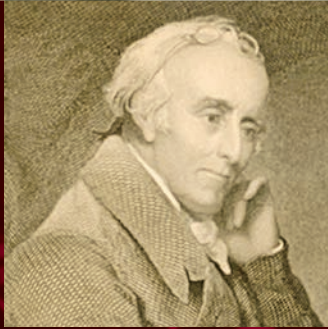


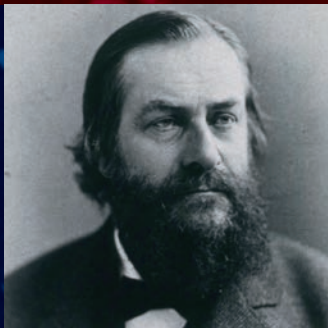
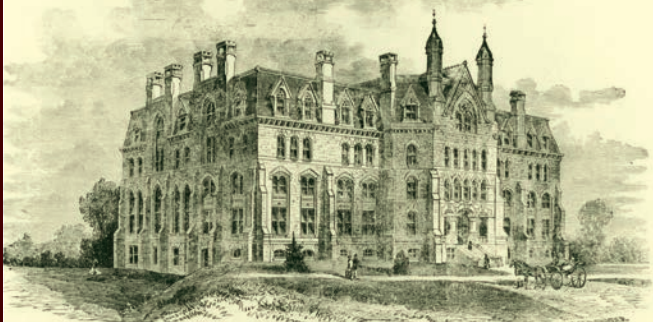
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PENN Medicine

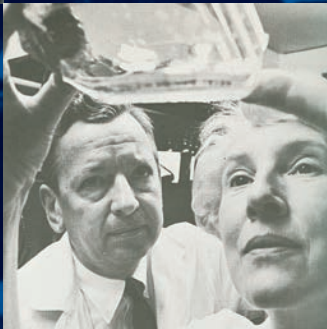
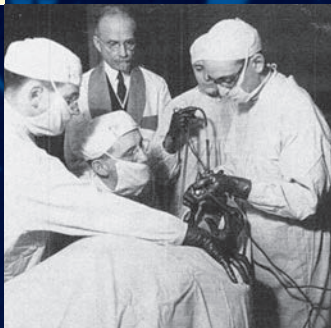
2015



1765



THE NATION'S FIRST MEDICAL SCHOOL TURNS



250

To Spread the Light of Knowledge:
Commemorative Book Celebrates the Perelman
School of Medicine's Milestone Birthday

Class Notes from America's First Medical Students

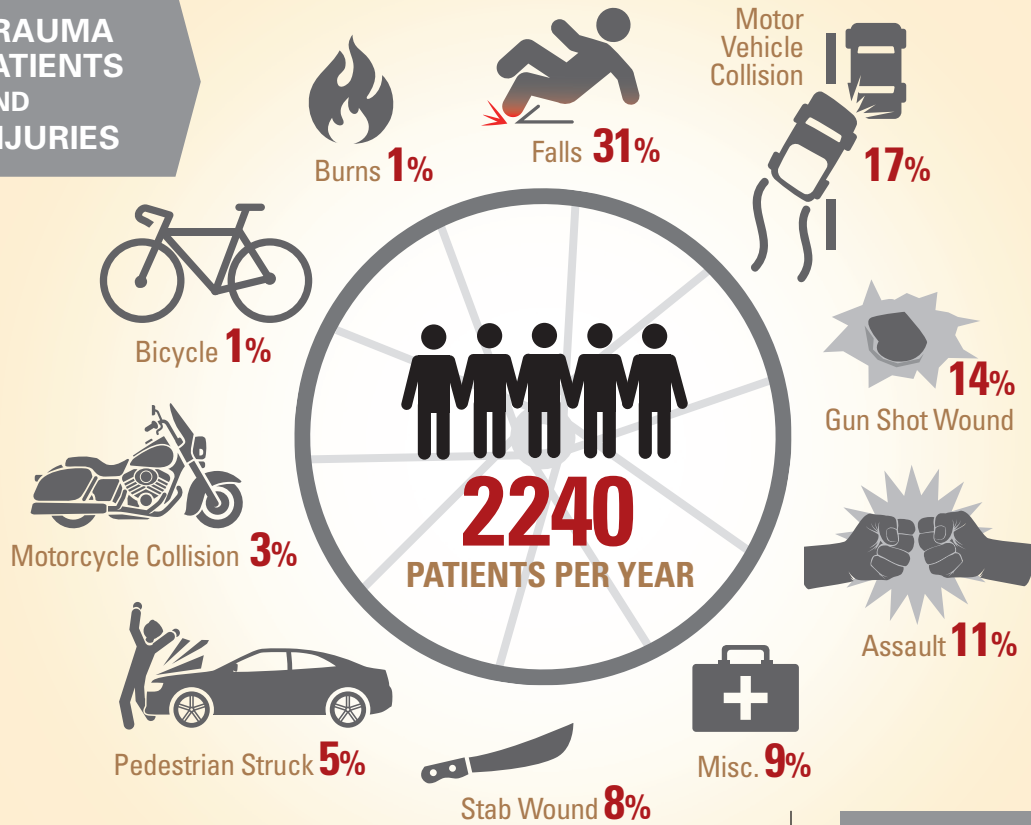
From Burma to Penn: A Family Saga



BY THE NUMBERS: PENN MEDICINE TRAUMA PROGRAM

Penn Medicine's Level 1 Regional Resource Trauma Center, widely recognized as a model program for other hospitals, recently confronted an unprecedented challenge: to move its entire operation from the Hospital of the University of Pennsylvania into a new state-of-the-art building at Penn Presbyterian Medical Center. After three years of planning, its new home is the Pavilion for Advanced Care, a facility of 178,000 square feet. Here is a pictorial glimpse at the types of injuries Penn Medicine's trauma team cares for each year, and the expertise that makes all those "great saves" possible.

TRAUMA PATIENTS AND INJURIES

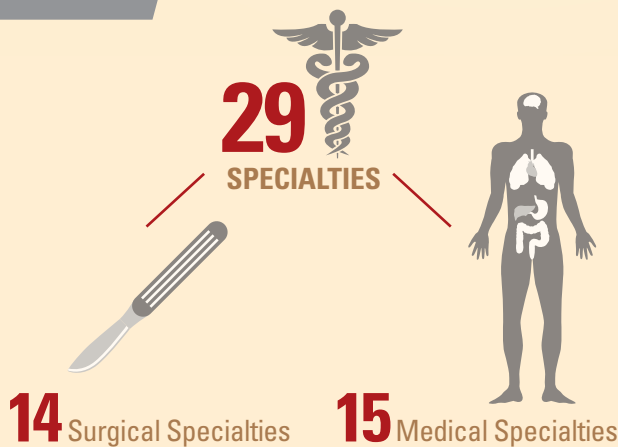


97% Survival Rate

Penn's Trauma Program offers the most advanced specialty care in the region, resulting in exceptional outcomes for patients that rank above national averages.

MULTI-DISCIPLINARY APPROACH

Caring for critically injured patients requires a collaborative approach involving trauma surgeons and emergency medicine physicians, as well as dozens of other specialties.



TRAINING

Penn Medicine trains surgeons in all phases of care using the latest techniques for the critically ill and injured surgical patient. Of the 100+ fellows trained at Penn Medicine since establishing the fellowship program in 1989, roughly 50 percent are chiefs, chairs and program directors in trauma programs throughout the country and internationally.





 **PENNMEDICINE**
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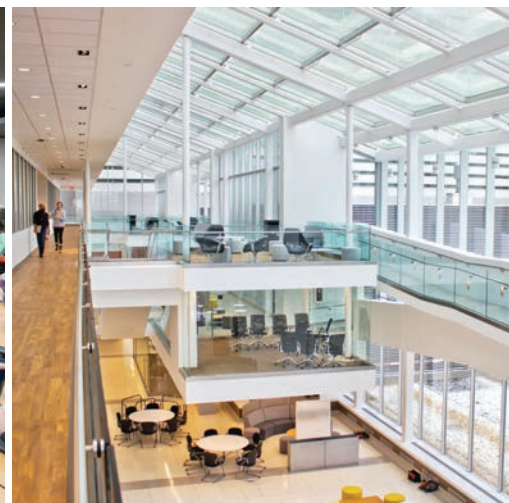
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- 6 The Nation's First Medical School Turns 250**
By Carol Benenson Perloff
To Spread the Light of Knowledge celebrates the first 250 years of the Perelman School of Medicine, as it progresses from a few lectures in borrowed space to an institution where students learn on high-tech devices, physicians practice robotic surgery, and researchers explore the human genome. Inside this issue: an excerpt from the forthcoming book.
- 18 From Burma to Penn: A Family Saga | By Art Carey**
When C. C. Chu, M.D., met and befriended Penn's legendary I. S. Ravdin at the 20th General Hospital in India during World War II, he set in motion a relationship that has lasted from then until now.
- 24 A Pair of Visionary Deans | By John Shea**
During a celebratory year of looking back, it's fascinating to see how the leaders of Penn's medical school have sometimes seemed to anticipate what lay ahead. Two such deans were Samuel Gurin and Alfred Gellhorn.
- 28 What They Learned in the 1760s | By John Shea**
A recent gift to the University of Pennsylvania offers a glimpse for the first time of what the earliest medical students in America were taught in lectures. Their lecturers included John Morgan and William Shippen Jr.
- 32 The Three Passions of Howard Frumkin | By Marshall Ledger**
Now dean of the School of Public Health at the University of Washington, Howard Frumkin, M.D. '82, has pursued his interest in environmental health. He has called for urban planners, architects, and others to work together in creating "healthier places for people."

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Visit Penn Medicine's web site: <http://www.uphs.upenn.edu/news/publications/PENNMedicine/>



The School of Medicine Moves into the High-Tech Jordan Center

As the Perelman School of Medicine – the nation’s oldest medical school – celebrates its 250th birthday this year, it continues to look forward as well. With the recent opening of the Henry A. Jordan M’62 Medical Education Center, Penn’s medical school is among the first in the nation to fully integrate education facilities with active clinical care and research lab space, placing students in the midst of the dynamic practice of medicine.

Located just steps away from the Smilow Center for Translational Research and the Perelman Center for Advanced Medicine, “the Henry Jordan Center will continue Penn’s tradition of close collaboration between faculty and students, and support the Perelman School of Medicine’s mission to embody the highest standards in education, research and patient care,” said J. Larry Jameson, M.D., Ph.D., dean of the Perelman School of Medicine and executive vice president of the University of Pennsylvania for the Health System. “It is ideally suited to play a prominent role in advancing innovation in every aspect of medicine.”

The 55,000-square-foot Jordan Center will offer state-of-

the-art technology. It includes recording and simulcast capabilities to support global conferences, telemedicine, and the creation of online courses and lectures available to millions across the globe. Such technologies will facilitate constant collaboration between Penn Medicine laboratories and other schools, centers, and institutes. Two flexible, technology-rich learning studios of 3,000 square feet can be converted into smaller spaces, and an additional eight wired classrooms form the core of the educational space.

The building is named both in recognition of the legacy of the late Henry A. Jordan, M.D. ’62, a former member of the medical school faculty, and in honor of the Jordan family’s whole-hearted support of the center. “Henry was passionate in his advocacy on behalf of Penn Medicine,” said Gail Morrison, M.D. ’71, G.M.E. ’76, senior vice dean for education, professor of medicine, and director of academic programs for the Perelman School of Medicine. “He saw in our faculty and students a very bright future for medicine.” ☐

Wanted: New, Safer General Anesthetics

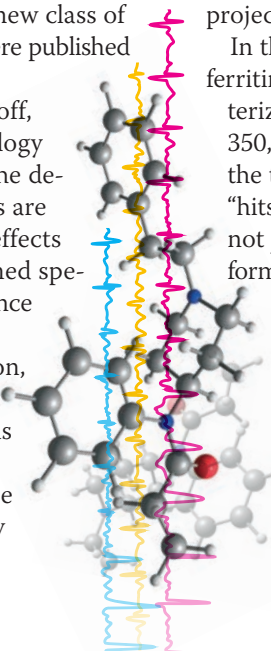
Penn Medicine researchers have found the first new class of novel anesthetics since the 1970s. Their findings were published in February issue of *Anesthesiology*.

Leading the new research is Roderic G. Eckenhoff, M.D., the Austin Lamont Professor of Anesthesiology and Critical Care and vice chair for research for the department. Eckenhoff believes that new anesthetics are needed because current ones have a host of side effects that can be dangerous if not administered by trained specialists. “Our previous work looked at the importance of ion channels as anesthetic targets. Despite the clear role for ion channels in normal brain function, little is known about how they interact with anesthetics. We have therefore used simplified versions of ion channels as surrogates to understand anesthetic action.” One such surrogate turned out to be ferritin, an abundant natural protein that was easy

for the team to characterize and that made this drug discovery project possible.

In this study, the team first miniaturized an assay based on ferritin and a drug-like molecule they had previously characterized, aminoanthracene, to test the ability of more than 350,000 compounds to behave like anesthetics – at least in the test tube. The researchers then had to validate that the “hits” from this assay behaved like anesthetics in an animal, not just in a test tube. Through this “secondary” assay, performed by Andrew McKinstry-Wu, M.D., an instructor in the Department of Anesthesiology and Critical Care, two of the compounds were identified as effective and non-toxic anesthetics in mice. In addition, both were of a novel chemical class, completely unrelated to any current general anesthetic.

“Our goal was to identify compounds with high potency, but low toxicity” explained Eckenhoff. “But we are a long way from getting these drugs into people.” ☐



Transitions

Jonathan Epstein, M.D., the William Wikoff Smith Professor of Cardiovascular Research

who serves as chair of the Department of Cell and Developmental Biology and scientific director of the Penn Cardiovascular Institute, was appointed executive vice dean and chief scientific officer



of the Perelman School of Medicine, effective July 1, 2015. **Glen Gaulton**, Ph.D., who currently holds this role, will assume new responsibilities at Penn involving the domains of global health and the institution's strategy of broader global engagement.

Epstein's research focuses on the molecular mechanisms of cardiovascular development and their implications for understanding and treating human disease. He is an elected member of the American Academy of Arts and Sciences and of the Institute of Medicine and was a founding co-director of Penn's Institute for Regenerative Medicine. Epstein's honors include the Outstanding Investigator Award from the American Federation for Medical Research. An Established Investigator of the American Heart Association, he has served as president of the American Society for Clinical Investigation.

Gaulton's contributions to Penn Medicine research and research training are wide-ranging. During his tenure as vice dean and chief scientific officer, sponsored National Institutes of Health program research has grown 128 percent, from \$175 million to \$399 million, with equally impressive growth in corporate funding. He was an early champion of



translational research, and the Penn Cardiovascular Institute, the Institute for Diabetes, Obesity and Metabolism, the Institute for Translational Medicine and Therapeutics, and the Center for Orphan Disease Research and Therapy were all conceived and initiated under Gaulton's sponsorship, as was the University-wide Center for Public Health Initiatives. He expanded the medical Scientist Training Program and also planned and implemented the biomedical post-doctoral training program. In addition, he was a leader in developing global health education and research initiatives on campus and in China and Africa.

Under Doubeni's leadership, the department will create two divisions: Family Medicine and Community Health. Family Medicine will focus its efforts on strengthening the department's clinical care to pediatric, adolescent, and adult patients in the local community. Community Health will seek to expand research activities in informatics, population health management, and the development of new

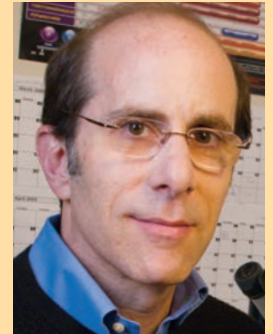
Chyke A. Doubeni, M.D., M.P.H., has been named chair of the Department of Family Medicine and Community Health. Board certified in both family medicine and general preventive medicine, Doubeni is a nationally recognized clinical epidemiologist/health services researcher. He earned his M.D. degree from the University of Lagos, Nigeria, and completed a fellowship at the Royal College of Surgeons of England. In 2010, Doubeni received a Presidential Early Career Award for Scientists and Engineers for his work on cancer screening, comparative effectiveness research, mentoring, and community service. His research focuses on disease prevention by identifying and mitigating individual risk of chronic illnesses, including cancer.

Under Doubeni's leadership, the department will create two divisions: Family Medicine and Community Health. Family Medicine will focus its efforts on strengthening the department's clinical care to pediatric, adolescent, and adult patients in the local community. Community Health will seek to expand research activities in informatics, population health management, and the development of new



models for transitions of care. It will also help the department strengthen and broaden community partnerships.

Kenneth S. Zaret, Ph.D., was appointed director of the Institute for Regenerative Medicine, a locus for interdisciplinary research involving faculty from more than 25 departments in five schools. He succeeds John Gearhart, M.D., the founding director. Formerly the institute's associate director, Zaret is also the co-director of the Epigenetics Program and a nationally renowned leader in gene regulation, chromatin structure and developmental and stem cell biology. As director, Zaret seeks to create important scientific and clinical advances especially in the areas of digestive tissues regeneration, cancer diagnosis and targeting, and skin repair, with additional focus on musculoskeletal, nervous system, and cardiovascular repair.



Zaret's research focuses on understanding how genes are activated to specify different cell types during embryonic development. His laboratory discovered a basis for the normal path of development in different tissue types. Recently, his lab used stem-cell technology to reprogram human pancreatic cancer cells to develop an experimental model for recreating and studying early stages of the disease.

Zaret received a MERIT award from the National Institute of General Medical Sciences Council and the Hans Popper Basic Science Award from the American Association for the Study of Liver Diseases and the American Liver Foundation. He is a Fellow of the American Association for the Advancement of Science.

James M. Metz, M.D., G.M.E. '00, was named interim chair of the Department

Continued on p. 4

Continued from p. 3

of Radiation Oncology, effective immediately. He succeeds former chair Stephen Hahn, M.D., who is now chair of Radiation Oncology at Texas M. D. Anderson Cancer Center. The search for a permanent replacement is under way.

Metz, who joined the Penn faculty in 2000, is the Morton M. Kligerman Professor of Radiation Oncology.

James M. Wilson, M.D., Ph.D., has been appointed director of the Center for Orphan Disease Research & Therapy. He succeeds Lee Sweeney, M.D., the center's first director, who accepted a new role at the University of Florida. The interdisciplinary center is focused on discovering novel treatments for orphan diseases.



A professor of pathology and laboratory medicine in the Perelman School of Medicine, Wilson has led an effort to develop the field of gene therapy since

coming to Penn in 1993. More recently, his laboratory discovered a family of viruses from primates that could be engineered to be very effective vectors – vehicles for transferring genes. Wilson was the second president of the American Society of Gene Therapy. Last year, he received two honors from the medical school: the Jane M. Glick Graduate Student Teaching Award and the William Osler Patient-Oriented Research Award.

Honors and Awards

Deborah A. Driscoll, M.D., the Luigi Mastroianni Jr. Professor and chair of the Department of Obstetrics and Gynecology, is the recipient of the 2014 FOCUS Award for the Advancement of Women in Medicine. She was cited for her outstanding advocacy and leadership on behalf of women faculty and trainees as well as for her exemplary roles as researcher, educator, and



clinician dedicated to the highest quality of compassionate and comprehensive women's health care. According to J. Larry Jameson, M.D., Ph.D., dean of the medical school, "Driscoll's remarkable impact on women at Penn, and on Penn Medicine overall, exemplifies the purpose and spirit of the FOCUS award."

Robert A. Aronowitz, M.D., G.M.E. '88, a physician and University historian, was elected a member of the Institute of Medicine, one of the nation's highest honors in the field. His election brings Penn Medicine's total members to 67.

Chair of the Department of History and Sociology of Science in the School of Arts & Sciences, Aronowitz also holds an appointment in the Perelman School of Medicine. His research interests center on the history of medicine and epidemiology and the role that risk and efficacy have played in driving trends and outcomes in health care. Among his books is *Unnatural History: Breast Cancer and American Society*. Earlier this year, Aronowitz was honored with the Jacob Ehrenzeller Award, given to former residents of Pennsylvania Hospital who have excelled in their fields. □

An Effort to Prevent Genetic Blindness

Penn's expanded relationship with Spark Therapeutics, a late-stage gene therapy company, could lead to developing treatments for rare genetic conditions that can cause blindness.

As part of this new relationship, Penn will be one of the clinical sites for a trial to evaluate the treatment of choroideremia (CHM), a rare genetic eye disorder that causes progressive vision loss in males and ultimately leads to blindness. The trial, designed to assess the safety and preliminary efficacy of sub-retinal administration of SPK-CHM, is led by Albert M. Maguire, M.D., professor of ophthalmology, and Tomas S. Aleman, M.D., assistant professor of ophthalmology. They will build on the findings of earlier trials of Spark's therapy known as SPK-RPE65, which has been observed in clinical trials to improve vision in patients who have mutations in the RPE65 gene.

"This expanded strategic relationship between the two organizations is representative of Penn's strong commitment towards direct engagement with the private sector to advance promising technologies," said John Swartley, Ph.D. He is the University's associate vice provost for research and executive



director of the Penn Center for Innovation, the University's commercialization center that works with the private sector to foster research and development collaborations.

"I am thrilled to now be able to test our gene therapy treatments with the potential to help the many men living with this disorder," said Jean Bennett, M.D., Ph.D., the F. M. Kirby Professor of Ophthalmology and director of the Center for Retinal and Ocular Therapy. □



PAC'ing It Up and Moving to PPMC

After three years of careful planning – with input from hundreds of people across multiple disciplines – the Pavilion for Advanced Care (PAC) officially opened its doors in January at Penn Presbyterian Medical Center. The 178,000-square-foot facility, the new home of Penn Medicine's Level 1 Regional Resource Trauma Center, brings together critical care specialties, surgical services, trauma/emergency services, and radiology in a single centralized location, raising care of the critically ill and injured patients to a new level.

According to C. William Schwab, M.D., of Trauma and Surgical Critical Care, unlike what's found in other hospitals, PAC is designed around the flow of these patients. (Schwab created Penn's Trauma Center in 1987.) The emergency department occupies the ground floor in the new six-story facility; directly above are the ORs, ICUs, and, atop the building, the helipad, all just a single elevator ride away.

The ED's concourse provides consolidated pre-admissions testing and medical imaging services. PAC's trauma center is the first in the nation to have a CT that performs a body scan in eight seconds. The standard takes from two to five minutes. The John Paul Pryor, M.D., FACS, Shock Trauma and Resuscitation (STAR) Unit – with its five bays – is the largest known design dedicated to trauma resuscitation. With 14 feet between each of the bays – four more feet than at HUP – it provides additional space for the multiple members of the trauma team to work. In addition, the STAR unit is integrated with two other large emergency resuscitation rooms.

Two cameras mounted on the ceiling allow easy access to each of the bays, without disturbing the trauma team or the patient. A digital plate slides into the stretcher beneath the patient, and the image goes directly to the reading room or x-ray station in the ER.

A new suite of surgical services provides a centralized admissions area and lounge for all surgical patients and their guests and includes a 16-bay surgical prep area as well as a 16-bay post-surgical recovery suite, immediately adjacent to the existing operating rooms.

Three state-of-the-art critical care units – including a designated Heart and Vascular unit, and PPMC's first neurosurgical

and neurocritical care inpatient units – increase capacity by more than 30 beds. Each patient room features equipment on booms for easy access and maneuvering, as well as ceiling lifts for patient and staff safety. There is also a family area, with either a fold-out couch or chair that turns into a bed. Each of the three ICUs is "linked" to its general care unit on the same floor in the Cupp Pavilion via a bridge. The connection provides an easy transition for families whose loved ones have moved out of the ICU to a general care unit and helps improve patient flow.

An oversized helipad on the roof of the PAC is equipped with self-cleaning and snow-melting technology. PennSTAR flight teams have direct and immediate elevator access to the trauma and resuscitation bays.

HUP's Emergency Department will continue to be a full-service ED, equipped and staffed to handle more than 60,000 visits each year. HUP will also remain Penn Medicine's home for specialty emergency services, such as the most advanced cardiac resuscitation techniques, hyperbaric medicine for carbon monoxide poisoning, and medical toxicology expertise for poisoning and adverse effects of drugs. ▢



Penn Med in the Top Five

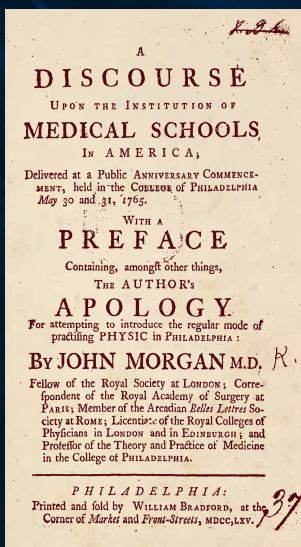
The Perelman School of Medicine has been ranked among the top five research-oriented medical schools in the United States for the 18th year in a row. According to the annual medical school survey in *U.S. News & World Report's* "Best Graduate Schools" report, Penn Medicine is ranked #5.

The Perelman School also ranked among the nation's top medical schools in five areas of specialty training, including a first-place ranking in Pediatrics and honors in Women's Health (#5), Drug/Alcohol Abuse (#6), Internal Medicine (#6), and AIDS (#7). The school is also tied for #12 in the rankings of medical schools specializing in primary care. ▢

“You will be in a condition to practice the healing arts with skill and reputation, and to transmit your knowledge, and the benefits thereof, to a succession of others.”

—John Morgan, *Discourse Upon the Institution of Medical Schools in America*, 1765

THE NATION'S FIRST MEDICAL SCHOOL TURNS 250



To Spread the Light of Knowledge, a full-color, limited-edition book commissioned to celebrate the 250th birthday of the Perelman School of Medicine, chronicles the institution's fascinating history: from its beginning as a few lectures given in borrowed space to the extensive curriculum, research, and multidisciplinary clinical practice within today's University of Pennsylvania Health System. Its colorful prose and images – including many archival documents, paintings, and photographs never previously compiled – track the canon of therapies offered to patients, from the 18th century's handful of primitive and sometimes harmful procedures, such as bloodletting, to today's robotic surgery and gene therapy. The book, written by Carol Benenson Perloff and designed by Stark Design, will be published this spring. This advance excerpt provides a glimpse inside its covers.

Image Text: Morgan's *Discourse Upon the Institution of Medical Schools in America*; Delivered at a Public Anniversary Commencement, held in the College of Philadelphia May 30 and 31, 1765.

Image Background: Joseph Leidy (M 1844), lecturing on anatomy in the Medical Hall amphitheater, 1886.

To Spread the Light of Knowledge will be available for pre-sale online this spring. For more information and to join our mailing list, visit <http://bit.ly/PSOM250>.

1789

Course of instruction in Medical Department is increased to two years and the Doctor of Medicine (M.D.) replaces the Bachelor of Medicine degree.

1793

Penn medical faculty and their apprentices tend to the city's victims of the yellow fever epidemic. Some lose their lives to the disease.

1805

Philip Syng Physick, the "father of American surgery," who is responsible for many innovations in surgical techniques and instrumentation, becomes Penn's first professor of surgery, separating surgery from anatomy and midwifery.

In the fall of 1765, two forward-looking physicians, John Morgan and William Shippen Jr., began lecturing at the first medical school in North America – part of the College of Philadelphia, forerunner of the University of Pennsylvania. Before then, American physicians received their medical education as apprentices to practicing physicians, thereby limiting their knowledge and skills to those of their mentors, and from scarce textbooks published in Europe. Those with means, including Morgan and Shippen, may have studied abroad at the great centers of medical education in Edinburgh, London, and Paris. The University of Pennsylvania changed those paradigms and transformed medical education in this part of the world.

In 1765, the College of Philadelphia was located on the west side of Fourth Street, between Market and Arch streets. That first campus was situated in the heart of the colonial city. On May 30-31, 1765, the College of Philadelphia held its public Commencement exercises.



John Morgan, portrait miniature in a pendant, front and back, c. 1790.



Caspar Wistar's dissection kit, c. 1808. *Courtesy Wistar Institute Archives*

Over the span of two days, John Morgan, a recent graduate of the University of Edinburgh, delivered his hour-and-a-half-long *Discourse Upon the Institution of Medical Schools in America*. He stated his case for establishing a medical school and outlined the requisites for a proper medical education.

William Shippen Jr. studied medicine abroad for three years: two in London, with the city's most prestigious surgeon-anatomists and attending hospital wards, and one year at the University of Edinburgh, from which he earned his medical degree. In 1762 Shippen began lecturing in Philadelphia from an anatomical theatre he devised in a building on his father's Fourth Street property – coincidentally, located just down the same block from the College of Philadelphia.

1807

An addition to the University's Ninth Street building, which includes a large anatomic theatre, consolidates all the medical disciplines at one location. The Medical Annex is enlarged and renovated in 1817.



BENJAMIN RUSH

1746-1813



Pennsylvania Hospital, Eighth and Pine streets. William Birch print, c. 1800. Founded in 1751 as the first hospital in the Colonies, it also became the first place to provide clinical instruction to the first medical students in what would become the United States. As of 1767, requirements for a Penn medical degree included one year attending the practice of the hospital. *Courtesy Pennsylvania Hospital Historic Collections, Philadelphia.*

The College appointed Morgan the nation's first professor of medicine and Shippen its first professor of anatomy, surgery, and midwifery. Classes commenced in November 1765; three years later, the Trustees awarded the first medical degrees. Around the same time, they appointed Adam Kuhn and Benjamin Rush to the faculty. Morgan's ambitious vision was off to an auspicious start.

Benjamin Rush attended the lectures of Morgan and Shippen at the newly founded Medical Department at the College of Philadelphia, but received his medical degree from the University of Edinburgh. He returned to Philadelphia in 1769 to begin private practice, treating mainly the poor. The College Trustees soon appointed him professor of chemistry. After one year at the lectern, Rush published *A Syllabus of a Course of Lectures on Chemistry*, the first American text on the subject. Rush represented Pennsylvania in the Continental Congress and became the only person with a medical degree to sign the Declaration of Independence.

As surgeon at Pennsylvania Hospital, Rush made inroads in the humane treatment of psychiatric patients. In 1786 he organized the Philadelphia Dispensary to provide medical care for the poor. When many physicians fled the city during the 1793 yellow fever epidemic, Rush remained behind to treat the stricken populace. His 1812 publication of *Medical Inquiries and Observations upon the Diseases of the Mind* earned Rush his position as the "father of American psychiatry."

1825

About a dozen medical schools throughout the United States, including Jefferson Medical College in Philadelphia, are training medical students. Penn is teaching approximately 20 percent of those students.

1837

William Wood Gerhard (M 1830, GME 1836), a lecturer at Philadelphia Hospital, identifies the difference between typhoid fever and typhus. He serves as Penn's professor of the institutes of medicine from 1838 to 1872.

Between the War of 1812 and the Civil War, conflict of a different sort percolated in the medical school. New faculty with new ideas challenged the status quo, students became advocates for their education, and competition and curriculum reform went head to head. Growing pains were not without gains: a larger student body, renovated and, before long, new facilities, and the infusion of modern scientific discovery into the teaching of Penn medical students.

Following the lead of European medical schools, in the mid-1830s George Bacon Wood, Samuel Jackson, and William Wood Gerhard broadened the horizon of medical students to explore scientific inquiry in materia medica, physiology, and pathology.

In 1853, Joseph Leidy introduced an investigative approach to anatomy. On the whole, however, teaching remained didactic through lectures and demonstrations, and students *observed* operations and obstetrical deliveries at Pennsylvania Hospital and the Philadelphia Almshouse.

Almost half of the University's antebellum medical students hailed from the South. Following John Brown's raid on Harper's Ferry, many of them transferred to medical schools below the Mason-Dixon Line and Penn accepted more local students in their place. The University continued to train medical students throughout the Civil War years, while many of its faculty members took leave to serve at local and battlefield hospitals.



Philadelphia Hospital (later Philadelphia General Hospital), part of the Philadelphia "Blockley" Almshouse, relocated to West Philadelphia in 1832. David J. Kennedy watercolor, 1889. Because students attended lectures all day for two years, it became harder for the faculty to enforce the apprenticeship system for clinical training. Pennsylvania Hospital and Philadelphia Hospital would continue to fill that gap until the University moved to West Philadelphia in the 1870s and opened a hospital of its own. *Courtesy Historical Society of Pennsylvania.*



JOSEPH LEIDY
1823-1891

1841

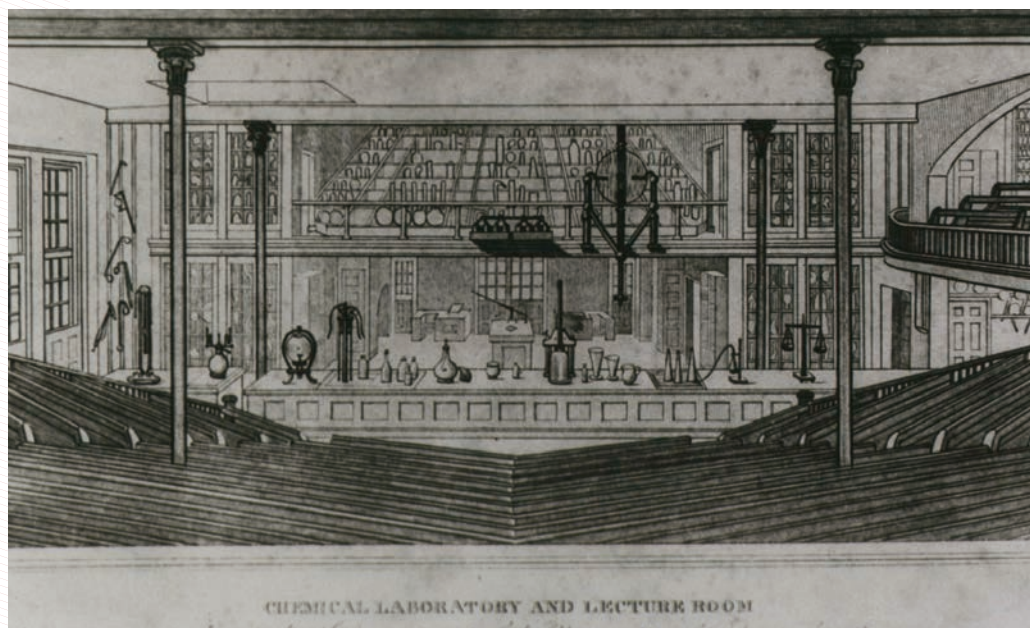
The University opens a dispensary on Locust Street, west of 11th Street – forerunner of the Hospital of the University of Pennsylvania – to further the clinical education of its medical students. The dispensary moves into the medical school’s Ninth Street building in 1843.

1861

Serving in the Civil War (1861-1865), roughly 660 Union army surgeons and 550 Confederate army surgeons are Penn medical alumni.

Joseph Leidy (M 1844) brought a different perspective to the professorship of anatomy when he succeeded the late William Horner to the position in 1853. Unlike his surgeon-anatomist predecessors, Leidy took the lectern as a naturalist, one with a formidable reputation at an early age. He had already founded the field of vertebrate palæontology in America and made important discoveries in botany, comparative anatomy, geology, and mineralogy. His work with microscopy advanced the field of public health. Leidy identified the *Trichina spiralis* in pigs that causes trichinosis and the link between hookworms and pernicious anæmia. In 1853, six years before Charles Darwin published *The Origin of Species*, Leidy wrote his views on evolution and natural selection; he subsequently recommended Darwin for election to the Academy of Natural Sciences in Philadelphia.

Leidy chaired anatomy at Penn’s medical school for nearly four decades while founding and heading the University’s Department of Biology. He was dean of the medical school 1877-1888. The Laboratory of Biology, built on Hamilton Walk in 1910, bears his name.



Chemical laboratory and lecture room of Robert Hare, 1831. When the University hired architect William Strickland to design the twin buildings for the Ninth Street campus in 1829, Hare worked with Strickland to create a space that best suited his needs for teaching, research, and demonstrations in a space with proper ventilation, heat, and light. *Courtesy National Library of Medicine.*



Ninth Street campus of the University of Pennsylvania, Medical Hall (left) and College Hall (right), home of the University, 1829-1872, and its Medical Department, 1829-1873. 1830 watercolor by J. G. Caldelough.

1875

Louis Duhring (M 1867) pioneers the specialty of dermatology in America.

1890

Penn Professor of Physics Arthur W. Goodspeed and British-born photographer William N. Jennings take the first X-ray picture, although the two do not realize the significance of their picture at the time. Five years later, William Conrad Roentgen of the University of Würzburg publishes his own report on X-rays.



**D. HAYES
AGNEW**
1818-1892

The Civil War transformed American society and, likewise, lessons learned on the battlefield, in cantonments, and at field and military hospitals influenced the practice and teaching of medicine. At Penn, these wartime experiences would lead to new hygiene courses, mandatory classes on practical anatomy, and improved instruction in patient management. Simultaneously, interest in laboratory science was growing.

In the late 1860s, University Trustees acquired 10 acres north of Spruce Street, where the first new campus buildings, College Hall and Medical Hall, opened in 1872 and 1874 respectively. Thanks to additional land negotiations with the City and a fundraising campaign spearheaded by William Pepper Jr., who generously donated matching funds to private and public grants, in 1874 Penn also opened the nation's first hospital built by a university to advance the education of its medical students. The Hospital of the University of Pennsylvania effectively replaced the apprenticeship system of the medical school's first 100+ years with bedside instruction.

A residential campus and the campus life it would offer awaited the construction of dormitories in the late 1890s. For the time being, medical students continued living at home or in boarding houses, using horse-pulled streetcars to commute to campus. The medical student body remained all male into the 20th century. However, Penn's medical school did take a significant step toward diversity, admitting the first African American medical student into the Class of 1882.

Esteemed medical educator and surgeon D. Hayes Agnew (M 1838) appreciated the importance of dissection in the training of a surgeon. By 1852, he had the expertise to purchase and direct the Philadelphia School of Anatomy for private anatomy instruction and two years later opened the Philadelphia School of Operative Surgery. Agnew soon earned appointments as surgeon at Philadelphia Hospital and lecturer in surgery and demonstrator in anatomy at Penn. He advanced to professor of both clinical and demonstrative surgery in 1871 and six years later became the first to hold the newly founded John Rhea Barton Professorship of Surgery. When an assassin shot President James Garfield in 1881, Agnew was called to Washington to treat the mortally wounded president. The graduating Class of 1889 led a fundraising campaign to commission artist Thomas Eakins to paint *The Agnew Clinic* as their beloved mentor retired from teaching that year.



Above: Dissection laboratory, fourth floor of the Hare Building, c. 1890. When dissection became a mandatory part of the curriculum in 1877, first-year students spent 14 hours per week in the dissection laboratory; second-year students continued these studies four evening hours a week. *Courtesy of Historical Medical Library of the College of Physicians of Philadelphia.*

Below: The original three buildings of Penn's West Philadelphia campus: (left to right) University Hospital, College Hall, and Medical Hall (on the far side of College Hall). The buildings to the right fronted Woodland Avenue, today's Locust Walk.





**ALFRED
NEWTON
RICHARDS**
1876 - 1976

1910

Carnegie Foundation for the Advancement of Teaching sponsors a significant investigation of medical schools in the United States and Canada. *The Flexner Report* cites Penn for its excellence as a medical school.

A chair of Pharmacology, Alfred Newton Richards modernized the curriculum and introduced medical students to mammalian pharmacological experiments in the laboratory. Richards began his renowned work on renal function in 1913, for which he and associates designed a perfusion system to determine the mechanism of urine formation. After World War I, he resumed the kidney perfusion experiments, the results of which supported the filtration-resorption theory for diuretic action. His discovery led to the development of new diuretics and systems of dialysis for patients who have no renal function.

In his lab, Richards trained protégés like Isaac Starr (M 1920), with whom he started the nation's first course in clinical pharmacology for medical students. President Roosevelt called him into service during World War II to head the Committee on Medical Research of the Office of Scientific Research and Development. Richards oversaw research projects for the timely mass production of penicillin, a better anti-malarial drug, and the preparation of blood plasma. In 1947, the National Academy of Sciences elected him president.



America approached the 20th century as a world power, an industrial giant rich in steel and petroleum at the dawn of the automobile age. The world was modernizing. So, too, were medical science, education, and practice.

Penn achieved a milestone in the history of laboratory medicine in 1895 when the William Pepper Laboratory of Clinical Medicine opened as a research and service arm to the University Hospital. Laboratory science gained an increasing role in the medical school, both as a teaching tool to understand health and disease and as a mission to encourage undergraduate medical students and faculty to pursue research. Construction of the Medical Laboratories Building (since 1987, the John Morgan Building) in 1904 provided modern facilities for pathology, pharmacology, bacteriology, and physiology.

Above: Gladys Girardeau and Alberta Peltz. Peltz and Girardeau graduated in 1918, becoming Penn's first medical alumnae





Pharmacology
laboratory in the
Medical Laboratories
Building, 1904.

1940s

Experimentation with ultrasound is under way in the University's Johnson Foundation for Medical Physics, two decades before the technique becomes a familiar tool for clinical medicine.

1953

James H. Robinson (M 1953) graduates from the School of Medicine. He goes on to complete his internship and residency at HUP, the first African American to do so.

The 1940-41 catalogue for the School of Medicine stated, "It has always been the object and aim of this institution to prepare its students for the practice of general medicine, not to graduate them as specialists." The times effectively changed that mission, in large part due to World War II and its aftermath. By 1964, more than 80 percent of the School of Medicine's graduates pursued residency training in a clinical specialty. In peacetime, unprecedented federal funds provided resources for Penn medical faculty and fellows to explore new frontiers in science and opened yet another path for which to prepare medical students.



While a Penn medical student, Christian J. Lambertsen (M 1943), an expert on respiratory physiology, invented the Lambertsen Amphibious Respirator Unit, or LARU, forerunner of today's scuba technology.



Helen Octavia Dickens, left, 1968. The first African American female fellow of the American College of Surgeons, Dickens joined Penn's OB/GYN faculty in 1956. Dickens founded the Teen Clinic at the University for school-age mothers in the inner city and initiated a project that brought temporary cancer detection facilities into Philadelphia's inner city. As Penn's associate dean of minority admissions, she markedly increased the diversity of the School of Medicine.

The nation's entry into the war took many Penn physicians, alumni, and nurses overseas and on the seas to staff military hospitals. It further intensified the medical school experience as the four-year curriculum was accelerated to graduate students in three years. After the war, physicians who had entered military service immediately after internship increased the demand for postponed residency training. Taking advantage of the GI Bill, the postwar classes of medical students tended to be older and many more were married than in earlier years.



**EMILY
HARTSHORNE
MUDD**
1898 - 1998

1960

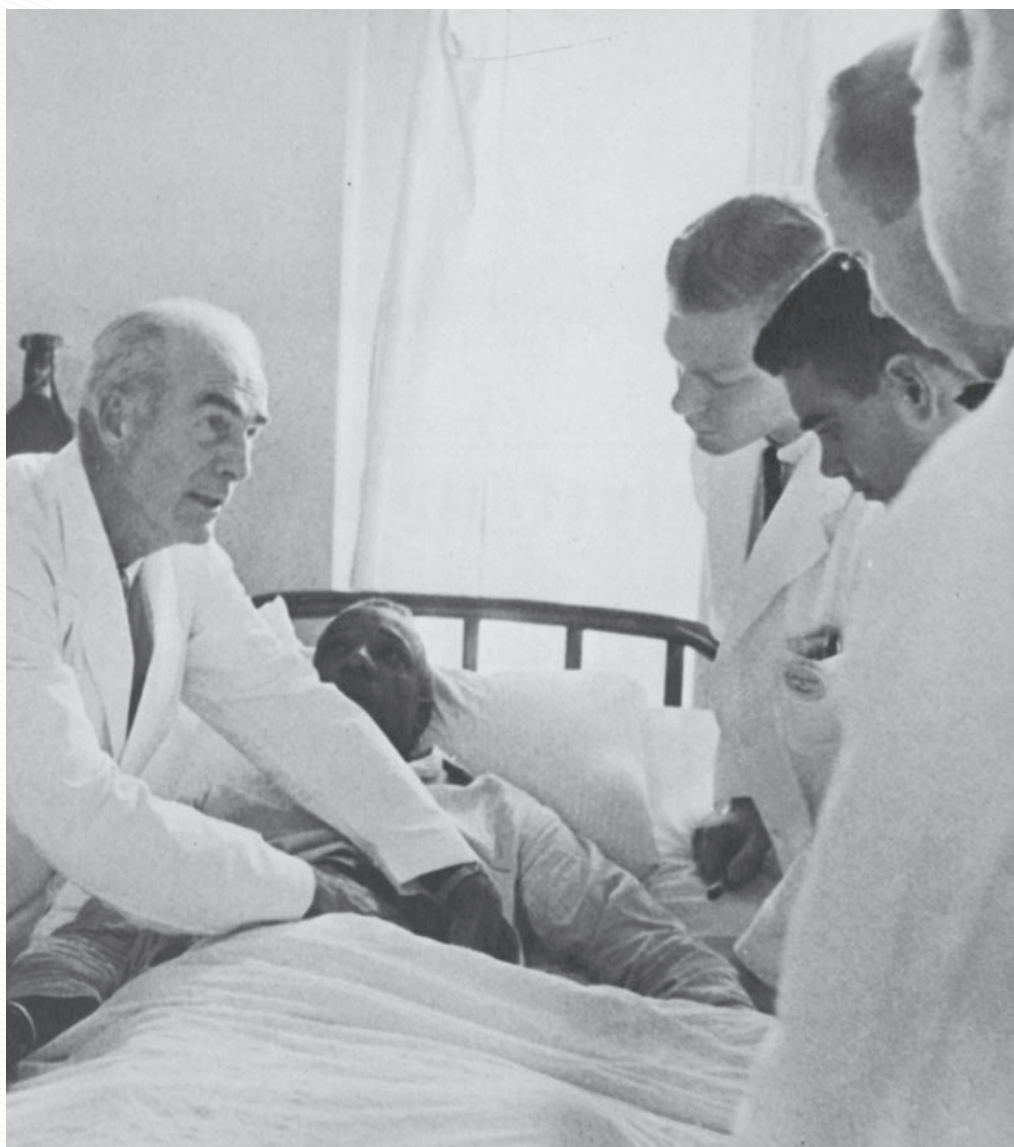
Peter C. Nowell (M 1952) and David Hungerford discover the "Philadelphia chromosome" that first links cancer to a genetic abnormality.

1966

Jonathan E. Rhoads (GME 1940), Stanley Dudrick (M 1961), and Harry Vars develop a viable system of total intravenous nutrition to sustain patients unable to be fed by mouth.

Emily Hartshorne Mudd became the School of Medicine's first woman to be named a full professor. Her 1956 appointment was in the Department of Psychiatry, where she headed the Division of Family Study. Mudd spent the early part of her career assisting her husband, Stuart Mudd, a renowned Penn microbiologist, with research that included work on the immunology of spermatozoa in hope of a new method of birth control.

She was a founder of the Maternal Health Center, the Philadelphia area's first family planning program, in the early 1930s, a time when it was illegal in Pennsylvania to prescribe contraception or dispense information about it. Mudd also established the Marriage Counsel of Philadelphia, which developed into a national force for training and research in human relationships; in 1952, it became part of the Department of Psychiatry's newly created Division of Family Study. She developed and taught a course to Penn medical students, addressing sex and interpersonal relationships, the first of its kind in an American medical school. In the mid-1950s Mudd joined William Masters and Virginia Johnson as a consultant on counseling techniques. The American Philosophical Society awarded Mudd its Benjamin Franklin Medal for distinguished achievement in the sciences.

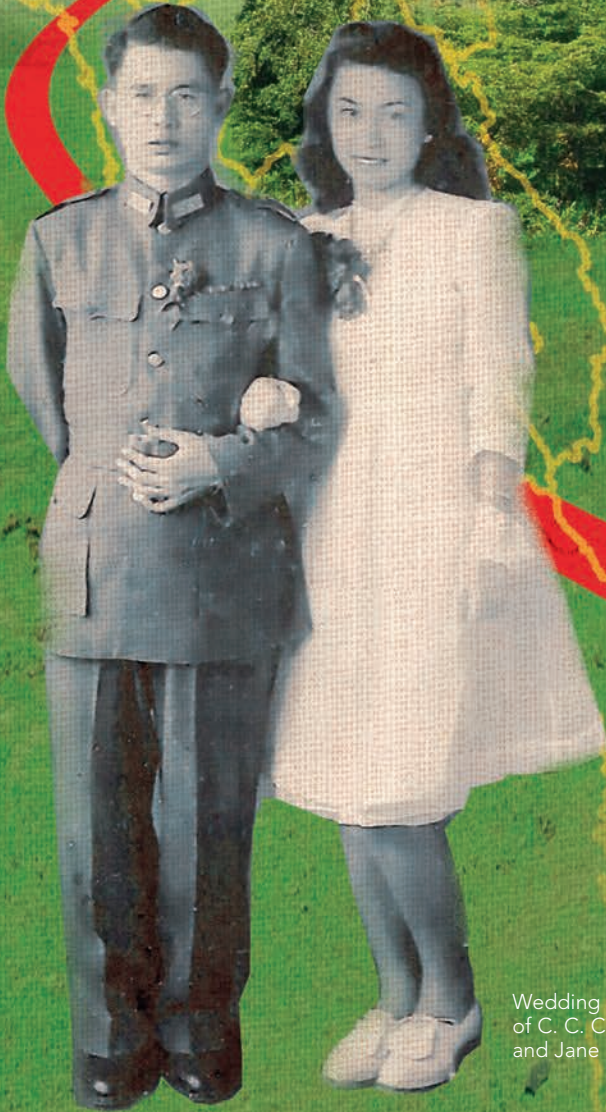


Francis C. Wood, chair of the Department of Medicine (1947-1965), conducting ward rounds, 1965.

BURMA

FROM BURMA

20TH
GENERAL HOSPITAL



Wedding photograph
of C. C. Chu, M.D.,
and Jane Shek.

PENN

TO PENN: A FAMILY SAGA

By Art Carey

In the annals of Penn Medicine, I. S. Ravdin, M.D. '18, and Jonathan Rhoads, M.D., G.M.E. '40, are towering figures. Their achievements as surgeons, scientists, innovators, teachers, and administrators – and their remarkable work ethic – made them legends. Their contributions are immortalized in brick and mortar, steel and glass. The Ravdin Building and the Rhoads Pavilion are integral parts of the University's medical complex. Underlying their success as physicians was a deep devotion to the care and welfare of others, which was based, in turn, on a foundation of decency, generosity, and compassion, as manifested in humanitarian deeds both large and small.

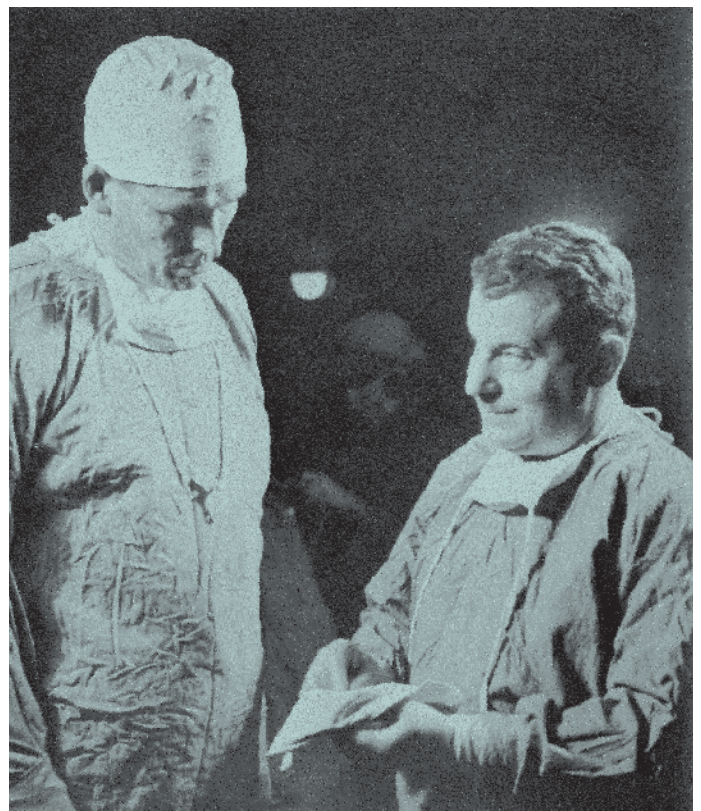
Three members of the Chu family – Winston and his sisters, Jennifer and Janette – can attest. Theirs is a typical immigrant story in many respects. What's unique about it is that they were able to flee an oppressive regime in Burma and take advantage of the opportunities in America through their father's wartime friendship with Ravdin and later the kind intercession of his close colleague and protégé, Rhoads. Once here, all three Chus were trained at Penn and went on to successful careers – Winston as a plastic surgeon; Jennifer as a physician specializing in rehabilitation and electro-diagnosis; and Janette as a registered nurse.

Ravdin Builds a Hospital in the Jungle

The family's saga begins during World War II. After the Pearl Harbor attack, Ravdin, who had distinguished himself at Penn as a surgeon, researcher, and administrator, worked with the American Red Cross and the National Research Council to introduce albumin as a transfusable blood product for treating burn and shock patients. In 1942, the Army Medical Corps tapped him to supervise the 20th General Hospital in Assam, India.

The mission of the hospital, which drew doctors and nurses from Penn, was to provide medical care for troops engaged in building a road from Ledo, Assam, into North Burma. The goal was to restore land communication with China, where the invading Japanese had driven the Chinese government into the interior.

What Ravdin encountered when he arrived in 1943 was daunting. As he put it: "The . . . monsoon had begun the day before our arrival and where all before had been dust, now was mud. It was not possible to drive vehicles through

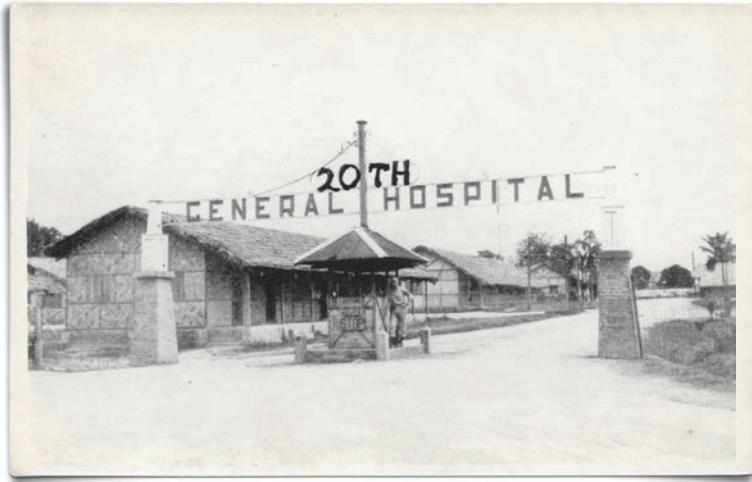


Penn surgeons Jonathan Rhoads (left) and I. S. Ravdin.

the area. There were no roads, nor fires, no provision for messes, no satisfactory quarters for women. Real work lay ahead."

Ravdin's task was to clear the jungle and build a hospital. This he and his staff did; in the end, the 20th General Hospital occupied 289 buildings and 162 tents. Constructed on high ground around a former polo field, bamboo "bashas" housed the hospital and its patients, nurses, doctors, and enlisted men. These native structures had dirt floors, sometimes covered with bamboo matting, and leaky roofs of palm leaves. There were no lights and very few outlets for water. In this area of heavy rainfall, malaria and dysentery were constants; leeches and mites were more dangerous than the snakes, tigers, and bears.

As a huge military installation sprang up at Ledo, the 20th General Hospital ministered to the American-Chinese forces



The entrance to the 20th General Hospital in Assam, India.

fighting the Japanese in Burma as well as the men constructing the Ledo road. In the 28 months the hospital operated under Ravdin's command, it admitted 73,000 patients.

Ravdin referred to the 20th General as a "league of nations" because it provided care to American soldiers, British troops with serious head, chest, and abdominal injuries, and the Chinese. In fact, more than half the patients were Chinese soldiers treated for the first time by modern Western medicine.

According to one admiring colleague, Ravdin, affectionately known as "Rav," exhibited the "tenacity of a bulldog" in obtaining necessary supplies and ensuring that conditions were livable for both patients and staff. Despite battle casualties and jungle diseases, the overall mortality rate was only 0.4 percent – no worse than for civilian hospitals. Ravdin was proud that his staff was able to employ modern practices such as antibiotics, and innovations such as air conditioning. He was determined to demonstrate that the surgery of war could be done with as much care and success as civilian surgery. The work of Ravdin and his staff was so excellent that the 20th General Hospital was regarded as one of the best hospitals in the China-India-Burma theater. In 1945, Ravdin was made a brigadier general, the first physician drawn from civilian life to achieve that rank.

Into the sphere of influence of this highly competent and charismatic man came a young physician named C. C. Chu. Born in what was then the Canton province of China in 1916, Chu Ah Chway (or C. A. Chway), as he was then known, was brought to Burma at an early age by his father, who was seeking a better life. Chway was only six when his father died, and because his mother remained behind in China, he was reared by an aunt and uncle. Burma was under British colonial rule at the time, and Chway attended the University of Rangoon medical school. When he graduated, the Japanese had invaded Burma, and the country was at war. Chway, who had adopted the simpler name C. C. Chu by now, joined the British army as a general medical officer.

As the Japanese advanced, the British forces withdrew to India. C. C. Chu was part of that retreat and had to slog

through jungles infested with leeches, mosquitoes, and other disease-carrying insects during the monsoon season. In Ledo, Chu reported to the 20th General Hospital, where he met and became friends with Dr. Ravdin, the hospital's executive officer and chief of the surgical service. In time, he joined Gen. Joseph Stilwell's American-trained Chinese army as it built the Ledo Road, moving across the top of Burma and southern China. Throughout the war, Chu continued to serve as a medical officer, tending to casualties at the Battle of Myitkyina, and eventually rising to the rank of lieutenant colonel. After the war, he kept up a correspondence with Ravdin, who had returned to Penn.

Under an Oppressive Regime

Winston Chu, the oldest of C. C. Chu's seven children, followed his father in becoming a doctor. The family was prominent in Burma, and C. C. Chu was the private physician to the prime minister of Burma and to the speaker of the House of Parliament. Chu made sure that all of his children were well educated. But in the 1960s, after a coup d'état, an oppressive socialist regime wielded power. One of its practices was to discriminate against ethnic Chinese. When Winston graduated from Rangoon's Institute of Medicine II, he was first in his class and won several academic honors. But instead of allowing him to pursue his ambition of becoming a surgeon, the government, which controlled all medical appointments, assigned him to front-line emergency medical training. The Chu family, because of harassment and persecution, was close to poverty.

"I never meant to leave Burma," Winston says. "But I wanted to be a surgeon, and if the government doesn't want you or like you, you're not going anywhere."

Dismayed by his son's predicament, C. C. Chu wrote a letter to Ravdin, appealing for assistance. At the time, Ravdin, who



A Chu family photograph, taken shortly before Jennifer Chu left Rangoon in 1973.

died in 1972, was incapacitated, so his wife, Elizabeth, forwarded the letter to Jonathan Rhoads, then chairman of the Department of Surgery.

“Through the kindness of his heart and a sense of international duty, he picked up the ball,” Winston recalls. Specifically, Rhoads arranged a position for Chu in the Harrison Department of Surgical Research, which enabled him to come to the United States. But first, Winston had to win approval from the Burmese government, which made him run a gauntlet to obtain his certificate of identification (in lieu of a passport). There were numerous medical exams and negotiations with truculent officials. “I had to beg and borrow,” Winston says, “and declare I would never return to Burma.”

Winston arrived in the United States in 1971 and reported to the Hospital of the University of Pennsylvania, where he met Rhoads for the first time. After Winston had spent several months in surgical research, Rhoads asked if he'd like to become a surgeon. Chu jumped at the chance. After his surgical internship, Rhoads offered him a surgical residency. (“I was the only foreigner in the class,” Winston says.) He completed his general surgical residency and then progressed to a plastic surgery residency. In between, he took a fellowship in head and neck oncology at the Fox Chase Cancer Center, where he studied head and neck oncology and won a prize for his research.

In 1979, Winston was board certified in surgery and plastic surgery and began practicing in Erie, Pa., where he has been ever since. During his 25 years of practice, he specialized in aesthetic surgery, although in the early years he did his share of trauma and cancer-related reconstructive surgery. In retirement, he has written a memoir titled *Reborn: Journeys from the Abyss* (Tate Publishing). The first abyss: Burma; the second, a life-threatening battle with *E. coli* septicemia.

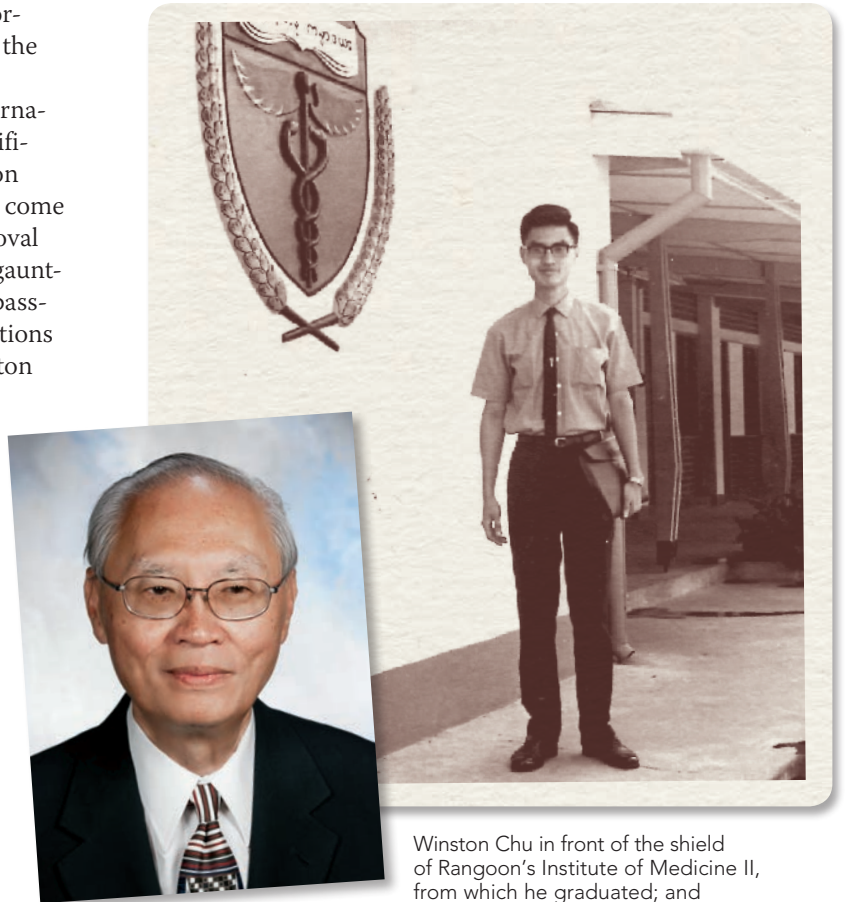
Although Winston never met Ravdin, he is deeply grateful nevertheless. He regards Rhoads, who died in 2002, as more than a friend.

“He was a mentor and benefactor who took a personal interest in the progress of my career. I consider myself extremely fortunate.”

Rhoads Steps In Again

“My father was the kindest and most humble person I've ever met,” recalls Jennifer Chu. “He always told us, ‘Use your brain’ and ‘The sky's the limit.’”

She took those words to heart. After being selected by the government, she completed her training at the same army medical school in Burma that Winston attended and began her internship. But because she was sure she'd have to emigrate, she refused to accept her intern's salary; she knew she'd have to repay the government, just as her father had had to refund the cost of her medical education. Although born in Burma, she was considered a “foreigner” (read Chinese), and she encountered some of the same difficulties in trying to leave that her brother had. In fact, it took two and a half years



Winston Chu in front of the shield of Rangoon's Institute of Medicine II, from which he graduated; and Winston Chu today.

before she won permission to depart. Appointments to see immigration officials typically took three months. When the day arrived, papers were often misplaced or unready – and another three months would go by.

Finally, in 1973, her traveling documents were completed. She was permitted to use Burmese money to buy only five U.S. dollars and seven British pounds. The only belongings she was able to carry out were a suitcase filled with Burmese clothes and a pair of flip-flops. Fortunately, an uncle in Hong Kong paid her one-way airfare to the United States. There was a stopover in Hong Kong where she was able to purchase western clothes and shoes.

Once again, Rhoads paved the way. Jennifer came to Philadelphia with a work permit as a research assistant to Brooke Roberts, M.D. '43, an eminent vascular surgeon at HUP. She published a couple of papers with Roberts and in 1974 was accepted for a one-year rotating internship at Presbyterian Hospital.

After her internship, Jennifer returned to HUP for her residency in physical medicine and rehabilitation, a specialty not available in Burma. It was, she says now, “one of the best decisions of my life.” The field required a deep knowledge of anatomy, and anatomy was her strong suit, thanks to her Burmese medical education. The chairman at that time was William Erdman, M.D., who chose her to be an attending physician when she completed her residency. He also allowed her a sabbatical leave for further training in electro-diagnostic medicine



Janette Chu (left) and Jennifer Chu display traditional Burmese wall hangings. Made of alabaster, they depict court musicians. The older photograph shows Jennifer at her 1972 graduation from medical school, with Janette on her left.



at the University of Uppsala in Sweden, where she became especially interested in the neuromuscular junction, which is crucial to her current work in pain care. In 1986, she and Robert J. Johnson, M.D., former chairman of anatomy at Penn's Graduate School of Medicine, published a textbook, *Electrodiagnosis: An Anatomical and Clinical Approach*. The book was placed on the suggested reading list of the American Academy of Physical Medicine and Rehabilitation and cited by the American

Association of Neuromuscular and Electrodiagnostic Medicine.

Jennifer often visited Rhoads in his office, initially to express her gratitude. When she kept returning, he asked her point blank why. Her answer: "I need to be mentored."

"I think he agreed to be my mentor because I jumped through all the hoops he set for me and not because I was some poor immigrant girl."

In time Jennifer and Rhoads became friends, and she was able to observe him at close range, which provided plenty of memories and anecdotes.

"We could converse on any topic, from academia to finances and daily life," Jennifer says. She remembers his gentlemanliness and how he would always rise from his chair and stand whenever she entered his office. She credits him for encour-

aging her to be a visionary, and she will never forget some of his pearls of practical wisdom. For example:

- "In politics dog eats dog. In academic medicine, it is the other way around.
- "Learn how to smell like a rose."
- "Do not get attached to only one thing."

Her last visit to Dr. Rhoads was about three weeks before his death, Jennifer recalls. "I had no idea of his impending demise, and as usual I went to visit him so that he could help solve my everyday problems. I noticed he was reading a medical record chart so old that the paper was yellow. I asked him what he was looking at, and he told me it was the chart of a patient he had operated on 50 years before when the patient was only 10 and suffering from burns. That same patient was returning to see him today, and he wanted to refresh his memory, he said. Such was the greatness of this man who understood the importance of connecting to people personally, even in his final hours. No wonder so many grateful patients returned to say goodbye to him."

In 2006, at age 58, Jennifer Chu retired from Penn Medicine to pursue her passion as an inventor and seek success as an entrepreneur in neuro-musculoskeletal medicine. At the time, she was an associate professor in the Perelman School of Medicine and director of the electro-diagnostic laboratories of the Department of Physical Medicine and Rehabilitation. Her latest invention, eToims (electrical Twitch-obtaining intramuscular stimulation: www.etoims.com) uses electrical current, applied non-invasively to skin to stimulate neuromuscular junctions or trigger points. What's unique about eToims is its ability to stimulate the trigger points of deep muscles where deep spasms occur. By evoking twitches that

continue spontaneously even without electrical stimulation, eToims fatigues the nerve and ends the cycle of nerve irritation at the site. The release of muscle spasms strengthens dormant muscles and relieves acute and chronic neuromuscular pain.

From Clerk to Nurse

Until recently, assisting Jennifer Chu in the enterprise was her sister Janette. She, too, left Burma, after being forced to leave medical school during the middle of her first year, because of the same discriminatory policies that induced her siblings to leave. In 1977, she arrived in Philadelphia.

Within three months, Janette was able to land a job, first as a clerk and later as an administrative assistant in the same place her sister worked, Penn's Department of Physical Medicine and Rehabilitation. At the same time, she decided to put herself through nursing school. Because she was working full time and attending school part time, it took Janette nearly eight years to earn her degree. She graduated in 1986 from Penn's School of Nursing and then worked as a surgical nurse at HUP for six years. After that, she was a clinical research nurse for nine years, in both inpatient and outpatient settings.

In 2001, Janette received a master's degree in health-care information technology from Drexel University. Employing that knowledge, she worked in Penn's Clinical Effectiveness and Quality Improvement (CEQI) department from 2001 to 2008 under Patrick J. Brennan, M.D., chief medical officer and senior vice president of the University of Pennsylvania Health System. In her years there, she assisted seven clinical departments with CEQI, patient safety, and regulatory projects. In all, Janette served HUP for more than 30 years. She credits her father for her achievements, citing especially his "wisdom, intelligence, and broadmindedness."

Jennifer Chu, on the other hand, attributes her long tenure with Penn Medicine to her beloved mentor, Jonathan. Rhoads. She tells this story:

"In 1988, the department had so much leadership difficulties that every faculty member left. I was the only remaining faculty member and I also wanted to quit." Even the timeline on current web site of the Department of Physical Medicine and Rehabilitation uses the words "The Department Disintegrates," and the search for a permanent chair took 11 years. As Jennifer remembers, she discussed quitting with Rhoads. "I told him I had never



Photo by Peggy Peterson

Jennifer Chu applies her stimulator to soothe a patient's nerve irritation.

made a bad decision and that I was convinced I should leave. Dr. Rhoads's answer? "This will be your first bad decision!"

Looking back, Jennifer says, "remaining with Penn Medicine was another one of my wise decisions. More recently, she was convinced once again of another of Penn Medicine's strengths – the clinical care it provides.

Jennifer had her first serious illness when she was 14 years old. She and her younger sister Julia became deadly ill with dengue hemorrhagic fever, and Julia died. Jennifer was hospitalized for more than a month. The experience marked her. "That was when I became convinced that I should become a physician, since I saw real suffering and patients screaming in pain throughout the night."

In December 2013, Jennifer became very ill from an enteric infection she had picked up on a visit to Burma. At first, she sought medical care at a local hospital close to her home and was immediately admitted on an emergency basis. But after 10 days, she had become progressively more ill, had gained 30 pounds due to gross fluid overload, and had undergone several tests when the diagnosis, she felt, was obvious. Even more: "If I were not my own patient advocate, I would have been more damaged." She was able to stop the hospital staff from adding unnecessary and potentially harmful medications into her IV drip – not once but twice. Janette stepped in and contacted Brennan, who arranged to have Jennifer admitted to HUP on a Sunday night. For a start, she needed two units of packed red cells to deal with her anemia.

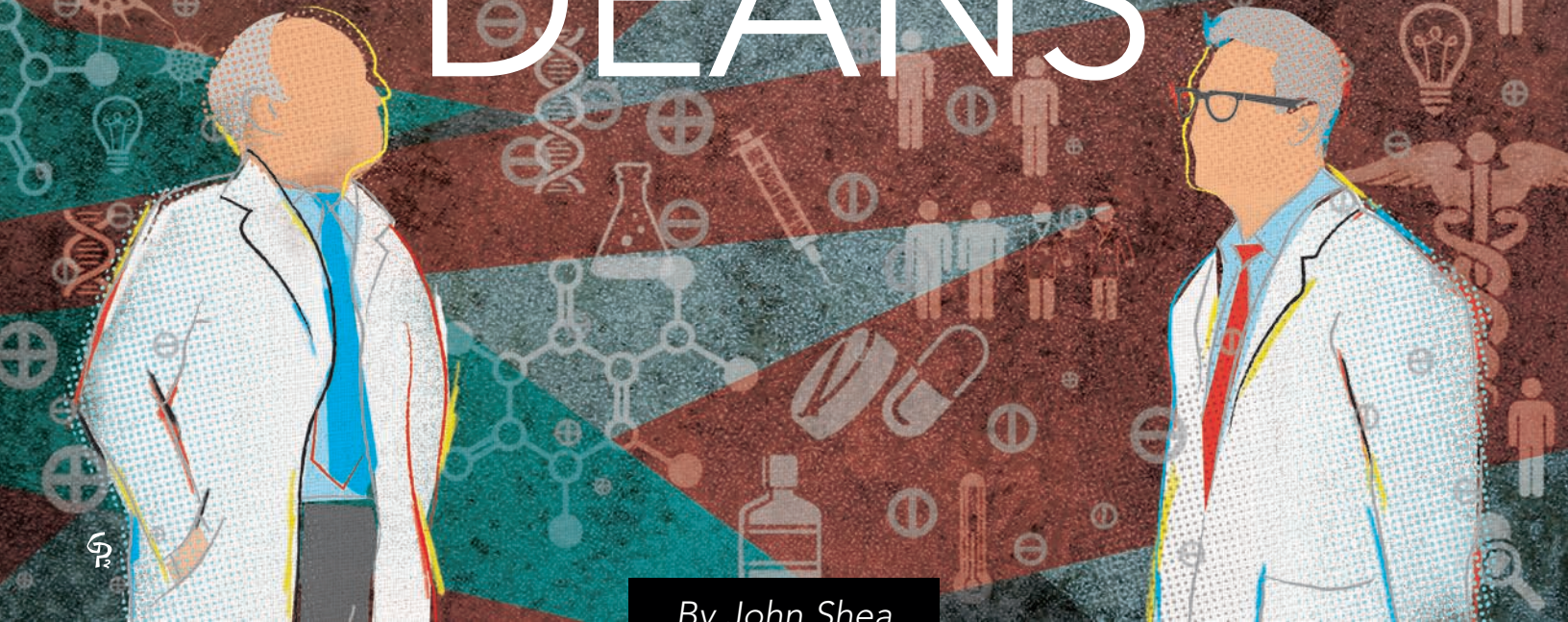
"I am forever grateful to the UPHS," said Jennifer, acknowledging the "excellent" care she received. "Our organization is a superb machinery and seamless and flawlessly managed," she said, and she praised the ancillary staff as well. Because of her experience, she added, "I would never move out of Philadelphia."

After surviving what she called "my second brush with death," Jennifer feels prouder than ever to be part of Penn Medicine. To her mentor: "Dr. Rhoads, don't worry. Thanks to you, I'm carrying the baton now." □



Photo by Peggy Peterson

A PAIR OF VISIONARY DEANS



By John Shea

As the Perelman School of Medicine continues its year-long celebration of its 250 years, it's fascinating to see how the school has changed over that long period – and sometimes how its leaders have seemed to anticipate what lay ahead. In the audience of last year's graduation were some members of the Class of 1964, returning for Medical Alumni Weekend and their 50-year reunion. In the 1964 *Scope*, the yearbook's editors included a brief profile of the dean at that time, Samuel Gurin, Ph.D. Here's part of what they said:

"His philosophy of medical education is based on the belief that today's medical students must have a firmer grasp of the principles of both the basic sciences and of the methods of research in order to both compete in and to contribute to our medical world. As a means to this end, he is striving to make possible for the students better lecture rooms and laboratories, more and better research facilities. . . ."

Fifty years later, it's likely that both Dean Gurin and the members of that class would be ecstatic – and astonished – to see where Penn's current students have studied and worked. The campus has been transformed, by new facilities for both research and for patient care. Even more unexpected would be the Henry A. Jordan M.D. '62 Medical Education Center, atop the Perelman Center for Advanced Medicine, which will fully integrate medical education with research and clinical practice facilities.

A Renewed Emphasis on Research

Dean Gurin also had a chance to outline his views in the 1964 yearbook. A school like Penn's, he wrote in "Perspectives in Medical Education," should educate all medical students as if they were going to become a "research-oriented specialist" – whether in patient-oriented research or in laboratory research.

“As advances in biological sciences are made, more and more M.D.s trained in basic science are working in conjunction with their more clinically oriented colleagues to a point where it is ridiculous to make a distinction between pre-clinical and clinical science. It is now *medical science* – or to the purist – *biological science*.”

– Dean Samuel Gurin, Ph.D.,
November 17, 1962

These days, the Perelman School is consistently ranked among the top five research-oriented medical schools by *U.S. News & World Report*. At the same time, however, this year it also ranked #13 among schools focused on primary care, which is a notable achievement.

Given that Gurin was the only dean of the medical school who was not an M.D., his emphasis on research may not be surprising. But in his comments, Gurin makes it clear that the clinical part of education is just as important. “Whatever the specialty, the school should provide the educational background to bring the best of bio-medical science to the bedside without losing sight of the fact that the patient is a human being and not just a disease.”

What’s notable is how closely Dean Gurin’s vision in some ways anticipated the major changes happening in medicine today. Back when the Class of 1964 attended our school, there was no program like the flourishing Biomedical Graduate Studies (BGS), which brings together faculty from basic science departments throughout the University, but there were some signs pointing that way. Gurin noted what he called “the scientific revolution” taking place in the early 1960s. The changes



included “the breakdown of departmental barriers” as different departments simultaneously investigate different facets of the same problem, such as immunology, viral diseases, and metabolic diseases.

That complementary approach has continued in dramatic fashion. For example, today’s students were educated on a campus that includes the Penn Institute for Immunology, an Immunology Graduate Group within BGS, the Institute for Diabetes, Obesity, and Metabolism, a Division of Infectious Diseases in the Department of Medicine, and a virology component of the Department of Microbiology, to name just a few. For many years now, the Perelman School has been known for its many interdepartmental centers and institutes – and new ones have been added in recent years.

Could Dean Gurin even imagine the recently launched Center for Personalized Diagnostics, where patients’ tumors are probed more precisely with next-generation DNA sequencing? Those specialized tests are expected to broaden treatment options for patients with cancer and improve their efficacy.

Going Beyond the M.D.

Another fascinating bit is Dean Gurin’s recommendation that – if time can be carved out of the students’ busy schedules – they might choose to “study intensively in depth in any field.” His examples include biology, psychology, sociology, even mathematics. This view anticipates the dramatic changes over the

last decade at Penn Medicine, as more and more students have earned a second degree or certificate or taken time off to do research or study abroad. In May, more than half of the graduating class received a degree in addition to the M.D. degree. That's a remarkable figure, given that the average among graduating medical students across the nation is 8 percent.

Perhaps Dean Gurin's receptivity to extra or outside pursuits can be traced in part to his own background.

He was a distinguished biochemist noted for his research on vitamin B and for his pioneering use of the radioactive C-14 in metabolic tracer studies. In 1955, he was named the Benjamin Rush Professor of Biological Chemistry and began a seven-year stint as chair of the Department of Biochemistry. In addition, however, he was a serious musician who had studied at Manhattan's Juilliard School. According to his obituary in *The Philadelphia Inquirer*, his wife said he gave up his dream of being a concert pianist when he found he would have to practice eight hours a day! But he would also perform as a pianist at his home in Maine and he composed some orchestral music. Dean, chairman, scientist, teacher, musician – he was, it appears, an example of the well-rounded person.

40 Years Before Health Care Reform

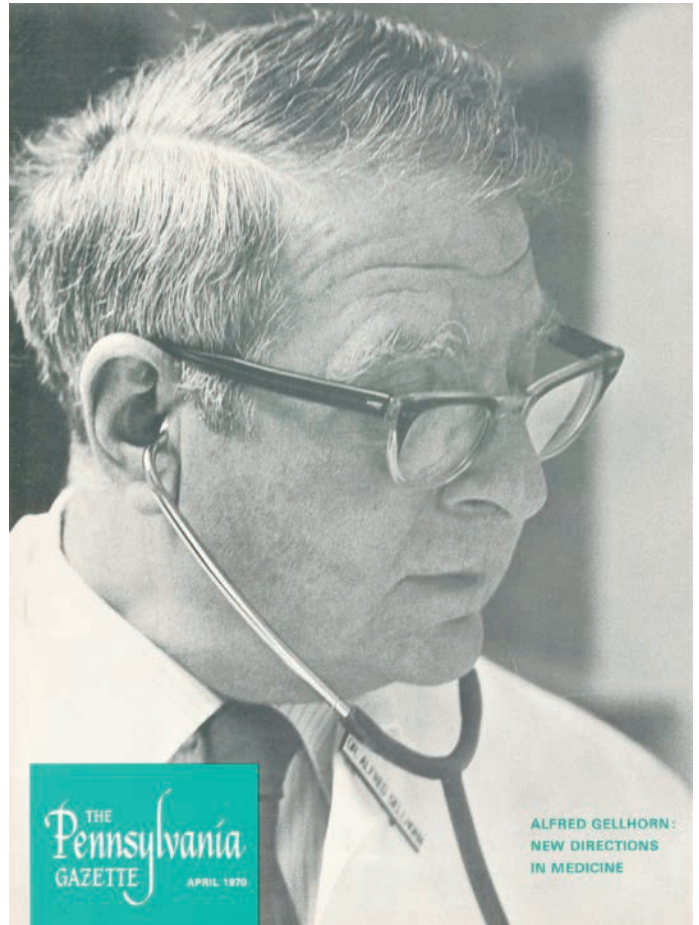
Compare these two quotations.

First: “Medical want in the midst of medical riches is an unconscionable inequity, and it could be socially explosive. Good medical care for some of the people some of the time is no longer acceptable; competent medical care for all of the people all of the time is now demanded. . . .” The University of Pennsylvania “has the experience to help lead American medicine into the next great chapter of its evolution: seeing that its health-giving powers get through to all elements of today's changing population.”

Second: “As a physician, I believe that it is, first of all, a civic and ethical imperative: the primary goal should be to expand coverage for the millions of Americans who have either no health-insurance coverage or very little. . . . Our mission involves curing disease and saving lives, through biomedical research and through expert clinical work. But to be fair, what we do must be available to as many people as possible.”

The second speaker was Arthur H. Rubenstein, M.B., B.Ch., then the executive vice president of the University of Pennsylvania for the Health System and dean of the Perelman School of Medicine. His words come from the dean's column in *Penn Medicine* (Winter 2009/2010), which appeared while the Obama Administration was continuing its push for the passage of the Affordable Care Act.

The words of the first speaker seem very much of the same time and the same point of view. But they were spoken 40 years earlier. The speaker was Alfred Gellhorn, M.D., then dean of Penn's medical school and the first director of the University's Medical Center. Gellhorn and his vision of what academic medicine could achieve were the subject of the cover story of the April 1970 issue of *The Pennsylvania Gazette*. The fact that Rubenstein could in some way echo Gellhorn's imperative – the title of the article was “To Make Health Care Available



to All” – suggests that the American health care system had not progressed very far. But as we know, the Affordable Care Act is now in effect, and its outcome is not yet clear. In the same issue of *Penn Medicine* in which the dean's column appeared, Ralph W. Muller, CEO of Penn's Health System, stated: “Although what we will have may be imperfect, it is an important first step toward a focus on higher quality and increased access to health care for the American people.” And for that, Dean Gellhorn, who died in 2008, would probably be thankful – but demand more.

A Historic Opportunity at a Historic School

Gellhorn arrived at Penn in 1968 after 25 years at Columbia University, and he came with an ambitious vision. According to Mary Ann Meyers, who wrote the profile in *The Pennsylvania Gazette*, he hoped and expected that a “historic corner will be turned in American medicine during the 1970s.” She noted that Gellhorn believed that “high-quality health care is a birthright” and that such an idea should have a profound effect upon the University's medical education and research programs. And of note during the Perelman School of Medicine's 250th anniversary year, Gellhorn was also aware of what he called the University's “significant role in American medical education.” As he put it: “As I looked forward to medical education moving to a new era, it was exciting to contemplate be-

coming a part of a University that I was confident would maintain its historic role by leading in the development of an equitable health care delivery system.”

What was somewhat surprising to a person reading about Gellhorn’s plans nearly 45 years later is that he hoped to broaden and update the school’s scope. Indeed, the dean appeared to be aware of a growing “generation gap” and change of attitudes. “To the current generation of realistic-idealistic medical students, the attainments of their elders, whether measured by recognition in science, personal income, or even clinical skills, are not as highly regarded as in the past because they appear to be unrelated to many of the important problems of health in our contemporary society.” Gellhorn pointed

“[Penn’s medical school] has played a leading role in advancing biological knowledge and applying it to the understanding of human disease. . . . But the dean believes that this emphasis on science has led to “increasingly narrow specialism in the clinical disciplines with progressive shortages of doctors and maldistribution of those available.” The University, he is convinced, “has the experience and the weight of example to help lead American medicine into the next great chapter of its evolution: seeing that its health-giving powers get through to all elements of today’s changing population.”

– The Pennsylvania Gazette, April 1970

to “the pressing need” to broaden how health care is conceived, to include “not only physical but also mental and social well-being. The time has come to join the existing skills of the medical sciences with those of the social sciences in combating the health problems of our country.” In Gellhorn’s view, that would mean bringing a “renewed sense of humanism” to the task and considering the social and environmental factors that are involved both “in producing disease and in curing it.”

The dean’s appeal would not be out of place today, as more and more faculty members and medical students are alert to the ways that subcultures intersect with medicine. They believe that medical professionals must pay close attention to the

patients they will be treating, where socio-economic and cultural backgrounds and beliefs can vary tremendously. Today may be the era of the high-tech “personalized medicine,” but we are urged not to overlook the patient as person.

Reaching Out, Bringing In

Shortly after Gellhorn arrived at Penn, one of the five hospitals affiliated with the medical school, Pennsylvania Hospital, established a community health center. It was a direction he approved. The medical school also created a department of community medicine, which offered a basic course to all first-year students in the environmental forces affecting health. As the *Gazette* article noted, “The students will be able to work in community medicine programs as they develop, and on a volunteer basis they already are assisting the Young Great Society in a health center in the Mantua area of West Philadelphia.”

To help increase the number of practitioners needed to extend health care, Gellhorn expanded the size of each class from about 130 to 150 – and proposed expanding them to 250 each. His hope was that a larger percentage of all socio-economic groups would be represented in the classes. One of the School of Medicine’s programs brought students from Lincoln University and Morgan State University to the medical campus for the month of January



to work with faculty members on a range of projects. According to Gellhorn, the program gave the students an opportunity to develop some scientific skills “and perhaps to see to what extent they’re attracted to the practice of medicine.” And, he noted, some medical schools had used the Penn program as a model.

Again, some of Gellhorn’s initiatives sound very familiar today. For example, there is the Penn Medicine High School Pipeline program (*Penn Medicine* Winter 2014), which introduces students from West Philadelphia to careers they may not have considered otherwise and helps them fund their college educations. In the obituary published in *Penn Medicine*, we noted Gellhorn’s focus on collaboration with the local community – and the fact that the University awarded him an honorary degree in 1993 for his contributions to medicine and to physician education in the service of humanity. Alfred Gellhorn left Penn after five years as dean. His vision for academic medicine was not realized to the extent he had hoped, but neither has it been exhausted or discredited. Today, in fact, the larger enterprise of Penn Medicine has embraced much of the same vision. □

WHAT THEY LEARNED IN THE 1760s

By John Shea



*Photographs by
Peggy Peterson*

The seven bound notebooks
of Jonathan Elmer IV.

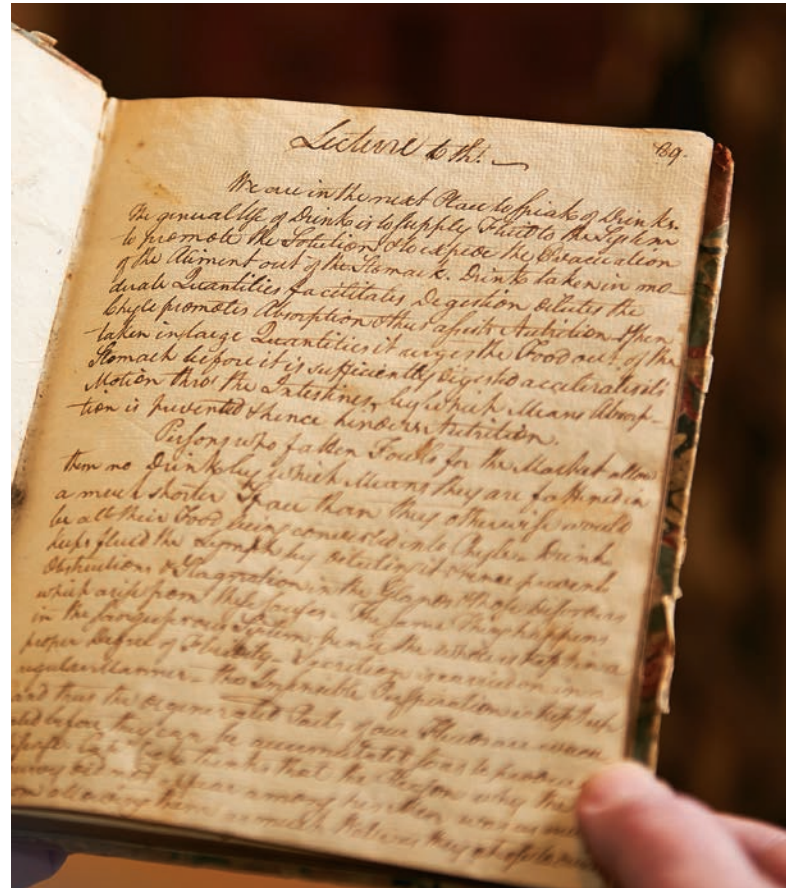
A recent gift to the University of Pennsylvania offers an unprecedented glimpse of what the very first medical students in America were taught in lectures.

Two years ago, the University of Pennsylvania Archives and Records Center received a set of notebooks that Mark Frazier Lloyd, its director, has called “a medical historian’s delight.” Seven of the notebooks belonged to a certain Jonathan Elmer, M.D. The eighth was the property of William Elmer, M.D., his grandson.

Jonathan Elmer: in the long and distinguished history of the Perelman School of Medicine, the name is not as recognizable as those of John Morgan or Benjamin Rush or Caspar Wistar. But Elmer shares a particular achievement with only nine other men – he was a member of the very first graduating class of the colonies’ first medical school. Elmer and his classmates of 1768 each received a B.S. degree in medicine, which was the only degree conferred by the school at that time. Three years later, however, Elmer earned an M.D. degree from the school as well.

His full name was Jonathan Elmer IV, and he came from a prominent New Jersey family. According to the American National Biography, he apparently was confident enough as a medical student to challenge William Shippen’s theory regarding the nature of vision – and Shippen was one of only two professors in the entire medical school! Thomas Bond, physician and founder of Pennsylvania Hospital, was a clinical instructor for the newly formed medical school of the College of Philadelphia, as the University of Pennsylvania was then known. In a letter to Benjamin Franklin, Bond declared young Elmer a “Man of Merit.” In 1774, Elmer was elected to the colonies’ first and perhaps most prestigious learned societies, the American Philosophical Society.

Although Elmer was an M.D., he was increasingly drawn to other pursuits. He became high sheriff of Cumberland County;



A page in Volume 1, pertaining to “Nutrientia.”

was appointed county clerk; was elected to the Continental Congress; and later became a senator from New Jersey in the new United States Senate. Returning to the county level, he eventually became a justice of the peace and a judge of the common pleas court.

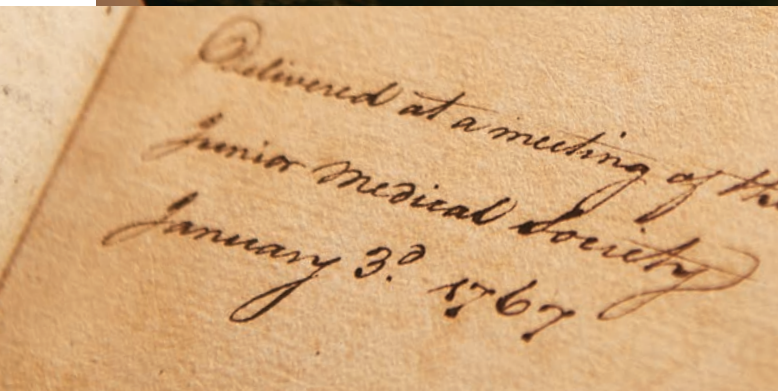
In a more personal way, however, Jonathan Elmer IV established a family tradition with the University of Pennsylvania. His grandson, William, also received his medical degree from Penn. Many years later, in 1957, Walter Gray Elmer, M.D., presented Jonathan’s 1771 M.D. diploma to the University. Not only was Walter also a recipient of a medical degree from Penn (Class of 1897), but he had been a faculty member of the school and a professor of orthopaedics in the Graduate School of Medicine. When Walter made his gift, he was described in *The Pennsylvania Gazette* as the fifth generation of the Elmer family to hold an M.D. degree from the University. And now three sisters, descendants of Jonathan Elmer – Mary Cogswell Elmer II, Heather Childs Elmer, and Holly Elmer – have presented his notebooks to the University.

The sequence: From professor to student to copyist

What makes these notebooks so remarkable is that they contain Jonathan Elmer’s notes for the lectures he attended during the first years of the medical school. Although the names of the lecturers are not contained in the notebooks, the



Elmer’s name on his M.D. diploma, conferred in 1771.



educated guess is that in most cases it was John Morgan. It was Morgan who persuaded the trustees of the College of Philadelphia to establish the school, and he was named its first professor. Among his specialties was the theory and practice of physic (the art of healing), and the University Archives possesses an “admission ticket” from 1770 for Morgan’s lectures on that field. Another of Morgan’s specialties was “materia medica,” the collected knowledge about the therapeutic properties of any substance used for healing, what would now likely be called pharmacology. What these lecture notes do, in other words, is help document the nature of medical education at the time of its beginnings in America. As Mark Lloyd puts it, “There is almost nothing that can be compared to this gift.”

The notebooks themselves are bound in leather-backed marbled boards, showing some normal wear. The spines of two notebooks are severely worn. Most of the notebooks run between 150 and 220 pages. What is noticeable is that the handwriting – which features the occasional long-tailed “s,” capital letters to begin all nouns, some missing commas, and other flourishes – is not identical from one lecture to another. As Lloyd explains, what has come down to us was not written by Elmer himself. “Everyone who had money paid a copyist,” able to turn the student’s notes into a more legible, usable source.

The 6th Lecture in Volume No. 1, for example, contains notes pertaining to “Nutrientia.” It begins thus: “The general Use of Drink is to supply Fluid to the System to promote the Solution & to expedite the Evacuation of the Aliment out of the Stomack. Drink taken in moderate Quantities facilitates Digestion dilutes the Chyle promotes Absorption & thus assists Nutrition. When taken in large Quantities it urges the Food out of the Stomack before it is sufficiently digested accelerates its Motion thro’ the Intestines, by which Means Absorption is prevented thence hinders Nutrition.” Some of the illustrative details are definitely of the day and age. There is a reference to “Persons who fatten Fowls for the Market” as well as to a contemporary celebrity, Captain James Cook, whose first voyage to the Pacific Ocean began in 1768. “Capt. Cook thinks that the Reason why the Scurvy did not appear among his men was as much from allowing them as much Water as they chose to drink.”

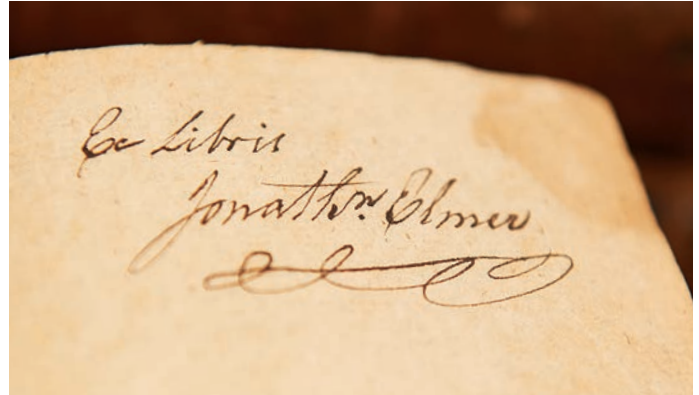
Among the other topics of the notebooks are astringents, emollients, “Stimulantia,” sedatives, and “Antispasmodica.” The last of Elmer’s notebooks contains a variety of items, including a letter to John Morgan regarding the health effects of weather and air; a copy of a letter to William Shippen about the structure and function of the eye; and “An Inaugural Dissertation On the case of A suppressed Catamenia,” which was delivered before professors and trustees of the College of Philadelphia.

All in the Family

Mark Lloyd first got wind of the Elmer notebooks on the occasion of the Class of 1962’s 50th reunion. He had been invited to speak to alumni, who are usually eager to hear about the institution’s history. Peter B. Bloom, M.D. ’62, a clinical professor of psychiatry at Penn Medicine and a Fellow of the

College of Physicians of Philadelphia, introduced him at the luncheon. After Lloyd finished his historical lecture, Bloom told him, “My family is holding this tremendous collection.” Would Lloyd be interested in it? He certainly would! Bloom, it turned out, was a cousin of the Elmer sisters and had been suggesting that they consider donating their “national treasures,” as he called them, for eventual archiving. When visiting Holly Elmer, Bloom had had occasion to read some of the lecture notes. “What impressed me was the high level of observation and deductive reasoning that went into examining patients and their urine, blood, etc. There was little technology, but they milked every ounce of knowledge out of what they had in front of them.” He put Lloyd in touch with his cousins.

Lloyd then was able to arrange for the three sisters to come to Philadelphia with the collection. He knew there would be competition for the notebooks from other organizations, but he was prepared. When the sisters visited University Archives, Lloyd was able to display a remarkable item already in the Archives: Dr. Elmer’s M.D. diploma, hand written in Latin in elegant script. The diploma bears not only his name but the signatures of “Johannes” Morgan and “Gul.” Shippen – as well as those of two professors who had joined the faculty by that



time, Adam Kuhn and Benjamin Rush. Elmer’s notebooks would seem to make a perfect match.

Holly Elmer has been the spokesperson for the Elmer sisters. (Heather Childs Elmer died last year.) Holly provided some of the more recent history of her ancestor’s notebooks. Robert Potter Elmer, M.D. (1877-1951), the sisters’ paternal grandfather, had inherited the books, and Holly feels certain that they were kept in his personal library, a “somewhat protected room,” in Wayne, Pa., where he had practiced. In 1963, they were passed down to her father, Jonathan Elmer IX (1918-1999), who the family believes was the first Jonathan Elmer not to become a doctor! At that point, the notebooks were kept on book shelves in the living room of their house in Radnor, Pa.

When the notebooks came to the three sisters, they split up the collection, keeping them in different locations, on book shelves, in a cabinet, in a box, with varying degrees of care. At a certain point, however, Holly realized that it would be better to find a place for the notebooks where they could be properly cared for. “The primary reason for our donating,” she said, “had more to do with restoring and protecting the manuscripts, making the information accessible to all to read. . . . We considered selling them, but the information would then continue to be private.” The sisters were most impressed with Penn’s resources for restoring and archiving the artifacts – and for converting them to digital format. And of course there was the family’s long tradition with the University.

Holly recalls reading in the seventh notebook – from the time after Jonathan Elmer’s medical training – about his interactions with Indians, learning about different healing herbs. She also cited a segment about trying to cure diarrhea. Even as “a non-medical person,” she says, she enjoyed reading her ancestor’s prose.

Last year, the notebooks were appraised by an independent service with expertise in books and manuscripts. According to Lloyd, the “fair market value” the appraiser assigned is the largest amount for any contribution to the University Archives in his 30 years as director. But the historical value of the now-enhanced Jonathan Elmer collection transcends dollars. And the notebooks now have a new home where they can be studied for an unprecedented view of the earliest medical education in America. □



Mark Frazier Lloyd examines one of the Elmer notebooks.

THE THREE PASSIONS OF HOWARD FRUMKIN

By Marshall Ledger

Howard Frumkin's professional mission is "healthier places for people." He also studies the effect of the natural world on humans – that is, as a strategy to promote health.

Public health professionals constantly look upstream, seeking the causes of illness. Problems tend to be complicated, and solutions generally involve many disciplines. Intelligence, integrity, courage, and advocacy are only four requisites for success in the field. Enter Howard Frumkin, M.D. '82, G.M.E. '84, Dr.P.H.

When you visit Frumkin in his office – he's the dean of the University of Washington School of Public Health – you quickly find that he walks his professional "talk."

His field is environmental health, which aims for the health and well-being of populations. For Frumkin, that also involves individual physical activity, so the very last way the school's Web site provides directions to his office is via auto.

First, you get information on walking and cycling paths, including locations of foot bridges and bike racks. Then bus lines and stops – "Yes! Public transportation entails physical activity" (the site offers upbeat reassurance) – and even kayaking via an adjacent waterway, though no dock, "at least not yet." To get to his third-floor office, you're asked to take the stairs: "healthier . . . (and often faster!)" than the elevator.

Frumkin himself comes by bike, his home a 10-minute ride away; at "U-Dub," as the university is known, he's called "the biking dean." There's more to his health agenda than that, of

course, but it's apparently working. He is wiry and seemingly in shape at 60. Allowing for some graying that has toned down his red hair, he looks younger by a decade or more.

The carpenter and the zookeeper

Walking, biking – they're public health in action. They address obesity, cardiovascular issues, diabetes, depression, and asthma, among other conditions. "We don't have medications that offer that many health benefits across that wide a range of diseases," says Frumkin, an internist and professor of environmental and occupational health sciences.

One principle of public health is prevention, as he illustrates with an emblematic story at the start of one of his textbooks. Residents of a village spent an exhausting day rescuing people from the turbulent waters of a nearby river. The victims were being swept into view one by one, yet there were many of them, and after the final rescue, the townsfolk were totally bushed. Suddenly one of their own approached, clean, dry, and relaxed. Where he had been? Why he hadn't pitched in? the others demanded to know.

When he saw the struggling people, he said, he remembered the footbridge upriver. He walked to it and noticed two boards missing. "So I patched the hole, and people stopped falling through."

Another principle is preparedness, and Frumkin has a mental picture for that, too. How would a zookeeper prepare for an incoming shipment of animals? By creating a habitat in which the animals will thrive. The same approach, Frumkin continues, should apply to human habitats – assuring clean air, clean water, wholesome food, the company of other people, but also privacy, routine opportunities for physical activity, contact with nature. These are "not complicated criteria," but norms not traditionally found in programs of architecture or urban planning – or even, he notes, of public health.

A sense of place

Frumkin's professional mission is "healthier places for people." By places he means the "built environment" – anything man-made, from a single building to neighborhoods, cities, and wider, as well as parks and other outdoor amenities, plus all of the associated infrastructure, including roads and sidewalks.



Photos by Amos Morgan



Known as “the biking dean,” Howard Frumkin bikes to his office . . .

He also studies the effect of the natural world on humans – that is, as a strategy to promote health. And he examines climate change for the kind of demands it will place on public health professionals and the responses the field should anticipate.

These “three passions” (his phrase) may well make Frumkin unique in public health. Richard J. Jackson, M.D., M.P.H., provides a perspective. A pediatrician, Jackson serves as professor and chair of environmental health sciences at U.C.L.A.’s Fielding School of Public Health and has collaborated with Frumkin since 1994. Relatively speaking, he says, many in environmental health are working on the built environment, fewer in climate change, and a “handful” on the importance of nature to human well-being. “But the ‘iron triangle’ of the three is really, I think, unparalleled.”

A central point of Frumkin’s agenda is to claim, or reclaim, a significant stake for public health in each one. He wants public health concerns to be incorporated into all of the stages that go into built environments, from the planning and design to the actual construction and subsequent fine-tuning. To reach this goal, he needs the ear of the disciplines that make these environments.

Sprawl and its discontents

Frumkin focuses on urban sprawl. That model features geographic expansion of cities over large areas; conversion of nearby farmland and forests into residential developments; low population density; the absence of defined, compact downtowns or “activity centers”; discrete uses of land, so that housing, commercial cores, offices, industry, schools, recreational spaces, and public areas such as parks are kept separate from one another; and heavy reliance on automobiles.

For instance, he has pointed out, some suburban schools are built on parcels of land so large that no child could ever walk or bicycle there. An aerial photo of the Hubbard Lake Elementary School in Michigan shows the school in the center of a vast grassy landscape, seven miles from the nearest student’s home. “And we wonder why we’re seeing an obesity epidemic.”

Frumkin is not an urban nostalgist. With half of all Americans living in the suburbs, he recognizes that many might choose to live there for the greenery, better school systems, or other lifestyle preferences, and might well enjoy feeling mobile and independent in their cars. At the same time, in the 1990s, he began to investigate the “human costs” of sprawl, just when it was being associated with other negative health trends such as obesity, explosive behavior such as road rage, and motor-vehicle fatalities. “Well,” he says, “put this all together, and it paints a picture.”

A few decades earlier, sociologists had begun analyzing suburban activity, especially the long-distance commute. One distinctive finding: Suburbanites tend to have less community involvement than do people who live and work near one another. In his own field, Frumkin says, few systematic, rigorous studies took the broad view and looked at not simply the absence of disease but “health in the broad sense: health and well-being.” Worse, he realized, even if public health practitioners undertook such systematic research, they were not positioned to offer solutions because they didn’t deal directly with the professionals who actually created built environments: for instance, urban planners, architects, transportation engineers, real estate developers, environmental psychologists, and geographers.

A link had been lost, he points out. A century and more ago, the fields of public health and urban design had “largely indistinguishable concerns.”

Sharing the property

Frumkin has sought to reunite the isolated domains, starting with showing what his field can contribute. In 2002, he proposed a “public-health framework for understanding the consequences of urban sprawl.” He looked at car-related effects, such as increased air pollution, crashes, and pedestrian injuries and fatalities. He looked at outcomes due to dispersed land use: e.g., sedentary lifestyles, threats to water supplies, and decreased likelihood that people with disabilities would be physically active and socially integrated in their communities. And he looked at effects on mental health and social interactions – or “social capital.”

A year later, the *American Journal of Public Health* published a special issue titled “Built Environment and Health,” raising a banner that essentially started a movement. For that issue, Frumkin collaborated on one article and was the single author on another. The literature was full of recommendations on how “place matters for health,” he said, but little empirical work supported them. He then described promising research opportunities that could produce the “solid evidence” urban planners, architects, and others would need to build healthier environments.

How does public health have something to offer? As Frumkin noted, air pollution is a problem not merely where it occurs but also downwind, thus affecting an entire region. A sedentary routine is “a well-established risk factor for cardiovascular disease and stroke,” potentially contributing to obesity, an epidemic currently estimated to cost \$190 billion annually in the United States. The risk associated with poor physical fitness, he pointed out, “is comparable to, and in some studies greater than, the risk associated with hypertension, high cholesterol, diabetes, and even smoking.”

Motor-vehicle deaths (already higher in the suburbs than in cities and the highest cause of death of young people) remain far too high, at more than 30,000 each year nationally, despite better car and highway design: “If you put people in a dangerous microenvironment for longer and longer periods of time, then the probability is that worse things will happen,” he says, adding, “That’s a public health shame.”

Public health is also essential to environmental justice. Because studies indicated that the poor and minorities are “disproportionately exposed” to environmental hazards, these populations might also be excessively affected by sprawl – for instance, simply getting to work if they are carless, live in the city, and have a job in the suburbs.

Merely identifying the health costs, however, would not guarantee public health a say in the planning, design, and construction of built environments, so Frumkin went further. He advised planners and architects to use “standard health-research methods” – for instance, clinical trials and observational epidemiology.

He encouraged health researchers to study the results of “natural experiments” such as the latest improvements in mass transportation and new mixed-use projects, in which various uses of land are integrated, rather than kept isolated as they usually are in suburbs.

Most of all, perhaps, he recommended that his field initiate “innovative partnerships” with other professionals, such as ur-



... and he also enjoys the natural world whenever possible.

ban planners, architects, and real-estate developers. Essentially, Frumkin was articulating what he calls “a broader agenda for environmental health.”

After producing the evidence, medically oriented fields may sometimes find it appropriate to step aside, he suggests: “Maybe sometimes the best dollar you can invest in improving somebody’s health is in the architecture or education or law-enforcement sector, not the health sector.”

Prescription: Nature

Frumkin works in a grim setting – “seven floors of dungeon,” he has called the building that houses U-Dub’s health sciences. “I may be the only public health dean in the world who has an asbestos warning sticker on the wall of my office.”

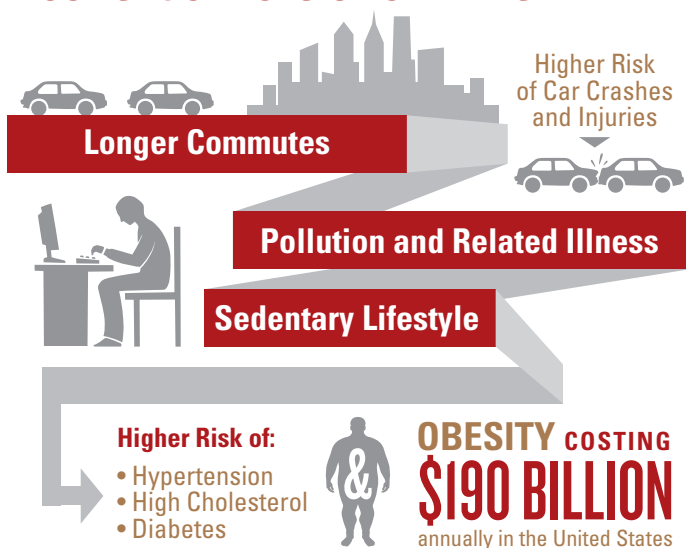
But from his window, he can gaze right into the heart of a stand of trees, with the waters of Portage Bay and the Montlake Cut beyond them. According to his own research, that view should help reduce the stress of his workday, serving, in his words, “as a powerful form of preventive medicine.”

Nature, Frumkin acknowledges, “almost sounds like an odd, Birkenstock-and-granola field. It’s generally the domain of people in parks and recreation or the interdisciplinary field of environmental psychology. Not many people in the biomedical side are in it.”

For him, it started as a sideline interest about 15 years ago, when he pulled together the available data and wrote a review paper. “Before I knew it, I was one of the experts in the health benefits of contact with nature.”

Frumkin had both theoretical and evidence-based support. In 1984, Edward O. Wilson, Ph.D., the polymath sociobiologist at Harvard University, developed the concept of “biophilia,”

CONSEQUENCES OF URBAN SPRAWL



which he defined as “the innately emotional affiliation of human beings to other living organisms.” Subsequent research suggested that humans have an “innate bond” with nature.

In the same year, coincidentally, Roger Ulrich, Ph.D., now at Texas A&M University, published a seminal analysis in *Science* titled “View Through a Window May Influence Recovery from Surgery.” Frumkin summarizes: Patients who could see trees and animals from their beds “needed less pain medication and left the hospital sooner with fewer post-operative complications and fewer negative nursing notes” than patients whose windows faced brick walls.

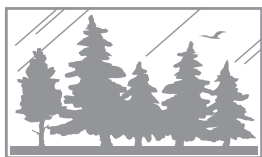
Frumkin proceeded to identify four domains of nature contact: connections with animals; views of nature; nature outings; and treatment, such as horticultural therapy. (Many hospitals had healing gardens, he notes, adding that Pennsylvania Hospital had planned a “physic garden” back in 1774, but then called it off, only to actually create it 202 years later, with curative herbs that Revolutionary-era physicians would have used.)

“The evidence for [health] benefits was spotty and inconsistent and incomplete, nothing at all approaching the level of

FOUR DOMAINS of Nature Contact that Promote Healing



1 Connections with Animals



2 Views of Nature



3 Nature Outings



4 Horticultural Therapy

rigorous evidence that we expect, and have, to support (for instance) our use of medications. So thinking biomedically, you feel a little hesitant in prescribing nature to people.” For instance, is a setting of shrubs as healing as one of trees? Must the trees have leaves on them, or can they be bare, as deciduous trees in winter? Are plants on the windowsill sufficient? How long does the effect last?

The area, Frumkin continues, “gives rise to a lot of testable hypotheses, and it enables – actually requires – health professionals to team up with architects and recreation officials and others to create nature-contact situations that are health-promoting and then test them to verify that they work.”

Even so, the evidence overwhelmingly points toward benefit: “We need to know more, but we know enough to act.”

Climate change

“In some ways,” says Frumkin, “climate change is the defining health issue of our time. It probably is already claiming several hundred thousand lives a year internationally. But we haven’t seen anything yet” – because it is accelerating even faster than the most sanguine models have predicted.

“That will mean increased risks of a whole range of adverse health outcomes,” he adds, reeling off a few of them: more allergen exposure due to worsening air quality; more infectious diseases, varying from place to place; diminished food production in many parts of the world, especially in parts already nutritionally insecure; drought, wildfires, and water scarcity in some regions; and severe weather events such as hurricanes, which cause their own bad health consequences.

For instance, he says, Katrina caused a hasty relocation of large numbers of people. People who needed chemotherapy or dialysis or psychotherapy, where the continuity of care is very important, didn’t have it. Without an electronic medical records system, people who ended up far from home often couldn’t access information about their care.

“I think we’re called upon, not only as contemporary health professionals but also for the sake of future generations, to do everything we can to, first, reverse climate change and, second, forecast what the health impacts are likely to be and try to prepare for them in order to reduce the harm that all of us will suffer.”

He seems heartened by some recent progress. At first, he says, research about climate change came from earth scientists, with few social scientists or health professionals present. But from 2006 to 2010, he served on the panel that coordinated the work of the U.S. Global Change Research Program.

Last year, Frumkin was one of the authors of a review of climate change and health that appeared in the *Journal of the American Medical Association*, at the time of the United Nations summit on that topic. He was also one of the lead authors of the Health section of the U.S. National Climate Assessment report. In addition, he was the only physician on a panel assembled by the American Association for the Advancement of Science that issued “What We Know: The Reality, Risks, and Response to Climate Change.” One of the things these experts *know* is stated explicitly: In November, Frumkin’s views were the topic of a blog maintained by *WIRED* magazine. He stated that climate change is “the biggest health challenge in the coming century.” The views expressed in the 99 comments varied widely! One respondent claimed that “The undisputed data shows that temperatures haven’t risen in 16 years” and cited the presence of global warming “cultists.” One claimed that “The undisputed data shows that temperatures haven’t risen in 16 years” and noted the presence of global warming “cultists.”

Shaping the field

How do Frumkin’s passions weave together? He suggests a scenario: If people crave interaction with nature and it’s good for them, cities could set a goal of building as much green space as possible. Such an urban design strategy reduces the



An office inside, but Howard Frumkin's window provides a beneficial view of trees and water.

Thrust into leadership

"He's a phenomenon. I knew that from the first day I met him," says Frumkin's Penn mentor, Paul D. Stolley, M.D., M.P.H., then the Herbert C. Rorer Professor of Medical Sciences. That quality surfaced quickly in Frumkin's career.

"When I met him, he was already political and an advocate." As an undergraduate at Brown University, for example, Frumkin was part of an independent study project on the working conditions and health effects of Rhode Island factories where costume jewelry was made. But, continues Stolley, "he probably wasn't getting a lot of encouragement in medical school from other faculty. I told him he was on the right path. There's no point doing public health if you're not also going to be an advocate for the population. It's not just gathering data. It's following through." Frumkin interrupted his Penn studies to take a master's degree in public health at Harvard University. Back at Penn, he worked under Stolley, who recommended him for a fellowship program in Japan. There, his student wrote a paper on occupational health, which demanded analyses and international comparisons that moved him toward academic health.

Frumkin joined the Penn faculty in 1988 as an assistant professor of medicine but left two years later for the Department of Environmental and Occupational Health at Emory University. He had the same junior-faculty title but was also recruited to serve as department chair, a position he held for 15 years. He proved confident in developing programs, such as a pediatric specialty in environmental health. In addition, he set up collaborations with the university's medical school and with the Department of Environmental Studies, based in Emory's College of Arts and Sciences. He also earned a Dr.P.H. degree in epidemiology from Harvard.

Some of his professional élan and future direction is suggested in his course "Green Books, White Coats: The Literature of the Environment and Health," an elective for second-year medical students, which he taught in the 1990s with the late Melissa G. Walker, Ph.D., writer and editor of environment writing

and Emory English professor. The texts included classics (e.g., Rachel Carson's *Silent Spring*), works promoting an "environmental consciousness" (Bill McKibben's *The End of Nature*), and personal accounts. The course was held, tellingly and weather permitting, by the pond and wooded trails of the university's Lullwater Park. While Walker addressed the books' literary values, Frumkin raised such questions as how the environment affects health; what physicians might learn from, and teach to, the environmental movement; what to do with uncertainty; and how to handle a bad prognosis.

Public service, public controversy

In 2005, Frumkin moved to the U.S. Centers for Disease Control and Prevention, where he became director of the National Center for Environmental Health and Agency for Toxic Substances and Disease Registry – and ultimately endured his most trying administrative period.

In 2007 he was accused of suppressing a report summarizing environmental exposures in contaminated areas of the Great Lakes region. The paper had not gone through regular channels, he says, so its appearance on his desk took him by surprise, as did its "poor scientific quality." He asked for a revision and, in light of other performance issues as well, reassigned the report's leader. That person went to Congress and claimed his science had been stifled.

Frumkin: "That was a tough thing. I am a very strong believer in not stifling science. I'm a very strong believer in making public health data available to the public. But it has to be high quality. It doesn't do the public any good for a government agency to release work that is inaccurate or misleading."

Two congressional committees dismissed the charge, he notes, but a newly elected congressman, along with the political news organization Politico, kept it alive. Finally, he sent the report for review to the Institute of Medicine, which cited (among other concerns) limitations with data (some, for instance, "were used because of their availability"), an absence

of clear statements of purpose or rationale for the selection of data, misleading conclusions drawn from the data, inadequate responses to criticisms of earlier drafts, and an “inappropriately alarmist” tone in the narrative. The IOM’s analysis supported Frumkin’s judgment.

The charge of suppression, however, had traction because of a problem Frumkin acknowledges causing. In 2005, the Federal Emergency Management Agency placed those who had lost their houses to Hurricane Katrina into mobile homes, “which exposed them to formaldehyde,” Frumkin says. “In the immediate crisis period after Katrina, we prioritized safe water, safe food.” They were also concerned about toxic exposures and formaldehyde in mobile homes. “But we didn’t think it was a big problem at the time.” Unfortunately, by the time the agency was paying attention, some months had elapsed. “That was an honest mistake, and I have said in congressional testimony that if I could run the clock back, I would have jumped on that sooner. But that was widely viewed as a failure of the agency. So two strikes.”

Despite the controversies, he counts some 20 accomplishments during his directorship, including the creation of programs in climate change and in the design of healthy communities; expansion of programs on biomonitoring and environmental public-health tracking; and the launch of a National Conversation on Public Health and Chemical Exposure.

Still, in a move some saw as a demotion, he was made special assistant to the CDC Director for Climate Change and Health in January 2010.

By September, he would be in Seattle.

The dean settles in

“I find when I walk into a place, I look at it with diagnostic eyes, almost as a physician diagnosing a patient,” Frumkin says. Of himself at U-Dub? “I feel it’s a very good fit.”

He arrived when the university seemed to be literally talking his language. Five colleges, including forestry and ecology, had recently been combined into the College of the Environment (“the largest in the country in one fell swoop”). The College of Architecture and Urban Planning was “re-envisioned completely, re-conceptualized, and renamed” the College of Built Environments.

Frumkin figures the provost picked him to head public health because of his experience in bridge-building across the disciplines in the other colleges. The three deans in fact write grants together, make cross-school appointments, and create their agendas with a sense of where they might align with the others.

Another reason may be what his colleagues call the breadth and depth of his competence in a public health school’s traditional departments: biostatistics, environmental and occupational health, epidemiology, global health, and health services. In 2012, he unveiled the School of Public Health’s strategic plan, aimed to reinforce its core activities and to develop new areas, including some that seem to have Frumkin’s imprint, such as “Obesity, Food, Physical Activity, and Health” and “Social Determinants of Health.” The plan, and the consultative process that created it, received a ringing endorsement from, among

others, the school’s students and their council.

Frumkin has embraced the campus initiative to increase engagement. He created a Dean’s Council of community leaders, invites faculty and staff to lunch (on his dime), and meets with students in sessions called “Hangin’ with Howie.” They’re bewildered by his informality. Student: “If you’re such an eminent guy, why do you go by Howie?” Howie, smiling: “One, why do you think I’m so eminent? And two, that’s my name.”

“Howie” is married to someone with a name that will be familiar to many who have listened to National Public Radio: Joanne Silberner, who covered health policy. She teaches journalism in U-Dub’s Department of Communication and does reporting as a freelancer. In 2013, Silberner won a Communication Award from the National Academy of Sciences for a radio series on cancer in the developing world.

At the university, Frumkin has instituted student service days. In one case, students and he went to the central food-distribution center and packed fruit for shelters and local food banks. “There’s something about inculcating the spirit of service, together with emphasizing that when we work together, it feels good and can be fun,” he says. “I want that to be part of the school ethos.”

Why? “You bring a sense, ideally, that there are goods that are greater than yourself, and the positive impact you can have on the world is bigger than yourself, and you’re primarily about serving others. I think that was very much the spirit of my medical training and very much the best of public health thinking as well.” □



Howard Frumkin peers down within his “seven floors of dungeon.”

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— J. Larry Jameson, M.D., Ph.D.
EVP of the University of Pennsylvania for the Health System
Dean, Perelman School of Medicine

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Gifts in any amount to the 250th fund will be recognized in the University's honor roll, **People Supporting Penn**, and Penn Medicine's 250th edition of **Partners in Giving**. The 250th fund will benefit students and trainees across our campus – in the medical school, in our labs, and training with our doctors and surgeons.

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Kick-Off Breakfast

Lobby, Smilow Center for Translational Research

50th Reunion Panel – Journeys and Reflections

Rubenstein Auditorium, Smilow Center for Translational Research

Join members for the Medical Class of 1965 as they look back to the School's 200th anniversary and reflect on the history they have witnessed in 50 years of medicine.

Faculty Panel: The Next 250 Years of Medicine

Hear the insights of experts from across Penn Medicine as they consider the future of health care.

Alumni Awards Presentation

Join Dean J. Larry Jameson and Perelman School of Medicine alumni as we celebrate our rich tradition of alumni involvement and service, and recognize the dedication of our alumni.

Dedication of The New Henry A. Jordan M'62 Medical Education Center & Lunch

5th Floor, Henry A. Jordan M'62 Medical Education Center, 3400 Civic Center Boulevard

Join **President Amy Gutmann, Dean J. Larry Jameson, Drs. Arthur Rubenstein and Gail Morrison, Barbara M. Jordan** and the **Jordan family** in a ceremonial ribbon cutting celebrating the beautiful new Henry A. Jordan M'62 Medical Education Center. Visit the stunning new classrooms and dramatic public spaces, then join us for a festive seated lunch immediately following.

Inspiring History: The Founder's Itinerary

Rubenstein Auditorium, Smilow Center for Translational Research

As the founder of America's first medical school, John Morgan sought out the best in medical education. Prominent speakers representing Dr. Morgan's preceptors in Europe and America present a lively guided tour of the origins of our tradition of excellence.

Class Dinners – Reunion & Non-Reunion Years

SATURDAY, MAY 16

All Alumni Brunch

Lobby, Henry A. Jordan M'62 Medical Education Center

Front Row Seats: Penn Medicine Alumni Share their View of Penn's Leading Role in Medicine

Law Auditorium, Henry A. Jordan M'62 Medical Education Center

Distinguished alumni from across classes discuss their student experiences, give their point of view on Penn Medicine's leading role, and share the significance of the 250th Celebration.

250th Penn Medicine Alumni Parade & Picnic

Wynn Commons, 3417 Spruce Street

Lead the First Medical School in America across campus in the All Alumni Parade to commemorate the 250th Year. Join us for fun, food, and games as we celebrate with all alumni, students, parents, and friends who have had a hand in the past 250 years. This is an extravaganza not to be missed!

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ANSWER THE DISTINGUISHED PROFESSORSHIP CHALLENGE

“The momentum at Penn and Penn Medicine has never been stronger. That’s why fellow Trustee Richard Vague and I have pledged \$10 million in matching funds to endow new distinguished chairs at the Perelman School of Medicine.”

George Weiss, W ’65, HON ’14,

Chair, Penn Medicine Development Leadership Cabinet
Say Yes to Education Foundation

Angela and Richard T. Clark, chair of the Cardiovascular Institute Leadership Council and former CEO of Merck, took up the challenge and established the first chair at Penn Medicine in President Gutmann’s new initiative to establish 50 Distinguished Presidential Chairs throughout campus in the next five years.

The Clarks’ gift honors **Frank Marchlinski, M.D.**, the leader of Penn Medicine’s internationally renowned program in cardiac electrophysiology.

Ely Michel and Karen Ruimy, who live in London, chose to support medical research at Penn by endowing a President’s Distinguished Professorship. The chair will be awarded to a faculty member focused on liver cancer research and care.



George Weiss, at the dinner welcoming David L. Porter, M.D., longtime collaborator with Carl June, M.D., as the inaugural Jodi Fisher Horowitz Professor in Leukemia Care Excellence. As chair of the Penn Medicine Development Leadership Cabinet, Weiss believes the 250th year is the time to build Penn Medicine’s momentum. He has generously supported not only the professorship challenge, but also individual chairs and medical research.

TO GIVE

To learn more about endowing a named professorship, please contact Paul Mischler, Deputy Chief Advancement Officer, at mischler@upenn.edu or 215-573-3089.

MAKE MORE FIRST BIRTHDAYS A REALITY

Support the First Year of the March of Dimes Prematurity Research Center at the University of Pennsylvania

Despite years of research, the causes of preterm birth remain a mystery and, as a result, interventions and treatments to prevent preterm birth have been unsuccessful. Premature

birth remains the leading killer of children under five years of age. Those who survive can face neurologic and other disorders. With a price tag of \$26 billion annually for medical and other services, premature birth is devastating to families and a significant cost to society.

“I can’t tell you how difficult it was, seeing our own little boy lying in the NICU, fighting for life. As an NFL player, I battled many fierce opponents and challenges on the field. But when our son was born, I felt so helpless and frightened.”

Darwin Walker, retired defensive tackle for the Philadelphia Eagles, currently a pre and post-game analyst for the Philadelphia Eagles on Fox 29.

In November, the March of Dimes announced a \$10 million commitment to Penn to launch the March of Dimes Prematurity Research Center at the University of Pennsylvania. While prematurity research has often studied nutrition, maternal age and health, and genetic factors, the interdisciplinary team at the new center will focus on the biological mechanisms that lead to spontaneous premature birth.

TO GIVE

Visit: PMDAR.org/giving

To support the March of Dimes Prematurity Research Center at the University of Pennsylvania and the opportunity to sign a best wishes card for families heading home from Penn’s Neonatal Intensive Care Unit.

Photo Courtesy of Kristine Ryan Photography



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Established in 2012, the Academy recognizes and celebrates our clinical faculty, the superb practitioners who inspire our future physicians. New inductees receive a cash award and time to develop best practices for mentorship and for improving the way Penn Medicine delivers patient care.

“As a general internist, doing one’s best includes practicing evidence-based medicine, bringing to bear upon each patient’s problem the most effective diagnostic and therapeutic services available, while always keeping in the forefront that each patient is an individual with his or her individual goals, preferences, and priorities.”

— *Jack Ende, M.D., MACP, Assistant Vice President, UPHS; Assistant Dean, Perelman School of Medicine; Adele and Harold Schaeffer Professor in Medicine*



At the inaugural celebration for the Academy of Master Clinicians. Left to right: John H. Glick, M.D., chair of the Founding Committee of the Academy and the Leonard and Madlyn Abramson Professor in Clinical Oncology; Ralph W. Muller, CEO of the Health System; Jack Ende, M.D., the Adele and Harold Schaeffer Professor in Medicine; and Dean J. Larry Jameson, M.D., Ph.D.

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The Academy was founded with a generous gift from Independence Blue Cross, and many individuals have stepped forward to help endow the program. We hope you will consider joining them with a gift this year, the perfect time to honor our 250 year tradition of educating master clinicians.



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To see your name in the program and receive an invitation to the annual event honoring the new class, please contact Clint McCall, Senior Director of Development at mccallc@upenn.edu or 215-746-2215.

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1970s

Samuel O. Okpaku, M.D., Ph.D., G.M.E. '78, is the editor of a new book, *Essentials of Global Mental Health* (Cambridge University Press). According to the book, mental illness accounts directly for 14 percent of the global burden of disease, and there is an urgent need to expand and improve the delivery of mental health, especially in low- and middle-income countries. Okpaku is executive director of the Center for Health, Culture, and Society in Nashville. A former fellow in Penn's Depression Research Unit, he had been a faculty member of the Department of Psychiatry. He is a former chairman of the Department of Psychiatry at Meharry Medical College and a clinical professor at Vanderbilt School of Medicine. He has been a recipient of fellowships from the World Health Organization and the National Institute of Mental Health. Okpaku's earlier books include *Clinical Methods in Transcultural Psychiatry* (1998).

1980s

Charles L. Bardes, M.D. '86, professor of clinical medicine and associate dean of admissions at Weill Cornell Medical College, received the 2014 Alpha Omega Alpha Robert J. Glaser Distinguished Teacher Award. He is the most decorated teacher in the college's history, having received 27 teaching awards since joining its faculty in 1989. Previously, he served as director of the medicine clerkship for more than 17 years and is now focused on implementing Weill Cornell's new medical education curriculum. Author of a variety of essays and poems, he is also a reviewer for *Academic Medicine*.

Kenneth C. Fang, M.D. '88, has become chief medical officer of DiaDexus, Inc., a commercial stage developer of proprietary cardiovascular diagnostic products. Previously, he was chief medical officer and vice president of translational research and clinical development at Integrated Diagnostics, where he led a comprehensive range of clinical activities, including clinical development, clinical operations, biometrics, medical affairs, project management and quality and regulatory affairs. Prior to Integrated Diagnostics, he was responsible for clinical development at XDx, a privately held company in Brisbane, California, where he directed clinical studies.

1990s

Matthew Lorei, M.D. '90, associate professor in the division of orthopaedic surgery at Temple University, was named chief of the division of orthopaedics in the Department of Surgery at Chestnut Hill Hospital.

Gary M. Phillips, M.D. '92, G.M.E. '97, has joined the board of directors of Envisia Therapeutics. He is currently the senior vice president and chief strategy officer at Mallinckrodt Pharmaceuticals. Before joining Mallinckrodt, he served as head of Global Health and Healthcare Industries at the World Economic Forum in Geneva, Switzerland. Previously, he was president of Reckitt Benckiser Pharmaceuticals, Inc., and held the dual roles of president, U.S. Surgical and Pharmaceuticals and global head of pharmaceuticals at Bausch & Lomb Incorporated. He has also held executive roles at Merck Serono, Novartis, and Wyeth, and served as a health care strategy management consultant at Towers Perrin and as a medical officer with the U.S. Navy.

2000s

Charles Munyon, M.D. '07, has been appointed assistant professor of neurosurgery at Temple University School of Medicine and director of functional and restor-

ative neurosurgery at Temple University Hospital. He had been a clinical fellow in functional and stereotactic neurosurgery at University Hospitals Case Medical Center, Cleveland, and clinical instructor at Case Western Reserve University, Cleveland.

John P. Williams, M.D. '00, G.M.E. '09, M.B.A. '00, founder of The Main Line Center for the Family, became president of the Academy of Cognitive Therapy earlier this year. The academy is an international board that certifies mental health clinicians in cognitive behavioral therapy. A clinical assistant professor in Penn's Department of Psychiatry, he was appointed last year to the Pennsylvania Board of Pardons. In November, he received the Jack Greenspan Award from the Philadelphia Psychiatric Society, given for private practice excellence by an early-career psychiatrist.

OBITUARIES

1940s

Samuel E. Warshauer, M.D., G.M. '40, Wrightsville Beach, N.C., a retired cardiologist who had maintained a practice in Wilmington for 42 years; August 1, 2013. He had been chief of staff of the James Walker Memorial Hospital and the New Hanover Regional Medical Center. During World War II, he served with the U.S. Army Medical Corps in the Pacific.

Stanley H. Lorber, M.D. '43, Palm Beach, Fla., a retired physician; November 24, 2014. He served as a flight surgeon in the U.S. Army during World War II in the European theater with the rank of captain. A professor of medicine for 43 years at Temple University School of Medicine, he was chief of gastroenterology for 25 years. He wrote more than 140 scientific articles and numerous textbook chapters and presented before the 1970 Nobel Symposium in Stockholm. In the late 1950s, he became the first team doctor in the National Basketball Association, a position he held for 25 years. He consulted for the U.S.

Navy, Veterans Affairs, and the Food and Drug Administration. After his retirement, Temple created the Stanley H. Lorber Chair in Medicine in his honor.

Lillian Panzer Kravis, M.D. '43, G.M.E. '47, Philadelphia, clinical professor of pediatrics at the Perelman School of Medicine; February 10, 2014. Affiliated with the Children's Hospital of Philadelphia, she also had maintained a private pediatrics practice for more than 50 years, specializing in allergies. Her sister is Ruth Panzer Gottlieb, M.D. '54, G.M.E. '58; and her children include Ellen Kravis Hamburger, M.D. '81, and Nathan M. Kravis, M.D. '83.

Charles A. DeLone Jr., M.D. '45, Camp Hill, Pa., retired chief of obstetrics and gynecology at Holy Spirit Hospital; October 7, 2013. During World War II, he served in the U.S. Army Medical Corps.

Homer Musgrave, M.D. '45, Albuquerque, N.M., a retired anesthesiologist; December 19, 2013. He served in the Army Medical Corps at Fort Dix. He moved to Albuquerque in 1950, where he practiced until retiring in 1983.

John Mitchell Sorrow Jr., M.D. '46, G.M.E. '50, Chapel Hill, N.C., a retired physician; October 27, 2014. He completed his first two years of medical school at the University of North Carolina (then a two-year school) before finishing at the University of Pennsylvania, where he was elected to the Alpha Omega Alpha Honorary Medical Society. Following his internship at HUP, he served in the U.S. Navy. Sorrow was chief resident in medicine at the North Carolina Memorial Hospital. After a fellowship in cardiology at UNC, he joined its faculty as an instructor in 1954 and eventually rose to professor of cardiology. In 1970, he became associate dean of student affairs, where he served until his retirement. Sorrow was a fellow of the American College of Physicians and of the American College of Cardiology.

William Hawk, M.D. '47, G.M.E. '51, Naples, Fla., a retired physi-

cian who was the first CEO of the Cleveland Clinic Florida; December 24, 2013. He served in the Navy during the Korean War and was a medical officer on the troop transport ship *U.S.S. General W. A. Mann*. He was a fellow of the American College of Pathologists as well as emeritus clinical professor of medicine at Case Western Reserve University.

Ross H. Musgrave, M.D., G.M. '48, Fox Chapel, Pa., a retired surgeon; September 12, 2014. He served in Japan during World War II. A plastic surgeon in private practice, he was also a clinical professor of surgery at the University of Pittsburgh Medical Center. During his career, he had been president of the American Society of Plastic Surgeons, president of the American Cleft Palate-Craniofacial Association, and governor of the American College of Surgeons. He was honored by the University of Pittsburgh with the Bicentennial Medallion of Distinction. After a long teaching career and private practice, he became the executive director of the Medical Alumni Association and established the Musgrave Lectureship for Plastic Surgery.

William C. Yohe, M.D. '48, York, Pa., a retired physician; December 18, 2013. He served in the U.S. Army in World War II and was later recalled to active duty in the Korean Conflict, serving aboard the *U.S.S. Randall* as a naval doctor. He established his medical practice in York in 1953. He retired from private practice in 1992 but continued to work at the York Hospital Medical Clinic for the next ten years.

Richard S. Monheit, M.D., G.M. '49, Elkins Park, Pa., a retired cardiologist at Albert Einstein Medical Center; March 27, 2013. His son is Alan G. Monheit, M.D. '75.

Bernard F. Poracky, M.D., G.M. '49, Ogden Dunes, Ind., a retired physician and surgeon; July 23, 2014. He was a founding member of Radiological Associates of Northwest Indiana. He practiced medicine for 50 years, and continued working part time at Radiological Associates and at Bethlehem Steel following his retirement.

1950s

Humbert M. Gambacorta, M.D. '50, Toms River, N.J., a retired ophthalmologist; January 22, 2014. In 1955 he was drafted and served as a captain in the U.S. Army Medical Corps. He was stationed at the Second General Hospital in Landstuhl, Germany, for two years. Upon his return from active duty, he established his solo practice in ophthalmology in Essex County, N.J., retiring in 1995. He was director of ophthalmology and a member of the executive committee of the Newark Eye and Ear Infirmary of the United Hospitals Medical Center in Newark and served a year as chief of staff. From 1980 to 1991, Gambacorta was the ophthalmological consultant and medical administrative consultant to the New Jersey Commission for the Blind and Visually Impaired and was associated with the commission for more than 20 years. He was a former president of the Northern New Jersey Ophthalmological Society, a fellow of the American College of Surgeons, and a diplomat of the American Board of Ophthalmology.

Peter Randall, M.D., G.M.E. '50, Chestnut Hill, Pa., a retired plastic surgeon; November 16, 2014. After a tour of duty in the U.S. Navy, he traveled the world, training doctors and nurses in reconstructive surgery. In India, he operated on lepers to restore the use of their hands. He volunteered in Vietnam during the war to teach local surgeons how to perform skin grafts on burn patients and traveled with multidisciplinary medical teams to China, Israel, Vietnam, and India to help patients with cleft lips and palates. He became chief of Penn's plastic surgery division in 1979. A former president of the American Society of Plastic Surgeons, the American Cleft Palate Association, and the Robert H. Ivy Society of Plastic Surgeons, he had been first vice president of the American College of Surgeons.

John E. Davis, M.D., G.M. '51, Manchester, N.H., January 17, 2013. He was a member of the surgical staff at both Samaritan and St. Mary's hospitals and had

served as president of the medical staff at Samaritan.

Thomas H. Ginley, M.D., G.M. '51, Bryn Mawr, Pa., October 8, 2013.

John B. Kucharzuk, M.D. '51, G.M.E. '58, Allentown, Pa., a retired obstetrician and gynecologist; September 27, 2014. He served as chief of obstetrics and gynecology as well as president of the medical board at the Sacred Heart Hospital in Allentown. In 1971, he opened its Fetal Care Unit. He was a fellow of the American College of Surgeons and of the American Congress of Obstetricians and Gynecologists, as well as a member of the Benjamin Franklin Society of the University of Pennsylvania.

George R. Hart, M.D. '52, G.M. '59, Fort Myers, Fla., a retired physician; February 22, 2014. He served in the U.S. Maritime Service as a purser/pharmacist's mate for three years during World War II. In 1954, he enlisted in the U.S. Naval Medical Corps and served for two years as a Destroyer Squadron Medical Officer. In 1969 he was sent to Vietnam as commanding officer of the 1st Hospital Company, 1st Marine Division, in Da Nang. He was awarded the Legion of Merit for his service. His final naval posting was as executive officer of the Annapolis Naval Hospital. After retiring from the Navy in 1974, he opened an ENT practice in New Castle, Pa. Hart also served as staff president of the Jamison Hospital, as secretary-treasurer of the County Medical Society, and as school committee representative in New Wilmington.

John P. Stewart II, M.D. '52, Frankfort, Ky., a radiologist; June 14, 2014. He served in the U.S. Navy from 1945 to 1946. He was president of the Kentucky Medical Association in 1978 and received its Distinguished Service Award in 1996. Stewart chaired the committee that built the Frankfort Regional Medical Center, which opened in 1973. He also served as director and chairman of the Stewart Home and School, a private special-education residential facility founded in 1893, which he helped develop into a premier school and com-

munity for lifelong education of the mentally challenged.

John M. Akin Jr., M.D. '53, G.M. '60, Mountain Brook, Ala., a retired surgeon who was director of the general surgery program of Baptist Health System; March 1, 2013.

George J. Chohany, M.D., G.M. '54, Williamsburg, Va., a retired surgeon; June 9, 2012.

Kenneth H. McCrocklin, M.D., G.M. '54, Louisville, Ky., a retired general surgeon; December 29, 2013. He had served in the U.S. Air Force.

F. Douglas Raymond Jr., M.D. '54, cofounder of the Bryn Mawr Rehabilitation Center and Bryn Mawr Medical Specialists Association; October 18, 2014. He served in the U.S. Navy during World War II. An attending physician at Bryn Mawr Hospital for nearly 40 years, he was chief of rheumatology from 1965 to 1990. Committed to educating the next generation of physicians, he served at various times on the faculties of the University of Pennsylvania, Temple University, and Jefferson Medical College. Raymond was a fellow of the American College of Physicians, the Philadelphia College of Physicians, and the Philadelphia Rheumatism Society, which he served as president 1982-83. He was a former board member and president of the Medical Club of Philadelphia. A longtime member of the Church of the Redeemer in Bryn Mawr, he founded its Men's Bible Study.

Eugene Braiden Rex, M.D., G.M. '54, Orlando, Fla., a retired otolaryngologist; April 4, 2014. During World War II, he served in the U.S. Army, leader of the 112th Regiment, 28th Infantry, also known as the Pennsylvania Bloody Buckets Keystone Division. Lieutenant Rex, who also served as platoon leader, reconnaissance executive officer, and company commander, fought in the Battle of the Bulge, ultimately receiving the Bronze Star, five campaign stars, and a Presidential Unit Citation. After the war, he earned his M.D. degree at the University of Maryland. He took an internship and residency at

the University Hospital, University of Maryland, followed by a residency at Graduate Hospital and the Children's Hospital of Philadelphia. He was certified by the American Board of Otolaryngology in 1958 and set up practice in suburban Philadelphia, where he worked as an ear, nose, and throat specialist until his retirement in 1986. He had been chief of the Department of Otolaryngology at Lankenau Hospital and associate professor in the Department of Otolaryngology at Jefferson Medical School. Rex was an active member of many organizations, including the Pennsylvania Academy of Ophthalmology and Otolaryngology, which he served as president and as a member of its board of directors. In 1985, Rex received the Academy's Distinguished Service Award and was named Otolaryngologist of the Year.

Robert C. Shoemaker, M.D., G.M. '55, Claremont, N.H., a retired orthopaedic surgeon; June 15, 2013. He was a former president of the Claremont General Hospital staff.

Belton J. Workman Jr., M.D., G.M. '55, Mount Pleasant, S.C., a retired physician; July 2, 2014. He entered the U.S. Navy as an officer and served in the Korean War. Because of medical staffing needs, he was transferred to the Marine Corps, where he served as a physician a few miles behind the front line for one year. He practiced medicine at the Workman Memorial Hospital for 32 years.

Robert P. Darrow, M.D., G.M.E. '56, Mendon, Vt., a retired physician; August 10, 2014. He served as a lieutenant in the U.S. Medical Corps during World War II and the Korean conflict. In 1956, he established his private practice in general surgery. He served as president of the Northeast Medical Association, the Rutland County Medical Society, the Rocky Mountain Traumatological Society, and Blue Cross-Blue Shield of Vermont, and was chief of surgery at Rutland Hospital. He was also a member of the American College of Surgeons, the American Board of Surgery, and other professional organizations.

Richard J. Feinberg, Ph.D. '57, M.D. '57, Loveland, Colo., a retired pediatric allergist who had maintained a private practice in Washington for many years; September 26, 2013.

Charles C. Richards, M.D., G.M.E. '57, Riverview, Fla., a retired physician; April 20, 2014. He served as a Navy doctor at the Naval Hospital in Newport, R.I., from 1957 to 1959. He then served in the Naval Reserve until 1967, achieving the rank of lieutenant commander. He began his civilian practice at the Children's Hospital of Philadelphia, where he helped develop the infant respirator, which has saved the lives of countless infants. In 1969, he moved to St. Petersburg, Fla., to be the first chief of anesthesia at All Children's Hospital. In 1977, he moved his practice to Edward H. White Memorial Hospital in St. Petersburg. Richards had also been associate professor of anesthesiology at the University of South Florida College of Medicine and the anesthesiology coordinator for the training program at Bay Pines Veterans Medical Center.

Alston Wilcox Blount Jr., M.D. '58, G.M.E. '62, Richmond, Va., a retired cardiologist; September 9, 2014. He served as a captain in the U.S. Air Force from 1962 to 1964. He began his professional career as a staff cardiologist at the McGuire Veterans Medical Center in Richmond and was promoted to chief of cardiology in 1965. The following year, he joined the Medical College of Virginia Hospital, where he served on the teaching faculty and was director of the coronary ICU. In 1972, he formed Medical Specialists Inc., a multidisciplinary private practice, where he was until 1998. He later worked for Cardiovascular Associates of Virginia and part time for the Social Security Administration until fully retiring in 2006. A fellow of both the American College of Physicians and the American College of Cardiology, he had been president of the medical staff and a member of the board of directors at Retreat Hospital, chief of internal medicine at St. Mary's Hospital, and a member of the board of directors of the Richmond Academy of Medicine.

Arnold H. Gessel, M.D. '58, G.M. '62, Newton, Mass., a retired psychiatrist; May 4, 2013.

Bernardo Moreno Mejia, M.D., G.M. '58, Ft. Lauderdale, Fla., a retired surgeon; July 8, 2013.

Norman Lawrence Roulet, M.D. '58, Cleveland; June 17, 2014. He trained in psychiatry at Case Western Reserve University School of Medicine and practiced psychiatry and psychoanalysis in Cleveland before retiring in 2012. Roulet and his wife, Ann, were avid art collectors and prominent leaders of the Cleveland art community.

Arthur K. Parpart Jr., M.D. '59, Bedford, Mass., a retired physician; July 23, 2013. He worked in neurology and psychiatry at Rhode Island Hospital and at the Boston and Brockton Veterans Affairs hospitals. He later served as a neurologist in the 93rd Evacuation Hospital in Vietnam, earning the Bronze Star for meritorious service. After retiring from the Army in 1975 as a lieutenant colonel, he worked as a staff physician at Tewksbury State Hospital for nearly 20 years.

1960s

Thomas W. Martenis, M.D. '60, G.M.E. '64, Burlington, Vt., a retired physician; July 5, 2014. He enlisted in the U.S. Air Force as a flight surgeon and was stationed at Goose Bay, Labrador, for two years. He moved to Burlington in 1966, where he trained in rheumatology and established his medical practice. With other area physicians, he helped found the Aesculapius Medical Center, the first free-standing medical facility in the area.

James A. Shaver, M.D., G.M. '60, Pittsburgh, a retired cardiologist at the University of Pittsburgh for over 45 years, who served as department chief there for 25 years; April 13, 2012.

Edward D. Johnson, M.D. '61, G.M. '65, Chattanooga, Tenn., a retired orthopaedic surgeon; October 9, 2013.

Aneel N. Patel, M.D., G.M. '63, Hampstead, N.C., a retired physician who had maintained a practice in Greenville; February 28, 2012.

H. Thomas Dodds, M.D., G.M. '65, Swarthmore, Pa., a retired ophthalmologist at Wills Eye and Lankenau hospitals; July 10, 2013.

Howard E. Leventhal, M.D. '65, Bakersfield, Calif., a radiologist; June 20, 2014. He was in the U.S. Naval Reserves and served with the Marines as a medical officer during the Vietnam War. In 1972 he became a diplomate of the America Board of Radiology. He worked in the Pennsylvania area until 1977 when he moved to California, where he worked with several different medical groups and at various hospitals.

Donald J. Pirozzi, M.D. '68, G.M.E. '72, Hilton Head, S.C., a retired physician; July 30, 2014. He worked for the Center for Disease Control and Emory University before going into the specialty of dermatology.

James M. Mays, M.D. '69, Middleton, Wis., a retired neurologist; September 9, 2013.

1970s

Larry Stewart Goldblatt, M.D., G.M. '71, New York, a psychiatrist; April 17, 2013.

Jerome H. Goldschmidt, M.D., G.M. '72, Roanoke, Va., a retired ophthalmologist; January 24, 2013

Warren S. Kriedman, M.D. '74, Florham Park, N.J., a psychiatrist; August 19, 2013.

David S. Kaminstein, M.D., G.M. '76, West Chester, Pa., a retired gastroenterologist; March 5, 2013.

Ferdinand L. Manlio, D.O., G.M.E. '78, Tampa, Fla., a retired radiologist; December 10, 2013. In 1964, he opened a general practice in Tampa. He moved to Hollywood, Fla., in 1971, where he practiced for 20 years, and then to New Port Richey, where he worked at North Bay Hospital until his retirement.

1990s

Sidney H. Don, M.D. '95, Cheltenham, Pa., a pediatrician; July 3, 2013.

FACULTY

Nicholas K. Gonatas, M.D., professor of pathology and laboratory medicine in the Perelman School of Medicine; October 7, 2014. He had been a faculty member at Penn for 50 years. Raised in Thessaloniki, Greece, he survived the Nazi occupation and graduated from the Anatolia College in 1946 and Aristotle University of Thessaloniki School of Medicine in 1952. He came to the U.S. in 1957 and trained in neuropathology, experimental pathology, and cell biology at Albert Einstein College of Medicine in New York. In 1964, he was recruited to Penn, where he built one of the finest neuropathology divisions in the country.

During his scientific and clinical career, Gonatas published more than 220 manuscripts, many of them in journals such as *Nature*, *Science*, and the *Journal of Neuroscience*. In cell biology, he was the first to describe in detail the ultrastructure of mitosis. His work on axonal transport was the first to describe retrograde axonal transport, receptor-mediated endocytosis, and Golgi trafficking. He introduced the concept of organelle pathology as key underlying factor in the pathogenesis of many inherited neurological diseases, paving the way to better classification of these disorders (such as lysosomal or mitochondrial diseases) and to better understanding of their etiology and pathogenesis. In experimental neuropathology and following closely his work in cell biology, he discovered that disruption of the Golgi apparatus is an early and hallmark lesion of motor neuron degeneration. He also described synaptic alterations as an early manifestation of neurodegeneration in Alzheimer's Disease.

Gonatas received numerous honors, including fellowships from the Guggenheim Foundation and the Josiah Macy Foun-

ation and the Rous-Whipple Award and the Gold Headed Cane Award from the American Society for Investigative Pathology. He served as president of the American Association of Neuropathologists. His grant support from the National Institutes of Health, which included two Senator Jacob Javits Neuroscience Investigator awards, had been one of the longest that any individual scientist had in the history of the NIH.

Yi Jin, Ph.D., research assistant professor of pharmacology; August 1, 2014. She came to Penn as a postdoctoral fellow in 2000 following postdoctoral training in the Department of Chemistry and Biochemistry at the University of Minnesota. Before that she was a graduate of Beijing University in China, where she earned B.Ss and M.S. degrees with training in x-ray crystallography. In the laboratory of Penn's Trevor M. Penning, Ph.D., she progressed from post-doctoral fellow to research associate and then, in 2008, to research assistant professor. In the Penning laboratory, she published on the structure-function of human steroid metabolizing enzymes that belong to the aldo-keto reductase superfamily, resulting in 28 peer-reviewed publications in premier journals.

Lillian Panzer Kravis, M.D. See Class of 1943.

Robert P. Perry, Ph.D., Philadelphia, a former professor of biochemistry and biophysics in the School of Medicine; July 15, 2013. He was also an emeritus professor and the former Stanley P. Reimann Chair in Oncology Research at the Fox Chase Cancer Center. A Guggenheim Fellow (1974-75), he was elected to the National Academy of Sciences in 1977. He had served as president of UNESCO's International Cell Research Organization.

Peter Randall, M.D., G.M.E. See Class of 1950.

Jackie Simms Creates Legacy of Cancer Research Progress through Retirement Plan Gift

"When I was diagnosed with breast cancer in the fall of 2013, I was stunned – and terrified," said Jackie Simms. "I am a single parent; I have an eleven-year-old son, and I knew I had to find the very best care possible."

Ms. Simms chose the Abramson Cancer Center, the biggest and highest-rated cancer program in the region. She felt she had found "the best of the best" in Dr. Kevin Fox and his team. The Medical Director of the Rena Rowan Breast Center, Dr. Fox has been recognized as a top doctor both locally and nationally.

An excellent teacher, Dr. Fox is also the inaugural recipient of the Mariann T. and Robert J. MacDonald Professorship in Breast Cancer Care Excellence. Christine Martin, M.D., a Hematology/Oncology HUP Fellow, credits his teaching with her decision to pursue a fellowship in oncology. "He showed us that practicing medicine is not just about the science. It is about taking care of people and being a healer," she explained. "He is one of a kind."

Ms. Simms agrees. "The kindness and compassion of Dr. Fox and his remarkable team as I went through a grueling year of treatment was key to my recovery," she said. "I wanted to find a way to help this very special work continue."

That is why she teamed with the development office to create a gift that would support research and the future needs of the Rena Rowan Breast Center – while serving the best interests of her family.

She decided on a gift of assets from her retirement plan. This simple and tax-wise option offers future support when giving outright is not ideal. Retirement plan assets make some of the best charitable gifts because when given to non-charitable beneficiaries they may be taxed more heavily than other assets in your estate. Naming the Perelman School, the Abramson Cancer Center, or any entity at Penn Medicine as a beneficiary of your IRA, 401(k), 403(b), or other retirement plan avoids both income and estate taxes. The knowledge that one hundred percent of your retirement plan assets will support the cause of your choice can be very satisfying. As Ms. Simms said: "Creating this legacy gift now through my retirement plan, and knowing the impact it will have on the continuation of such important work in cancer care and research, is incredibly fulfilling for me and for my family."

As you plan your financial future, the Office of Planned Giving is ready to assist in developing an appropriate strategy to incorporate your charitable objectives. Contact Christine S. Ewan, J.D., Executive Director of Planned Giving, at 215-898-9486 or cewan@upenn.edu.



► For more information, please visit the website at: www.plannedgiving.med.upenn.edu.

A Glimpse of 250 Years

In this academic year celebrating the Perelman School of Medicine's 250th anniversary, some have been called to greatness . . . and some have been called upon for humbler tasks. That was my situation a couple of months ago as I helped move along the production of the gorgeous and informative book honoring the medical school's 250 years, *To Spread the Light of Knowledge*, which will be published in May. Two images for the book were still to be found. My mission: to arrange for the two historic objects to be photographed.

So photographer Peggy Peterson, her assistant Katie Hauer, and I found ourselves one recent morning standing by as one of the display cases in the John Morgan Building was unlocked. They had come to shoot an architectural scroll taken from the faculty room of the Ninth Street building, home of both the medical school and the University of Pennsylvania from 1829 until the 1870s. A remnant, that is, of a building gone for more than a century.

Our next stop was the mezzanine of the Ravdin Building, overlooking HUP's main entrance. Again, a display case was unlocked. The historic object this time was the brass-mounted lancet that appears – much larger than life – on this issue's back cover. It once belonged to Philip Syng Physick (1768-1837). A professor at Penn's medical school, he was skilled enough to be called "the father of American



surgery." As noted in the forthcoming history book, the lancet "was part of the physician's armature" for bloodletting, back when that was a common practice in response to illness. Even today, as small as it was, the lancet looked ready for business!

The writer of *To Spread the Light of Knowledge* is Carol Perloff. The book was designed by Stark Design. Mark Frazier Lloyd, director of the University of Pennsylvania Archives, was part of the book's guiding team. He was generous with his knowledge and his time, and his staff was invaluable as well. (In addition, Mark put me on to another of the historically oriented articles in this issue, about the notebooks of Jonathan Elmer IV, part of the very first graduating class of the medical school.) Everyone involved hopes you will enjoy reading the excerpt in this issue (pp. 6-17). It provides a small sample of the book's wealth of history, biography, and engaging photographs and illustrations, many never before compiled.

For more information and to join our mailing list, we invite you to visit <http://bit.ly/PSOM250>, where you can order the book. □

John Shea



Coming Up: The next issue will have coverage of events celebrating the Perelman School of Medicine's 250th birthday and a look at a campus center that treats traumatized children.

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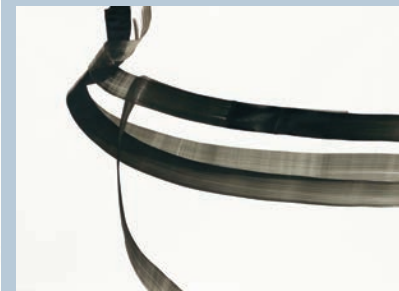


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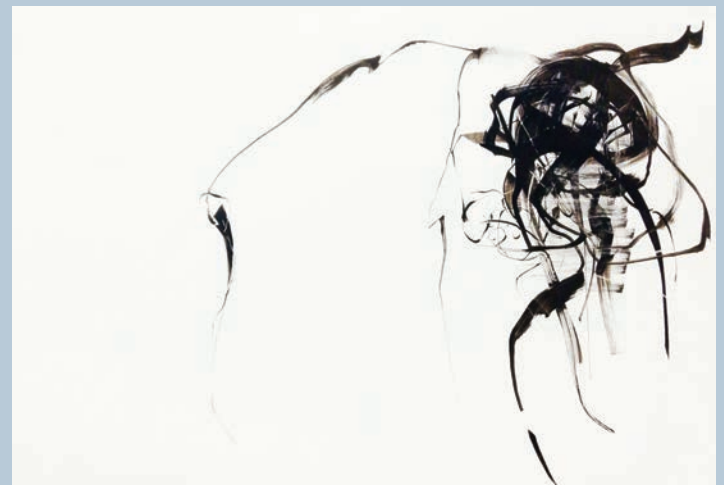
penmedicine

From Traditional Calligraphy to Abstract Art



Ink, graphite, bamboo pens, paper – and, as she tells it, music. These are the elements of the art Nazanin Moghbeli, M.D., is now creating. In addition to her career as a Penn cardiologist, currently based at Penn Medicine Radnor, Moghbeli has continued to pursue her artistic interests. And if it takes getting up at 5:00 in the morning before her three young children are awake, she's ready to do it. What she produces are evocative, often swirling and sweeping, abstract line drawings. Moghbeli grew up in Iran and studied traditional Iranian art forms, and her drawings are inspired by that nation's calligraphy. They refer, she points out, to Farsi, the Iranian language. To her, each letter can be a character. To help her create, she may listen to traditional Iranian music while drawing. "I pay attention to the rhythm of the line, its tempo, its overall melody, the spaces between the phrases," as painting and music seem to blur into one.

As she told Swarthmore College's *Bulletin*, Moghbeli tries to meld art and medicine into all aspects of her life. "Art can be a sustaining force when people are so ill," she says. "It connects them to something bigger than just



today and tomorrow." She studied both art and science at the college, graduating in 1996.

Moghbeli's art (including other forms like gouache paintings) has been exhibited throughout the United States, recently at the L. G. Tripp Gallery on North Second Street in Philadelphia. Her drawings will be on display at the Burrison Gallery in the Penn University Club (3611 Walnut Street) from April 18 through May 13. □



**What Is this object,
and who did it belong to?**

Find out on page 48.