classic F.O.P. has the identical mutation in the ACVR1 gene.

Computer modeling of the three-dimensional structure of the mutant ACVR1 protein suggests altered activation of this form of ACVR1. “Presumably, the F.O.P. mutation causes a molecular short circuit or promiscuous activation of the receptor, but the detailed molecular physiology is still being deciphered,” says Kaplan. “Such knowledge will be essential to develop treatments and an eventual cure for F.O.P.”

Shore adds that “to really understand the physiological consequences, we have begun to develop a genetically engineered mouse with the F.O.P. mutation.”

“We now know the cause for F.O.P. at the genetic level, and we expect that it will not be long before we understand the mechanism at the molecular level,” says Kaplan. “That knowledge may someday be used, not just for understanding and treating F.O.P., but for treating many common disorders that affect the skeleton.” Among those he cites as non-genetic forms of extra bone growth that may occur following total hip replacement, head injuries, spinal cord injuries, sports injuries, blast injuries from war, and even osteoarthritis and damaged heart valves. “Perhaps someday we will be able to harness the gene mutation that causes the renegade bone formation in F.O.P. and

make bone in a controlled way – for patients who have severe osteoporosis, for those with severe bone loss from trauma, for those with fractures that fail to heal or spinal fusions that are slow to heal, or for those with congenital malformations of the spine and limbs.”

During the media briefing, both Kaplan and Shore mentioned a former collaborator who had helped further their quest to understand F.O.P. – Michael A. Zasloff, M.D., Ph.D., a former chief of genetics at The Children’s Hospital of Philadelphia, who also had an appointment in Penn’s Department of Orthopaedic Surgery. Zasloff, now a professor at Georgetown University, was in the audience, back to observe the historic occasion and share in the celebration. As Shore put it, she had written her thesis in cell and molecular biology at Penn on fruit flies, and her career seemed to be on a decidedly different path. “Then I met Fred and Michael Zasloff – and the rest is history!”

In his career, Fred Kaplan has received many awards and honors, has been recognized by his students, and has won several grants from the National Institutes of Health. This summer, he gained a national honor of an unusual sort when he and his F.O.P. research were profiled in a special issue of *Newsweek*. The issue was devoted to “15 People Who Make America Great” – great, because of what they have given back to the nation. The one-page piece sketched Kaplan’s scientific achievements but also emphasized his “compassion and infectious optimism” that have helped his patients keep going. “I wanted a mountain to climb,” Kaplan told *Newsweek*, referring to his work on what sometimes must have seemed an insoluble problem.

After discovering the skeleton key, another summit looms in the distance for Kaplan, Shore, and their team of researchers. ▀

A trauma surgeon at the Hospital of the University of School of Medicine, Dr. John Pryor wrote earlier this spring ing health care more than 22 years ago. He would encounter



Photographs courtesy of John H. Pryor, M.D.

Pennsylvania and an assistant professor of surgery in the that he has been very familiar with death since enter- it nightly in a trauma bay.

But Pryor is also a major in the United States Army Reserve Medical Corps, and it was in that role that he spent part of this year on a tour of duty at the 344th Combat Support Hospital in Abu Ghraib, Iraq. There, his experience with death changed dramatically. As a war surgeon, he wrote, “I have seen a level of destruction that even I thought was not possible.” Here is the last report he sent back from Iraq before he returned to Penn.

“In other fighting, one marine was killed in the Al Anbar province after a Humvee he was riding in hit an IED.” That was what I read in the AP news piece. It was one line of several paragraphs that summed up the day’s casualties in Iraq during another day of the war that has gone on for three years now. These reports are so common, most people do not even read them or listen to the 30-second blurb that follows on the evening news: “Another day of violence in Iraq where. . . .” For us, the reality is much different, a horrific drama that is played out in the field, in forward surgery tents, and in combat support hospitals every single day.

Today the warning came over the radio: “Urgent litter coming in by ground.” I immediately responded to the emergency treatment room, where the buzz is usually in full swing.

“IED, Marines,” is all the ETR nurse said as I walked in. Damn, I thought. Another casualty of an improvised explosive device. One day left – all I asked God for was no more marines with one day left on my tour. The hospital staff went into full swing. These people are at the end of a year-long deployment here; they are ex-

perienced, hardened, and cool under pressure. The activity was programmed and efficient. I took my position at the head of bed number one, put my head down, and waited.

Within a few minutes, the litter team burst into the ETR with the first patient. I could see his arms dangling off the stretcher with bone exposed, and I immediately knew that this was going to be a bad one. When the litter was pulled up

a puppets. As we moved him over, I tried to ignore the massive tissue destruction of his legs and focus on potential life-threatening chest and abdomen wounds. He was moaning – actually a good sign: the brain was still getting blood flow. Anesthesia moved to intubate him, as the emergency-medicine physician started the primary survey. Nurses started lines, lab was there to bring blood, medics held pressure on bleeding wounds, all in a



A long way from home: John Pryor in his tent

alongside the bed, I saw the full extent of what I was up against. Driver, I thought to myself. The drivers always seem to get the full force of the IED. There was a pungent smell of gasoline and burned flesh. My first order of business was to remove his body armor before we moved him over; to do this we had to sit him up in order to pull the arms through the sleeves. When we did, his arms, broken in several places on each side, flopped around like

dance that has been repeated so many times before.

The other patients began to file in, eventually filling the ETR. One soldier in a bed next to ours was calling out to my patient, ignoring his own gaping wounds: “You’re going be okay, man. Hang in there.” I began to focus on the problem and my plan. Both legs had massive tissue destruction. The left thigh was torn apart and burned, with a tourniquet at the groin.



Some of the 344th's finest: John Pryor is flanked by colleagues.

The right leg was mangled below the knee, with a tourniquet above that. There was a neck wound that wasn't bleeding and shrapnel to the face. Both arms had multiple levels of open fractures. The pulse was weak and the blood pressure was barely readable. We hung blood immediately. The chest x-ray did not show any thoracic injury. We shot an abdominal film to look for shrapnel that may have gone into the belly: none. As we moved to the OR, the hospital commander stopped me to ask if he was going to make it. I told him that I was worried that once we start to resuscitate him, the bleeding would become even worse, and I didn't know if he would make it. His head dropped as he walked back to the chaos of the ETR.

In the operating room we started by getting control of the external bleeding of the legs. There was blood coming from everywhere: bright red arterial blood, dark blue venous blood, and areas where the two swirled together in pools between

the flesh. Two orthopaedic surgeons and I worked frantically to get control of the bleeding, which, as predicted, became worse as we started to resuscitate him. Anesthesia was struggling to keep a blood pressure, infusing unit after unit of packed red blood cells and plasma. I was having trouble finding the source of some bleeding high on the thigh, and I was going deeper and deeper into the groin to track down the source. Suddenly my hand broke into a space, and a gush of blood came out. I realized that I was in the retroperitoneal space and the bleeding was coming from here. This was the worst-case scenario. Bleeding from this location is the toughest to control. The packing did nothing; blood flowed from the wound in a constant stream. We opened the abdominal cavity and clamped the arteries that feed the pelvis, but it didn't help. Bleeding from this area is almost always from large veins that cannot be controlled with sutures or arterial control.

We packed as tight as we could and then put a sheet around the pelvis to pull the bones together in an attempt to tamponade the bleeding, but it was not enough. His heart went into a lethal arrhythmia. We shocked him and pumped epinephrine into his blood stream. After a few minutes, his heart stopped for the last time.

There was an immediate silence in the operating room as soon as I announced the time of death. Most of the staff had tears running down their faces; this was a long year for them with so many of these kids dying in this room. I could not move for several minutes. I looked at this kid, a child, and I apologized to him for not being skillful enough to save him. As a trauma surgeon, every death I have is painful, every one takes a little out of me. Losing these kids here in Iraq rips a hole through my soul so large that it's hard for me to continue breathing. After a few minutes, I collected myself and began to direct the care for his final jour-

ney home. We closed what we could of the wounds and wrapped the ones we couldn't get together. We washed all of the dirt and oil off his skin, combed his hair, and washed his face. He was transferred to a litter and brought to a private enclosed room, where we placed him inside a heavy, black body bag. The body was draped with the American flag, and a guard was posted. The chaplain gathered some of the providers, and we said prayers over the body.

There was – and always is – a palpable grief that comes over the entire staff when we lose an American soldier. Everyone is affected, and everyone deals with it in a different way. For me, this is not an objective, depressing thing; it is very, very personal. I was the surgeon who couldn't save him. For me the grief is intolerable. I become the focus of the morning for the staff – people come and give me a hug. They ask me if I am okay, they pray for me. I appreciate it and hate it at the same time. Often my misery turns into anger. Sometimes I become angry with God for

allowing this to happen. I just want the whole thing to be over and all of these kids to go home to their families and live long lives. I have seen so many soldiers and marines die here; I just want it all to end.

As I made my way out of the hospital, I saw the Marine unit gathered together. Two Humvees were parked, and weapons were leaning against the vehicles. I noticed this immediately because a marine is never without his weapon. They would never be stacked like that. These were the weapons of all the marines injured in the latest attack. I spoke with the first sergeant, the father figure of a Marine unit. I knew him well: we lost several of his marines and had many more injured and treated here. We arranged for his buddies to come in and say goodbye, something that I could not bear to watch. After a time of reflection, the unit gathered the equipment and prepared to go out again that night. This is some of the raw courage that I talk about, the ability to lose a friend in battle and go right back into the fight. I love every single one of these marines.

The marine's body was eventually taken to the landing zone and loaded into a helicopter, with some of his buddies as escorts. He was brought to Baghdad International Airport, where mortuary affairs prepared the body for transport home. A friend of mine was at the airport when the body was loaded onto the C-130. All activity on the tarmac stopped when the casket was brought onto the airstrip. All personnel in the area stopped what they were doing and attended a 45-minute ceremony on the airstrip. They tell me that this happens two or three times a day, but everyone takes time out to attend the ceremonies. What happens next is an honor guard brings the flag-draped casket onto the aircraft with full military honors. Personnel then enter the aircraft to accompany the marine to Kuwait. There, the casket is removed first, again with a full honor guard. The marine will be brought to Dover Air Force Base in Delaware and then, eventually, home and to his final resting place.

If I could say something to this marine's parents, it would be this: I am so sorry that you have lost your son. We, above everyone else, know that he was a true American hero. I want you to know that the marines, medics, doctors, and nurses of the 344th Combat Support Hospital did everything possible to save him. I want you to know that I personally did everything that I could and that I am sorry it wasn't enough. I want you to know that although we never knew your son, we loved him. I want you to know that although he lost his life, we preserved his dignity after death. We held his hand when he died and prayed for his soul and for God to give you strength. I want you to know that he had great friends who cared deeply for him and that they were also here when he died. He was never alone during his journey back to you. I also want you to know that I will never forget your son and that I will pray for him and all of the children lost in this war. ♥

Same surgical skills, different setting: Dr. Pryor, left, operates.





Institute for Diabetes, Obesity, and Metabolism Seeks

In January 2005, the University of Pennsylvania established three new biomedical research institutes aimed at cutting across traditional academic disciplinary lines, as called for by the Plan for PENN Medicine, the institution's strategic roadmap. Here, we highlight the Institute for Diabetes, Obesity, and Metabolism and its opportunities for philanthropic support; in future issues we will feature the Penn Cardiovascular Institute and the Institute for Translational Medicine and Therapeutics.

The New York Times calls it “a local, national, and worldwide scourge.” “It” is Type 2 diabetes, and in the last few months *Time*, *Newsweek*, and the *Times* have all sounded the alarm about America's epidemic of obesity and diabetes, with front-page warnings about their myriad complications and mounting health-care costs. Anticipating these trends and recognizing the need for innovative approaches to prevention and treatment, last year PENN Medicine created the Institute for Diabetes, Obesity, and Metabolism (IDOM).

“There is research into diabetes and obesity going on in all corners of the Penn campus,” explains the director of IDOM, Mitchell A. Lazar, M.D., Ph.D., the Sylvan Eisman Professor of Medicine and Genetics and chief of the Division of Endocrinology, Diabetes, and Metabolism in the Department of Medicine. “We want to bring these investigators together, facilitate the exchange of knowledge and ideas, and encourage research collaboration beyond the School of Medicine. And we aim to train the next generation of investigators and discoverers – and caregivers.”

Among the dire statistics recently publicized:

- Nearly 21 million Americans are diabetic, according to the Centers for Disease Control and Prevention (C.D.C.). Another 41 million more are pre-diabetic.
- The American Diabetes Association estimates that in 2002, the total annual economic cost of diabetes was \$132 billion. (Total costs attributed to all forms of cancer put together were \$171 billion for the same year.) The costs of medical care for diabetes more than doubled between 1997 and 2002.



Mitchell A. Lazar, M.D., Ph.D., was one of the diabetes experts gathered on PBS's *Charlie Rose Show* this spring.

- The CDC projects that one-third of children born in the U.S. in 2000 will develop diabetes in their lifetimes – and the forecast for African Americans and Hispanic Americans is one in two. Almost one-third of American children are overweight.
- Diabetic complications can attack every major organ: it is the leading cause of kidney failure and adult blindness, and in 2005, war veterans suffered as many amputations due to diabetes as American soldiers did from combat injuries during the entire Vietnam War. Adults with diabetes have death rates and stroke rates from heart disease from two to four times those without diabetes.

There are two types of diabetes. In Type 1, formerly called juvenile diabetes, the pancreas ceases to produce insulin. In Type 2, once known as adult-onset diabetes, the body produces some insulin, but the individual's cells can't properly use it. Both types are tied to genetics, but the onset of Type 2 is strongly linked to obesity and inactivity. Between 90 and 95 percent of American diabetics have the Type 2 form of the disease.

“The epidemic is in Type 2 diabetes – but both forms have the same complications,” Lazar explained in March, as

Solutions to National Epidemic



Daniel Burke



Daniel Burke

Aida Turturro, part of the cast of *The Sopranos*, toured Penn's Rodebaugh Diabetes Center in June and spoke about her own experiences with diabetes. Here, she listens to Mark H. Schutta, M.D., the center's medical director.

a guest on PBS's *Charlie Rose Show*. "In Type 1 diabetes, there are life-threatening symptoms that signal the onset of disease. With Type 2, there are often no early symptoms. People can have it for seven to 10 years, and develop serious complications, before they are diagnosed – and by then it's too late."

How did we get here? There are so many contributing factors. Genetic predisposition. Pervasive supersizing. Neighborhoods without sidewalks – and schools without physical education. Labor-saving technologies that take the physical effort out of everything from mowing the lawn to brushing your teeth. The hypnotic effects of TV and the PC – and the demise of the neighborhood's evening game of kick-the-can. Insurance reimbursement that will pay for amputations but not diabetes education or frequent visits to specialists.

A Multi-Disciplinary Approach for a Multi-Faceted Problem

The solutions will be equally complex – and that's why an organization like IDOM is well suited to this daunting challenge. To the best of Lazar's knowledge, Penn's is the

only academic institute that addresses both obesity and diabetes. The Institute aims to achieve understanding of the genetic, biochemical, molecular, environmental, and behavioral origins of diabetes, obesity, and their complications – with the goal of reducing both incidence and severity.

Two seminar series help bring IDOM members together. Once a week, the IDOM Research Seminar Series brings in researchers from across the country to present their studies and findings. And once a month, a second seminar series pairs two Penn researchers, one basic and one translational, often from different departments or schools, to discuss their projects. Stella Volpe, Ph.D., associate professor of nursing and the Miriam Stirl Term Professor of Nutrition, organizes the Translational Series along with Karen Teff, Ph.D., a member of the Monell Chemical Senses Center and director of the IDOM Translational Research Program. "This year, we plan to have workshops to critique investigators' grant proposals, to make them as strong as they can be," says Volpe.

Many Lines of Inquiry

Here are just a few of the questions into causes and complications currently being explored by Penn's endocrinologists, neuroscientists, pharmacologists, geneticists, epidemiologists, transplant surgeons, psychiatrists, and nutritionists, in the Schools of Medicine, Veterinary Medicine, Arts and Sciences, and Nursing, as well as in The Children's Hospital of Philadelphia:

- What causes insulin-secreting beta cells to fail in Type 2 diabetes?
- What genetic and/or pharmacological interventions could enhance insulin sensitivity?
- Why do infants with low birth weight tend to become obese in adulthood?
- What are the mechanisms within the brain that control calorie intake and expenditure?
- Can changes in the school environment help prevent or delay the onset of Type 2 diabetes in middle school children?

Tracy Bale, Ph.D., assistant professor of neuroscience in the School of Veterinary Medicine, studies how stress drives mice to over-consume high-fat food – braving bright light and open areas, behavior that in the wild would expose them to predation – even when nutritious but less palatable food is available in the dark, safer chamber. This behavior, says Bale, illustrates the powerful attraction that calorically dense foods have.

"When you put animals on high-fat diets and then replace their food with a lower-fat variety, their symptoms suggest

Development Matters



an increased stress state,” she elaborates. Stress, she notes, is well known as a trigger for reward-seeking – or for resuming a temporarily conquered addiction. Bale’s laboratory is also exploring sex-based differences in physiological responses to stress – why females’ stress hormones spike higher and take longer to revert to normal, possibly increasing their predisposition for stress-related diseases such as obesity and depression.

Bale welcomes the interaction and cross-pollination of ideas that IDOM has instigated. “The meetings broaden our thinking, provide a forum to discuss our data, and give fellows and postdocs a chance to make presentations and talk to others outside their own labs.”

Much to Be Done

There’s much going on at Penn, but so much more needs to be done. Lazar readily lists a half-dozen avenues warranting exploration: Stem cell research into generating more insulin-producing islets (Penn is a leader in islet transplantation). Exploring how to harvest islet cells for transplant more efficiently and prevent their rejection. Describing how genes and proteins differ among Type 1 and Type 2 diabetes and “normal” function. “These comparative studies are so important, but the N.I.H. doesn’t tend to fund this kind of exploration, focusing instead on hypothesis testing,” says Lazar. “We need more money to do the ‘risky’ research that helps us generate the hypotheses in the first place.”

There’s also expensive new technology available, such as specialized equipment to measure body fat in mice or the metabolism of fat and glucose in people.

At the top of Lazar’s wish list is funding for a comprehensive mouse laboratory devoted to diabetes where IDOM investigators could conduct their research in proximity to one another and share their observations every day rather than weekly or monthly, to speed the flow of multi-disciplinary solutions to one of the nation’s – and the world’s – most pressing public health problems.

“For the vast majority of people, there won’t be one gene that causes obesity or one gene that causes diabetes – there

Institute for Diabetes, Obesity, and Metabolism

Director: Mitchell A. Lazar, M.D., Ph.D.

Type 1 Unit

Director: Ali Najj, M.D., Ph.D.

Type 2 Unit

Director: Morris J. Birnbaum, M.D., Ph.D.

Obesity Unit

Director: Rex Ahima, M.D., Ph.D.

Cardiovascular Metabolism Unit

Director: Daniel Rader, M.D.

Integrative Research Program

Assistant Director: Stella Volpe, Ph.D.

Translational Research Program

Director: Karen Teff, Ph.D.

will be many, operating in pathways,” he predicts. “It won’t be a case of ‘you have the genes or you don’t,’ but rather that you have them to some degree, which, in combination with environmental factors, will help us predict and help prevent disease onset.

“I believe that people are different and develop diabetes for different reasons – the challenge for us is to identify and understand all those reasons, and devise unique, individualized diets and treatment plans.”

Benaroya Foundation Challenge Grant

The Benaroya family (Larry R. Benaroya, W '72) has generously supported Penn's diabetes research. Now, prompted by the family's desire to motivate additional philanthropic support for finding a cure for Type 1 diabetes, the Benaroya Foundation has announced a \$1.5 million Challenge Grant for the Institute for Diabetes, Obesity, and Metabolism's (IDOM) research into the disease. The challenge requires that PENN Medicine raise \$3 million from new sources. For information on how you can help us meet this challenge, please contact Carol Forte, IDOM's Director of Development, at 215-898-0578.

Supporting Diabetes Education Is a Family Affair

Samuel A. Cann is a trustee of the Stewart Huston Charitable Trust, which supports patient and family education programs at Penn's Rodebaugh Diabetes Center. For Sam, diabetes is personal: The 79-year-old Savannah resident has been a patient at Rodebaugh for 30 years and has nothing but praise for the care he's received for part of that time from Mark H. Schutta, M.D., the Center's Medical Director, for his Type 2 diabetes. And, a few years ago his infant grandniece – whose grandfather, Alexander L. Cann, is also a Huston trustee – was diagnosed with Type 1 diabetes. Says Samuel Cann, "With present advances in the control of blood sugar, she can live a normal life – and may be a Rodebaugh patient herself one day."

With this motivation, Cann felt it was time to champion the diabetes cause with his fellow Huston trustees. "I felt supporting education was important because many patients have trouble understanding the complex medical concepts involved in controlling diabetes and its complications – such as triglycerides, HDL and LDL cholesterol, blood glucose levels," he says. Cann himself is a prime example of how healthy living can control his disease: He rides a stationary bike every day, jogs, and plays tennis, and eats cold water fish such as salmon or sardines most days of the week. "My HDL 'good cholesterol' jumped 20 to 25 points just from adding the fish to my diet," he says.

Alumni Events

You can find out more about these and other upcoming events at <http://www.med.upenn.edu/alumni/events/calendar.html>.

February

Sunday, February 4: Dermatology Reception, 6:00-8:00 p.m., Washington, D.C.

March

Monday – Wednesday, March 5-7: PENN Medicine in Palm Beach

April

Wednesday, April 11: Elizabeth Kirk Rose Women in Medicine Dinner, 6:00-9:00 p.m., Philadelphia

Saturday, April 28: Helen O. Dickens Memorial Dinner, 7:00-10:00 p.m., Philadelphia

May

Friday – Sunday, May 11-13: Medical Alumni Weekend, Philadelphia

Private Funding Supports Serendipitous Research

Morris Birnbaum, M.D., Ph.D., professor in the departments of Medicine and Cell and Developmental Biology, is one in a long line of Penn diabetes investigators to serve as director of the George S. Cox Institute. The Institute, whose sole focus is diabetes research, was established in 1973 through Mr. Cox's will.

Not long ago, Birnbaum serendipitously discovered a link between insulin's regulation of blood glucose and the regulation of lipids. Thanks to the Cox funds, he was able to begin work immediately on studying abnormal lipids in mouse models of diabetes. "People think of diabetes as a disease of blood sugar, but in these mice as in people, the lipids are just as abnormal, and in a sense more life-threatening – because lipid abnormalities are so closely associated with cardiovascular disease," he says. "I was able to put two researchers to work on it right away, and it would have taken years to get government funding."

The Cox Institute has also supported one full-time research fellowship every year since its inception, initiating the careers of more than 30 diabetes investigators.

Recent Gifts

With their \$2.5 million gift, PENN Medicine trustee **Craig L. Dobbin** and his wife, **Elaine**, have created an endowed professorship in the Department of Medicine to honor pulmonologist Robert M. Kotloff, M.D., and senior nurse practitioner Nancy P. Blumenthal, M.S.N, C.R.N.P, C.S.

The Juvenile Diabetes Research Foundation International's \$1.2 million contribution is part of its multi-year \$15.5 million pledge, funding research at PENN Medicine's JDRF-W. W. Smith Charitable Trust Center for Islet Transplantation and JDRF Center for Gene Therapy.

A \$3.3 million planned gift from the **Estate of Mary A. Keetz** to Pennsylvania Hospital has created the Keetz Endowed Research Fund for Parkinson's Disease at Penn's Parkinson's Disease Movement and Disorder Center.

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
3533 Market Street, Suite 750
Philadelphia, PA 19104-3309

'20s

Elizabeth Kirk Rose, M.D. '26, G.M.E. '30, Kennett Square, Pa., celebrated her 105th birthday on May 25, 2006. From 1929 to 1947, Rose taught pediatrics at the School of Medicine; was chief of the division of maternal and child health for the City of Philadelphia's Department of Public Health; and served as an assistant professor in Penn's Department of Public Health and Preventive Medicine for 12 years. The recipient of the School of Medicine's highest honor, the Distinguished Graduate Award, she is also honored through the annual Elizabeth Kirk Rose, M.D., Women in Medicine Dinner.

'50s

Peter J. Jannetta, M.D. '57, G.M.E. '64, former chair of neurological surgery at the University of Pittsburgh, received the K. J. Zulch Prize from the Gertrud Reemtsma Foundation, administered by the Max Planck Society. The prize honors scientific discoveries and continuous excellence in research related to pain surgery. Jannetta is former Secretary of Health of the Commonwealth of Pennsylvania.

Vincent DelDuca Jr., M.D. '59, G.M.E. '63, Wilmington, Del., received the Outstanding Volunteer Clinical Teacher Award from the American College of Physicians in April 2005. He was also honored with the Laureate Award by the Delaware Chapter of the American College of Physicians, which recognizes Fellows and Masters of the College who have demonstrated an abiding commitment to excellence in medical care, education, or research and have served their community, their chapter, and the College itself. DelDuca is a retired chief of hematology at the Christiana Care Health System.

'60s

Fredric L. Hildebrand Sr., M.D. '60, Neenah, Wis., recently retired after practicing in the field of internal medicine and pulmonary disease for 41 years. He is a Fellow of the American College of Chest Physicians and of the American Thoracic Society. During a period of rapid growth, Hildebrand oversaw the merger of several small clinics into what is now a regional medical group, Affinity Medical Group, with more than 200 staff members. He now volunteers at the local free clinic.

H. Richard Winn, M.D. '68, professor of neurosurgery and neuroscience at Mount Sinai School of Medicine, received the 2005 Distinguished Service Award, presented by the Society of Neurological Surgeons at its annual meeting. The Society cited Winn for his accomplishments as leader in research, teaching, and patient care, and for his outstanding contributions to academic neurosurgery in the United States. He is a recognized world leader in the study of the regulation of cerebral blood flow (i.e., how the brain controls its own blood flow) and the treatment of head trauma, stroke, and cerebral aneurysms. He is the editor-in-chief of *Youmans Neurological Surgery* (W. B. Saunders), which he notes is the most widely sold reference textbook of neurosurgery in the world. The fifth edition (2003) was designated "highly commended" by the British Medical Association. Winn was chair of the Department of Neurological Surgery at the University of Washington from 1983 to 2002.

'70s

William G. Woods, M.D. '72, director of the Allac Cancer Center and Blood Disorders Service of Children's Healthcare of Atlanta/Emory University Department of Pediatrics, has been appointed president of the American Society of Pediatric Hematology/Oncology. During his two-year term, Woods will support, advise, and provide strategic leadership to more than 1,000 pediatric hematologists and oncologists. As president, he plans

to continue advocating for children with inherited blood disorders. Woods also serves as an associate chair on the scientific council of the Children's Oncology Group.

'80s

Moiz M. Carim, M.D., G.M.E. '82, Wyomissing, Pa., was named section chief of ophthalmology at the Reading Hospital and Medical Center. He is in private practice specializing in vitreo-retinal diseases at the Carim Eye and Retina Center in Reading.

Elizabeth Genovese, M.D. '82, M.B.A., Bala Cynwyd, Pa., medical director of IMX Medical Management Services, Inc., received the 2006 Meritorious Service Award from the American College of Occupational and Environmental Medicine. She was honored for serving the College as a contributing editor to its journal, *Occupational Medicine Practice Guidelines*; as editor of its supporting newsletter, *APG Insights*; and as a contributing editor for the forthcoming *AMA Guides to the Evaluation of Permanent Impairment, 6th Edition*.

Gary W. Crooks, M.D., G.M.E. '84, Philadelphia, associate professor of medicine at the University of Pennsylvania, was appointed the first holder of the Ruth C. and Raymond G. Perelman Professorship in Internal Medicine. It is the first professorship at PENN Medicine devoted to a full-time clinician.

Rona Woldenberg, M.D. '87, associate director of medical education in the neuroradiology division of the Department of Radiology at North Shore University Hospital, Manhasset, N.Y., is editor-in-chief of Case-in-Point, the on-line unknown case-of-the-day sponsored by the American College of Radiology. Launched in 2005, the site draws about 5,200 people every day, and about 4,000 of them are members of the College. According to Woldenberg, "We are able to share images and discuss them via computer technology, opening the door to extend the opportunity for education."

Nancy A. Simonian, M.D. '88, senior vice president of clinical,

medical, and regulatory affairs at Millennium Pharmaceuticals, Inc., was named to the board of directors of ArQule, Inc., a biotechnology company engaged in the research and development of next-generation, small-molecule cancer therapeutics. At Millennium Pharmaceuticals, where she has worked since 2001, Simonian has led development activities in the areas of oncology and inflammation, overseen more than 40 clinical trials for 12 compounds, and obtained a variety of regulatory approvals. From 1995 to 2001, she was at Biogen, Inc.

Darryl L. Landis, M.D. '89, M.B.A., Winston-Salem, N.C., was recently elected to the board of directors of the American College of Physician Executives. He is a consultant for Mustard Seed Ventures on new business ventures. He has also held numerous other leadership positions, including senior vice president of health intelligence and chief medical officer for Cor-Solutions; vice president of business development for Ingenix; and medical director with United Healthcare of North Carolina.

'90s

Charles V. Clevenger, M.D., Ph.D., G.M.E. '91, who had been an associate professor in Penn's Department of Pathology and Laboratory Medicine, has joined Northwestern University's Feinberg School of Medicine as the Diana, Princess of Wales Professor of Cancer Research. Clevenger earned his B.S., Ph.D., and M.D. degrees from Northwestern. At Penn, he had led the Flow Cytometry Laboratory.

David L. Bartlett, M.D., G.M.E. '93, professor of surgery and chief of the division of surgical oncology in the University of Pittsburgh School of Medicine, has been named the inaugural Dr. Bernard Fisher Professor of Surgery. The professorship is named in honor of the school's Distinguished Service Professor of Surgery. Bartlett, who has been a member of Pitt Med's faculty since October 2001, also serves as director of the David C. Koch Regional Perfusion Cancer Therapy Center.

Alexander A. Parikh, M.D. '93, and **Melinda S. New**, M.D. '93, recently moved to Nashville, Tenn., with their two children. At Vanderbilt University, New is the program director in Ob/Gyn, and Parikh is a G.I. surgical oncologist.

OBITUARIES

Herbert K. Ensworth, M.D. '33, Ithaca, N.Y.; October 21, 1998.

J. Clifford Scott, M.D. '33, Newtown Square, Pa., a retired psychiatrist; March 26, 2006. After earning his medical degree, he joined a family practice in Media, followed by practice in Essex, Conn. During WWII, he was a flight surgeon in the Navy in the Marshall Islands. After discharge, he completed a residency at the Institute of Pennsylvania Hospital and trained in psychoanalysis. For 20 years, Scott was on the staff at Devereux Schools (now Devereux Foundation), a residential treatment program that seeks to provide education and daily living skills for people with emotional, developmental, and behavioral disorders. It was founded in Devon, Pa., by Scott's wife's aunt. Scott served as director of adolescent psychiatry and as medical director there until 1971. Before retiring in 1977, he was a clinical professor at Thomas Jefferson University and served on the staff of the Veterans Affairs Hospital in Coatesville. He was co-author of *Child in the Shadows: A Manual for Parents of Retarded Children* (1960).

Joseph H. Burchenal, M.D. '37, a retired oncologist, Hanover, N.H.; March 8, 2006. After taking internships at New York Hospital and Union Memorial Hospital in Baltimore, he was a research fellow at Harvard Medical School and the Sloan-Kettering Institute. He then joined the faculty of Cornell Medical College, where he ultimately became professor of medicine. Before he retired in 1983, his appointments at the Sloan-Kettering Institute included chief of the division of clinical chemotherapy, vice president for clinical investigation, and vice president of the institute. Burchenal was among the first clinical investigators to induce temporary remission of childhood leukemia through the

use of aminopterin, a folic acid antagonist, as chemotherapy. His wide-scale testing of chemical inhibitors of tumor growth in mice culminated in the discovery of 6-mercaptopurine, a major anti-leukemic agent, in 1951. The success of his research helped spark the development of a highly coordinated program in acute leukemia research at the National Cancer Institute. In 1972, Burchenal shared the Albert Lasker Award for Clinical Medical Research with Dr. Denis P. Burkitt and 13 others. Burkitt had described an aggressive tumor found in East African children, and Burchenal helped develop drugs that led to remissions in two-thirds of the patients. Burchenal's other honors include the David A. Karnofsky Memorial Award from the American Society of Clinical Oncology; the de Villiers Award from the Leukemia Society of America; the American Cancer Society Annual National Award; and the Alfred P. Sloan Jr. Prize from the General Motors Cancer Research Foundation. A member of the American Association for the Advancement of Science, Burchenal was a fellow of the American College of Physicians and a president of the American Association for Cancer Research. He was a prized consultant for the National Cancer Institute for more than two decades. In 2000, Penn's School of Medicine presented him with its highest honor, the Distinguished Graduate Award.

William I. Gefer, M.D. '39, a retired cardiologist, Stamford, Conn.; March 20, 2006. He took his internship and residency in medicine at Philadelphia General Hospital. In World War II, he served as a captain in the Medical Corps of the Army Air Force. Following the war, Gefer went on to become the William J. Mullen Professor of Medicine at the Medical College of Pennsylvania, professor of medicine at Temple University's School of Medicine, chief of medicine at Episcopal Hospital in Philadelphia, and chief of medical service at Philadelphia General Hospital. He also served as a medical director of the Mutter Museum in Philadelphia. In his career, he had also been director of professional services and medical education at St. Joseph Medical Center in Stamford, Conn., and clinical professor of medicine

at New York Medical College. In 1983, he was elected to the Cultural Hall of Fame of South Philadelphia High School. He received awards for distinguished service from both Philadelphia General Hospital and the Medical College of Pennsylvania. Gefer was a Diplomate of the American Board of Internal Medicine, a Fellow of the American College of Physicians, and a Fellow of the American College of Cardiology. Co-author of *Synopsis of Cardiology* (1965), he later published *Quality Living in the Semicircle of Life* (2001).

Dr. Gefer's son, **Warren B. Gefer**, M.D. '74, is professor of radiology at Penn.

Joe Nelson Jarrett, M.D. '39, G.M.E. '43, Port Republic, Md.; April 27, 2004.

Carmen C. Thomas, M.D., G.M.E. '40, Philadelphia; February 11, 2006.

James H. French, M.D. '41, Brundidge, Ala.; July 15, 2005.

Merle S. Bacastow, M.D. '43, Cape Porpoise, Maine; September 2, 2005.

David Sherbon, M.D. '44, Kentfield, Calif.; January 24, 2006.

Robert Warwick Miller, M.D. '46, Bethesda, Md.; February 23, 2006. He took a fellowship in radiation medicine with the U.S. Atomic Energy Commission, which led him to the Atomic Energy Project at the University of Rochester. While there, he developed his etiologic approach in trying to determine the effects of fluoroscopy on children in the pediatric ward. Miller's intervention led to a change in fluoroscopy policy and to a review of the literature on potential hazards of medical radiation to children. In 1953, he became chief of pediatrics of the Atomic Bomb Casualty Commission in Hiroshima, Japan, where he studied the environmental and familial factors for illness and the oncogenic effects of treatment. He went on to serve as chief of pediatrics for the Child Health Survey, a comparative study in Hiroshima and Nagasaki. He also earned advanced degrees in epidemiology and public health from the University of Michigan. Miller spent the rest of his career at the National Cancer

Institute, where he served as chief of the Epidemiology Branch and then as chief of the Clinical Epidemiology Branch. From 1962 on, he specialized in linking childhood cancers to birth defects. As a member of medical advisory committees, Miller also studied the health effects of Agent Orange on Vietnam veterans and later reviewed Russian studies of children exposed to radiation released in the Chernobyl disaster. Miller helped establish the Delaware Valley Combined Tumor Registry, the first population-based cancer registry in the United States. Among his honors are two from the National Institutes of Health: the N.I.H. Superior Performance Award and the N.I.H. Director's Award. Miller also received the Outstanding Service Award from the American Academy of Pediatrics. In 2002, he received the School of Medicine's highest honor, the Distinguished Graduate Award. At that time, he was praised for pioneering "the etiologic approach to the study of disease by the bringing together the principles of epidemiology, genetics, and clinical medicine."

E. Howard Bedrossian, M.D., G.M. '49, Drexel Hill, Pa., a retired ophthalmologist and former associate clinical professor of ophthalmology; January 15, 2006. He earned his medical degree in 1945 from Temple University. After working as an intern at Episcopal Hospital, he served as a flight surgeon in the Air Force from 1946 to 1948. In the 1950s, Bedrossian took over his father's practice in Drexel Hill and later shared the practice with his own son for 23 years, until he retired last year. Bedrossian taught both at Penn (1951-1978) and Thomas Jefferson University. In 2000, he created an endowed professorship, the Babcock Surgical Society Professorship in Surgery, at Temple.

Col. Roosevelt Cafarelli, M.D., G.M. '49, Rochester, N.Y.; December 12, 2004.

Maj. Gen. William A. Boyson, M.D. '50, San Antonio, Texas; December 11, 2005.

Donald Canter, M.D., G.M.E. '50, Sherman Oaks, Calif.; April 25, 2002.



David G. Neander, M.D., G.M. '51, Hernando, Fla.; February 27, 2005.

Thomas J. Kennedy, M.D., G.M. '52, Meadowbrook, Pa.; May 21, 2005.

William E. Copeland, M.D., G.M.E. '53, Columbus, Ohio; January 6, 2006. A professor of obstetrics and gynecology in the College of Medicine at the Ohio State University, Copeland was chief of staff of the Ohio State University Hospitals from 1983 to 1987. In the 1960s, Copeland helped lead the fight to allow fathers in delivery rooms.

Sidney Greenstein, M.D. '53, Rydal, Pa.; February 23, 2006.

Margaret Gray Wood, M.D., G.M.E. '53, Philadelphia, emeritus professor of dermatology; February 9, 2006. She earned a medical degree in 1948 from the former Women's Medical College of Pennsylvania before completing a residency in dermatology at Penn. In 1968, she became an assistant professor of dermatology in Penn's School of Medicine, where she later served as acting chair of the Department of Dermatology (1980-82). She was the 1989 recipient of the Rose Hirschler Award given by the Women's Dermatologic Society, where she was a lifetime member. She was president of the alumnae association of Women's Medical College for two years. When the College closed in 2004, Wood attended a protest and expressed her outrage from her wheelchair.

Norman J. Quinn, M.D., G.M.E. '54, Gwynedd Valley, Pa.; January 13, 2006. For more than 40 years, Quinn maintained a pediatrics practice in Plymouth Meeting and was on the staff of Montgomery Hospital in Norristown. He was chief of pediatrics there when he retired in the 1990s. He donated his services as an attending physician for 30 years at St. Mary's Villa for Children and Families. An alumnus of Thomas Jefferson University, he later helped his class raise a million dollars for the school. He served on Jefferson's board for six years and was president of its alumni association in 1982.

D. Stratton Woodruff Jr., M.D. '54, Haverford, Pa.; February 17, 2006. He interned at Philadelphia General Hospital and completed a residency at Presbyterian Hospital. During World War II, he served in the Navy Medical Corps aboard the *U.S.S. Pensacola* in the South Pacific. For 18 years, he practiced family medicine in Gladwyne with his wife, Frieda Wagoner Woodruff, M.D. '55. In 1975 he joined the Family Practice Center in Bryn Mawr and headed its residency program. After retiring as program director in 1988, he continued to treat patients at the center and to train residents until 1993. A physician at Bryn Mawr College for 28 years, Woodruff had been an associate professor of family medicine at Thomas Jefferson Medical School. He was a founding member of the residency assistance program of the American Academy of Family Practice and served on its residency review committee. He served for more than 15 years on the Board of Health of Lower Merion Township.

Edwin F. Comstock Jr., M.D. '58, Olean, N.Y.; March 23, 2000.

Andre C. Blanzaco, M.D. '59, North Wales, Pa., a retired obstetrician-gynecologist; December 17, 2005. He took his internship at Chestnut Hill Hospital. After serving in the Army in Virginia, he established a practice in Germantown. He was on the staff of Chestnut Hill Hospital, where he was chief of obstetrics and gynecology for 15 years before retiring in 2002. At the 50th reunion of his undergraduate class of Ursinus College, he received a distinguished alumnus award.

Harold M. Reynolds Jr., M.D. '76, Oakland, Calif.; February 2, 2006.

FACULTY DEATHS

E. Howard Bedrossian, M.D. See Class of 1949

Margaret Gray Wood, M.D. See Class of 1953.



Lessons That Last

Stanton P. Fischer, M.D. '56, had great respect for the School of Medicine years before he ever set foot on campus. His father, an ophthalmologist, took a graduate course at the School and came away deeply impressed with Penn's method of teaching. Fischer recalls that his father admired Penn's focus on "learning how to think for yourself, and not memorizing arbitrary facts."

Fischer knew he wanted to attend the School his father raved about – and after enrolling in 1952, he discovered the same enriching, mind-expanding environment his father had always spoken of. Fifty years later, Fischer cites commitment to learning as one of the "tools" that the School of Medicine taught him. "Even decades into your career, you never stop learning," he says.

Fischer and his wife of 55 years, Marie, recently transformed this gratitude into a bequest to the School of Medicine. A bequest is a gift of cash or property made through a will or living trust – or by a simple amendment to an already existing will or trust. Charitable bequests are generally deductible for estate tax purposes.

Fischer began his practice as a general internist at the Kelsey-Seybold Clinic in Houston. At 77, he still practices there three days a week. His career highlights include having a private practice both as a general internist and as a pulmonologist, serving as a Senior Aviation Medical Examiner for the U.S. Department of Transportation, and being a consultant to the Johnson Space Center for the astronaut selection program.

Over the years, Fischer's giving has been largely directed towards scholarship aid. As a class agent for the Class of 1956, he has been active drumming up support among his fellow classmates, encouraging them to establish planned gifts or scholarships.

"We believe we can help these students through these gifts," he says. "When they are able, they will give – it is a self-perpetuating cause."

As a member of his reunion committee and other alumni activities, Fischer has earned the respect of his classmates. That respect was shown when they nominated him to address the Class of 2006 as the 50th Reunion Speaker. The theme of his remarks: lifelong learning.

"A medical degree from Penn is priceless," he told the newly minted M.D.s – and reminded his classmates. "Use it well and never stop learning. Even though you have graduated, you never stop being a student."

The Fischers' bequest is just one of a multitude of 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 e-mail: mmerz@ben.dev.upenn.edu.

Paragons

As each academic year begins, the emphasis often seems on the new. New students arrive, our departments welcome new faculty members, and so forth. We celebrate renewal and potential that is yet largely untapped. Here I would like to recognize members of our faculty who have worked at a high level of achievement for many years – and who have been honored recently for their accomplishments. Recruiting the best people is crucial to our school's continued success. Just as essential, however, is to nurture and retain those faculty members who have served as wonderful examples for students and younger colleagues as researchers, clinicians, educators, or some special combination of all three.

My first exemplar is Aaron T. Beck, M.D. This fall, he received the Lasker Award for Clinical Medical Research. Sometimes described as America's Nobel Prizes, the Lasker Awards are presented for outstanding contributions to basic and clinical medical research. Dr. Beck, now an emeritus professor of psychiatry, was recognized for developing cognitive therapy, which is credited with transforming the understanding and treatment of many psychiatric conditions. Through cognitive therapy, patients are taught to identify unrealistic negative perceptions that govern their behavior and then to challenge these distorted thoughts.

Dr. Beck's ties to Penn go back to 1954, when he started as an instructor in psychiatry. In 1975, he founded a mood clinic at HUP, which developed into the Center for Cognitive Therapy.

The Lasker Award is not the only major honor Dr. Beck has received recently. To cite two examples, he also received the Lifetime Achievement Award from the American Foundation for Suicide Prevention and the 2006 Adolf Meyer Award, the most prestigious honor presented by the American Psychiatric Association.

Peter C. Nowell, M.D. '52, the Gaylord P. and Mary Louise Harnwell Professor of Pathology and Laboratory Medicine, is

Robert Clink



another Penn recipient of a Lasker Award. He received it in 1998 for his research, done in collaboration with the late David Hungerford, that led to the discovery of the "Philadelphia chromosome." It was the first evidence that abnormal chromosomes can cause cancer. This fall, our School honored Dr. Nowell with a symposium, drawing its stellar panelists from Penn and elsewhere. In addition, we have established an endowed fund in Dr. Nowell's name.

Dr. Nowell is also known for his inspiring teaching and counts the University's Lindback Award for Distinguished Teaching among his honors. Others include the Parke-Davis Award and the Rous-Whipple Award of the American Association of Pathologists; the Outstanding Investigator Grant from the N.I.H.; and the Robert de Villiers Award of the Leukemia Society of America. He is also a member of the National Academy of Sciences.

Dr. Nowell, who joined our faculty in 1956, was the first director of the University of Pennsylvania Cancer Center.

Its third director, John H. Glick, M.D., the Leonard and Madlyn Abramson Professor of Clinical Oncology, has just stepped down as director of what is now called the Abramson Cancer Center of the University of Pennsylvania. When Dr. Glick was appointed to the position in 1985, the Center included 120 faculty members (primarily from the School of Medicine), and its total funding for cancer research was \$10 million a year. Today, the Abramson Cancer Center has more than 300 members from eight University schools and 41 departments; its grant funding for cancer research and training has risen to

more than \$180 million a year. Under Dr. Glick's direction, the Abramson Family Cancer Research Institute was established in 1997. He has also been one of the staunchest campaigners for the Perelman Center for Advanced Medicine, set to open in 2008. Dr. Glick leaves things in excellent shape for his successor as head of the Abramson Cancer Center, Craig B. Thompson, M.D. (See pp. 2-3)

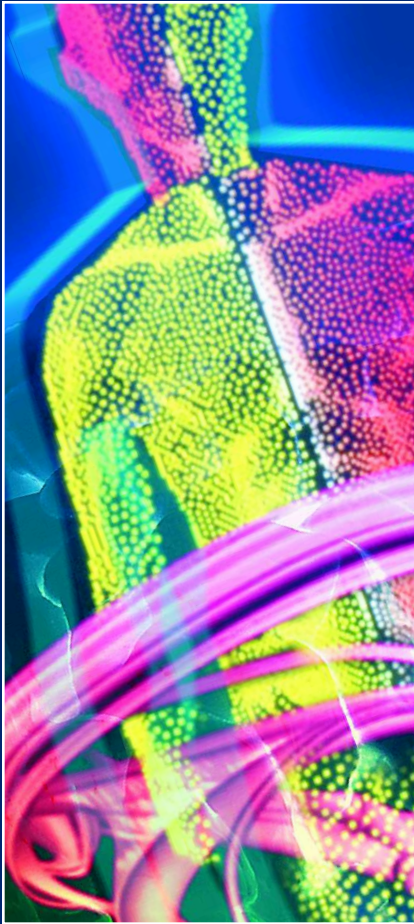
I am happy to say that Dr. Glick will remain very active in our institution. In his new role as Vice President of the Health System and Associate Dean for resource development in the School of Medicine, he will use his talents as an advocate and fund-raiser to increase external support for our many initiatives.

Helen C. Davies, Ph.D., joined our Department of Microbiology in 1965. Each spring, the graduation ceremonies hardly seem complete without recognition of her extraordinary teaching skills and rapport with the medical students. This year, Dr. Davies received the Medical Student Government Teaching Award for the 16th time. There is no other faculty member who comes close. She is widely known for using music in her teaching: she puts new words to familiar melodies, making important information about infectious diseases easier to remember. (In Dr. Davies's hands, the Beatles' "Yesterday" becomes "Leprosy"!) She is also known for her terse exhortation to one and all: "Wash your hands!"

It is not only our medical students who have recognized Dr. Davies's abilities. In 1977, she received the University's Lindback Award. More recently, she received the National Golden Apple Award for Teaching Excellence, presented by the National Medical Students Association. Only one of these awards is given each year.

Four senior members of our faculty – all of them with a wonderful record of sustained service to our school. ▀

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



With R. Nick Bryan, M.D., Ph.D., at the helm, Penn's Department of Radiology has weathered some difficult times and undergone substantial growth and development. Armed with an array of cutting-edge imaging equipment, Penn radiologists are seeing more patients and advancing knowledge in the field. Residencies and fellowships are highly sought after. Among the nation's radiology departments, Penn's remains near the top in receiving research funding from the National Institutes of Health.

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