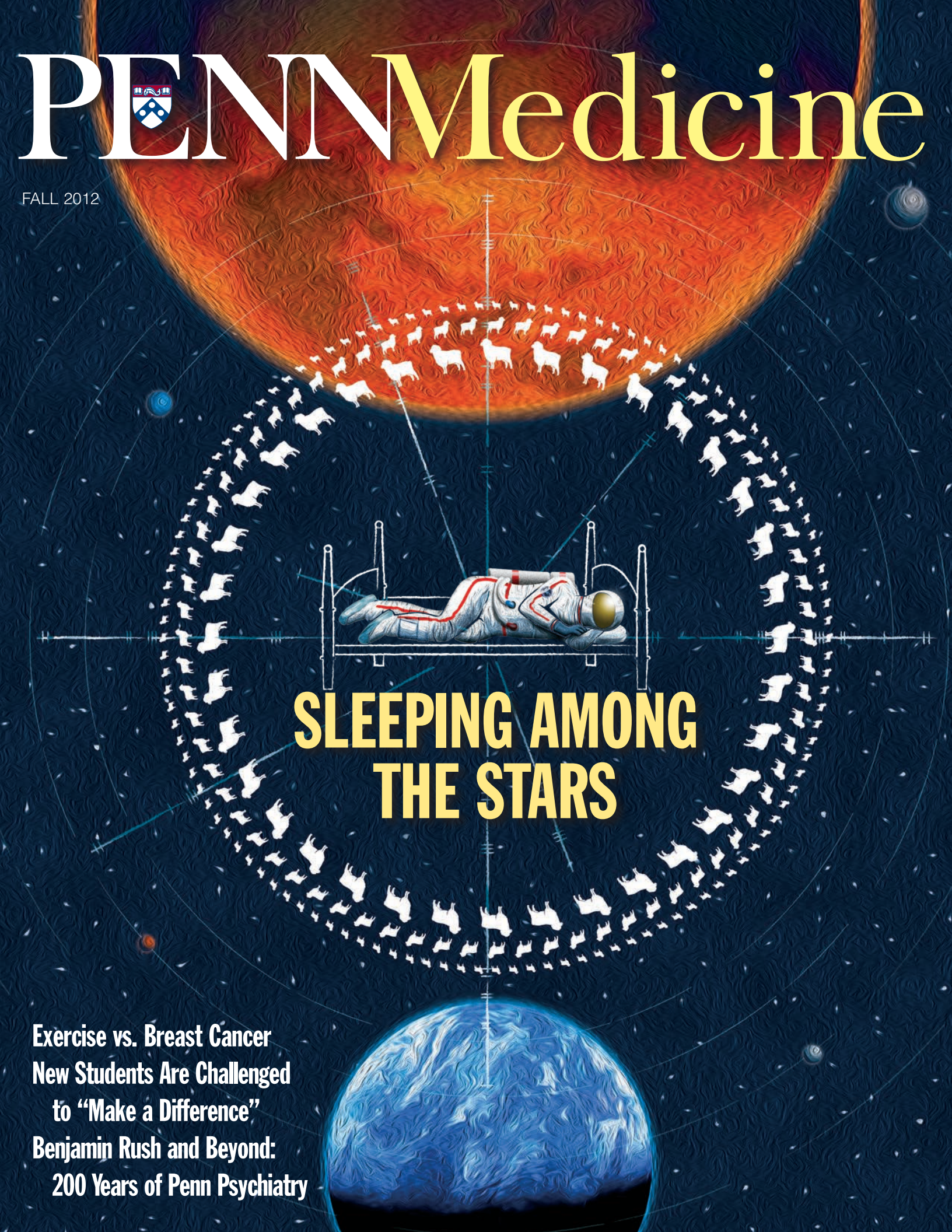
# PENN Medicine

FALL 2012



# SLEEPING AMONG THE STARS

Exercise vs. Breast Cancer

New Students Are Challenged to "Make a Difference"

Benjamin Rush and Beyond: 200 Years of Penn Psychiatry

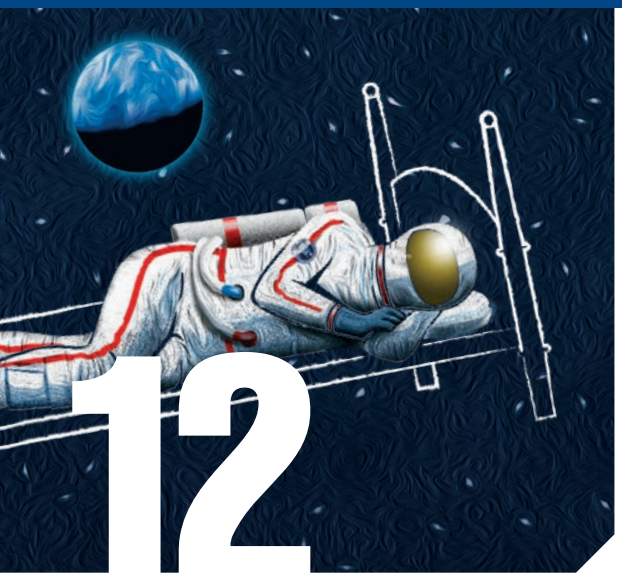
# Images of a Day

On November 14, the goal was to capture in photographs the range of activities, people, and environments on a typical day at Penn Medicine.

*Photographs by Rob Press*



PENNMEDICINE FALL 2012 / VOLUME XXIV NUMBER 1




## SLEEPING BY STARLIGHT

*By Mark Wolverton*

**David Dinges, Ph.D., professor of Psychology in Psychiatry, has been working with NASA for more than 20 years on how to keep astronauts alert, active, and able to do their enormously complex and dangerous jobs in the most extreme conditions human beings will ever face. His team was part of a recent multi-nation study that simulated a 520-day manned mission to Mars.**


## WISER SCIENTIST

*By Martha Ledger*

**Kathryn Schmitz, Ph.D., M.P.H., knows a thing or two about exercise. Her research on the effects of physical exercise to help control lymphedema among survivors of breast cancer led to changes in the guidelines for patients. Now she has a major grant from the National Cancer Institute to broaden her study, looking at the effects of exercise on reducing breast cancer biomarkers and the effect of weight loss on those same biomarkers.**


## FINDING YOUR PATH, FINDING YOUR PASSION

*By Cindy Christian, M.D.*

**At this year's White Coat Ceremony, Dr. Cindy Christian, a pediatrician at The Children's Hospital of Philadelphia and professor of pediatrics at the Perelman School of Medicine, described the arc of her career and encouraged the incoming students to choose a journey that fulfills them – and to make a difference in the world.**


## GIVING BACK

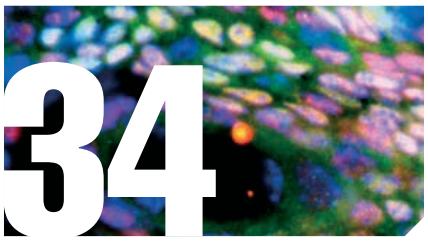
*By Holly Auer*

**The guidelines for human CPR have been heavily informed by research done with animals. At the same time, there has long been disagreement and confusion among veterinarians about how best to treat dogs and cats that suffer cardiopulmonary arrest. Now, a new effort using research conducted in humans has provided evidence-based guidelines for performing CPR on small animals.**


## BENJAMIN RUSH AND 200 YEARS OF PENN PSYCHIATRY

*By Marshall A. Ledger*

**This year is the 200th anniversary of Benjamin Rush's textbook on "diseases of the mind," the first of its kind in America. *Penn Medicine* is marking the occasion with a look at the development of the field of psychiatry at Penn (and elsewhere in the United States) since Rush's book appeared. Part 1 of this sometimes surprising journey takes us through the first part of the 20th century.**




## A RECOGNITION OF MERIT

*By Karen Kreeger*

**Sarah Millar, Ph.D., may not have been familiar with MERIT Awards when she first learned she had been recommended for one. But she soon discovered how these very select awards from the National Institutes of Health provide long-term stability to those seen as productive and creative scientists.**

## Departments



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GRAHAM P. PERRY, NCS Studios
*Design / Art Direction*

**ADMINISTRATION**
SUSAN E. PHILLIPS
*Senior Vice President for Public Affairs*

**Penn Medicine** is published for the alumni and friends of Penn Medicine by the Office of Public Affairs.  Address all correspondence to John Shea, **Penn Medicine**, 3535 Market Street, Suite 60 Mezzanine, Philadelphia, PA 19104-3309, or call (215) 662-4802, or e-mail john.shea@uphs.upenn.edu.

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

# Penn Receives Gift to Name Center for Translational Research

The University of Pennsylvania has received an undisclosed gift from father and son philanthropists Joel and William Smilow to support Penn Medicine's translational research activities. The gift names the Smilow Center for Translational Research in the Raymond and Ruth Perelman School of Medicine. It also establishes the William Smilow Professorship and the William Smilow Award for Innovation in Clinical Excellence. While the exact gift amount remains undisclosed, it is the largest capital gift to date to the University of Pennsylvania's $3.5 billion "Making History" fundraising campaign, and among the top gifts in Penn Medicine's history.

"We are enormously grateful to Joel and Bill Smilow for their profoundly generous gift, which will help ensure that Penn is at the vanguard of innovative medical research and cures," said Amy Gutmann, Ph.D., Penn's president. "The Smilow Center for Translational Research provides a state-of-the-art environment where eminent physicians, researchers, and scientists at Penn Medicine will work side-by-side to advance medical science. The Smilows are noted for their significant philanthropic works throughout the nation, and Penn is very proud to be the recipient of their first gift here in Philadelphia."

*The Smilow Center for Translational Research brings Penn basic scientists and physicians together to deliver discoveries quickly and effectively to patients. Its collaborative, innovative design helps research teams accelerate targeted scientific discoveries for a wide range of diseases and train the next generation of physician-scientists.*

The Smilow Center's collaborative, innovative design helps research teams accelerate targeted scientific discoveries for a wide range of diseases and train the next generation of physician-scientists. The gift also provides support to enhance Penn's medical bioinformatics team and infrastructure, allowing researchers to mine large amounts of genetic, imaging, and biomarker data for patterns and to analyze gene sequences and drug targets.

According to 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, "Our scientists in the Smilow Center can train and work as fast and collaboratively as possible with Penn Medicine patient-care teams to ensure that patients are able to benefit from scientific advances in areas such as cancer, obesity, and cardiovascular disease."

At the building's dedication in May, 2011, Francis S. Collins, M.D., Ph.D., director of the National Institutes of Health, described it as a "remarkable research center" and predicted that it would be "a wonderful incubator." The building flanks two of Penn's outpatient-care facilities: the Ruth and Raymond Perelman Center for Advanced Medicine, home of the Abramson Cancer Center, and the Roberts Proton Therapy Center.

The eight floors of the Smilow Center are each the size of a football field, with more than 700 laboratory work stations and 180 research bays throughout. More than 100 lead researchers and 900 staff members from a wide range of departments, centers, and institutes work in the building.

From left to right: Amy Gutmann, Joel Smilow, William Smilow, and J. Larry Jameson

"My son Bill and I believe that Penn shares our philosophy on making an immediate impact on peoples' lives," said Joel Smilow, former chairman and chief executive officer of Playtex Products, Inc. "We are delighted to make this significant contribution to advancing health care in our nation and around the world."

William Smilow, president and founder of Great Oak Holdings, Inc., and a resident of Chestnut Hill, serves on the Penn Medicine Cardiovascular Institute Leadership Council, where he was first introduced to the research advances taking place on the Penn campus. His family feels it is important, he said, "to inspire compassionate and visionary giving in others."

Joel Smilow and family have long been major donors to the medical field, most notably with the Smilow Cancer Hospital at Yale-New Haven Hospital and the Joel E. and Joan L. Smilow Medical Research Center at the NYU School of Medicine. There is also a William S. Smilow Center for Marfan Syndrome at Johns Hopkins. ●

– Kim Menard

## Penn and Novartis Form Alliance Against Cancer

In August, the University of Pennsylvania and Novartis, the multinational pharmaceutical firm, announced an exclusive global research and licensing agreement to expand and commercialize personalized T cell therapy for cancer patients. The agreement follows a Penn research team's highly publicized publication in 2011 of breakthrough results in several patients with chronic lymphocytic leukemia who were treated using chimeric antigen receptor (CAR) technologies. The partnership is expected to pave the way for pivotal studies that have the potential to expand the use of CAR therapies for a wide range of cancers.

"The center will be devoted to the discovery, development, and manufacture of adoptive T cell immunotherapies through a joint research and development program."

Demonstrating Penn's commitment to translational science aimed at expediting the process of bringing novel therapies to patients, the University and Novartis will build a first-of-its-kind Center for Advanced Cellular Therapies on the Penn campus. The center will be devoted to the discovery, development, and manufacture of adoptive T cell immunotherapies through a joint research and development program led by scientists and clinicians from Penn, Novartis, and the Novartis Institutes for Biomedical Research.

"Penn's intellectual resources, combined with a pharmaceutical industry leader like Novartis, offer a powerful symbiotic relationship in our mutual goal of finding more effective treatments for cancer," said J. Larry Jameson, M.D., Ph.D., dean of the Perelman School of the Medicine and executive vice president of the University of Pennsylvania for the Health System. He noted that clinical trials with engineered T cells "could open doors for use of promising treatment options for many cancer patients who have reached the end of currently available treatments."

Under the terms of the agreement, Penn grants Novartis an exclusive worldwide license to the technologies used in an ongoing trial of patients with chronic lymphocytic leukemia as well as future CAR-based therapies developed through the collaboration. Novartis will invest at least $20 million in the establishment of the new center and future research of the technology. Additional milestone and royalty payments to Penn are also part of the agreement.

So far, the CAR study has involved only patients whose cancers have not responded to traditional therapy. These patients' only remaining treatment options would have been a bone marrow transplant, a procedure that carries a mortality risk of at least 20 percent.

"Our early results in patients treated with chimeric antigen receptors represent two decades of investment and perseverance in our effort to treat cancer in an entirely new way, combining a highly targeted cell-based therapy with the might of a patient's own immune system," said the study's leader, Carl June, M.D., professor of pathology and laboratory medicine and director of translational research Penn's Abramson Family Cancer Research Institute. "By joining forces with Novartis, we will now have the resources and space to expand our research in new directions that we hope will change the way cancers of all kinds are treated."

## Two Tabbed as Research Leaders for Space Teams

The National Space Biomedical Research Institute (NSBRI) has enlisted David F. Dinges, Ph.D., professor of psychology in psychiatry and associate director of the Center for Sleep and Circadian Neurobiology, and Ann R. Kennedy, D.Sc., the Richard Chamberlain Professor of Research Oncology in the Department of Radiation Oncology, as team leaders in its efforts to protect the health of astronauts during long space flights. The institute is a partnership between NASA and the academic and industrial communities. Dinges and Kennedy were chosen from a national pool of experts to be part of the seven-person team appointed by the Institute.

Each scientist chosen will lead one of seven discipline-area research teams focused on specific challenges faced by humans in space. Dinges will lead the neurobehavioral and psychosocial factors team, and Kennedy, who is also the director of the Institute's Center of Acute Radiation Research at Penn, will lead the radiation effects team.

The expertise and knowledge of the selected scientists "will be beneficial to the Institute, NASA, and human spaceflight in general," said Jeffrey P. Sutton, M.D., Ph.D., president and CEO of the Institute. "They will play an instrumental role in our efforts to overcome health challenges facing humans while in space and to improve health care on Earth."

The team leaders' term is for three years, and they must also have a currently funded NSBRI research project.

Two other Penn Medicine faculty members have an association with NSBRI. Serving on its board of directors are Peter F. Davies, Ph.D., the Robinette Foundation Professor of Cardiovascular Medicine and director of the Institute for Medicine and Engineering; and Glen N. Gaulton, Ph.D., executive vice dean of the Perelman School of Medicine and chief scientific officer.

For more on Dinges's work with NSBRI, see pp. 12-15.

Although further studies are needed to explore the long-term viability of the treatment, June's team showed that in the patients studied so far, months after infusion, the new cells had multiplied throughout the patients' bodies and were capable of continuing their "seek-and-destroy" mission against cancerous cells.

– Holly Auer

## UPHS Receives Two Innovation Awards

The Centers for Medicare and Medicaid Services (CMS) has selected two projects submitted from the University of Pennsylvania Health System for funding as part of the Health Care Innovation Awards. The awards were made possible by the Affordable Care Act.

One project was submitted by David Asch, M.D., G.M.E. '87, M.B.A., and Kevin Volpp, M.D. '98, Ph.D., both in the Department of Medicine, the Leonard Davis Institute of Health Economics, and the Penn Medicine Center for Innovation. The project will focus on helping post-discharge patients who are recovering from acute myocardial infarctions in metropolitan Philadelphia and adjoining areas of New Jersey to take their prescribed medications. (Research has shown that only about half of all patients are still taking their medicines after a year.) The project will use telemonitoring and a visual and audible "reminder" system. It will also retrain social workers to monitor adherence, offer incentives, and enlist patient support from family and friends. The result is expected to be improved health outcomes and lower costs. The program, funded with $4.8 million, will train an estimated 21 workers and create an estimated seven jobs. The project is estimated to save CMS $2.7 million.

The second project was submitted by David Casarett, M.D., associate professor of medicine and chief medical officer for Penn Wissahickon Hospice. Serving five counties in the metropolitan Philadelphia area, the program will test a comprehensive set of home-care services for Medicare and/or Medicaid beneficiaries with advanced cancer who are receiving skilled home care and have substantial palliative care needs, but are not yet eligible for hospice care. Using care coordination and planning, the intervention will provide in-home support, manage symptoms and crises, and provide emotional and spiritual support for patients with advanced cancer. It will enable them to remain in their homes and avoid unnecessary and unwanted hospitalizations. Funded with $4.3 million, the program will create an estimated 16 jobs and train 64 workers. The project is estimated to save the Centers for Medicare and Medicaid Services more than $9.4 million.

## A Different Fall Election . . . to the IOM

Six faculty members of the University of Pennsylvania – including four in the Perelman School of Medicine – were elected members of the Institute of Medicine (IOM), one of the nation's highest honors in biomedicine. The four new members bring Penn Medicine's total to 61. Established in 1970 by the National Academy of Sciences, the IOM has become recognized as a national resource for independent, scientifically informed analysis and recommendations on health issues. With their election, members make a commitment to volunteer their service on IOM committees, boards, and other activities.

**The new Penn Medicine IOM members:**

**Shelley L. Berger, Ph.D.**, is a Penn Integrates Knowledge Professor and the Daniel S. Och University Professor in the Department of Cell and Developmental Biology and in the Department of Genetics. She also has an appointment in the Department of Biology in the School of Arts and Sciences. Berger serves as director of the Penn Epigenetics Program. She earned her B.S. and Ph.D. degrees from the University of Michigan; was a postdoctoral fellow at Massachusetts Institute of Technology; and was previously the Hilary Koprowski Endowed Professor at the Wistar Institute. Her work has advanced understanding of eukaryotic gene regulation by helping to unify the fields of transcription and chromatin regulation. The major focus of her research is to define the mechanisms by which epigenetic modifications affect chromatin structure (the combination of DNA and proteins found in chromosomes) and gene expression in normal and diseased states. Berger has served as senior editor of the journal *Molecular and Cellular Biology* and sits on advisory committees for several research institutions and pharmaceutical and biotechnology companies. She is also lead investigator on an NIH research award on epigenetics and aging.

Photograph by Tommy Leonardi

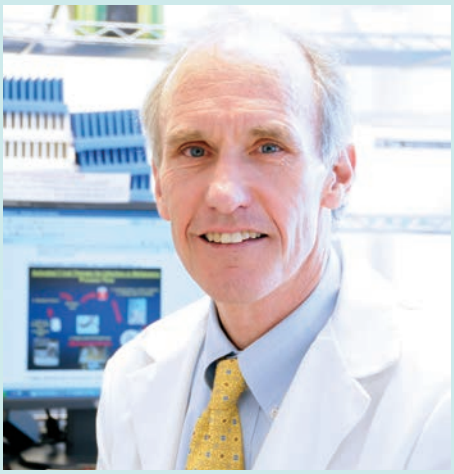
Berger

**Carl H. June, M.D.**, is the Richard W. Vague Professor in Immunotherapy in the Department of Pathology and Laboratory

## Honors & Awards

**Stephanie Abbuhl, M.D.**, professor and vice chair of faculty affairs for the Department of Emergency Medicine, received the 2012 Leadership Development Award from the Group on Women in Medicine and Science, a professional development group of the Association of American Medical Colleges. She was honored for her work as executive director of the Perelman School's FOCUS on Health and Leadership for Women, which seeks to increase the recruitment, retention, and promotion of women physicians and researchers through the ranks of academic medicine. According to the Association, the award recognizes "extraordinary, innovative, and far-reaching contributions." In 2004, the FOCUS program received the Association's Women in Medicine Leadership Development Award.

Abbuhl



June

Medicine and the program director of translational research for the Abramson Family Cancer Research Institute. His laboratory studies various mechanisms of lymphocyte activation relating to immune tolerance and adoptive immunotherapy. In 2011, his research team published findings detailing a new therapy in which patients with refractory and relapsed chronic lymphocytic leukemia were treated with genetically engineered versions of their own T cells. The treatment has now also been used with promising results to treat children with refractory acute leukemia. June is a graduate of the U.S. Naval Academy and Baylor College of Medicine. He had graduate training in immunology and malaria at the World Health Organization in Geneva and postdoctoral training in transplantation biology at the Fred Hutchinson Cancer Research Center. June's honors include a Freedom to Discover Research Grant from Bristol-Myers Squibb; the William B. Coley Award from the Cancer Research Institute; the Ernest Beutler Prize from the American Society of Hematology; and the Joan Miller and Linda Bernstein Gene Therapy Ovarian Cancer Award from the Alliance for Cancer Gene Therapy.

Schnall

**Mitchell D. Schnall, M.D., Ph.D.**, is the Eugene P. Pendergrass Professor of Radiology and chair of the Department of Radiology. (See "Transitions.") Schnall is an international leader in translational biomedical imaging research. His work has led to fundamental changes in the imaging approaches to breast and prostate cancer. In addition, he has had a significant influence on emerging technologies, such as optical imaging. Schnall became chair of the American College of Radiology Imaging Network in 2008. Under his leadership, the network completed the landmark National Lung Cancer Screening trial that demonstrated the ability of low-dose CT lung cancer screening to reduce lung cancer mortality by 20 percent in high-risk patients. Schnall is a member of the American Society for Clinical Investigation and the Association of American Physicians.

**Kevin G. M. Volpp, M.D. '98, Ph.D.**, is the founding director of the Center for Health Incentives and Behavioral Economics at Penn's Leonard Davis Institute; co-director of the Penn Medicine Center for Innovation; and a professor of medicine at the Perelman School of Medicine and of health-care management at the Wharton School. He is also director of

Volpp

Abbuhl is also co-leader of the Transforming Academic Culture Trial, a cluster-randomized trial funded by the National Institutes of Health to study a multi-faceted intervention in the Perelman School aimed at improving the academic productivity and job satisfaction of women faculty.

**Aaron T. Beck, M.D.**, Emeritus University Professor of Psychiatry, received an honorary doctorate in medical science from Yale University. He earned his medical degree at Yale in 1946. Beck is widely regarded as the father of cognitive therapy, and his pioneering theories are widely used in the treatment of clinical depression.

**Daniel G. Haller, M.D.**, professor of medicine, has been named chair of the scientific advisory board of Niiki Pharma, Inc. The board will provide clinical and strategic guidance to the company for its two first-in-class clinical-stage anti-cancer compounds, NKP-1339 and NKP-2235. Haller is currently co-chair of the National Cancer Institute's Gastrointestinal Intergroup. He served as editor-in-chief of *The Journal of Clinical Oncology*, the official journal of the American Society of Clinical Oncology, was the associate editor of the *Annals of Internal Medicine*, and was editor-in-chief of PDQ, the National Cancer Institute's cancer information database.

## IOM (Continued)

the Penn CMU Roybal P30 Center in Behavioral Economics and Health, one of two such NIH-funded centers in the U.S. For his research on the impact of financial and organizational incentives on health behavior and health outcomes, Volpp has received numerous awards, including the Presidential Early Career Award for Scientists and Engineers; the Alice S. Hersh New Investigator Award from AcademyHealth; and the "outstanding paper of the year" from the Society of General Internal Medicine. He is a member of the editorial board of the *Annals of Internal Medicine*. Volpp did his medical training at Penn and Brigham and Women's hospital; has a Ph.D. degree in applied economics and managerial science from the Wharton School; and is a staff physician at the Philadelphia Veterans Affairs Medical Center.

**From the University of Pennsylvania:**

**Gustavo D. Aguirre, V.M.D., Ph.D.**, is a professor of medical genetics and ophthalmology in the School of Veterinary Medicine. He has led efforts to develop gene therapy to treat various forms of blindness. Modeling the visual disorders in dogs, he and colleagues have cured retinal degeneration in the animals – breakthroughs that have laid the groundwork for human clinical trials. Aguirre earned

Aguirre

his undergraduate, veterinary, and doctoral degrees from Penn. He is the recipient of numerous honors for his work, including an honorary Doctor of Philosophy degree from the University of Göteborg, Sweden; the WSAVA/Waltham International Award for Scientific Achievement; and the Foundation Fighting Blindness Trustee Award and Scientist of the Year Award. He was recently elected a Fellow of the Association for Research in Vision and Ophthalmology.

**Nancy M. Bonini, Ph.D.**, is the Florence R. C. Murray Professor of Biology in the School of Arts and Sciences and an investigator of the Howard Hughes Medical Institute. Her research uses the fruit fly *Drosophila melanogaster* to gain insight into neurodegenerative diseases, including Alzheimer's, Parkinson's, Huntington's, and amyotrophic lateral sclerosis. By re-creating features of these diseases in flies, her team has helped identify disease mechanisms and potential targets for ameliorating some of the damage they cause. Bonini received her Ph.D. degree in neuroscience from the University of Wisconsin-Madison. She has earned multiple awards from the

Photograph by Candace diCarlo

Bonini

Huntington's Disease Society of America and the Hereditary Disease Foundation, and in 2009 received an NIH EUREKA award for "highly innovative" research. Bonini is a Fellow of the American Association for the Advancement of Science and was recently elected a member of the National Academy of Sciences.

**Daniel F. Heitjan, Ph.D.**, professor in the Department of Biostatistics and Epidemiology and director of the Biostatistics Core Resource in the Abramson Cancer Center, was elected president-elect of the Eastern North American Region of the International Biometric Society.

Heitjan earned his Ph.D. degree in statistics from the University of Chicago in 1985 and joined the Penn faculty in 2002. His research is concerned with statistical methods for the design and analysis of medical studies. He has made important contributions in the areas of incomplete data, the design and analysis of clinical trials, the analysis of longitudinal studies, and more recently the analysis of data in health economics.

Jessup

**Mariell Jessup, M.D.**, associate chief of clinical affairs in the Division of Cardiovascular Medicine and medical director of the Penn Medicine Heart and Vascular Center, was named president-elect of the American Heart Association. She began her term on July 1, 2012, and will become president next July.

After receiving her medical degree from Hahnemann Medical College, Jessup completed her residency in internal medicine at Hahnemann University Hospital and a cardiovascular fellowship at HUP. Her focus has been on the optimal management of patients with heart failure, which includes selecting the appropriate patients for heart transplants or ventricular assist devices. As medical director of the Penn Medicine Heart and Vascular Center, Jessup works with a multi-disciplinary team of cardiologists, cardiac and vascular surgeons, nurse practitioners, and nurses to deliver collaborative, cutting-edge care to heart patients.

Jessup recently served as chair of the American College of Cardiology/AHA committee that updated guidelines on heart failure. She also played an important role in establishing the new specialty in advanced heart failure and transplant cardiology.

**Rahul M. Kohli, M.D., Ph.D., G.M.E. '06**, an assistant professor in the departments of Medicine and of Biochemistry & Biophysics, has received a New Innovator Award from the National Institutes of Health. The award, for $1.5 million over five years, supports new investigators who are conducting highly innovative research with a strong potential to make great advances on a critical biomedical or behavioral research problem. Kohli's lab will use the grant to study the enzymes that drive bacterial evolution, in the hopes of developing new methods to combat the emergence of drug-resistant bacteria. Past responses to this concern have largely focused on modifying existing drugs, which can offer a brief reprieve, but that approach eventually fosters more drug resistance. Kohli's research seeks to change the paradigm by targeting the very pathways that allow the pathogen to mutate.

**Nehal N. Mehta, M.D., M.S.C.E. '09**, director of inflammatory risk in preventive cardiology at Penn Medicine, was named the inaugural Lasker Clinical Research Scholar, developed by the National Institutes of Health and the Albert and Mary Lasker Foundation. While remaining an adjunct faculty member at Penn, he joins the intramural program of the Na-

Mehta

## Standing with Alex

Alex's Lemonade Stand Foundation, a nonprofit organization dedicated to finding cures for all children with cancer, announced more than $4 million in new medical research grants in the first cycle of 2012. The grants in pediatric oncology will extend to doctors and researchers, as well as medical and graduate students, at 34 institutions and universities in 19 states across the country. The following people affiliated with Penn Medicine have received awards:

Innovation Award: **Andrei Thomas-Tikhonenko, Ph.D.**, for "In-UTR mutations in neuroblastoma: functional consequences and therapeutic implications." He is an associate professor of pathology and laboratory Medicine at the Perelman School of Medicine and at The Children's Hospital of Philadelphia.

Young Investigator Award: **Monalisa Mukherjea, Ph.D.**, for "Role of myosin VI in pediatric glioma proliferation and invasion." She is a postdoctoral fellow and research associate in physiology.

Pediatric Oncology Student Training (POST) Program: **Nicole Herbst**, an M.D. candidate; and **Nathan Singh**, an M.D. candidate and a Master of Translational Research student.

tional Heart, Lung, and Blood Institute. His research focuses on how inflammation influences metabolic activity, insulin resistance, lipid function, and atherosclerosis. He also has expertise in nuclear cardiology and uses novel imaging techniques to understand the development of atherosclerotic plaques and vascular inflammation.

Reese

**Peter Reese, M.D., M.S.C.E. '07**, assistant professor of medicine and of epidemiology, received the Presidential Early Career Award for Scientists and Engineers, the highest honor bestowed by the United States Government on science and engineering professionals in the early stages of their independent research careers. Reese, who takes care of kidney-transplant recipients and living-kidney donors, received the award for his innovative efforts to develop effective strategies to increase access to kidney and liver transplantation. He uses tools from epidemiology, biostatistics, health-services research, and medical ethics to describe disparities in transplantation and suggest methods to overcome them.

Reese was lead author of an article in the *Journal of the American Geriatrics Society* (2010) that argues that attempts to use health technology assessment for health-care rationing are likely to disadvantage older patients; instead, the authors proposed guiding principles for allocating kidneys justly across the life span. Through policy development work with the United Network for Organ Sharing, Reese has helped to translate clinical research into effective national policy.

**Karl Rickels, M.D., G.M.E. '57**, the Stuart and Emily B. H. Mudd Professor of Human Behavior and professor of psychiatry, received the 2012 Pioneers in Psychopharmacology Award from the International College of Neuropsychopharmacology (CINP). According to the college, the contributions of the honorees "must be internationally recognized as significant to the growth of the field." Rickels, one of the founding members of the CINP in 1958, received the award for his groundbreaking work in developing medications to treat anxiety disorders. Supported continuously by National Institute of Mental Health grants from 1959 to 2010, Rickels has contributed significantly to the development of anti-anxiety medications introduced into medicine since 1955. One of those grants was funded for 32 consecutive years – a record for the institute.

Rickels is co-director of the Mood and Anxiety Disorders Treatment and Research Program and a Charter and Life Fellow of the American College of Neuropsychopharmacology.

**Garry Scheib, M.B.A.**, chief operating officer of the University of Pennsylvania Health System and executive director of HUP, is included in the *Becker's Hospital Review*'s "100 Leaders of Great Hospitals." The list recognizes the top executives at each of the hospitals in Becker's "100 Great Hospitals List," which includes HUP. Scheib also serves as chair of the board of the Hospital & Healthsystem Association of Pennsylvania, which advocates on a number of issues for the nearly 250 hospital members across the state, as well as for the patients and communities they serve.

**Donald Silberberg, M.D.**, emeritus professor and former chair of the Department of Neurology, was granted the Vicente Rocafuerte condecoration by the Ecuadorean National Assembly. It is the first time the assembly's highest scientific award has been awarded to an American. Silberberg was honored for his efforts spanning two decades to raise awareness of and improve patient care for neurological and psychiatric conditions in Ecuador and around the globe. Brain disorders cause at least 25 percent of global death and disability. Silberberg has demonstrated a longstanding dedication to improving

Silberberg

neurological care in developing countries. He led efforts resulting in the 2001 Institute of Medicine report *Neurological, Psychiatric and Developmental Disorders — Meeting the Challenge in the Developing World.*

**Douglas C. Wallace, Ph.D.**, professor of pathology and laboratory medicine, is the recipient of the 2012 Genetics Prize of the Gruber Foundation. Considered the founder of the field of mitochondrial genetics in humans, Wallace is also director of the Center for Mitochondrial and Epigenomic Medicine at The Children's Hospital of Philadelphia. He was honored for his groundbreaking achievements in understanding the role of mitochondria – the "power plants" of cells – in the development of disease and as markers for human evolution. He was also hon-

Wallace

ored for training and inspiring numerous pre- and postdoctoral students who have gone on to have distinguished careers of their own.

**Alan J. Wein, M.D.**, received the Keyes Medal from the American Association of Genitourinary Surgeons for his contributions to the field of urology. Wein is professor and chief of the division of Urology at the Perelman School and director of the Urology Residency Program at HUP.

"No one deserves this award more than Dr. Alan Wein," said David M. Barrett, M.D.,

Wein

chair of the awards committee. "The Keyes Medal is not given on a regular basis and awarded only when there is a deserving candidate. In Alan's case, he exemplified excellence in practice, education, and research. He should be looked upon as a role model for all young aspiring urologists."

## Transitions

**Marjorie Bowman, M.D., M.P.H.**, founding chair of the Department of Family Medicine and Community Health, was named dean of the Boonshoft School of Medicine at Wright State University in Ohio. The Boonshoft School was recently highlighted for the strength of its social mission in a national study published in the *Annals of Internal Medicine*. Based on the percentage of graduates who practice primary care, work in areas with a shortage of health professionals, and are underrepresented minorities, the study of 141 U.S. medical schools ranked Wright State 4th in the nation for this commitment.

Since arriving at Penn in 1996, Bowman led the department to increasing service to the West Philadelphia community while championing education and research in family, preventive, and community medi-

Bowman

cine throughout the University. In addition, she served as director of the Center for Public Health Initiatives and was a senior fellow in the Leonard Davis Institute of Health Economics. Bowman has been described as a force in national public health and a leader in Philadelphia's efforts to improve health status.

**Robert W. Doms, M.D., Ph.D.**, who had served as chair of the Department of Microbiology since 2001, was named pathologist-in-chief and chair of the Department of Pathology and Laboratory Medicine at The Children's Hospital of Philadelphia. Doms is a nationally recognized researcher in the study of HIV/AIDS, and his efforts have led to significant discoveries about the way in which the AIDS virus enters cells and how the disease develops. His laboratory has also studied a number of emerging viral diseases, including West Nile virus. Among his honors are the Elizabeth Glaser Scientist Award from the Pediatric AIDS Foundation and the Pfizer Young Investigator Award from the American Society for Investigative Pathology. Doms, who arrived at Penn in 1992 as an assistant professor of pathology and laboratory medicine, is a member of the American Society for Clinical Research.

**Susan R. Ross, Ph.D.**, has been named interim chair of the department. A professor of microbiology, Ross joined Penn's medical faculty in 1994. Her research has focused on the susceptibility and resistance of individuals to viral infection and virus-induced cancer (which makes up approximately 20 percent of human cancers). Since 2002, Ross has served as associate dean and director of the interdisciplinary Biomedical Graduate Studies, the academic home of roughly 740 University of Pennsylvania students pursuing their Ph.D. degrees in the basic biomedical sciences. An alumna of the University of Pennsylvania (B.A., Biochemistry), Ross earned her doctoral degree in biochemical sciences at Princeton University.

Ross is an elected fellow of both the American Academy of Microbiology and of the American Association for the Advancement of Science and serves as associate editor for *PLOS Pathogens* and as senior editor for the *Journal of Virology*.

**Mitchell D. Schnall, M.D., Ph.D.**, was named chair of the Department of Radiology, effective October 1, 2012. He had been the Matthew J. Wilson Professor of Research Radiology and vice chair

of research in Penn's Department of Radiology. Schnall's research spans the interface between basic imaging science and clinical medicine. His work has led to fundamental changes in the imaging approaches to breast and prostate cancer.

A University Scholar as a Penn undergraduate, majoring in physics, Schnall went on to earn his medical degree and Ph.D. degree in biophysics from the University. He completed his medical training as a radiology resident at HUP, where he was chief resident in 1989. He was appointed assistant professor in 1991, associate professor in 1994, and professor in 2002. For seven years, he was chief of Magnetic Resonance Imaging.

Schnall currently is the principal investigator of the American College of Radiology Imaging Network, a cooperative group funded by the National Cancer Institute that has made several seminal contributions to cancer imaging. With Katrina Armstrong, M.D., M.S.C.E., professor of medicine, Schnall is principal investigator for the recently funded Penn Center for Innovation in Personalized Breast Screening. He was also a co-principal investigator of a five-year, $10 million grant to study the progression of breast cancer using state-of-the-art imaging techniques and animal models, with the goal of developing more effective therapies. With that grant, the Perelman School of Medicine was named a Breast Cancer Center of Excellence by the Department of Defense Breast Cancer Research Program. Schnall was elected a member of the American Society for Clinical Investi-

## Letters

**Early Epigenetics**


I read your article ("Epigenetics: Above and Beyond DNA," Spring 2012) with interest. I had to write to you, though, to point out that Penn has by no means been at risk for "lagging behind" in the field of epigenetics. Indeed, one of our senior faculty, Ann R. Kennedy, D.Sc., the Richard Chamberlain Professor of Research Oncology in the Department of Radiation Oncology, has been studying epigenetic control of cellular transformation by the soybean derived Bowman-Birk Trypsin/Chymotrypsin inhibitor (a protein) for over 30 years. She first introduced me to the term epigenetics in 1990 when I joined her lab as a technician. Her early work ("Bowman-Birk soybean protease inhibitor as an anticarcinogen." *Cancer Research* 43 (5 Suppl): 2454s -2459s, 1983 May; Yavelow J.; Finlay T. H.; Kennedy, A. R.; Troll W.) made the connection between proteins and genetic changes and its implications for carcinogenesis. She has spent her career building a compelling case for epigenetic regulation of gene expression as a significant mechanism of carcinogenesis, and she has certainly had a profound influence on how I think about any and all scientific questions.

It is terrific to learn that Penn has established the Penn Program in Epigenetics, as it will no doubt have broad scientific and societal benefit by engaging and connecting a large and diverse group of researchers in the Penn community! Thank you for writing the article that will bring the topic to an even broader audience at Penn.

Annamarie D. Horan, Ph.D., M.P.A.
Adjunct Assistant Professor of
Orthopaedic Surgery
Director, Clinical Research, HUP

**"Medicine in the Third Reich"**

Just a brief note to thank you for the excellent article in the recent [Spring 2012] *Penn Medicine*. Often, perhaps by necessity, the articles are about Penn members and their work. This was an in-depth article on an important field.

Ronald Banner, M.D. '67

**The Definition of Life**

I appreciate the articles entitled "Medicine in the Third Reich," by Harry Reicher, L.L.M., and " 'Life Unworthy of Life': Considering the Meaning of Auschwitz," by Noemi Spinazzi, in the Spring 2012 issue of *Penn Medicine*. The spirit behind "science" gave the Nazis their definition of life. We in medicine should never repeat what was done. Furthermore, can, may, must we not also examine ourselves? The spirit of the age, the "science" of this age, has defined an unwanted child in the womb as unworthy of life. Cannot we, as physicians in the 21st century, stand up and say, "is this not the same?" I, for myself, see no difference. And I believe that history also will say so. Cannot we objectively look at what we are doing?

William Gottlob Berlinger III, M.D. '79

Enjoyed "Medicine in the Third Reich." Elliot Rabinowitz could have saved his air fare to Auschwitz and visited the nearest Planned Parenthood clinic. The philosophy and results are identical whenever you consider or rationalize that some people are "life unworthy of life."

Bob Burns, M.D. '68

gation, the Association of American Physicians, and, most recently, the Institute of Medicine.

Schnall succeeds **R. Nick Bryan, M.D., Ph.D.**, who became chair of radiology in 1999. According to the memo announcing Schnall's appointment, Bryan "assumed leadership of the department in especially challenging times and led it to the strong and vibrant organization it is today."

## From Health Economics to Innovation

In June, David A. Asch, M.D., G.M.E. '87, M.B.A., stepped down as executive director of the University's Leonard Davis Institute of Health Economics (LDI), a position he held since 1998. Asch, the Robert D. Eilers Professor of Medicine and of Health-Care Management and Economics in the Perelman School of Medicine and the Wharton School, was named the first executive director of the new Penn Medicine Center for Innovation.

Formed as a partnership between LDI and Penn Medicine, the Center combines the expertise of faculty members at the Perelman School and the Wharton School to encourage innovation within the Health System and the medical school. It is co-led by Kevin Volpp, M.D. '98, Ph.D., director of the LDI Center for Health Incentives and Behavioral Economics and a professor of medicine in the Perelman School and of health-care management at the Wharton School, and Kevin B. Mahoney, senior vice president and chief administrative officer of the Health System and vice dean of integrative services at the Perelman School. Roy M. Rosin, formerly vice president of innovation for Intuit, was named chief innovation officer of the Center. Intuit is a leading software company best known for Quicken, QuickBooks, and TurboTax.

According to the memo announcing Asch's appointment, "Initial areas of focus

Asch

include improving the patient experience, anticipating and responding to changes in health-care financing, and identifying ways to achieve better health outcomes for our employees, patients, and community. Most importantly, the Center aims to make it easier for all of us to rapidly turn our ideas into experiments, to learn from the experiences of other leading innovative organizations, and to share with others the insights we develop that drive better outcomes."

During Asch's 13 years of leading LDI, the institute's annual research funding grew from $9 million to $126 million. Established in 1967, LDI is one of the country's largest centers for health-services research, with more than 200 senior fellows studying the organization, delivery, management, and financing of health care.

Asch is well known for his research on end-of-life care, genetic testing, health-care rationing, organ transplantation, health-care quality, and racial disparities in health and health care. His many honors include the Alpha Omega Alpha Robert J. Glaser Distinguished Teacher Award from the Association of American Medical Colleges (2009) and the John M. Eisenberg National Award for Career Achievement in Research from the Society of General Internal Medicine (2010). Earlier this year, he received the highest honor bestowed by the Perelman School of Medicine on its graduates, the Distinguished Graduate Award, which noted how he "has led the way in helping the public navigate the intricacies of the enigmatic health-care system."

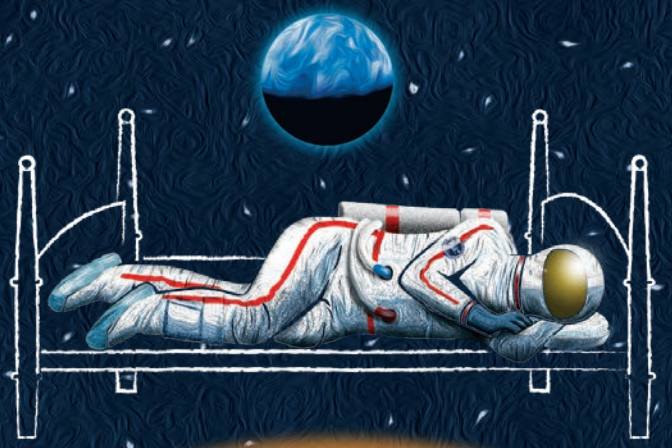
### Taking the Reins

Succeeding Asch as executive director of LDI is Daniel E. Polsky, Ph.D., who had served as the Institute's director of research since 2008. Polsky is professor of medicine in Penn's Perelman School, with a secondary appointment as professor of health-care management in the Wharton School. He has taught at Penn since 1996, when he earned his Ph.D. degree in economics. He serves on the Congressional

Polsky

Budget Office's Panel of Health Advisers and in 2007-08 was senior economist on health issues for the President's Council of Economic Advisers.

A globally recognized expert in health economics, Polsky is a co-author of *Economic Evaluation in Clinical Trials* and an author of more than 90 peer-reviewed articles in such leading journals as *The New England Journal of Medicine, The Journal of the American Medical Association*, and *Journal of Health Economics*. His research has received extensive federal funding, including multiple awards from the National Institutes of Health and the Robert Wood Johnson Foundation.



# SLEEPING BY STARLIGHT:

## DAVID DINGES STUDIES HOW HUMANS REST AND WORK IN SPACE

*By Mark Wolverton*

On November 4, 2011, humankind's first mission to the planet Mars returned home. An international crew of six men transferred from their spacecraft to a quarantine facility, then finally emerged four days later to again walk on planet Earth after almost a year and a half.

Well, not quite: actually, the six crewmembers had never left Moscow. Instead, they had successfully completed the Mars-500 experiment, a multinational effort to simulate a manned mission to Mars. Six volunteers – three Russian, one French, one Italian, and one Chinese – spent 520 days in a specially designed isolation chamber, experiencing the conditions (except for microgravity, of course) that the first human travelers to the Red Planet will have to endure, under the constant study of Russian, European, and Chinese scientists and spaceflight planners. And one American research team, led by David Dinges, Ph.D., professor of Psychology in Psychiatry at the Perelman School of Medicine. Dinges has been working with NASA for more than 20 years in one of the most challenging problems of space exploration: how to keep astronauts alert, active, and able to do their enormously complex and dangerous jobs in the most extreme conditions human beings will ever face.

As one of the world's leading experts in sleep, chronobiology, and circadian rhythms, Dinges has spent his entire career studying people in extreme conditions – mostly how they react to the lack of proper sleep. In fact, *The New York Times* once noted that Dinges "has the distinction of depriving more people of sleep than perhaps anyone in the world." But even if you're not enrolled as a volunteer in one of his sleep lab studies, his ebullience and obvious enthusiasm for his work would certainly make it difficult to fall asleep in his presence.

Dinges is the chief of the Division of Sleep and Chronobiology in the Department of Psychiatry and associate director of Penn's Center for Sleep and Circadian Neurobiology. As he puts it, "We're interested in what lifestyle stressors – like not getting enough sleep, or being awake at night like a nightshift worker, or traveling across time zones, or not getting enough sleep and getting exposed to a stressful situation, all of which we can simulate in the lab – do to people's ability to function, emotionally, behaviorally, cognitively, performance-wise."

Such questions are of particular importance to people such as pilots, long-distance truckers, police officers, ship captains, or power-plant workers, who don't keep regular 9-to-5 schedules. "You have people doing something where a human error can result in catastrophic consequences," says Dinges. "It can damage a multibillion dollar system or it can lead to the grounding of a tanker." That's why Dinges's work has attracted intense interest from the National Transportation Safety Board, Department of Transportation, and Department of Defense, among other agencies.

## THE MOST CHALLENGING ENVIRONMENT

But whatever the difficulties faced by fatigue-prone human beings on Earth, no environment is more challenging to work and live in than outer space. Although NASA has been subjecting astronauts to various indignities in the name of medical research since before Alan Shepard became the first American in space (as anyone who has seen the film *The Right Stuff* may recall), much remains unknown about the physical and psychological effects of spaceflight on the human organism, particularly throughout long-duration missions.

In the pioneering era of space exploration, missions were only a few hours or days long. Even the Apollo astronauts went all the way to the Moon and back in less than two weeks. While orbital space stations such as Skylab, Mir, and the International Space Station made it possible for humans to spend weeks and months off Earth, no one has yet remained in space even for the 500 days or so required for a trip to Mars. The current record holder, cosmonaut Valery Polyakov, lived aboard Mir for 438 days.

If people are eventually going to journey to the planets or live in permanent space colonies, we're going to have to do a whole lot better than that. But can humans survive and function effectively outside of Earth in the long term, in conditions of microgravity and isolation and constant danger? How will they behave, individually and as part of a team? Are some personality types better suited than others for life in space? Will years away from Earth have lasting neurological or psychological effects? Those are some of the questions that David Dinges is exploring for NASA.

When NASA first approached Dinges around 1990, it was to study commercial aviation, not spaceflight. "We were working with NASA Ames Research Center intensively on fatigue in airline pilots," he says, "doing field studies and lab studies, trying to understand whether they could nap in a cockpit seat or sleep in a sleeper berth and how alert would they be." That led to another project at Johnson Space Center, NASA's home for manned spaceflight, studying how shift work affected mission controllers. Some of the testing measures Dinges and his colleagues developed in his lab to study fatigue effects on cognitive and motor responses, such as the Psychomotor Vigilance Task (PVT), also found their way onto the STS-90 *Columbia* Space Shuttle mission and the STS-95 mission, which was John Glenn's return to space.

Photograph by Sabina Louise Pierce

David Dinges has worked with NASA for more than 20 years.

## THE FACTORS AFFECTING ASTRONAUTS

But as the 1990s gave way to the 21st century, NASA was looking for more. "They basically needed a way to get more human medical research done faster than they could do with their own scientists," says Dinges. In 1997, a new scientific research consortium was put together, the National Space Biomedical Research Institute (NSBRI), composed of researchers from Baylor, Penn, Harvard, Johns Hopkins, MIT, and other leading institutions. Dinges contributed his expertise on human performance factors dealing with sleep and chronobiology, but around 2000 he was tapped by NSBRI to form a group specializing in behavioral health – how psychological and social factors such as depression, stress, anxiety, or just plain boredom can affect the way an astronaut works both as an individual and part of a team.

Dinges's Neurobehavioral and Psychosocial team at NSBRI developed and conducted new research projects and plans for NASA involving what scientists call "analog environments" – situations that simulate as closely as possible the conditions of space. One of the most successful is the NEEMO (NASA Extreme Environment Mission Operations) program, based in an underwater laboratory named Aquarius, located 62 feet under the ocean off Key Largo, Florida. Since 2001, groups of astronauts and NASA researchers have spent up to three weeks at a time performing experiments, training exercises, and "spacewalks" underwater, in the closest analog to prolonged weightlessness available on Earth.

For Dinges, the NEEMO program provided a chance not only to study the performance and behavior of the crews and gather valuable data on their psychomotor performance, attention, and sleep cycles, but also to try out and perfect tests and performance measures to be used on actual space missions. "We ran three of these studies in NEEMO," he says. "It's really hard to get access to astronauts, but here we had prime access to them. They're in neutral buoyancy so there's

risk to life, so it's a good analog for spaceflight. It's not a long-duration spaceflight, it's only a two-week mission, but we could collect saliva on them [for levels of the stress hormone cortisol], and we could show that they weren't overly stressed or sleep deprived, so we could get cognitive norms on them in quick tests."

At NASA's urging, Dinges and his colleagues, Mathias Basner, M.D., Ph.D., M.Sc., and Daniel Mollicone, Ph.D., then used the NEEMO data to develop a streamlined 3-minute version of his PVT test that International Space Station astronauts could use to test themselves in space. "Sitting around doing an experiment for a scientist isn't terribly glamorous," he says with a laugh. "They're very busy up there. So the question was, what could you put up there that had no mass, no power requirements, no uplift costs, that could be electronically downloaded and interpreted, and would be easy for the astronauts to do with no training? And I said, we can do that. Everything we're building is designed for minimal burden, no cost. It's software."

## THE NASA CONNECTION

Recently, David F. Dinges, Ph.D., was named a team leader by the National Space Biomedical Research Institute as part of its efforts to protect the health of astronauts during long space flights. The institute is a partnership between the National Aeronautics and Space Administration and the academic and industrial communities. (See p. 3.) It was not the first time Dinges has been recognized by NASA. In 2007, he was awarded the Distinguished Public Service Medal, the highest honor the agency bestows upon non-governmental personnel whose accomplishments have contributed substantially to its mission. He has also received the NASA Ames Honor Award from the Fatigue Countermeasures Group in 1992 and the NASA Group Achievement Award from the Fatigue Countermeasures Group in 1993. In addition, his research has been consistently supported by NASA and other Federal agencies.

## THE IMPORTANCE OF REACTION TIME

Dinges worked in partnership with a software company, Pulsar Informatics, to develop a PVT self-test that would be compatible with the ISS computer systems. It was an even bigger challenge than it sounds. "We have to know about any timing errors in those computers on the space station," Dinges explains, "because the PVT test only works if we know that error and can correct for it in the software. We checked with the company that made the International Space Station computers to establish the exact time they were made on the assembly line. Then you get one of those and test it and you can see what the error in the timing is. We're correcting for thousandths of a second. That matters in reaction time. If they're 30 milliseconds off, that's a problem."

Every four days throughout each 180-day ISS mission, the astronaut performs the PVT test twice a day, and some other times depending on their scheduled sleep shifts. Although the full-fledged PVT is more complex and takes around ten minutes, the PVT SelfTest is simplicity itself. Says Dinges, "An astronaut doesn't have to go into one module to do our experiment. Anywhere they're floating around through the space station, there's one of the support computers – you hit the key, reaction self-test comes up, do it. And we brief them and train them on it, we put it on their personal computers before they go up to get them used to it." By the time the ISS study is concluded within the next two years, the PVT SelfTest will have collected data on 24 astronauts, the largest cohort study yet conducted in spaceflight.

The ultimate goal of all this testing, of course, is to improve safety and performance. An astronaut might test her reaction times and fatigue level to ensure she's at her peak performance before embarking on a particularly delicate and risky extra-vehicular activity, for example. Or a crew member whose tests are showing a marked increase in stress and fatigue might be placed on an extra rest cycle or lighter workload by mission control.

## SCANNING FOR SIGNS OF STRESS AND FATIGUE

Dinges developed another assessment measure in collaboration with Dr. Dimitris Metaxas, a computer scientist at Rutgers University. Called optical computer recognition (OCR), the system reads a person's face for telltale signs of stress, fatigue, and emotional upset. Through a sophisticated algorithm, it acts as a sort of early-warning system by providing feedback on emotional and psychological states. Dinges explains it as "a combination of some very brief tests, where we can measure speed of the nervous system and memory and processing and simultaneously measure changes in the speed of the eyelid, or facial expressions in response to objects shown on the computer. It's not to spy on people, but maybe the device can help you understand that you're at risk right now – and you need to do something to recover." In the future, an OCR system may even serve as a "computer therapist" to provide psychological counseling.

Although NASA wasn't directly involved in the Mars-500 simulation, the NSBRI team led by Dinges was invited to participate in the study. So the six international volunteers dutifully tested themselves using the PVT SelfTest and the OCR system. Of the hundred or so experiments conducted by the Russian, European, and Chinese space agencies, Dinges observes that "we got the most data by a wide margin, and the most high-fidelity data." By perfectly integrating their software with the Russian system inside the Mars simu-

With Naomi Rogers, Ph.D., then a postdoctoral student, David Dinges observes sleeping subjects.

lation chamber, and relying on a Russian liaison who downloaded the data regularly to Dinges's team, "we could see, week by week, what was happening with each crew member: how much they were moving, the intensity of movements, their moods, their performance, everything."

Less than a year after the six volunteers completed the simulation, the results of all the experiments are still being analyzed and written up, but Dinges already notes some fascinating preliminary results. "What we found was something I don't think we or others had expected. We found a very dramatic change in behavior in the chamber. Humans go into a kind of . . . it's not a hibernation response, but it's like a behavioral torpor. They move less and less, and they spend more time in sedentary activities. Communication delays that were simulated up to 24 minutes, which will be true for Mars, had an impact on the crew and their perceptions of conflicts."

Dinges adds that there were "various abnormal reactions that occurred among crew members that we're writing up that were very sensitive but reflect this prolonged confinement. What we learned was something incredibly valuable about what we're going to have to watch out for when we send humans to Mars. Circadian entrainment, lighting in the habitat, the scheduling of activities are all going to be critical, along with the way in which we maintain high physical-activity rates, which is the primary countermeasure for microgravity effects on bone, muscle, cardiovascular health, and other physiology. So we got a lot of information on what's likely going to happen to behavior. Is it a perfect simulation? No. If it was perfect, it would have microgravity. But it's pretty darn good and it tells us likely behaviors among high-functioning crews in prolonged mission confinement."

## WHAT "STUFF" IS RIGHT?

Dinges's work with NASA and the NSBRI on the Mars-500 project, which will be published in *Proceedings of the National Academy of Sciences of the United States of America*, has also led him to consider the possibility that those qualities traditionally considered "the right stuff" might not be enough anymore. "It's my new mantra with NASA that we must revisit the issue of [astronaut] selection," he notes. "Right now we've been selecting astronauts for six-month missions on the ISS. We need to look at whether those are the right criteria for a 17-month mission to Mars or even longer. We probably need some different types of people. Not that some of the astronauts going up aren't the right stuff, but we have to look at what kind of other 'right stuff' may be right for space exploration."

Dinges's NASA work has ready application outside of spaceflight, encompassing pilots, train engineers, shift workers, medical residents, anyone faced with a sleep-challenged lifestyle. Or, in the final analysis, anyone who sleeps. His research collaborations are wide-ranging and diverse, involving neuroimaging, physiology, genetics, and even computer science.

"It's great because it's a multidisciplinary team," he says. "We can turn our collective microscope on anything we want and build translational and clinical and applied connections. We can span from looking at policy issues all the way down to studying single cells. And since I'm a workaholic anyway, it's perfect for me to stay busy."

With such a busy career, does David Dinges still manage to get enough sleep himself? "I practice what I preach to the extent that I can," he says. "Because I have to travel, I actually will structure my activity on the airplane, in the hotel, at the meetings, around how to maintain my performance based on what I know about this biology." It can sometimes be a bit of a problem. "The one thing a lot of people look forward to on international trips is the socializing. You've got to do that at breakfast with me," he says, laughing. "I'm not going to be up all night with you."

So while David Dinges may keep a lot of people up all night, he's hardly a party animal. "Generally not," he confesses. "Maybe once a year for a party at my house." ●

# WISER Scientist

*By Martha Ledger*
*Photographs by Candace diCarlo*


**Against conventional thinking,** a Penn researcher is showing that physical exercise can be a potent weapon against breast cancer.

Kathryn Schmitz works out in the basement of her suburban home 200 times a year. On many days, her 15-year-old son exercises with her, and each tries to outdo the other with exaggerated grunts or pretend "owies." Sometimes she exercises alone, treating herself to a simultaneous hit of TV.

Two hundred times a year averages out to about four times a week. When Schmitz travels, she misses workouts, so occasionally she makes it up by doing six in one week. She logs each workout, making sure by year's end she meets her contract with herself.

She could be someone recovering from an illness or just an ordinary healthy person trying to stay that way. In fact, she's an expert on exercise – an exercise physiologist with a Ph.D. degree in kinesiology and an M.P.H. degree in epidemiology. She is also a Penn Medicine associate professor of epidemiology, a senior fellow at the Abramson Cancer Center, and the principal investigator of multiple studies involving exercise and breast cancer.

Schmitz, called Katie by everyone, is having an enviably productive career. Her first major clinical trial resulted in new options for dealing with lymphedema, the persistent swelling of arms or shoulders caused by the removal of lymph nodes during treatment for breast cancer. Even while this landmark study was running, Schmitz was laying the groundwork for an even more compelling investigation, forging transdisciplinary research collaborations focused on both lymphedema and breast cancer recurrence. Her perseverance culminated in a $10 million, five-year TREC Center grant from the National Cancer Institute (NCI). She has other studies funded by the NCI in progress. Her CV lists more than 100 peer-reviewed publications, and her awards include two prestigious ones from the Perelman School of Medicine – the Marjorie A. Bowman New Investigator Research Award (2008)

and the Dean's Award for Excellence in Basic Science Teaching (2011).

Schmitz's focus on exercise is not the norm in cancer research, where most investigators study disease processes with an eye to creating new diagnostics and treatments. Schmitz's research questions are directed toward diminishing the likelihood of having to deal with the disease or its consequences. They're more like "Can exercise lower the risk of breast cancer in high-risk women?" "Can it reduce the chance of breast cancer recurrence?" "Can it lessen the collateral damage of breast cancer treatment?"

Schmitz became aware of the prevalence of lymphedema – now the focus of much of her work – in a serendipitous way. While on the faculty at the University of Minnesota, she had a Susan G. Komen Foundation grant to investigate the effects of twice-weekly progressive weight training on a biomarker associated with the recurrence of breast cancer.

Recruiting for the study didn't go well because so many survivors of breast cancer turned out to have lymphedema. In those days (2000), doctors routinely advised women with this disorder not to use their affected arm, even for daily chores such as carrying groceries or lifting children. Schmitz rejected one potential participant after another.

While still trying to recruit, she combed the literature on lymphedema and physical exercise and found seven small studies that supported its safety. She also discovered the growing movement of breast cancer survivors who race in dragon boats. Their run-up to competition stretched over five months and included progressive strength training. Some paddlers had lymphedema, all were at risk for it – yet none seemed to suffer ill effects.

> The transdisciplinary TREC Center grant from the National Cancer Institute – for $10 million over five years – supports Kathryn Schmitz's studies. The E is for Energetics, which deals with the interplay of physical activity, diet, weight, and genetics. At its core is the concept of energy balance, which is associated with health.

Developing a special protocol to maximize their safety, Schmitz began to accept women with lymphedema into her study. If she had excluded them, she explains, there would have been no study.

She had a Ph.D. candidate, Rehana Ahmet, M.D., monitor these particular women – take arm measurements, analyze self-reported flare-ups of swelling, and make clinical diagnoses. "After a while," Schmitz recalls, "my student started popping her head into my door, saying, 'You know, I think we're on to something. I really think we're on to something.'"

Changes in the biomarker were insignificant. All the good news was about the breast cancer survivors with lymphedema. Schmitz and her colleagues had amassed enough evidence to prove that slowly increasing physiological stress training was safe for these women. "Science is fickle," Schmitz says, calling up an example of its unpredictability. "Sometimes when you're looking for a blood-pressure drug, you find Viagra."

Schmitz arrived at Penn in 2005, and for the next three years she examined the effects of exercise on breast cancer survivors with lymphedema. Called PAL (Physical Activity and Lymphedema), the study was the largest and longest randomized controlled trial yet done on this subject, and it showed that slowly progressive resistance training – use of the arm – was not only safe but also beneficial.

Dolores Garrett, enrolled in WISER Survivor, lifts weights as Justin Brown, the exercise interventionist, observes.

Kathryn Schmitz confers with colleagues: Karen Glanz, Ph.D., M.P.H., the George A. Weiss University Professor and professor of biostatistics and epidemiology; Julia Tchou, M.D., Ph.D., assistant professor of surgery; and David Sarwer, Ph.D., professor of psychology in psychiatry.

Following publication of the PAL results in *The New England Journal of Medicine* and *The Journal of the American Medical Association* in 2009 and 2010, several national organizations made changes in their advice to breast cancer survivors. Among them were the American College of Sports Medicine, which issued new guidelines that Schmitz helped to write; the National Lymphedema Network; and the NCI, which invited Schmitz to rewrite its online patient-oriented fact sheet on lymphedema.

*The New York Times, Time, USA Today, CBS World News Tonight*, and many other media sites also reported her findings. The new advice ran the gamut from an endorsement of "slowly progressive resistance training" to the wholly vague "avoid inactivity." But the word was out that survivors of breast cancer could and *should* exercise.

PAL is still very much on Schmitz's desk. She currently has an NCI grant, called Disseminating PAL, to study doctors' referral patterns and the settings most appropriate for exercise programs for breast cancer survivors. (So far, she has found, fitness centers seem more successful than physical-therapy settings.)

Through the grant, Schmitz now has such exercise programs at a half-dozen sites in Philadelphia. Comprising one hour of education plus four group sessions of physical therapy, the programs present a mini-version of the PAL protocol, including the basics needed to support home workouts.

And while she knows there are still many doctors wary of PAL, including those who say "It's just one study," she can also see "the vanguard doctors, the early adopters" starting to move. Two hundred and fifty women were referred for exercise by their oncologists in the first six months of the program.

The TREC Center grant is noteworthy for its comprehensiveness. The TR in its name stands for Transdisciplinary Research; many other specialists are involved. The E is for Energetics, which deals with the interplay of physical activity, diet, weight, and genetics. At its core is the concept of energy balance, which is associated with health.

Obesity – which now has reached epidemic proportions in the United States – represents an energy imbalance, one that the NCI anticipates will cause an increase in cancers (the C in TREC). In its words, there is "mounting evidence that obesity plays a role in the development of many types of cancer." In fact, it lists eight, among them post-menopausal breast cancer.

Obesity is also thought to play a role in breast cancer recurrence, Schmitz explained recently in a TREC Center seminar presentation. Underlying this idea is the dormancy theory, which holds that cancer cells live on quiescently in the body after a person is cured of the disease. They can remain harmless for many years but, if prodded, can turn back on, initiating a recurrence. Scientists are looking at fat, which is composed of adipose tissue, as a likely source of biochemical triggers.

Adipose tissue is usually quite homogeneous but becomes less so when there are excessive amounts. In those circumstances, it is metabolically active, producing a vast array of molecules that facilitate production of other biochemical agents. Too much adipose tissue is associated with increases in all of the following: insulin, insulin resistance, growth factors, sex steroid hormones, and inflammatory regulators. An overabundance of adipose tissue has also been linked with altered signaling proteins and increases in oxidative stress. These biochemical regulators are thought to support the growth and spread of cancers.

Schmitz's study, called WISER Survivor (Women In Steady Exercise Research), is the centerpiece of the TREC Center grant. She is again looking at the effects of exercise on reducing breast cancer biomarkers, but now also looking at the effect of weight loss on those same bio-

markers. "I basically took my work that was focused on breast cancer biomarkers and my work that focused on survivorship and on lymphedema into one big trial," says Schmitz.

"Recurrence and lymphedema are the two most significant challenges breast cancer survivors face," she points out. Recurrent breast cancer is typically incurable. Lymphedema is disfiguring, often painful, and both costly and time-consuming to have treated.

Health-care professionals, according to Schmitz, tend to think that sentinel node biopsy (which reduces the number of nodes removed) makes lymphedema no longer a concern. "But it's not the case," she says, because removing any node comes with some risk; in addition, many women's treatments predate the more moderate procedure; and 40 percent of women end up going on for axillary dissection, where the risk of lymphedema is highest.

Known as "cancer's dirty little secret," lymphedema can pack an emotional wallop more devastating than the cancer itself. Schmitz explains: "A survivor can put the cancer behind her and say, 'I had cancer. It's gone. Goodbye. I'm done.' But not so with lymphedema. Now it's 'I have a chronic condition that I'm going to have to deal with for the rest of my life. And the best I can hope for, if I do everything right, is that it doesn't get any worse.' Psychologically, that's a blow."

There are currently more than 2½ million survivors of breast cancer in the United States, according to the American Cancer Society. Lymphedema can arise at any time, so all survivors are at some risk. Exactly how many actually have it is hotly debated, Schmitz says. "Sticklers who take note of even the slightest difference in size between a woman's two arms say it's 70 percent of survivors, but if you look at the best-quality studies that have multiple measures and are done over time," she explains, "20 to 30 percent seems to be what most people settle on."

WISER Survivor got under way in May when the first group of what will be 555 women started workouts at 3401 Market Street, where TREC's offices are housed. In addition to lymphedema caused by breast cancer treatment, each woman must have a body mass index between 25 and 50 (25 to 29.9 is classified as overweight; ≥30, obese).

Each WISER survivor will be randomly assigned either to a control group or to one of three weight-reduction groups: exercise, caloric restriction, or exercise plus caloric restriction. Schmitz expects that women in the combined group can lose as much as 15 percent of body weight. She will be looking for changes in cancer-related biomarkers across all groups. She also hopes to improve on PAL's lymphedema outcomes. In that study, exercise alone did not reduce arm circumference; however, she's expecting to see reductions now when weight loss is added in.

> Our hypothesis is, not only is this intervention likely to be effective and improve the health of women with lymphedema, but we think it will actually save money – and save more money than people think.

Two projects from wholly different disciplines at Penn bookend Schmitz's clinical trial. One is based on cutting-edge molecular research, led by Lewis A. Chodosh, M.D., Ph.D., the J. Samuel Staub, M.D., Professor of Cancer Biology. The other brings sophisticated economic modeling to the table and is led by J. Sanford Schwartz, M.D. '74, G.M.E. '78, the Leon Hess Professor in Internal Medicine and professor of medicine, health-care management, and economics. "Bench to trench" is how Schmitz likes to describe the scope of the interrelated studies.

Chodosh's project will test the effects of the weight-reduction strategies used in WISER Survivor on a mouse model genetically engineered for oncogene-induced breast cancer. In his model, oncogene expression is controlled by the presence or absence of a biochemical agent. When it's present, the mouse develops a primary tumor. When it's withheld, the tumor regresses. Some cells survive regression, stay dormant for a while, reactivate, and give rise to new tumors.

Four groups of these mice will be fed a high-fat diet to acquire excess adipose tissue. Once tumor regression is apparent, they either will have no intervention or undergo one of the three weight-reduction strategies used in WISER Survivor – exercise, caloric restriction, or exercise plus caloric restriction. (The design also includes a control group of genetically engineered mice that are not overweight.)

Chodosh will compare differences in tumor recurrence across the groups as well as differences in the secondary pathways associated with excess adipose tissue. Biomarkers of interest that arise in his study will then be tracked in WISER Survivor.

Schwartz's project will look at the net benefit of an exercise intervention for breast cancer survivors with lymphedema. He'll determine the monetary cost of having lymphedema, which is currently unknown because the costs are borne by multiple parties: the patient, the insurer, and the employer (through lost or less effective work time). He'll also calculate the

cost of the physical exercise intervention used in WISER Survivor, weighing it against the benefits achieved, both short-term and over a survivor's lifetime.

"In the real world," Schwartz says, "things aren't either good or bad. It's a question of how much net benefit they provide. Sometimes benefits are positive, but so small relative to cost that they just don't make sense doing. We think the opposite is likely to be true here." As he explains, "Our hypothesis is, not only is this intervention likely to be effective and improve the health of women with lymphedema, but we think it will actually save money – and save more money than people think."

These transdisciplinary research collaborations are basic to all TREC Centers (four others were funded in 2011 along with Penn's), where the objective is to speed beneficial interventions into policy and practice. Schmitz participated in the University of Minnesota's successful application while on its faculty. She knew when she came to Penn that all the expertise was here – "if only I could harness it."

According to Schmitz, it took four years of building relationships to set her up to compete for this grant. The TREC Center she assembled draws upon specialists across the University: the Center for Clinical Epidemiology and Biostatistics; the Abramson Cancer Center; the Center for Weight and Eating Disorders; the Institute for Diabetes, Obesity, and Metabolism; the Institute for Translational Medicine and Therapeutics; Good Shepherd Penn Partners, which provides post-acute care; the Leonard Davis Institute of Health Economics; the Perelman Center for Advanced Medicine; the Perelman School of Medicine; and the Wharton School.

Schwartz is enthusiastic about what Schmitz has accomplished: "Katie's the one who conceived the project, who brought people together, who got us motivated and energized. And she's the person whose leadership is crucial for this project to be successful."

Before doing exercise research in academia, Schmitz spent some years as a modern dancer with the Martha Graham Dance Ensemble in New York City and as a fitness trainer at an upscale gym in the World Trade Center. She was an expert in exercise before she became the degreed kind of expert. Even now, in addition to her 200 home workouts, she frequently bikes the 12-mile round trip between home and work. In 2011, she trained for and completed the Broad Street Run, an annual 10K race in Philadelphia, with a breast cancer survivor who was in one of her studies.

Not everyone interested in energy balance has a bias toward physical activity. "There are two sides to the equation – exercise and diet – and most researchers tend to remain on the side where they start out," Schmitz says. To her thinking, she picked the right side. Some from the other side agree. Wendy Demark-Wahnefried, Ph.D., a prominent researcher in cancer prevention and a nutritionist at the University of Alabama at Birmingham Comprehensive Cancer Center, often gives talks at exercise conferences. " 'Why?' " Schmitz recalls her saying. " 'Because I do all these studies and what we keep finding is that physical activity consistently causes positive benefits, while dietary interventions – which may be harder to follow – show more variable results.'"

As Schmitz puts it, "How many times do you have to [hear] that before you say, 'Hmmm, physical activity seems to be an important factor here.'"

Even when obesity is not at issue, Schmitz stresses the importance of physical exercise programs for women with lymphedema. Her analogy is cardio rehabilitation programs, which are already common for heart attack survivors. It's known that a carefully controlled increase in physiological stress on a damaged body system actually makes that system work better, Schmitz explains. Just as the heart adapts, so does the dysfunctional arm. In her words: "The body says, 'Oh, you're going to ask me to lift something heavier tomorrow, aren't you. Okay.' And it makes

Anne Metellus does part of her exercise routine in the WISER Survivor study.

little changes. And then you *do* ask it to do something harder the next day, and it says, 'Got it. And I'm going to keep changing.'" Conversely, a damaged arm that is not exercised loses conditioning and becomes even more vulnerable to injury.

Physiologists don't know whether exercise rehabs a lymphatic system damaged by cancer treatment or whether other systems take over its function. "We do know that if you work your left arm and not your right, it's the left that shows an increase in capillary density," Schmitz says. "Greater capillary density is going to help remove excess fluid and cellular debris, but it's quite possible that exercise is changing lymphatic vessel density as well."

In its ability to change the body, exercise is potent medicine. "Its benefits are going to vary depending on the mode, the dosage, and the timing," Schmitz says. So it's not enough for the doctor to say, "You should lose a few pounds. You should walk." Schmitz wants it prescribed with the same specificity as the pills we ingest. She also wants exercise done with correct biomechanical form. "It's precise, like dance. It has to be this," she says, holding out her arm at a certain angle. "It can't be this or this," she demonstrates, flexing her wrist, then her fingers, ever so slightly.

Like all medications, exercise can have unintended effects. A meta-analysis reported in May in *PLoS One* (the first author is Claude Bouchard, Ph.D., professor of genetics and nutrition in the Louisiana State University system) showed that the vast majority of participants in exercise studies benefit from physical activity, and about 10 percent achieved exceedingly good responses. At the same time, various markers traditionally associated with cardiovascular and diabetes risk factors (HDL cholesterol, triglycerides, resting systolic blood pressure, and insulin) were negatively affected, depending on the marker, in 8 to 13 percent of study subjects. (Participants were not breast cancer survivors.)

"In its ability to change the body, exercise is potent medicine. "Its benefits are going to vary depending on the mode, the dosage, and the timing," Schmitz says. She wants it prescribed with the same specificity as the pills we ingest."

"All therapeutic interventions have risks," Schmitz says, "including sudden cardiac death, musculoskeletal injuries, metabolic abnormalities, hormonal and bone health problems." In her work with breast cancer survivors, the more likely negatives are the onset of lymphedema or lymphedema flare-ups. But, she says, "The issue is to weigh the risks and benefits of both exercise and lack of exercise."

Expressed numerically, the benefits are impressive: Survivors with lymphedema who lifted weights reduced the need for lymphedema treatment by 50 percent versus those getting standard care. Survivors who had had five or more lymph nodes removed had a 70 percent lower risk of swelling arms.

In an article published in the August 2012 issue of *The Oncologist*, Schmitz (the senior author) deals with the risks of exercising, acknowledging that the need for medical attention was higher in the weightlifting than in the non-exercising control group. Among the weightlifters, 20.9 percent of survivors either had to cease exercising or reduce the intensity of their lifting.

From a population standpoint, Schmitz thinks it's inadvisable to keep all women sedentary simply because a certain percentage will have flare-ups or injury. Instead, in *The Oncologist* article, she proposes ways to minimize adverse effects, including careful pre-evaluation of survivors entering exercise programs, as well as supervision during the program by well-trained professionals who can respond quickly to negative symptoms.

The article in *The Oncologist* is part of Schmitz's campaign to convince physicians that exercise is sufficiently safe and will help their breast cancer patients. She wants to educate survivors of breast cancer as well. But it has not been easy. When the PAL study was reported, she thought women would demand access to exercise programs. Not only did that not happen, but only 25 percent of doctor-referred survivors have taken advantage of the community exercise programs offered through the Disseminating PAL grant.

Improvement "has been demonstrated," Schmitz says, "and the journals are filled with clear and compelling evidence of the benefits of exercise for a broad variety of health conditions and disease preventions." Nevertheless, the health-care system has been hard to crack. She feels that doctors find it easier to prescribe pills and people find it easier to take pills than to commit to exercise programs. "This kind of short-run thinking," she argues, "is one of the reasons we're in the situation we're in now with ridiculous health-care costs in this country."

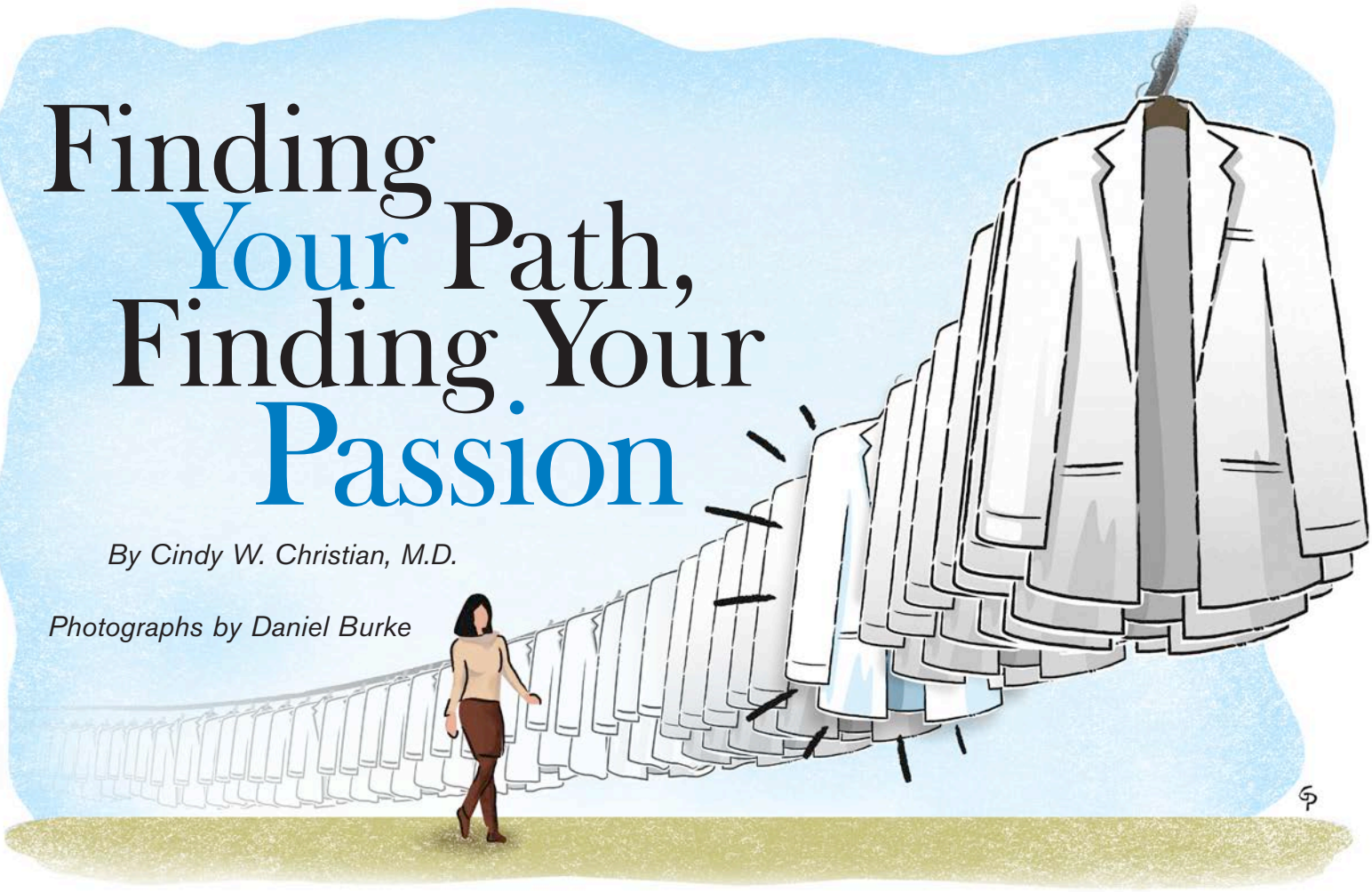
Schmitz is looking forward to a time when it's no longer acceptable to be in our cars as much as we are, or to eat out as much as we do, or to say, "I don't have time to exercise."

"How can people spend three hours in front of a television every day and say they have no time to exercise?" she asks rhetorically. "They need to make the connection and say I will not watch TV unless I am exercising in front of it, even if it's just marching in place." ●

# Finding Your Path, Finding Your Passion

*By Cindy W. Christian, M.D.*

*Photographs by Daniel Burke*



**At this year's White Coat Ceremony, Dr. Cindy Christian, a pediatrician at The Children's Hospital of Philadelphia and professor of pediatrics at the Perelman School of Medicine, described the arc of her career and encouraged the incoming students to choose a journey that fulfills them – and to make a difference in the world.**

As a CHOP physician, I believe pediatricians play a unique role in the lives of children and families. Most of you can probably think back and reflect on your relationship with your childhood physician. I remember crying on the examination table when receiving stitches in my thigh, wondering why my doctor was listening to my back when I knew my heart was in the front, and I recall my doctor making a house call when I had chicken pox. In those days, I had no thoughts of a career in medicine, at least not human medicine. I had always loved animals and thought that perhaps I would become a veterinarian. When I applied for college, I searched for a small school with a strong program in animal science and found Bucknell University, where I majored in Animal Behavior.

Those college years were wonderful and introduced me to the world of academia and research. I had professors who mentored me, arranging for me to spend a summer as a zoo keeper in New Orleans, where I completed my first research project. I helped care for a paralyzed wallaroo, acclimated a tapir into a new exhibition, and even attended the autopsy of a murdered ostrich. It was all wonderfully interesting, but that summer helped me to realize that my love for animals did not translate into the career that I wanted. I turned to human medicine, where I thought I could make more of a difference to those in need.

When I entered medical school – probably like many of you – I had no idea what career path I would take. I worked hard learning pharmacology and biochemistry, studying anatomy and histology, and anticipating the clinical learning ahead. When I entered the clerkships, I enjoyed them all, but found myself drawn to both pediatrics and pathology. For some time, I considered a career in pediatric pathology. In my last year of medical school, hoping I was headed to Philadelphia after graduation, I called CHOP to arrange a visiting rotation in pediatric pathology. I discovered it was something they did not offer, at least until then. I spoke with the head of pathology and convinced him that I would be worth the trouble. And so, in October of 1984, I had my first introduction to what

would eventually be a long and fulfilling career at The Children's Hospital of Philadelphia. I met some of the world's most accomplished physicians that month: the neuropathologist Lucy Rorke would differentiate astrocytomas from medulloblastomas under the group microscope, and Dr. Anna Meadows would lead oncology case discussions every Thursday afternoon.

Both of these women were tough cookies, incredibly accomplished physicians who didn't suffer fools lightly, and were a little intimidating to a young, impressionable medical student. Little did I know then that both Dr. Rorke and Dr. Meadows would be important influences in my career and are friends to this day. Ultimately, I decided that while I enjoyed pathology, my temperament was best suited for pediatrics. I loved taking care of children, but more importantly, I loved the medicine of pediatrics. I still do. The diseases are interesting, the patients are adorable and resilient, and caring for children can improve their lives for decades to come.

I recall Match Day, when I learned I would be headed to CHOP for my residency. I later learned that my initiative in creating an elective that didn't exist in part opened those doors for me. I remember being so proud to have matched at the premier pediatric training program in the country, but also so apprehensive about whether I was up to the challenge. After all, wouldn't the other interns be smarter than me, better educated, more talented? Some of you might be having similar thoughts sitting here today . . . and the truth is, there may be some students who are smarter than you, others who are better educated, and others still who have special talents, but each of you has what it takes, and you'll find the career that maximizes your personal strengths.

My residency years at CHOP were grueling but fabulous. During my first month,

I cared for two children diagnosed with pheochromocytoma – a rare adrenal tumor that in medical school we were told we would never encounter. Bacterial meningitis, epiglottitis – the vaccine-preventable diseases we read about in *Deadly Choices*, Dr. Paul Offit's book about the anti-vaccine movement in America – were all common.

On just my second night of call, I encountered a child with a problem I had never learned about in medical school. His name was George, and he was a three-year-old who had been severely beaten by his uncle. He had welts and bruises all over his body.

But on just my second night of call, I encountered a child with a problem I had never heard of, had never learned about in medical school. His name was George, and he was a three-year-old who had been severely beaten by his uncle. He had welts and bruises all over his body, and I was assigned to care for him. What I remember so clearly is that I had no idea what to say to that little boy or his family. This was something I had never encountered in my life, and I was paralyzed by ignorance. But I had teachers – physicians and social workers – who knew exactly what to do and how to begin the very difficult dialogue that was needed. Looking back, I can't say that this first encounter with an abused child changed my life . . . but caring for so many abused and neglected children during my residency ultimately defined my life's work.

As medical students, you will learn a tremendous amount about the human body at its most elemental – but you will also learn the importance of social influences on the human condition. You may chose a career in basic science or in an organ-based specialty, but know that whatever your career choice, you have the opportunity to help the most vulnerable. Personally, I've chosen a career protecting abused and neglected children, and I've been a fearless advocate for children who have been hurt by those who are supposed to protect and nurture them.

Of course, I didn't do this alone. All of our careers are defined by those who mentor us, and during your years at Penn, you will most assuredly find some of

From left to right, Cameron Stainken, Adeline Goss, Saloni Malik, Lea Hecht, and Fred Lin try out their new white coats.

your early career mentors. I've had wonderful mentors at CHOP. Dr. Tina Duhaime, now the chief of Pediatric Neurosurgery at Mass General Hospital, taught me the importance of objectivity in research and how best to address relentless criticism by those who don't believe in child abuse. Dr. Katie Manno, now the chair of Pediatrics at NYU, guided my career on a daily basis, as we drove back and forth from home to the hospital together for almost 20 years. And Dr. Steve Ludwig, a consummate clinician and educator, mentor to a generation of pediatricians. He started the child protection program at CHOP and invited me to join him in the work. He provided leadership and opportunities when I was just starting my career, and to this day he still provides a sounding board for my ideas and concerns.

As first-year medical students, you can hardly imagine where your career will take you. The possibilities are endless, and some of you will find careers in disciplines that you don't even know exist.

I chose to have an academic career, which means I have clinical, teaching, and research responsibilities. Clinically, I care for both abused children and sick children who are hospitalized with a broad range of illnesses. I've directed three different pediatric courses for the medical school, trained the next generation of child abuse pediatricians, taught a law school class for a decade, and currently direct a center at Penn to improve child welfare practice. I collaborate on brain-injury research funded by the NIH and CDC – and I've even taught at Penn's veterinary school. There aren't many universities in the world that can provide these opportunities, and they are available to all of you – so take advantage.

I've learned over the years that to be an effective advocate for abused children, you can't do all the work inside a children's hospital. In this field, the physician is only one member of a team in a complex system that involves law enforcement, child welfare, courts, and health care. Which is why, two years ago, I agreed to take on an additional position, for the City of Philadelphia, as the first medical director for the city's child welfare agency. This new work is challenging, but slowly, steadily, we are making progress towards improving the health and well-being of Philadelphia's most vulnerable children.

I protect children. That is my work. Many of you, and many of my colleagues, may find it hard to believe that I can do this day in and day out, year after year. And although the work is very difficult, I find it to be most compelling. I am proud to be a voice for children who have no voice.

As first-year medical students, you can hardly imagine where your career will take you. And you may not know it, but that's a good thing. The possibilities are endless, and some of you will find careers in disciplines that you don't even know exist. In my wildest dreams I could never have imagined being where I am today. But I've had great mentors along the way, have worked hard to make a difference, and have welcomed opportunities that challenged me to do more – and do it well. Here at Penn, we have high expectations for all of you. We are here to give you the foundation you need to make a difference in the world, and we challenge you to do so. As you journey through life, remember, you will make a living by what you get, but you will make a life by what you give. Take advantage of the opportunities afforded at this great medical school and remember to learn broadly, think critically, and work hard to overcome the paralysis that comes with ignorance. With open arms, we welcome you to the Perelman School of Medicine. ■

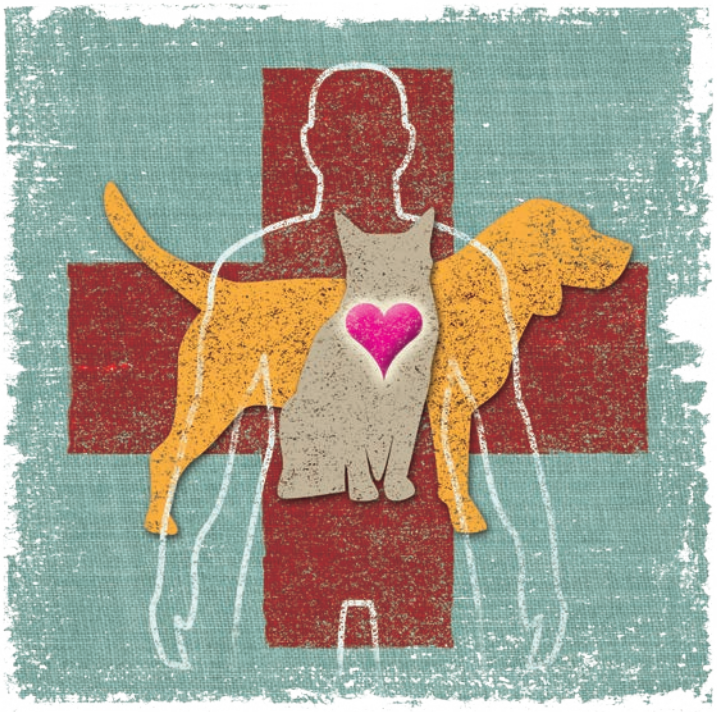
# Giving Back

By Holly Auer

## New CPR Guidelines for Dogs and Cats Are Informed by Research in Humans

In a unique partnership between veterinary experts and physician-scientists who study and treat cardiac arrest in humans in Penn Medicine's Center for Resuscitation Science, the same research that is saving patients who suffer cardiac arrests while hospitalized will now be put to use saving the lives of beloved pets. The Reassessment Campaign on Veterinary Resuscitation (RECOVER), announced in June, provides the first evidence-based guidelines on how to best treat cardiopulmonary arrest in dogs and cats that are undergoing surgery or are hospitalized.

Among humans, the survival rate for in-hospital cardiac arrest is 20 percent, but less than six percent of dogs and cats who experience cardiopulmonary arrest in the hospital return home for more opportunities to curl up on their owners' laps, play fetch in the park, and nibble at special treats. Veterinarian Manuel Boller, D.V.M., until recently the medical director of the Translational Resuscitation ICU in Penn's Center for Resuscitation Science and a senior research investigator in anesthesia and critical care in Penn's School of Veterinary Medicine, was a co-chair of the effort. He said that the new guidelines aim to settle longstanding disagreement and confusion about how best to treat small animals during these emergencies. Because it's difficult to conduct large randomized clinical trials in pets, the field has advanced slowly during the same years that new innovations for human cardiac arrest victims – such as therapeutic hypothermia – have been widely adopted.



The need for CPR guidelines for pets became obvious when Boller and his colleagues surveyed veterinarians on how they treated dogs and cats in cardiac arrest. The results, compiled from more than 600 practitioners, showed a large amount of variation. "What we found was that there was really no consensus on how to do that best," Boller said. "There may have been a cohort, for example, that recommended 60-80 compressions per minute and another that thought 120-150 compressions per minute was the right thing."

Unlike the struggles typically associated with duplicating human conditions in laboratory animals and translating those findings to the bedside, the authors of the new guidelines note that there are more similarities in the process of resuscitation in humans and animals – such as directives to push hard and fast during chest compressions, with minimal interruptions – than there are differences. The guidelines capitalize on those similarities in an effort to provide the same evidence-based care for family pets that physicians employ to save human victims of cardiac arrest, which remains one of the nation's leading killers.

Boller played in important role in Penn's research on the use of new techniques for cardiac arrest treatment, such as the use of cardiopulmonary bypass. "When you look at human guidelines," he said, "they have been heavily informed by research done with animals, which forms the fundamental concepts to build clinical trials on. Now, what we're doing is turning things around by using the research that was conducted in humans to inform how we should do CPR to help our animals. It's really getting something back from this process of helping humans." ●

# Benjamin Rush AND 20 YEARS OF PENN PSYCHIATRY

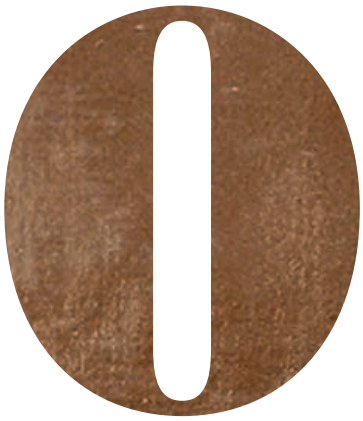
*By Marshall A. Ledger*

When doctors ask for a patient's past medical history, they often find surprises. That's what we found in taking the history of Penn's Department of Psychiatry. *Part 1 of a 2-part article.*

Courtesy Pennsylvania Hospital Historic Collections, Philadelphia

Portrait of Benjamin Rush, M.D. (1813) by Thomas Sully

Penn's Department of Psychiatry, along with its colleagues throughout the country, marks a bicentennial celebration this year: the publication of the first American textbook in the field, by a faculty member of the University's medical school, in 1812.



Calling psychiatry a "field" over all that time, however, is too generous. For many decades, it seemed more like individual physicians in search of a discipline. Its evolution into a distinctive medical specialty – moreover, one that contributes to other fields of medicine, and beyond – is relatively recent.

The difference has been transformational and due in part to the prevalence of behavioral illnesses. The World Health Organization has identified the disorders that cause "the largest numbers of healthy years lost to disability" in high-income countries, and three of the top four are mental/brain diseases: unipolar depression (#1), Alzheimer's and related diseases (#2), and alcohol abuse (#4).

(In low- and middle-income countries, unipolar-depressive disorders are first, schizophrenia eighth, and alcohol-use disorders ninth.)

Dwight L. Evans, M.D., the Ruth Meltzer Professor and chair of psychiatry at Penn, cites these figures to underscore the importance of the field today. Psychiatric illnesses, he adds, also accompany many other medical conditions – for instance, depression in patients with cancer or HIV-AIDS.

"Depression is an independent risk factor for developing heart disease," he says. "If you have a heart attack, your chances of dying from cardiac causes are significantly increased if there is a co-morbid, co-occurring depression. A lot of work is going on to understand the underlying biology – the mechanisms, if you will – that might account for that."

That is a glimpse of psychiatry in the 21st century: "mainstream, much more appreciated, and now well embraced," Evans says. Its relevance is indicated globally, he suggests, in a W.H.O. expression: "There is no health without mental health." And its relevance is suggested in Evans's secondary academic title: "professor of psychiatry, medicine, and neuroscience."

This story briefly describes the changes in psychiatry at the University of Pennsylvania and elsewhere, driven by Penn faculty and alumni, who were leaders during the field's strong periods and, in its meandering days, were often found working for something better.

## THE NATION'S FOUNDING PSYCHIATRIST

Benjamin Rush, M.D. (1746-1813), is considered "the father of American psychiatry"; his silhouette appears on the seal of the American Psychiatric Association. These honors are due to his seminal book *Medical Inquiries and Observations, Upon the Diseases of the Mind*. Published in 1812, it enjoyed multiple editions through the century and, in effect, was not superseded until the 1880s. The tributes also recognize Rush's 30-year practice in innovative mental-health care, as well as the 20 to 30 lectures on mental disorders he gave annually to Penn's medical students, usually in their final year.

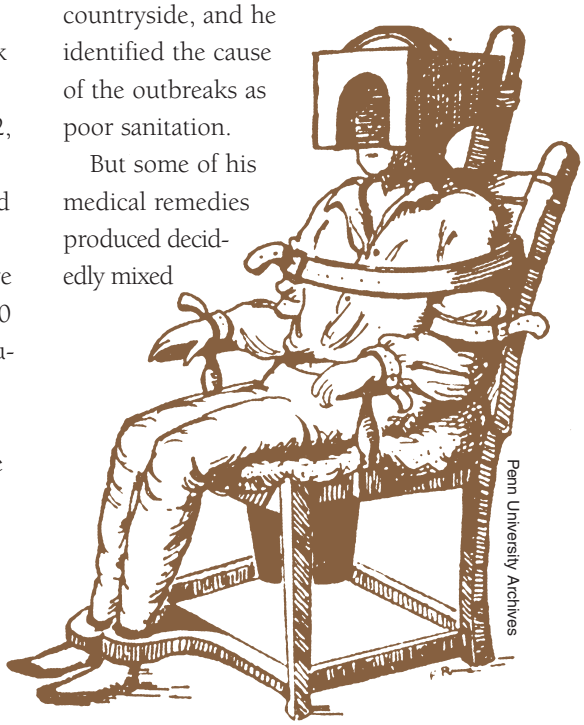
Rush was on the Penn faculty because of a most unusual recruiting process. Penn had just started its medical school, and he was taking courses taught by the founders, John Morgan, M.D., and William Shippen, M.D. Morgan was reportedly so struck by his student's brilliance that he offered him a professorship in chemistry if he studied that subject at the University of Edinburgh, Morgan's own alma mater.

Rush accepted, earned his medical degree at Edinburgh, and returned to take the post. Thus, in addition to his originating role in psychiatry, he established "the formal beginnings of chemistry in America," according to the *Dictionary of Scientific Biography*.

Rush went on to a wide-ranging career. As a member of the Continental Congress, he signed the Declaration of Independence. He tutored Meriwether Lewis on frontier illnesses and cures before the explorer joined with William Clark for their trip to the American Northwest. Many of Rush's ideas were progressive, if not radical for the time: He favored free public schools, the education of women, and the abolition of both slavery and capital punishment. In health measures, he opposed tobacco and promoted temperance, a good diet, and exercise.

He was heroic during Philadelphia's yellow fever epidemic in the 1790s, staying in the city to treat sick citizens when some doctors left for the safety of the countryside, and he identified the cause of the outbreaks as poor sanitation.

But some of his medical remedies produced decidedly mixed



Penn University Archives

Benjamin Rush's "tranquilizing chair."

results. His preferred treatments were bloodletting and purging, conventional yet draconian therapies that often killed patients rather than curing them. ("Saint or Scourge" is the title of James Thomas Flexner's chapter on Rush in his 1937 history of pioneers of American medicine; the question, debated even in Rush's lifetime, remains arguable.)

In Rush's day, some of the mentally ill were housed at Pennsylvania Hospital, founded in 1751 by charter "to care for the sick poor of the Province and for the reception and care of lunaticks." Rush joined its medical staff in 1783, and, as Stacey C. Peeples, the hospital's curator and lead archivist, notes, several trends of the era merged.

As were others at the time, including the hospital's predominantly Quaker board, Rush was influenced by the Enlightenment's preference for a scientific approach to problems. In addition, the physician and the hospital were in agreement that the mentally ill, like the physically ill, could be diagnosed, classified, treated, and potentially cured. As Peeples puts it, "This opened up such enormous possibility."

Rush separated the mentally ill from the sick and the violent patients, and he promoted the construction of a new building where the mentally ill could be treated in more humane confines. He literally removed their shackles and gave them useful work – e.g., gardening for the men and washing and ironing for the women.

Those who work, he noted in *Diseases of the Mind*, "often recover, while persons whose rank exempts them from performing such services languish away their lives within the walls of the hospital." (For these efforts, Rush is also known as a pioneer of occupational therapy.)

Like bloodletting, some of his cures were misguided. He invented a "tranquilizing chair" that would immobilize patients and permit their pulse rate to calm down, since excitement presumably upset them; and a "spinning board," which whirled patients centrifugally, supposedly in order to reorient the confused state of their minds. He felt that they could be startled into reason, so he might toss a bucket of cold water on the unsuspecting patients.

ALTHOUGH SOME OF BENJAMIN RUSH'S REMEDIES, LIKE BLOODLETTING, WERE MISGUIDED, HE SUCCESSFULLY INTRODUCED THE "MORAL TREATMENT," WHICH WOULD BECOME THE DEFINING APPROACH TO MENTAL ILLNESS FOR DECADES INTO THE 19TH-CENTURY: TREAT THE PATIENTS RATIONALLY AND HUMANELY.

Rush stubbornly held to his remedies, Peeples acknowledges, but he gave a biological explanation for mental illness in an era when the condition was popularly considered as retribution for a sin or caused by the moon ("lunacy") or even by the patient's own will.

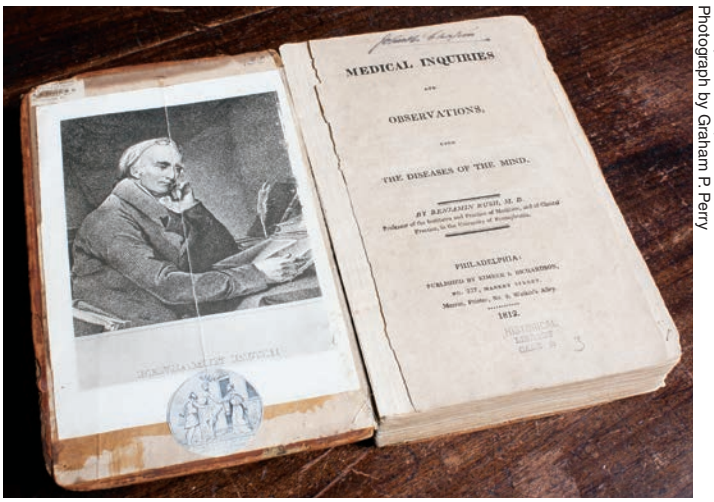
Early in *Diseases of the Mind*, Rush explained the theory behind his treatments. "The cause of madness is seated primarily in the blood-vessels of the brain," he wrote in the first chapter. "It depends upon the same kind of morbid and irregular actions that constitute other arterial diseases."

He erred again. A thoughtful contemporary assessment of Rush was made by one of his students, Charles Caldwell, M.D. 1796, who became professor of natural history at Penn and later founded a medical school in the Midwest. Rush made a "sedulous and unwearied effort to collect facts," Caldwell wrote in his *Autobiography*, but "instead of making them the groundwork of his doctrines, he allowed his doctrines to be too often the controllers and modifiers of them. This I do not allege that he did by design; he did it through the delusion thrown around him by his inordinate devotedness to theory and hypothesis. For of theory and hypothesis, his fancy was a hotbed – I say his fancy, not his intellect deliberately exercised."

Rush has also been criticized for not keeping up with his European contemporaries. Medical historian Gerald N. Grob, Ph.D., has written that he was "a generation behind the times."

But Rush successfully introduced the "moral treatment," which would become the defining approach to mental illness for decades into the 19th century. "Basically," says Peeples, "the humane care of the mentally ill, treating them rationally, in the hope that that rational care will return the patient to his rational self."

Rush's standing seems to have survived his faults. As the *Dictionary of Scientific Biography* puts it: "He realized that not only intellect but also behavior and the emotions can be disturbed, and his at-




Pennsylvania Hospital Historic Collections
Photograph by Graham P. Perry

First edition of *Diseases of the Mind.*

tempts at understanding these phenomena represent his most creative contribution to psychiatric thought."

And he speaks to today's psychiatry in seeking an organic cause, notes Peter C. Whybrow, M.D., who was chair of psychiatry at Penn from 1984 to 1997. (He is the Judson Braun Distinguished Professor at U.C.L.A. and directs its Semel Institute for Neuroscience and Human Behavior. Even today, he has an engraving of Rush on his office wall.)

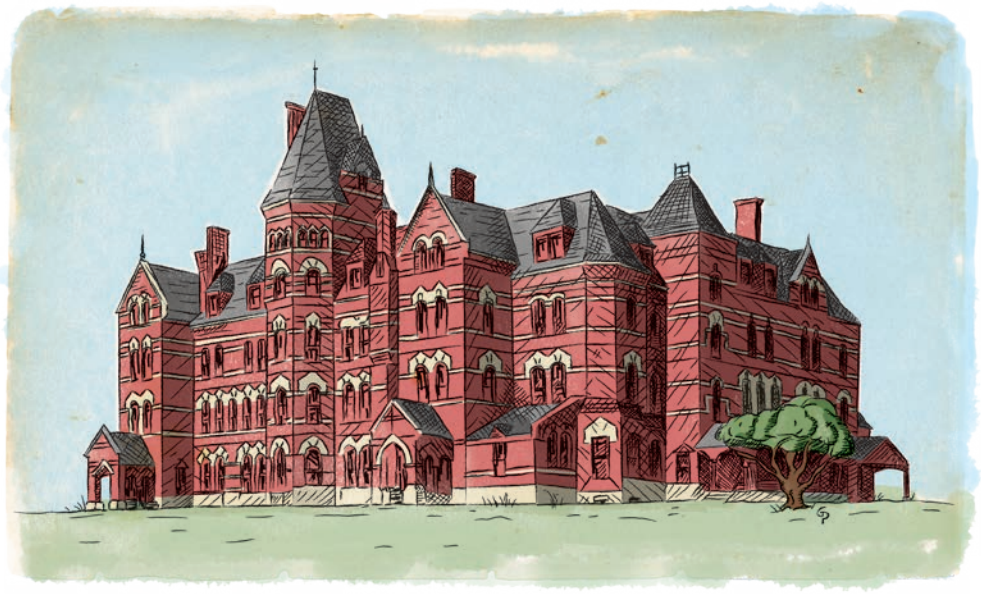
"In some ways," Whybrow says, "Rush, with his ideas of a dynamic relationship between body and brain, had it right. He just didn't have the technology or the knowledge at the time to figure out how it really worked."

## PENN'S ROLE IN THE ASYLUM ERA

The word *psychiatry* was coined in 1808 by the German neuroanatomist Johann Christian Reil, who argued as well that the field should be its own medical discipline rather than a branch of medicine. The first university position was created in 1811, also in Germany: associate professor for mental therapy.

Yet decades would pass before the field was recognized in American academe and longer before the word gained currency here. *Insanity* and *mental diseases* were more common 19th-century terms, as was *medical jurisprudence*, which combined medicine, the state, and criminal law. Well into the 20th century, practitioners were often called "alienists," since a patient was assumed to be alienated from reason – or "lost to oneself," in the words of the medical historian Nancy J. Tomes, Ph.D. 1978.

Penn alumni played a significant part in the nascent discipline. Samuel M. Smith, M.D. 1839, became, in effect, the nation's first professor of psychiatry when he was appointed "professor of medical jurisprudence and insanity" in 1847 at what is now Ohio State University. By his appointment, O.S.U. claims credit for the nation's first academic psychiatry department.



Hudson River State Hospital, conceived by Thomas S. Kirkbride, M.D.

More widely known is Thomas S. Kirkbride, M.D. 1832, a leader in the first phase of the 19th-century asylum movement. In 1841, Pennsylvania Hospital moved its mentally ill patients to a new facility on 101 pastoral acres in West Philadelphia. (Nearly 90 years later, it was renamed the Institute of Pennsylvania Hospital.) Kirkbride became its superintendent; three years later, he helped found the superintendents' organization that later became the American Psychiatric Association, and he served as its president for eight years.

Furthering the humane approach at the heart of the "moral treatment," Kirkbride instituted entertainments for patients – a bowling alley and gym, dances, and, in Tomes's phrase, a "therapeutic landscape" that included strolls in the deer park and rides on the tram around the grounds.

Patients who behaved could attend the magic-lantern shows, featuring educational travelogues. They were also encouraged to write and paint; madness had been linked to creativity since ancient times, and the association stayed strong. (Pennsylvania Hospital retains some of the patients' publications.) "Little things like that," says the archivist Peeples. "No shock, no harm."

Another Penn-related physician who gained renown for removing restraints and applying the tenets of compassion was (Mary) Alice Bennett, M.D., Ph.D. 1880, the first woman to receive a degree of any sort from the University. She became an asylum superintendent in Norristown, Pa., and later practiced obstetrics and gynecology.

As Tomes has noted, medical science in this period contributed little to the understanding of mental illness, but patient care improved nonetheless, "based less on any medical advances than on simple Christian charity and common sense."

Kirkbride apparently had the right disposition as well. He was a listener, totally attentive to the person in front of him, even to a patient, according to his wife in her surviving letters. That was especially important to female patients, Peeples points out, "because having a man sit down and listen and treat them seriously was a rarity." (Tomes titled her 1984 book on Kirkbride's career *A Generous Confidence*.)

To complement the considerateness he felt patients deserved, Kirkbride developed a system of housing that improved even on his own advanced facility.

In *On the Construction, Organization and General Arrangements of Hospitals for the Insane* (1854), he described how an asylum and its grounds should be de-

signed, constructed, and administered. It should accommodate no more than 250 patients. The floor plan should flare like bats' wings to maximize light and ventilation and to separate the sexes. The parlors, individual rooms, and furnishings should reflect solid Victorian values of order, comfort, harmony, and ornament.

Kirkbride, says Tomes, wanted patients to regard their surroundings as private, pleasurable residences where they could relax and recover, and he wanted their families to visit often and have full trust in the environs where their relatives were living.

The so-called Kirkbride Plan became enormously influential. Ethan McElroy, a Massachusetts-based photographer who is currently documenting the remaining Kirkbride structures before they are torn down or retrofitted, lists nearly 70 Kirkbride sites nationwide (and some were built abroad).

**Thomas S. Kirkbride, superintendent of Pennsylvania Hospital's facility for mentally ill patients, described how an asylum and its grounds should be designed, constructed, and administered. Its interior should reflect Victorian values of order, comfort, harmony, and ornament.**

## SEEKING A BASIS FOR THERAPY

By the time Kirkbride died, in 1883, both the moral treatment and his architecture had largely run their course. Relatively few patients were healed and able to re-enter society. Asylums tended to exaggerate their cure rates, some claiming that up to 90 percent of their patients went home well. The major whistleblower of the day was Pliny Earle, M.D. 1837, an asylum superintendent in New York and Massachusetts and promoter of better mental-health research.

States had assumed the task of building hospitals but did not keep up financing, care, or even construction. The number of patients was escalating; several thousand might be housed in a single facility. A new generation of superintendents was necessarily focused more on the bureaucracy than on improving treatment.

With a few exceptions, their world was drifting away from the interests of physicians associated with universities, who had been eager to base therapy on research results. Unproductive tensions arose, as the professors generally regarded the superintendents as mere custodians. But there still was no discipline that could give scientific or even systematic direction to practitioners.

There was, however, movement toward giving the field valid academic status. John J. Reese, M.D. 1839, started his Penn faculty career as a toxicologist, added forensic medicine, and in 1865 was appointed Penn's first professor of medical jurisprudence in both the medical and law schools. He wrote a textbook lauded in its time for its chapters on insanity and on toxicology, and he treated patients for alcoholism and drug addiction.

For some years, "medical jurisprudence" evolved more quickly than "psychiatry." Psychiatry was complex, but medical jurisprudence could simplify a difficult criminal case by focusing on "monomania," conceived as "a single pathological deviation" that supposedly explained the crime the defendant was accused of. (Monomania was also attributed to literary characters, such as Captain Ahab in *Moby-Dick* and Heathcliff in *Wuthering Heights*.) Popular in the early and mid-19th century, the diagnosis died out by the 1870s.

John P. Gray, M.D. 1848, who supervised the Utica, N.Y., state hospital, became editor of the *American Journal of Insanity* and in 1865 issued a call for scientific research in the field. In an editorial, he wrote: "If insanity be merely a disease of the mind, pure and simple, we can readily admit the all-sufficiency of moral means of treatment. Believing, however, that it is but a manifestation of physical lesion, . . . to which the psychical phenomena are subordinate or secondary, any other conclusion than that which makes medical therapeutics the basis of treatment involves an absurdity."

Gray, however, labored at a disadvantage. Academic psychiatrists were not finding physiological causes of disordered minds. They were mostly building classifications based on symptoms, doing their work without a viable theory of mental illness.

Perhaps one indication of how psychiatry was marginalized in this era appears in "Benjamin Rush," a major address by William Pepper, M.D. 1864, Penn's provost, to the American Medical Association in 1889 and published in *JAMA* the next year. Pepper extols Rush as "the founder of scientific medicine in America" but mentions his psychiatric contributions only in a footnote. Pepper's actual delivery might not have mentioned any of them to his audience.

Meanwhile, the neurologists were studying "cerebral physiology," as it was called. Through autopsies and electric stimulation of nerves, they were beginning to understand how the brain was wired for speech, vision, hearing, and the movement of limbs. "It was the golden age of cognitive neurology – how the brain func-

tions," says Anjan Chatterjee, M.D. '85, Penn professor of neurology.

As Chatterjee points out, the fields weren't greatly differentiated then – Freud, after all, studied with neurologists who were exploring hysteria and psychosomatic symptoms. Nevertheless, they used the term "state of war" to describe relations between them. As noted by Ellen Dwyer, Ph.D., a specialist in the social history of medicine, the long-simmering "hostility and competition" between neurologists and psychiatrists grew most intense between 1880 and 1910. Yet, at least at Penn, it was the neurologists who did the more significant psychiatric work.

Penn established a department of nervous diseases – the original name for neurology – in the 1870s, and at least three neurologists related to Penn made major contributions to psychiatry, at the University and beyond.

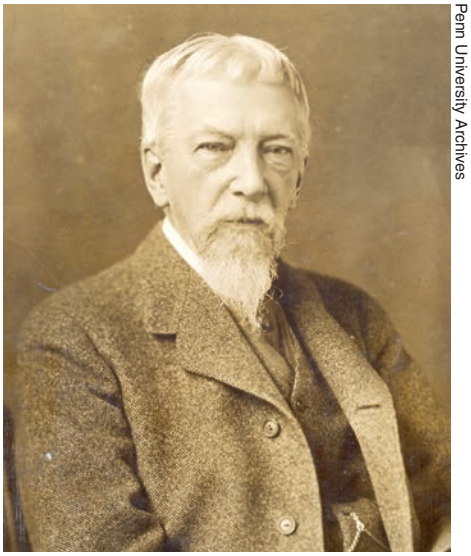
## MITCHELL AND HIS "REST CURE"

S. Weir Mitchell, M.D. (1825-1914), a University trustee for 35 years, contributed to the modernization of Penn's medical administration and curriculum and was a staunch advocate of scientific investigations. He served as president of the American Neurological Association and was so famous that, when, incognito, he sought out a doctor on a trip to Europe, he was referred for ongoing care to "Dr. Mitchell, of Philadelphia."

His career didn't start well. His father, John Kearsley Mitchell, M.D. 1819, told him early on, "You are wanting in nearly all the qualities that go to make a success in medicine." He was turned down for an internship at Pennsylvania Hospital (and later, faculty positions at Penn). But he earned a worldwide reputation with *On Gunshot Wounds and Other Injuries of Nerves* (1864), based on his and colleagues' studies of wounded Union soldiers in the Civil War. His descriptions of causalgia (a painful hand and skin disorder), phantom limb, and other illnesses have impressed physicians as psychiatric as much as neurologic.

Mitchell maintained that orientation. In *Wear and Tear: Hints for the Overworked* (1871), he dealt with nervous breakdowns, traced them to the stresses of daily life, and advised exercise as a cure. The book sold out in 10 days and went on to four other editions. One of its successors was *Fat and Blood* (1877), which enjoyed eight American editions and separate publications in five European languages.

Most famous — and infamous — was his "rest cure," given mostly to women



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S. Weir Mitchell, M.D.

diagnosed with neurasthenia, whose symptoms included depression and anxiety; the intent was to build up their fat and blood. (An article in *The New England Journal of Medicine* in June celebrating its 200th anniversary this year points out that diseases exist "within a social world"; neurasthenia, it says, "has disappeared.")

The cure, summarized by Tomes, consisted of "complete bed rest, isolation from family and friends, massage and electrotherapy, and a protein-rich diet." Also playing a major role was "the force of the physician's personality," which basically infantilized the patient, who, as a child again, could be re-educated in body and mind.

According to Mitchell's colleague Charles K. Mills, M.D., Ph.D., the scientific basis of the rest cure was, in part, psychotherapeutics: "the use of psychic or mental methods for the treatment of curable afflictions of a nervous order." Psychotherapeutics was also useful for "nervous disorders not capable of a complete cure," Mills added, "in improving the mental tone of patients and relieving their distressing symptoms."

The rest cure was influential (the bed has been called the forerunner of the therapeutic couch in Freudian psychotherapy), but it was not popular with everyone. Virginia Woolf lampooned it in *Mrs. Dalloway* (1925). Even more harshly, the writer Charlotte Perkins Gilman, one of Mitchell's patients, vilified the treatment in her 1892 short story "The Yellow Wallpaper," in which the protagonist takes the rest cure and goes mad.

Gilman later described her own experience: "I . . . obeyed these directions for some three months and came so near the borderline of utter mental ruin that I could see over [it]." She sent a copy of "The Yellow Wallpaper" to Mitchell, who did not respond, but Gilman subsequently claimed to have heard that he had read the story and modified his treatment because of it. (A recent critical edition of the story casts doubt on her claim.)

Like Rush, Mitchell sometimes resorted to shock treatment. When his female patients, diagnosed with hysteria, refused to leave their beds, he would try to startle them onto their feet. Once he reportedly started to undress and another time set the bed sheets on fire. In fact, he sometimes didn't have a clue; he called hysteria "mysteria."

And he pleaded for help. In 1894 the association of asylum superintendents invited him to address its 50th-anniversary meeting and "boldly" criticize their work. He did. He criticized their professional isolation, lack of trained personnel, their

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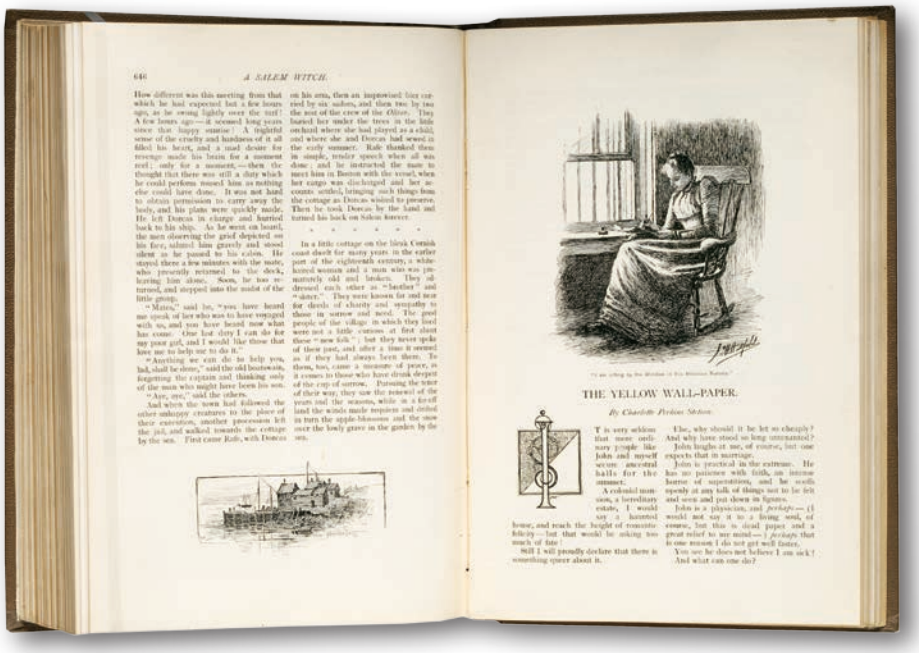


646 A SALEM WITCH.

How different was this meeting from that which he had expected but a few hours ago, as he swung lightly over the surf! A few hours ago—it seemed long years since that happy sunrise! A frightful sense of the cruelty and huskiness of it all filled his heart, and a mad desire for revenge made his brain for a moment reel; only for a moment,—then the thought that there was still a duty which he could perform roused him as nothing else could have done. It was not hard to obtain permission to carry away the body, and his plans were quickly made. He left Duncan in charge and hurried back to his ship. As he went on board, the men observing the grief depicted on his face, silently gave him gravely and stood silent as he passed to his cabin. He stayed there a few minutes with the mate, who presently returned to the deck, leaving him alone. Soon, he too returned, and stepped into the midst of the little group.

"Mates," said he, "you have heard me speak of her who was to have voyaged with us, and you have heard now what has come. One last duty I can do for my poor girl, and I would like those that love me to help me to do it."

"Anything we can do to help you, lad, shall be done," said the old boatswain, forgetting the captain and thinking only of the man who might have been his son.

"Aye, aye," said the others.

And when the town had followed the other unhappy creatures to the place of their execution, another procession left the jail, and walked towards the cottage by the sea. First came Rale, with Duncan on his arm, then an improvised bier carried by six sailors, and then two by two the rest of the crew of the Oliver. They buried her under the trees in the little orchard where she had played as a child, and where she and Duncan had sewed in the early summer. Rale thanked them in simple, tender speech when all was done; and he instructed the mate to meet him in Boston with the vessel, when her cargo was discharged and her accounts settled, bringing such things from the cottage as Duncan wished to preserve. Then he took Duncan by the hand and turned his back on Salem forever.

* * * * *

In a little cottage on the bleak Cornish coast church for many years in the earlier part of the eighteenth century, a white-haired woman and a man who was prematurely old and broken. They addressed each other as "brother" and "sister." They were known far and near for deeds of charity and sympathy to those in sorrow and need. The good people of the village in which they lived were not a little curious at first about these "new folk"; but they never spoke of their past, and after a time it seemed as if they had always been there. To them, too, came a measure of peace, as it comes to those who have drunk deepest of the cup of sorrow. Pursuing the even tenor of their way, they saw the renewal of the years and the seasons, while in a fervid land the winds made requiem and clothed in turn the apple-blossom and the snow over the lowly grave in the garden by the sea.

THE YELLOW WALL-PAPER.

*By Charlotte Perkins Stetson.*

IT is very seldom that mere ordinary people like John and myself secure ancestral halls for the summer. A colonial mansion, a hereditary estate, I would say a haunted house, and reach the height of romantic felicity—but that would be asking too much of fate!

Still I will proudly declare that there is something queer about it.

Else, why should it be let so cheaply? And why have stood so long untenanted? John laughs at me, of course, but one expects that in marriage.

John is practical in the extreme. He has no patience with faith, an intense horror of superstition, and he scoffs openly at any talk of things not to be felt and seen and put down in figures.

John is a physician, and *perhaps*—(I would not say it to a living soul, of course, but this is dead paper and a great relief to my mind)—I *perhaps* that is one reason I do not get well faster.

You see he does not believe I am sick! And what can one do?

Original version of "The Yellow Wallpaper," in *The New England Magazine* (1892).

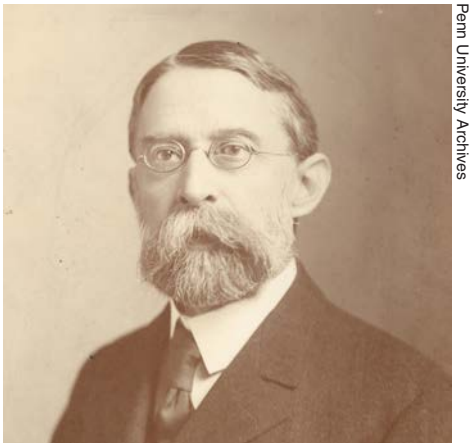
outdated treatments, lack of analytical investigations ("to keep treatment or scientific product on the front line of medical advance"), poor record-keeping, and failure "to move within the growth of medicine."

According to the editors of *Psychiatry: Areas of Promise and Advancement* (1977), who included John Paul Brady, M.D., a former chair of psychiatry at Penn, Mitchell's rebuke helped formalize American psychiatry. At Penn, it led to the creation of a new chair of mental diseases in 1901.

## MILLS, BURR, AND A HALF-CENTURY

Weir Mitchell was the first of Penn's closet psychiatrists and was mentor to the second, Charles K. Mills, M.D. 1869, Ph.D. 1871. Mills started his career as a general practitioner but, upon Mitchell's advice, specialized in the nervous system. He became the center of the internationally known "Philadelphia school of neurology" and served twice as president of the American Neurological Association. In 1878, Mills was appointed a lecturer in electrotherapeutics, treating lesions of the peripheral nerves, and in 1903 he became Penn's first professor of neurology.

Like Mitchell's, Mills's interests were often psychiatric. Although his publications were chiefly neurological, he also covered such areas as hysteria, hypnosis (which "has perhaps a real but very limited field of usefulness"), psychotherapeutics, the mental stresses of overwork, alcoholism, drug addiction, and behavioral problems resulting from disorders



Penn University Archives

Charles K. Mills, M.D.

of the central nervous system. As a consultant to Philadelphia General Hospital and founder of its nervous ward, he strove "to improve the conditions of the insane poor," he wrote in a memoir.

He also testified in the insanity trials of Charles J. Guiteau, who shot President James Garfield in 1881, and of Harry K. Thaw, who killed the celebrity architect Stanford White in 1906.

When Mills was appointed lecturer in mental diseases in 1881, psychiatry became a part of the curriculum – perhaps for the first time since Rush's day. (Horatio C Wood Jr., M.D. 1862, whose expertise included botany, pharmacology, and neurology, may have taught elements of psychiatry in his neurology classes, according to Brady et al., but records seem to be lacking.)

One of Mills's students was Charles W. Burr, M.D. 1886, who also became a neurologist with Mitchell's encouragement. After Mills's death in 1931, Burr wrote an appreciation that recalled his mentor's teaching. In the 1880s, he noted, psychiatry consisted mostly of classifying patients by symptoms, and the word itself was not yet in general use. Though the field was not like "the psychiatry of today," Burr wrote, what Mills taught was the first "systematic course on this subject in an American medical school." Mills, he stated, was "the first man to try to cover the whole subject, in a series of lectures, illustrated by patients."

Even under Mills, however, as Brady et al. note, "there is little record of what didactic teaching or experience medical students had in the diagnosis and treatment of mental disorders."

In a brief account of the school in 1939, David Riesman, M.D. 1892, a Penn internist and medical historian, flatly considered the early curriculum meager, "if one can speak of a discipline being taught when the instruction consisted of exhibiting a few 'show cases' and giving an ancient classification of insanities."

Burr was appointed professor of mental diseases in 1901, and with that title the Department of Psychiatry came into being, although with the old terminology. He retired in 1930, and in the intervening years little changed in his domain.

His course offering stayed virtually the same for three decades: 32 hours in the fourth year, consisting of five lectures on

the causes and symptoms of "affections" and 27 clinical lectures. In an elective course, the student "examines patients himself, reporting his findings and diagnoses to the professor for criticism. Especially in these latter exercises, he obtains an insight into the general workings of asylum management."

In a memorial article on Burr, Edward B. Krumbhaar, M.D. 1908, pathologist and chair of Penn's department from 1934 to 1948, called him "a conservative." Burr had harsh words for psychoanalysis; he was hardly alone in this. He had harsher words for standardized education and for

Penn University Archives

Charles W. Burr, M.D.

young people who strove to cross class, ethnic, racial, or other lines and to climb social and economic ladders. "Their capacities are not in proportion to their ambitions," he stated in a 1927 interview with *The Philadelphia Evening Bulletin*. At the same time, he was responsive to "young men who showed promise of special intellectual ability," said fellow neurologist Frederic H. Leavitt, M.D. 1911, in an obituary tribute, and often helped pay their educational expenses.

Burr was harshest on people who upset or threatened to upset the social order. He called for "segregation of the defective classes," including government-imposed lifetime confinement in institutions, as he wrote in *The New York Times* in 1913. In his presidential address to the Eugenics Research Association in 1925, he stated, "Criminals are born without capacity to develop social instinct and moral sense and though not responsible, should be segregated for life, or, if they are of the type that murder or commit rape, should be executed because they are a menace to the state and to the race." His views, again not unique, were considered in his time "extremist."

Burr was prominent in his field. A president of the American Neurological Association, he was organizing founder of the Philadelphia Psychiatric Society. He was also known for his writings in newspapers, and his opinion was sought on many topics, including art. When the Pennsylvania Academy of Fine Arts in 1921 mounted an exhibition of 280 modernist paintings and drawings, Burr (as quoted in *The Weekly Review*) condemned the paintings as "degenerate." It was art, he said, that "a healthy-souled artist would not have painted," art that simply inspires "unhealthy feelings of pleasure in the diseased onlooker."

Although Penn psychiatry did not move forward under Burr, the field at large was also dormant. "Our therapeutics," said the head of the major psychiatrists' association at its annual meeting in 1907, "is simply a pile of rubbish."

In 1909, S. Weir Mitchell restated the charge when he told his neurology colleagues: "Amid enormous gains in our art, we have sadly to confess the absolute standstill of the therapy of insanity and the relative failure, as concerns diagnosis, in mental maladies of even that most capable diagnostician, the postmortem surgeon."

Even into the 1920s and '30s, according to medical historian Hans Pols, Ph.D. 1997, "existing treatment methods were

CHARLES W. BURR, A NEUROLOGIST, WAS APPOINTED PROFESSOR OF MENTAL DISEASES IN 1901. HE WAS PERHAPS LESS NOTEWORTHY FOR WHAT HE SUPPORTED THAN FOR WHAT HE DISLIKED: PSYCHOANALYSIS, STANDARDIZED EDUCATION, THOSE WHO THREATENED TO UPSET THE SOCIAL ORDER — AND MODERNIST ART.

hardly effective; consequently, mental illness was generally viewed as a hopeless condition, and psychiatry appeared rather ineffectual." Looking back on this period in 1941, Burr's successor, Edward A. Strecker, M.D., said the results from research were "lean."

Some professionals publicly doubted that they belonged to an actual profession. As Pols notes, James V. May, M.D. 1894, in his presidential address to the American Psychiatric Association in 1933, called psychiatry "the great popular playground of modern medical science," with "a fatal fascination for the uninitiated, appealing to medical as well as lay amateurs."

In our next issue, Part 2 will describe how American psychiatry rose from what S. Weir Mitchell called an "absolute standstill" and, in Penn's case, to a prominent position in the mainstream with a legacy of continued excellence. ●

Marshall A. Ledger, Ph.D., is author, with David Y. Cooper III, M.D. '48, of *Innovation and Tradition at the University of Pennsylvania School of Medicine* (1990) and founding editor of *Penn Medicine*. For this article he acknowledges the substantial help of the University Archives and Records Center.

# A Recognition of MERIT

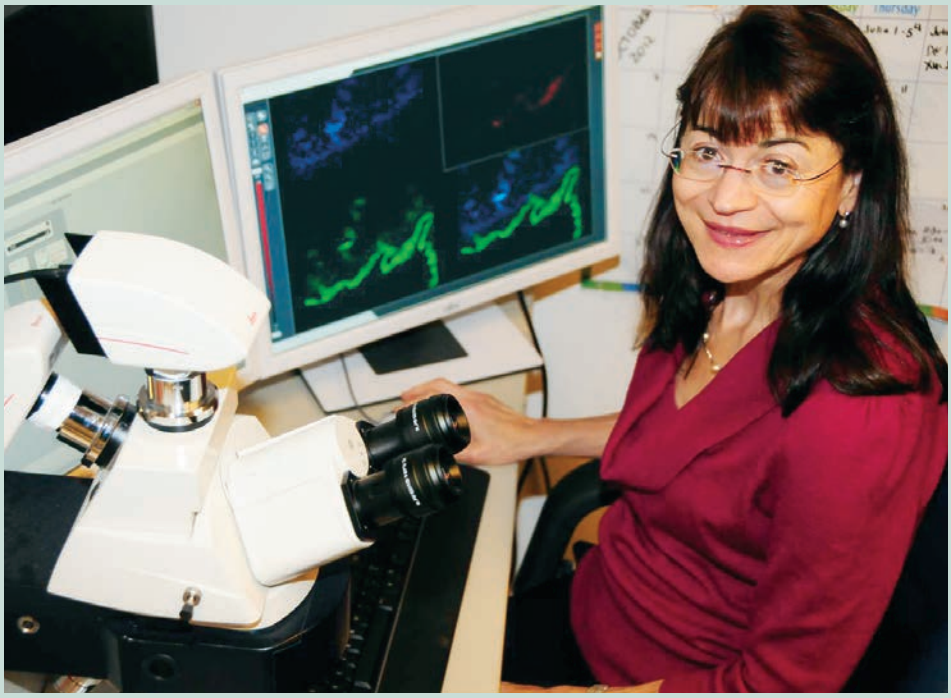
## A class of awards from the National Institutes of Health gives researchers long-term stability

*By Karen Kreeger*

This summer, Sarah Millar, Ph.D., a professor in the departments of Dermatology and of Cell and Developmental Biology, received an unusual phone call from Carl Baker, M.D., Ph.D., health scientist administrator at the National Institute of Arthritis and Musculoskeletal and Skin Diseases. "So, Sarah, we've recommended that you receive a MERIT Award. Do you have any idea what that is?" asked Baker. Millar guessed that anything termed "MERIT" was likely to be good news but admitted she had no idea what it actually meant.

It turns out that several Penn Medicine professors presently have these prestigious awards, in a wide range of topics, including the natural reservoirs of SIV, simian immunodeficiency virus; the regulation and function of thyroid hormone receptors; and the genomic analysis of Alzheimer's disease genes.

The MERIT (Method to Extend Research in Time) awards are designed to give productive and creative scientists long-term support, without the burden of constantly devoting time and staff resources to applying for new grants to fund their research. (The awards are especially welcome in a funding climate in which the 2011 overall success rates, 18%, for research project grants, fell compared to the 21% in 2010). In fact, less than 5% of investigators funded by the National Institutes of Health are selected to receive MERIT Awards.



NIH created the program in 1986, with the aim of providing stable long-term grant support to investigators whose research skills and productivity are "distinctly superior" and who are highly likely to continue to perform in an outstanding manner.

Recipients of MERIT awards cannot apply for the award; they are nominated by the funding NIH institute from a large pool of competing award recipients and then endorsed by an institute's advisory council, as in Millar's case. The benefit of being designated as a MERIT awardee is that recipients are afforded a simplified renewal for a second five-year period. It cuts out the complex reapplication process, as long as they met certain criteria showing that their research has yielded results.

Millar's lab has, for the last thirteen years, been studying the molecular processes underlying development and postnatal growth of outer layers of the skin, the "epidermis," and "appendage" organs such as hair follicles, taste buds, mammary glands, and teeth that are derived from surface cells of mammalian embryos. Members of her lab are applying their findings to develop methods for regenerating skin, hair follicles, and teeth for therapeutic

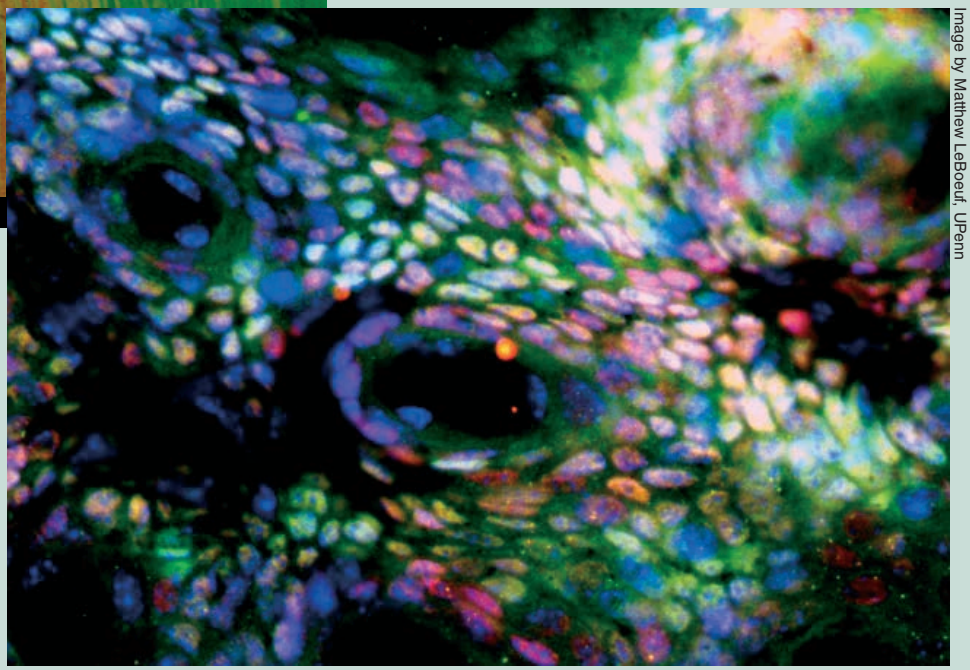


Image by Matthew LeBoeuf, UPenn

Horizontal section through the basal layer of newborn mouse epidermis.

purposes. Because the signaling pathways important for normal skin development are disrupted in common skin cancers, Millar's work also aims to identify novel anticancer strategies.

A major finding from the Millar lab is that Wnt proteins, which are small molecular messengers that convey information between cells, instruct embryonic surface cells to form appendage organs rather than a layered skin epidermis. In adult life, these same proteins control hair growth and breast development, among other processes. Over-activity of Wnt signals can lead to cancers of the skin, breast, and colon, so tight control of this signaling activity is essential.

Millar's MERIT award focuses on understanding the normal mechanisms that confine Wnt activity to its appropriate locations and developmental stages and on identifying the molecules necessary for cells to respond to Wnt signals in the skin. As Millar explains, "In the end, we hope we will be able to apply this information to help design strategies for regenerating more normal skin for burn victims, promoting hair growth in patients with common hair-loss diseases, and treating skin cancers that involve overactive Wnt signaling." ●

## Current faculty members who have MERIT awards

**Marisa S. Bartolomei**, Ph.D., Professor of Cell and Developmental Biology

**Gary H. Cohen**, Ph.D., Professor of Microbiology

**Andrew B. Dancis**, M.D., Associate Professor of Medicine

**J. Kevin Foskett**, Ph.D., the Isaac Ott Professor of Physiology

**Clara Franzini-Armstrong**, Ph.D., Emeritus Professor of Cell and Developmental Biology

**Beatrice H. Hahn**, M.D., Professor of Medicine

**James A. Hoxie**, M.D., Professor of Medicine and director of the Penn Center for AIDS Research

**Klaus H. Kaestner**, Ph.D., the Thomas and Evelyn Suor Butterworth Professor in Genetics

**Gary A. Koretzky**, M.D., Ph.D., the Francis C. Wood Professor of Medicine and Vice Chair for Research and Chief Scientific Officer for the Department of Medicine

**Mitchell A. Lazar**, M.D., Ph.D., the Sylvan H. Eisman Professor of Medicine and director of the Institute for Diabetes, Obesity, and Metabolism (Dr. Lazar has two MERIT awards.)

**Stephen Aaron Liebhaber**, M.D., Professor of Genetics

**Sarah E. Millar**, Ph.D., Professor of Dermatology

**Michael P. Nusbaum**, Ph.D., Professor of Neuroscience

**Daniel J. Rader**, M.D., the Edward S. Cooper, M.D./Norman Roosevelt and Elizabeth Meriwether McLure Professor and director of the Preventive Cardiovascular Medicine and Lipid Clinic

**Gerard D. Schellenberg**, Ph.D., Professor of Pathology and Laboratory Medicine

**Kenneth S. Zaret**, Ph.D., the Joseph Leidy Professor, Department of Cell and Developmental Biology, and co-director of the Penn Epigenetics Program

# Development Matters

# ALUMNI WELCOME INCOMING

**From a robust scholarship program, to that first stethoscope, to words of welcome and encouragement, Perelman School alumni had much to give our new students this year. On August 10, the Parents and Partners Program and the White Coat Ceremony kicked off the new academic year. The day provided the first of many occasions for students and alumni to share the sense of pride, accomplishment, and aspiration that comes from being a part of one of the nation's best medical institutions.**

**Many new students could choose Penn only because of our alumni's continued commitment to financial aid. The *Making History* campaign has added a significant new way to support our students: the John Morgan Scholars program. Through December, the Jordan Challenge will match contributions to this program – a rare opportunity to supersize your scholarship gift.**

## HELP SECURE $1.5 M FOR STUDENT FINANCIAL AID AS THE JORDAN CHALLENGE NEARS THE FINISH LINE


Dr. Brown (far left) joins 50th reunion classmates in leading the Medical Alumni Weekend parade.

For John Carlisle Brown, M.D. '62, a proud third-generation Penn Medicine graduate who cherishes the "friendly and supportive environment" he experienced at Penn, finding the motivation to give to the Jordan Challenge was no challenge at all. The memory and ideals of his classmate and friend Henry A. Jordan, M.D. '62, G.M.E. '67, also provided poignant inspiration.

As part of his 50th reunion this spring, Dr. Brown joined the increasing numbers of alumni and parents who have seen their generous gifts doubled through the Jordan Challenge. The Challenge provides a dollar-for-dollar match for gifts of $10,000 and above. So far, $2.3 million in gifts has been raised, delivering $4.6 million in financial-aid endowment. Meeting the goal of $3 million by the December 31, 2012, deadline would deliver nearly $1.5 million more to help our deserving students survive the high cost of medical school.

Dr. Jordan constantly showed great pride in the School and pure joy in meeting talented students and assisting with their education. Instead of establishing individual scholarships, the late Dr. Jordan and his wife Barrie chose to create the Jordan Family Challenge to encourage more alumni to share in an experience they have valued and enjoyed.

All donations are pooled to support the John Morgan Scholarship Program, an innovative approach that allows aid to reach students as quickly as possible. Payments can be made over multiple years, and contributions are recognized at the dollar level reached with the matching gift.

"This challenge is perfect – to be able to give back and to have it doubled certainly is my ideal for philanthropy," said Rona Woldenberg, M.D. '87 (and Parent '13). She and her husband, Mr. Reuben Askowitz, made two gifts to the Challenge, adding $300,000 to the scholarship pool.

Students greatly appreciate scholarship help. Fourth-year student Daphne Owen, who has volunteered at Puentes de Salud in South Philadelphia since 2009, said, "Receiving my scholarship made it possible for me to attend Penn and develop after-school tutoring and wellness programs for immigrant children. I am very grateful to the alumni/donors for making this possible. I wouldn't have been able to afford to pay for medical school and even stay in Philadelphia to continue overseeing the children that I've been working with in South Philly otherwise." Owen is planning to work with vulnerable populations by combining her medical training and interest in sociology.

Said Dr. Brown, "Henry believed so strongly in Penn and in helping students not only benefit from the same great education that he had but to achieve their aspirations in medicine unfettered by debt. Making a gift through the Jordan Challenge, for our class at least, feels like an appropriate memorial to Henry and tribute to his family and their strong advocacy for students." Dr. Brown added that "Henry was widely considered by his classmates as a gregarious dynamo, an always good-natured, never aggressive organizer, a ringleader, and a real pleasure to work with."

# PARENTS AND PARTNERS – AN INSIDER'S VIEW OF MEDICAL EDUCATION AT PENN

Gail Morrison addressed parents in her talk, "From a Caterpillar to a Butterfly: The Transformation of Medical Students Year by Year."

Medical school is incredibly taxing: emotionally, physically, and intellectually. Hosted by Alumni Development and Alumni Relations, the Parents and Partners program offers families a morning-long program designed specifically to introduce them to the medical-school experience. The program has become very popular, attracting more than 600 participants this year.

Parents and Partners focuses on the School's role as a leader in innovative medical education and on the tremendous support system the administration has created for its students.

"Our educational approach to understanding medicine is that we treat the whole patient, and because of this, our innovative, humanistic curriculum teaches to the whole student," said Senior Vice Dean Gail Morrison, M.D. '71, G.M.E. '76, during her welcoming remarks.

Two sessions focused on strategies now integrated into Penn Medicine's curriculum: clinical simulation and standardized patients. No longer relying on the "see one, do one, teach one" approach, the new frontier of medical education provides safe, controlled environments where medical situations are simulated so students can practice procedures over and over with no real consequences.

Parents and Partners guests observed, and some participated in, a hands-on simulation of heart resuscitation using the Sim Man mannequin.

Penn Medicine's Standardized Patient Program trains people to portray various patient scenarios to help students learn to handle the emotionally challenging aspects of medical care. At the Parents and Partners demonstration, fourth-year student Austin Kilaru informed an actress playing a former intravenous drug user that she was HIV-positive.

Ira Dosovitz, M.D. '74, whose son Simon Dosovitz is now a first-year student, was originally skeptical. "I appreciated the education I received on standardized patients while attending Parents and Partners. It helped me recognize its benefits."

Sim Man Session, led by Gregg Lipschik, M.D., Director of Life Support Training and Special Programs at Penn Medicine's Clinical Simulation Center.

"We didn't have a White Coat Ceremony or anything like Parents and Partners when I was at Penn," said Dr. Dosovitz. "The entire day was very stimulating and helpful for parents of new medical students, but it was also warm and inviting. One of the greatest aspects of Penn Medicine is that it is a first-rate school as well as an accessible, tight-knit community."

In the "My Child, the Doctor: Will I Survive It" Panel, families learned from experienced parents and current medical students about what

Simon Dosovitz and his father, Dr. Ira Dosovitz

# Development Matters

## THE JORDAN CHALLENGE (CONTINUED)

Fourth-year medical student Daphne Owen and students at Puentes de Salud.

Part of Dr. Jordan's enduring legacy will be the John Morgan Scholars Program and its mission to help relieve the debt burden of students and ease their path to becoming the great doctors he believed "will become the stars of the health-care system in America." Now is the time to make your generous donations count even more.

To learn more about the Jordan Challenge, please contact Bill Bole at wbole@upenn.edu or 215-898-9175.

## CALENDAR

**Mitchell J. Blutt, M.D., Visiting Professorship in Entrepreneurism and Medicine**
Thursday, February 14, 1:00 p.m.
Smilow Center for Translational Research
Philadelphia

**Penn Medicine in Palm Beach**
Tuesday, March 5, 8:30 a.m.
Palm Beach Country Convention Center
Palm Beach, Fla.

**Penn Medicine in Naples**
Wednesday, March 6, 6:00 p.m.
The Ritz-Carlton Golf Resort
Naples, Fla.

**Making History Campaign Celebration**
Friday, April 19, 5:00 p.m.
Penn Park
Philadelphia

*For more information visit www.alumni.med.upenn.edu*

## PARENTS AND PARTNERS (CONTINUED)

the next four-plus years will have in store for their students. "As parents we are most concerned for our children's emotional and social well-being. Happiness brings success, and happiness comes from friends and community," said panelist Barbara Quinn Kreider, Ph.D. '81, mother of current M.D./Ph.D. candidate Edward Kreider. "The Penn Medicine administration uses its talents and resources to create an environment that fosters close friendships. This sets the School apart."

Director Denise LaMarra, M.S., introducing the Standardized Patient Program.

## WHITE COAT CEREMONY – APPAREL, INSPIRATION, AND GUIDANCE FOR OUR NEW STUDENTS

Alumni played a large role as speakers, faculty members, donors, and parents in this year's White Coat Ceremony, the formal commencement of our students' careers in medicine. Families are invited to attend the afternoon event, which opens

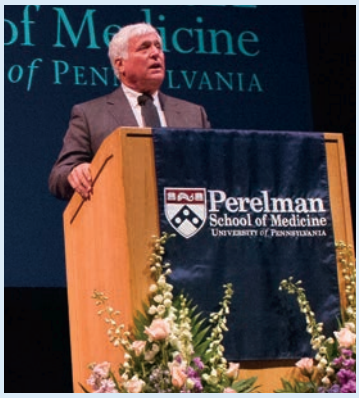
First-year students applaud and thank their families.

Dean Jameson addressed students, family, and alumni at the White Coat Ceremony.


Lou Matis, co-chair of MAAC, presented stethoscopes to each member of the incoming class. Dr. Matis has funded the giving of stethoscopes for the past two years.

with reflections from the School's leaders and guest speakers. Students briefly introduce themselves as they receive their white coats, and at the conclusion, the new class recites the Hippocratic Oath.

This August, the speakers provided the kind of advice that can only come with a lifetime in medicine. Students were encouraged to explore fearlessly and embrace the unknown in order to fully realize their medical aspirations. Dean J. Larry Jameson, M.D., Ph.D., set the tone with his welcoming remarks: "Medicine is a broad and deep field. Penn Medicine will help prepare you for whatever you may choose to pursue. Here you will have ample opportunity to find your niche and make your contribution."



Louis Kozloff, Medical Alumni Advisory Council co-chair.

Louis Kozloff, C '65, M.D. '69, co-chair of the Perelman School's Medical Alumni Advisory Council (MAAC), spoke of the satisfaction he believes should come from a medical career: "If it isn't fun and exciting," he said, "you have made the wrong career choice."

During the White Coat ceremony, each student was presented with a stethoscope, thanks to the support of MAAC co-chair Lou Matis, M.D. '75. "The White Coat Ceremony is inspiring," said Dr. Matis. "It's a wonderful way to be introduced to new students and their accomplishments."

Along with this gift came a special message that highlighted the meaningful role our alumni community plays in our students' daily lives. "On behalf of the Medical Alumni Society, this stethoscope is given to you through the generosity of Lou Matis, M.D. '75."

## RECENT MAJOR GIFTS

**Jeffrey and Anne Keefer** made a pledge of $1.0 million to support the Center for Neurodegenerative Disease Research and the Parkinson's Disease and Movement Disorders Center.

**Estelle Siegel** has contributed $1.0 million to establish the Dowshen Program for Neuroscience: "Studies of Schizophrenia" at Penn Medicine, which will be led by Dr. Raquel Gur. The gift was made in honor of her parents and brothers.

**Raymond (W '53) and Joanne (CW '52) Welsh** have pledged $1.25 million to support the Institute for Diabetes, Obesity, and Metabolism (IDOM), the new Medical Education Center, and Translational Centers of Excellence at the Abramson Cancer Center. The Welshes made the gifts to IDOM and the new Medical Education Center in honor of Arthur H. Rubenstein, M.B.,B. Ch., former dean of the Perelman School of Medicine and EVP of the University of Pennsylvania for the Health System.

*For more information, please contact the **Office of Development and Alumni Relations** at 215-898-0578.*

*To make a gift, please mail your check made out to The Trustees of the University of Pennsylvania to:*
*Penn Medicine Development and Alumni Relations*
*3535 Market Street, Suite 750*
*Philadelphia, PA 19104-3309*

*To make your gift online, please visit:*
*www.alumni.med.upenn.edu/gifts*

## Progress Notes

*Send your progress notes to:*
Donor Relations
*Penn Medicine Development and Alumni Relations*
*3535 Market Street, Suite 750*
*Philadelphia, PA 19104-3309*

# '40s

**Paul W. Petcher**, M.D. '48, Chatom, Ala., was honored by the Washington County Museum Board for 46 years of dedicated service and was given emeritus membership on the board. After completing his medical training, he traveled to Nigeria as chief medical officer in charge of the Ruth Roger Kulp Memorial Hospital of the Church of the Brethren Mission. During his seven years in Nigeria, he was the only doctor for 100 miles. While there, Petcher performed 3,500 major operations and did the first operation for hypertrophic pyloric stenosis on the continent. From 1954 to 1956, he practiced industrial surgery in Mobile, Ala., then returned to Nigeria to serve as medical officer in charge of the Lassa Hospital until1960. He returned to the United States and practiced in the Chatom Clinic for 33 years until retiring in 1993.

# '60s

**Myron Genel**, M.D. '61, G.M.E. '65, was honored by Stepping Stones Museum for Children of Norwalk, Conn., named a recipient of its 2012 Stepping Up for Children Awards. The awards recognize individuals, nonprofit organizations, or companies that demonstrate a steadfast commitment to improving and enriching the lives of children and families. Genel is an emeritus professor and senior research scientist in pediatrics at Yale University School for Medicine, where he was an associate dean for 19 years. He serves on the Stepping Stones Community Partnership Council and has provided direction for several major museum initiatives. A former president of the Connecticut Academy of Science and Engineering, Genel has also received the President's Certificate for Outstanding Service from the American Academy of Pediatrics and the Joseph W. St. Geme Jr. Leadership Award, presented by a group of academic pediatric associations.

**David F. Apple Jr.**, M.D. '62, former medical director of the Shepherd Center in Atlanta, was named a recipient of the Perelman School's Alumni Service Award. A leading expert in the field of spinal cord injury and rehabilitation, he holds academic appointments at Emory University and Georgia State University. Apple was the team physician of the N.B.A.'s Atlanta Hawks for 30 years and was chief medical officer of the 1996 Atlanta Paralympic Games. He has received many awards, including the Humanitarian of the Year from the American Academy of Orthopaedic Surgery, the American Spinal Injury Association Lifetime Achievement Award, and induction into the National Spinal Cord Injury Association's Hall of Fame. He was president of the American Spinal Injury Association and the Orthopaedic Rehabilitation Association, which he founded.

A champion for the students of the Perelman School, Apple is an ardent supporter of the Medical Class of 1962 Scholarship Fund, the John Morgan Scholarship Fund, and the Class of 1962 Auditorium Fund. For the past 15 years, he has served as the class agent for the Medical Class of 1962 and was co-chair of his 50th reunion committee.

**Stuart B. Levy**, M.D. '65, Boston, was awarded the 2012 Abbott-ASM Lifetime Achievement Award, the American Society for Microbiology's premier award for sustained contributions to the microbiological sciences. He was recognized for his many decades of dedicated basic science and his advisory work in the area of antimicrobial drug resistance. A longtime distinguished professor of molecular biology and microbiology and of medicine at Tufts University School of Medicine, Levy serves as director of the Center for Adaptation Genetics and Drug Resistance.

Much of his work has been devoted to the mechanisms and control of resistance, both in bacterial and mammalian cells, working with tetracyclines as the paradigm. He is credited with the discovery of the inner membrane Tet protein, which is responsible for pumping tetracyclines out of the cell. He also discovered the regulatory operon *marRAB*, which controls upwards of 90 other genes in the cell, and regulates the expression of multidrug resistance and virulence. This work led to the 3D crystal structure of MarR, the first of several members of the Mar family. Levy's works was the foundation for Paratek Pharmaceuticals, established in 1996. The company's aim is to discover and develop new antibiotics not subject to resistance. Levy led some of the early work examining the survival of bacteria in the human intestinal tract, during the early days of recombinant DNA research.

In addition to basic science studies, Levy has also performed studies in the environment and on farms. His landmark 1976 *New England Journal of Medicine* paper demonstrated the ecologic effects of introducing feed containing antibiotics to animals on a farm, which led to the transfer of these resistant bacteria from animals to farm workers.

The author of more than 300 articles and reviews and 100 book chapters, Levy has also written *The Antibiotic Paradox: How Miracle Drugs Have Destroyed the Miracle* (1992), now in its second edition.

**Ronald S. Banner**, M.D. '67, former chair of medical ethics at the Albert Einstein Medical Center, was honored by the Physicians' Committee for Responsible Medicine. "A Practice Based on Compassion and Caring," appearing in *Good Medicine*, the committee's publication, described his focus in treating patients and his help during the last decade to the committee. Banner continues to practice internal medicine in Northeast Philadelphia.

**Charles I. Wagner**, M.D. '67, G.M.E. '68, '74, a gastroenterologist, received an Alumni Service Award from the Perelman School in May. For the past 45 years, he has been co-chair for the Medical Class of 1967 Reunion Committee and has served on the Medical Alumni Advisory Council since its

**William S. Pierce**, M.D. '62, G.M.E. '69, the Evan Pugh Emeritus Professor of Surgery at the Pennsylvania State University and former member of the faculty at the Milton S. Hershey Medical Center, was a recipient of the Distinguished Graduate Award, the highest honor the Perelman School of Medicine gives to alumni.

In 1970, Pierce initiated a collaborative effort between two Penn State colleges, Medicine and Engineering, that went on to make medical history. The Artificial Heart and Circulatory Support Group, as it was called, created the Pierce-Donachy Ventricular Assist Device, also known as the Penn State Assist Pump, which has now been used in more than 3,000 patients. The seam-free surface of the chambers inside the heart pump was its most innovative feature — the pump's smooth cavities helped prevent dangerous blood clotting that could cause a stroke. In 1980, the pneumatically driven device was approved by the U.S. Food and Drug Administration and, five years later, a major milestone occurred when the heart pump was successfully applied as a bridge for cardiac transplantation. Pierce also played an important role in developing a fully implantable, wireless, motor-driven left ventricular assist pump named the "LionHeart." In 1990, the Pierce-Donachy device was designated as an International Historic Mechanical Engineering Landmark by the American Society of Mechanical Engineers.

Among Pierce's many other honors are an honorary doctor of science degree from Lehigh University, where he earned his B.S. degree in chemical engineering, and the Jacobson Innovation Award of the American College of Surgeons, the organization's highest research award. A prolific scientific researcher and writer, Pierce has also served on the editorial boards of numerous medical, surgical, and scientific journals. He holds nine patents, including two for surgical gloves, one for an artificial heart, two for heart valves, and one for a blood pump. He also shares patents in 16 countries for a right ventricular assist device.

inception in 2007. He was a former chair of the Medical Alumni Society Executive Council and was a member of the Penn Alumni Board of Directors from 2005 to 2007. In addition, he continues to be a generous annual supporter of the Medical Class of 1967 Scholarship Fund. A leader in the field of patient safety, Wagner is currently the medical adviser for patient safety and quality initiatives at Holy Redeemer Health System in Meadowbrook, Pa. He has served in the U.S. Public Health Service and is chair of the clinical advisory committee of the Health Care Improvement Foundation. In addition, he is a member of the board of directors of the Pennsylvania Health Care Quality Alliance. A Fellow of the American College of Physicians, he is also a member of the American College of Physician Executives.

# '80s

**James M. Beck**, M.D. '84, was appointed chief of the medical service for the Veterans Affairs Eastern Colorado Health Care System, based in Denver. A professor of medicine at the University of Colorado, Beck is a specialist in pulmonary and critical-care medicine. His research focuses on HIV-related pulmonary infections, lung immunology, and investigation of the lung microbiome. Beck recently completed a term as chair of the Education Committee for the American Thoracic Society and as a member of its Board of Directors; he received a presidential commendation for his educational accomplishments.

# '00s

**Gabrielle R. Bonhomme**, M.D. '00, G.M.E. '01, director of the Neuro-ophthalmology Division and assistant professor in the Department of Ophthalmology at the Eye Center of the University of Pittsburgh Medical Center, was appointed to the board of trustees of the Western Pennsylvania School for Blind Children. Named the 2011 Clinical Educator of the Year at Pitt, she is board certified by the American Board of Ophthalmology and is a member of both the American Academy of Ophthalmology and the North American Neuro-Ophthalmology Society.

## OBITUARIES

# '30s

**Frederick E. Foerster**, M.D. '39, Oceanside, Calif., co-founder of Milwaukee Medical Clinic; April 22, 2011. He was commissioned as an officer in the U.S. Army Medical Corps in 1943 and attached to the 298th General Hospital. His unit landed at Utah Beach as first general hospital in the European theater. Foerster oversaw a 1,500-bed French Marine Hospital in Cherbourg, France; later he created a 1,000-bed hospital in more than 200 tents outside Liège, Belgium. Foerster received the European-African-Middle Eastern Campaign Medal with three service stars, as well as the Meritorious Unit citation. He opened his practice of internal medicine in Milwaukee in 1946. As a resident in Santa Fe from 1972 to 1998, he was a director of mobile medical clinics and served as the first Medicare/Medicaid administrator in the State of New Mexico.

# '40s

**Sydney Schiffer**, M.D., G.M. '40, San Antonio; February 21, 2012. A U.S. Army Major during World War II, he served in the U.S. Army Medical Corps from 1942 to 1946. When the U.S. Air Force became a separate service, he became an Air Force physician. He was the former chief of staff of the Robert B. Green Hospital and had served as chairman of the Department of Medicine in every major hospital in San Antonio. Schiffer was in private practice in San Antonio from 1946 to 1988 and was a consultant to the Internal Medicine Department of Wilford Hall U.S.A.F. Hospital for 12 years.

**Wade M. Cline**, M.D., G.M. '42, Birmingham, Ala., June 25, 2011.

**Charles S. Neer II**, M.D. '42, G.M. '46, Vinita, Okla., retired chief of the fracture and adult-reconstructive services at Columbia Presbyterian Medical Center; February 28, 2011. He was founding president of the American Shoulder & Elbow Surgeons. He served in the U.S. Army during World War II.

**Henry H. Fertig**, M.D. '43, Laramie Boomerang, Wyo.; March 22, 2012. He served in the United States Army during World War II as a physician, stationed at Brecksville Veterans Hospital in Cleveland, and later had a private practice in Laramie.

**Arthur I. Murphy Jr.**, M.D. '43, G.M. '47, Pittsburgh, a retired surgeon; January 10, 2012. He joined the U.S. Army Air Corps after completing his surgical residency and was dispatched to Europe; there, from his base in Southern France, he inspected hospitals and treated wounded service personnel across southern Europe and North Africa during the 1945-1946 demobilization of Allied Forces. He practiced surgical oncology at Memorial Sloan-Kettering Cancer Center 1949-1953. He also held positions at Magee-Women's and Allegheny General hospitals, where he specialized in gynecological and head and neck surgery and served as chief of surgery. Upon his retirement in 1992, Magee-Women's Hospital named its surgical waiting room in his honor.

**James DeCamp Piver**, M.D. '43, Raleigh, N.C., a retired surgeon; April 7, 2012. During World War II, he was a captain in the U.S. Army and served with the 30th Infantry Regiment in Germany. He was the first board-certified surgeon in Onslow County and served as a general, thoracic, and orthopaedic surgeon as well as practicing gynecology and urology in Jacksonville for 46 years. A former president of the Onslow Medical Society, he had also been chief of staff of Onslow Memorial Hospital.

**J. Rowland Reid**, M.D. '43, Colorado Springs, a retired internist who had been the oldest practicing physician in Colorado Springs; February 29, 2012. He served as an army physician with the 307th General Hospital during World War II. During his residency, he directed research that led to the discovery of the first drug to treat tuberculosis. He volunteered at Peak Vista Community Health Center for more than 20 years.

**James H. Allison**, M.D. '44, Gettysburg, Pa., October 12, 2011. He served in Korea and retired from family medicine in 1982.

**Paul C. Houston**, M.D. '44, Middletown, R.I., a former chief of surgery at Newport Hospital, where he served from 1952 until 1997; August 21, 2011. He was honored as Physician of the Year by the hospital in 1990. During World War II, he served as captain in the medical corps of the U.S. Army.

**Erika Bruck**, M.D., G.M. '45, Hamburg, N.Y., October 13, 2011. She was born in Breslau, Germany, now a part of Poland, where she studied medicine at the Friedrich Wilhelm University. She was a pediatrician at Children's Hospital of Buffalo for 50 years and was a professor of pediatrics at the University at Buffalo. The author of seminal articles in *The Journal of Clinical Investigation*, she had served on the National Committee for Clinical Laboratory Standards.

**John J. Murphy**, M.D. '45, G.M.E. '49, Bryn Mawr, Pa., former chief of urology at the Hospital of the University of Pennsylvania; February 6, 2012. He served in the U.S. Army Medical Corps as captain and was stationed in Fort Hood, Texas, and at the Walter Reed Hospital in Washington, D.C. After retiring from Penn, he practiced urology at Mercy-Fitzgerald Hospital in Darby, Pa., and volunteered at the Children's Hospital of Philadelphia. Over the course of his career, he published numerous papers on surgical techniques and the management of various urological problems, including prostate cancer and kidney ailments.

**Cynthia Swartley Zimmer**, M.D. '45, G.M.'49, Danville, Pa., June 4, 2011. She retired from family practice in 1982. Her husband was the late Frederick E. Zimmer, M.D. '45, G.M.E. '49.

**Wallace C. Bedell**, M.D., G.M.E. '46, Concord, Mass., a retired surgeon; February 11, 2012. He earned his M.D. degree from Harvard and was a fellow in pathology at Penn.

**Simon M. Berger**, M.D., G.M. '46, Wyndmoor, Pa., a retired radiologist; January 7, 2012. In 1951 he received a grant from the National Institutes of Health to investigate the pathology and the technical requirements for detecting breast cancer with X-rays at Albert Einstein Medical Center in Philadelphia. He joined the staff at Einstein in 1949 and in the 1960s became chief of diagnostic radiology; later, he became chief of the radiology department at Episcopal Hospital. He was also on the staff of Chestnut Hill Hospital and was a clinical professor of radiology at Temple University School of Medicine and at the former Hahnemann University Medical School.

**H. Clinton Davis**, M.D. '46, G.M. '55, Coral Gables, Fla., former chief of surgery at Miami Children's Hospital; October 9, 2011. A former secretary of the Dade County Medical Association, he wrote some 30 medical articles.

**G. Walker Blair Jr.**, M.D. '47, G.M. '51, Burlington, N.C., September 4, 2011. He was a Navy veteran who served as a physician in the Korean War. A retired internist, he had been an associate professor of medicine at the University of North Carolina at Chapel Hill.

**John J. Dowling**, M.D. '47, G.M. '53, Syosset, N.Y., former health commissioner of Nassau County; October 31, 2011. During the Korean War, he served in the U.S. Army. He had been a professor of preventive medicine at the State University of New York at Stony Brook and served on the boards of many volunteer community health organizations. He instituted one of the earliest smoking bans in restaurants and bars.

**William O. Robinson**, M.D. '48, retired head of emergency medicine at Mercy Hospital in Pittsburgh; March 11, 2012. He served in the U.S. Army Medical Corps during the Korean War. After the war, he joined a practice at Mercy Hospital in Pittsburgh, where he worked for 25 years, first as a general surgeon, then as director of emergency medicine. He later headed emergency departments at McKeesport Hospital and Western Pennsylvania Hospital and was instrumental in establishing an emergency physician medicine residency program at the University of Pittsburgh Medical Center.

**George R. Cocks**, M.D. '49, Auburn, Ala., a retired neurologist; September 14, 2010. He had been a lieutenant colonel in the United States Air Force.

**John J. Driscoll**, M.D. '49, Wellesley Hills, Mass.; April 7, 2012. A former instructor at Harvard Medical School, he retired from obstetrics and gynecology in 1986.

**John M. Edmiston**, M.D., G.M. '49, Plant City, Fla., a retired surgeon; December 11, 2011. He served in the U.S. Navy, 1944-46, and was recalled to serve during the Korean War, 1950-52.

## '50s

**Frank Cox**, M.D. '50, Cleveland; April 13, 2012. After enlisting in the U.S. Army Air Corps during World War II, he flew a Mustang that was shot down over France. He was imprisoned by the Germans and was later freed by the Americans. He was director of medical education at the Henry Ford Hospital in Detroit and specialized in infectious diseases. A former president of the Michigan Association for Medical Education, he helped write several studies and co-founded the Infectious Disease Society of America. He won the Henry Ford Hospital's distinguished career award. In 1983, Cox joined Fairview Hospital and chaired its department of medicine. He later worked at St. John Westshore Hospital and joined the Ohio Medical Group.

**Powell Evans Adams**, M.D. '51, Allison Park, Pa., a retired physician; January 20, 2012.

**Nancy Boucot Cummings**, M.D. '51, G.M. '55, Washington, D.C., former associate director for research and assessment at the National Institute of Diabetes and Digestive and Kidney Diseases; March 27, 2012. A co-author of *Chronic Renal Disease: Causes, Complications, and Treatment*, she was a council member of the International Society for Geriatric Nephrology and Urology.

**William C. Frayer**, M.D., G.M. '51, Bryn Mawr, Pa., emeritus professor of ophthalmology at Penn; January 17, 2012. He served as an Army captain during World War II. After completing a dual residency in ophthalmology and pathology, he joined the faculty of the University of Pennsylvania in 1952. In 1964 he left to join the faculty of Thomas Jefferson University School of Medicine but returned in 1972 to help launch the Scheie Eye Institute, founded by the renowned Harold G. Scheie. Frayer served as interim chairman of the institute twice and was the longtime director of its ophthalmic pathology laboratory, which now bears his name. After becoming emeritus professor in 1991, Frayer continued to attend Grand Rounds and faculty meetings, consulting and advising faculty and residents. The author of numerous medical articles, Frayer wrote a history of ophthalmology at Penn titled *An Ophthalmic Journey: 50 Years at the University of Pennsylvania*, published in 2002. From 1969 to 1991, Frayer directed a summer course in ophthalmic pathology at Colby College in Waterville, Maine.

**James W. Russell**, M.D. '51, Boulder, Colo.; April 21, 2012. During the Korean War, he served in the United States Air Force, then became assistant chief of medicine at the White River Junction VA Hospital. He was in private practice in St. Johnsbury, Vt., for 36 years. He was a fellow of the American College of Physicians. In 1992, Senator Jim Jeffords read a tribute to him into *The Congressional Record* for his dedicated service to the citizens of Vermont. He retired to Arizona, where he was named Catalina Citizen of the Year in 2001.

**Edgar H. Ward**, M.D. '51, Fairview, Pa., former chairman of medicine at Hamot Hospital; February 20, 2012. He served in the United States Army Air Corp during World War II. He had been president of the Erie County Medical Society and practiced internal medicine in Erie at the St. Vincent Health Center. After retiring, he returned to serve several years in the Outpatient Clinic at Hamot.

**James H. Davis**, M.D. '52, East York, Pa., a retired surgeon; April 7, 2012. He served in the U.S. Army during World War II. He ran his family medical practice in East York and often made house calls on his motorcycle.

**Frederick Redding Hood Jr.**, M.D. '52, G.M.E. '59, Bellingham, Wash.; February 27, 2012. He served as a flight surgeon with the United States Air Force. He began his surgical practice in Oklahoma City, then moved to Anchorage in 1966. Having been badly burned as a child, he was especially empathetic to patients who suffered burns, and he managed burn injuries and provided reconstructive surgery.

**Rene J. Cossette**, M.D., G.M. '53, Poland, Ohio, July 25, 2010.

**Coleman G. Jacobson**, M.D., G.M.E. '53, Manchester, N.H., a longtime professor of medicine at Southwestern Medical School of the University of Texas; April 10, 2012. During World War II, he served in the Army Air Corps as 2nd Lieutenant. While in the European Theatre, he earned an Air Medal and a Purple Heart. He was a prisoner of war for almost two years in Germany after being shot down from a B24 bomber. Later he was chief of the dermatology service at Children's Medical Center and chief of dermatology at Baylor University Medical Center. He founded and supported clinics and hospitals throughout Africa, including Ethiopia, Kenya, Tanzania, and South Africa, and worked to combat leprosy, HIV/AIDS, and parasitic infections of the skin. He was a fellow of the American Academy of Dermatology, which awarded him a lifetime achievement award in 2006.

**Jerrold G. Grofe**, M.D. '55, Philadelphia, a retired psychiatrist; April 27, 2012. He served in the U.S. Army Air Corps for two years in Germany until the end of World War II. He joined the University of Pennsylvania faculty as

a staff psychiatrist in the 1970s, then moved to Paoli in 1981 and served a year as president of the Philadelphia Psychiatric Society. Later he joined the Clinical Outpatient Mental Health Center in Easton while maintaining his home office in Paoli.

**James Loeb Schuster**, M.D., G.M. '55, Erie, Pa., December 18, 2011. He served in the United States Army 1943-1944 as an artillery man and then 1950-1953 as a battalion surgeon. He advanced to commanding officer of the 4th MASH. He was an attending orthopaedic surgeon for Hamot Medical Center from 1955 to 1986, then served at the Veterans Administration Hospital of Erie as acting chief of physical medicine and rehabilitation until 2000. At Hamot, he was chairman of the medical records committee and a member of the executive committee and the ambulatory care committee. He served a term as president of the Erie County Medical Society.

**Frank J. Dracos**, M.D. '56, G.M. '64, Buck Hill Falls, Pa., retired chair of orthopaedics at Pocono Medical Center; January 11, 2012. He had served in the U.S. Navy.

**John R. Delahunty**, M.D. '57, Red Wing, Minn., a retired pediatrician; October 31, 2011.

**David Flinker**, M.D. '57, Moorestown, N.J., a longtime physician leader at what is now the Virtua health system; February 17, 2012. More than 50 years ago, he came to Memorial Hospital Burlington County, now Virtua Memorial, and he was the first physician offering expertise in hematology and medical oncology in Burlington County. Flinker served as chief of internal medicine there from 1973 to 1991. During that time, he also served a year as president of the medical staff. He was considered the driving force in the development of the Memorial Hospital Regional Cancer Center. Flinker was on the board of trustees of the Memorial Hospital Burlington County Foundation, today known as Virtua Foundation. He was also a firm believer that art was important to healing and, as a result, Virtua Memorial has showcased art for more than 20 years. The Pavilion Art Gallery was named for him when he retired.

**Harry McCorry Henderson Jr.**, M.D., G.M. '58, San Antonio; December 31, 2011. He retired from the U.S. Army in 1965; during his 18-year stint he was an assistant chief of surgery at DeWitt Army Hospital at Fort Belvoir, Va., and chief of surgery at military hospitals in Nuremberg, Germany, and Fort Campbell, Ky. He later practiced medicine in San Antonio until retiring in 1997.

**Walter L. Eaton Jr.**, M.D. '59, G.M. '61, Etna, N.H., a retired physician; March 8, 2011.

**Joseph H. Goldstein**, M.D., G.M. '59, Woodmere, N.Y., July 30, 2011. He had been a member of the Division of Ophthalmology at the State University of New York Downstate Medical Center and was a Fellow of the New York Academy of Medicine.

**J. Scott Hommer Jr.**, M.D. '59, Altoona, Pa., June 17, 2010. He had a private practice from 1960 to 1999 and served a term as president of the Pennsylvania Academy of Family Physicians.

**James A. Zimble**, M.D. '59, Salem, Conn., former Surgeon General for the U.S. Navy; December 14, 2011. His Navy career spanned 35 years of service, beginning in 1956 at the rank of ensign and ending in 1991 at the rank of vice admiral. He later served as president of the Uniformed Services University of the Health Sciences in Bethesda, Md., where he set up a nursing school. Zimble received several military medals for his service, as well as an honorary Doctor of Science degree from the State University of New York at Syracuse.

## '60s

**Frank R. Brand**, M.D. '60, Fayetteville, N.Y.; December 9, 2011. He served as medical director at Loretto Health and Rehabilitation Center. As a member of the clinical faculty at Upstate Medical Center, he was a strong advocate for improving health care for the elderly. He had also been a physician with the Veterans Administration in Syracuse.

**Karl M. Buretz**, M.D. '60, Castle Pines, Colo.; January 28, 2012. He had a family medicine practice in Colorado Springs and Rancho Mirage, Calif., and later held corporate positions in Saudi Arabia and Texas. He retired to Colorado in 2006.

**Mohammad H. Amirgholi**, M.D., G.M.E. '61, Alexandria, Va., a retired otorhinolaryngologist; February 1, 2011. He was born and raised in Iran, where he earned his medical degree.

**Jose S. Sambursky**, M.D., G.M. '61, Longboat Key, Fla., a retired ophthalmologist who had maintained a practice in Binghamton, N.Y., for many years; November 6, 2011. He taught at SUNY Binghamton.

**David M. Besselman**, M.D. '62, G.M.E. '66, Harrisburg, Pa.; December 22, 2011. After completing his medical training, he spent the next three years as an Army medical officer stationed at Womack Army Medical Center, Ft. Bragg, N.C. He later had a private pediatric practice in Harrisburg for 45 years.

**Anne U. Barnes**, M.D., G.M.E. '63, Philadelphia, a retired surgeon; February 18, 2012. She was a professor of anatomy at Temple University Medical School, a surgeon at Jeanes Hospital, and chief of surgery at Philadelphia State Hospital at Byberry. She joined the faculty and the surgical staff of Woman's Medical College of Pennsylvania, now part of Drexel University College of Medicine, in 1966. She had also taught residents at Frankford Hospital. Barnes received several awards for excellence in teaching and helped develop trauma surgery as a specialty. Although she retired from surgery in 2001, she continued to teach until 2007.

**Charles Earl Hansing**, M.D. '65, Mercer Island, Wash., one of the founders of Bellevue Cardiology Clinic; January 12, 2011. He served in the U.S. Navy as a medical officer on a destroyer during the Vietnam War. He was instrumental in getting the Medic One Program started in Bellevue and was responsible for helping start the first cardiac catheterization lab at Overlake Hospital.

**Charles J. Johnson**, M.D., G.M.E. '66, McMurray, Pa.; January 22, 2012. He had been an assistant professor of surgery at the University of Wisconsin, St. Louis University, and Washington University in St. Louis.

**Stuart Snyder**, M.D. '67, G.M. '71, Philadelphia, a cardiologist; January 25, 2012.

**Irma Buko Csanalosi**, M.D., G.M.E. '68, emeritus associate professor of psychiatry at the Perelman School of Medicine; May 6, 2012. She earned her medical degree in Budapest, Hungary, then immigrated from Europe to Venezuela in 1949. She was a resident in psychiatry at Penn's medical school from 1965 to 1968, when she became an instructor. In 1977, she was promoted to associate professor. Csanalosi taught the psychiatry clerkship to many generations of Penn medical students and practiced at the Philadelphia General Hospital, the Philadelphia Psychiatric Center, and the VA Medical Center. Her many honors included the Earl D. Bond Award for Excellence in Teaching from Penn's Department of Psychiatry in 1975 and the University's Lindback Award for Distinguished Teaching in 1976. She was inducted into the Alpha Omega Alpha Honorary Medical Society in 1982 at the faculty level and was a Life Member of the American Psychiatric Association.

## '70s

**Kenneth K. Tucker**, M.D. '73, Lexington, Mass., a cardiologist; January 2, 2012.

## '80s

**Randy Siegel**, M.D. '86, Newark, N.J., an interventional radiologist; March 3, 2012. A co-author of *Interventional Radiology, a Multimedia Approach*, he was voted by his peers as a top doctor in New Jersey as well as in the greater met-

ropolitan area. Siegel was a clinical associate professor of radiology at Robert Wood Johnson Medical School/University of Medicine and Dentistry of New Jersey and was also a partner in the University Radiology Group.

## FACULTY DEATHS

**Saul Philip Bralow**, M.D., Philadelphia, a prominent gastroenterologist who was a former clinical professor of medicine at the old Graduate Hospital of the University of Pennsylvania from 1983 to 1997; January 11, 2012. He was a specialist in colon cancer. After retiring, he opened a gastroenterology clinic for seniors in Sarasota.

**Christopher M. Clark**, M.D. Philadelphia, former associate professor of neurology in the Perelman School of Medicine and former director of the Penn Memory Center whose research advanced the understanding of Alzheimer's disease; January 12, 2012. Clark earned his M.D. degree from Thomas Jefferson University in 1973. From 1990 to 2007, he served as the director of the Clinical Core of Penn's Alzheimer's Disease Center. He was one of the founding participants in the Alzheimer's Disease Cooperative Study, a clinical trials network funded by National Institute of Aging that established a national infrastructure for Alzheimer's disease clinical trials and conducted the first clinical trials in patients with Alzheimer's disease. Clark was committed to developing efficient methods for the early and reliable diagnosis of Alzheimer's that could be readily adopted into routine primary-care clinical practice. He helped develop the Dementia Severity Rating Scale, a self-administered scale that a family member could complete and whose scores assisted in diagnosing dementia and mild cognitive impairment. John Q. Trojanowski, M.D., Ph.D., director of Penn's Alzheimer's Disease Center and a collaborator with Dr. Clark for nearly 20 years, recalls how "Chris was an inspiration to all of us and a beacon of hope to patients with Alzheimer's and their families."

After retiring from Penn in 2007, Clark worked as the medical director for AVID Radiopharmaceuticals.

**Irma B. Csanalosi**. See Class of 1968.

**Laurence E. Earley**, M.D., Philadelphia, chair of the Department of Medicine from 1977 to 1990; March 13, 2012. Born in Ahoskie, N.C., Earley earned his B.S. degree in 1953 and his M.D. degree in 1956 from the University of North Carolina. He came to Penn from the University of Texas Health Science Center in San Antonio, where he had been chairman of the Department of Medicine. He was appointed to Penn's faculty in 1977 as the Frank Wister Thomas Professor of Medicine and was later named the Francis C. Wood Professor of Medicine. Earley also served as the senior associate dean for international medical education from 1991 to 1995 and traveled to strengthen Penn's connections with institutions in Asia, Latin America, and Africa. In addition, he was interim chair of the Department of Physical Medicine and Rehabilitation for three years. In 1995, he left Penn and served as professor of clinical medicine at the University of North Carolina until retiring in 2000.

Internationally known for his work in nephrology, Earley was co-editor of a textbook, *Diseases of the Kidney*. He published many articles in research and clinical journals and held editorial positions in several scholarly journals that explore renal physiology and kidney disease. He had been president several medical organizations, including the American Association of Physicians, the Association of Professors of Medicine, the American Society for Clinical Investigation, and the American Society of Nephrology. A former member of the board of governors of the American Board of Internal Medicine, Earley had been a member of the Institute of Medicine of the National Academy of Sciences. One of his hobbies was photography, and he once had an exhibition at HUP of his photographs of wildlife in the Serengeti plain.

**John J. Murphy**. See Class of 1945.

LEGACY GIVING

# Being True to His School: Dr. Carpenter Gives Heart and Home to Penn Medicine

*John T. Carpenter Jr., C '48, M.D. '52, G.M.E. '58, describes himself as a "3-B Man" because his main hobbies are singing in a barbershop quartet, bird-watching, and playing bridge. Through a generous gift to Penn Medicine, he just added one more B to his list: benefactor.*

*A couple of years ago, Dr. Carpenter read an item in* Penn Medicine *magazine about Walter Gamble, M.D. '57, and his wife, Anne, giving the assets from the sale of their house to support scholarships at the Perelman School of Medicine. This gift inspired Dr. Carpenter, who recently celebrated his 60th reunion. Working with the Penn Medicine Office of Planned Giving, he stipulated in his will that when his house is sold, the funds will go directly to assist financial aid. Dr. Carpenter's gift of real estate was a culmination of his love for his alma mater.*

*"I bleed red and blue," he said, "and I thought this was the best way to demonstrate my loyalty to my beloved Penn, and also leave a legacy after I am gone."*

*Dr. Carpenter has consistently supported the School of Medicine for decades and has attended almost every reunion of the Medical Class of 1952 since graduation. He fondly remembers his great admiration for Penn legend Dr. John Mikuta, whom he knew during his residency in Ob/Gyn. He respected Dr. Mikuta's exceptional skills, bedside manner, and kindness towards his patients. Dr. Carpenter's gift of real estate will ultimately benefit the John J. and Margaret E. Mikuta Scholarship Fund.*

*"By giving," said Dr. Carpenter, "I know I will be helping today's students. They don't deserve the burden of their debt."*

*Now retired, Dr. Carpenter looks back on his career, which focused on babies. During his 40 years as an Ob/Gyn, he delivered more than 6,000 babies. He credits the Perelman School of Medicine for giving him the foundation for a successful and satisfying career.*

*And what advice would he give to his fellow alumni? "Be grateful. Be philanthropic!" he declared.*

*A gift of real estate can be structured to meet your estate planning, retirement income, and lifestyle needs – and can be one of the most tax-wise ways to support the Perelman School of Medicine. Dr. Carpenter chose one of a multitude of creative gift opportunities that benefit both the School of Medicine and donors. 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., Senior Director of Planned Giving, at 215-898-9486, or you can e-mail her at cewan@upenn.edu. For more information, please visit the web site at www.plannedgiving.med.upenn.edu.*

## Another Whiff of Eugenics

This issue of *Penn Medicine* includes Part 1 of Marshall Ledger's engrossing article on psychiatry at Penn. The article is timed to commemorate the 200th anniversary of the publication of *Medical Inquiries and Observations, Upon the Diseases of the Mind*, by Dr. Benjamin Rush, considered the "father of American psychiatry." What I did not expect to find in Ledger's article was a passing reference to eugenics – and by pure coincidence, that makes three issues of *Penn Medicine* in a row where that often-buried topic turns up.

The Summer 2012 issue included my article on Jonathan Moreno, Ph.D., the David and Lyn Silfen University Professor, and his timely book *The Body Politic: The Battle Over Science in America* (2011). Despite the enthusiasm of the Founding Fathers for science, many Americans have felt an an ambivalence if not distrust of science. I asked: "But why on earth would any right-thinking American citizen regard science and scientists with distrust?" In an earlier book, Moreno wrote about the government's secret experiments on humans, and in *The Body Politic* he provided several more reasons. Among the most compelling was the support among some scientists and government officials for eugenics and social engineering.

One prominent example is Charles Davenport, founder of the Eugenics Records Office at Cold Spring Harbor, who had a Ph.D. degree in biology from Harvard. Harry Laughlin, superintendent of the Eugenics Records Office, had a doctorate in cytology/cell biology from Princeton University. In 1922, Laughlin published a "Model Eugenical Sterilization Law" that would have authorized the sterilization of what he described as the feeble-minded, insane, criminalistic, epileptic, inebriate, diseased, blind, deaf, deformed, and dependent, as well as "orphans, ne'er-do-wells, the homeless, tramps, and paupers."

This is a grim proposal, but, as Moreno also pointed out, some of the nation's leading early twentieth-century progressives, including Theodore Roosevelt, Woodrow Wilson, and Margaret Sanger (founder of the American Birth Control League, which would become Planned Parenthood) "embraced the notion that society's burden of morally debilitated persons could be lessened through selective reproduction" (*The Body Politic*). Their support for the idea, however, may have been less extreme than Laughlin's, and as Moreno also noted, "Behind the enthusiasm for eugenics lay an impulse to improve social conditions in the wake of an era of industrialization that brutalized and exploited many."

In Marshall Ledger's article, we discover that at least one Penn doctor supported eugenics as well. Charles W. Burr, M.D. 1886, was a student of Charles K. Mills, M.D. 1869, Ph.D. 1871, Penn's first professor of neurology. Another of Burr's mentors was perhaps the most well-known neurologist of the day, S. Weir Mitchell, M.D., who served as a trustee of the University of Pennsylvania for 35 years. Burr was appointed professor of mental diseases in 1901, and (as Ledger put it) "with that title the Department of Psychiatry came into being, although with the old terminology."

Burr was described by a Penn colleague as "conservative." That may be putting it mildly. In "Government Should Undertake Prevention of Insanity," printed in *The New York Times* in 1913, Burr called for "segregation of the defective classes," including government-imposed lifetime confinement in institutions. In his opinion piece, Burr spent nearly half his space discussing undesirable immigrants, then cautioned against "the intermarriage of races as far apart as the negro and the Caucasian. . . . It leads to degeneracy."

Whether Burr's favorable view of eugenics was instilled and nurtured by his illustrious predecessors is not known. What is known is that Burr became president of the Eugenics Research Association in 1925. The association, established in 1921, included as members Davenport and Laughlin.

Those who supported eugenics advocated both positive and negative programs. The positive version was to seek to increase reproduction of "fit" stock (in the animal world) and "fit" humans, which in the latter case might involve tax preferences and other financial support. There are plenty of examples of negative eugenics; as Moreno pointed out, "tens of thousands of people were involuntarily sterilized" in the United States. The most extreme examples, however, were instituted in Nazi Germany. In the Spring 2012 issue of *Penn Medicine*, Harry Reicher, LL.M., adjunct professor at the Penn Law School, explored the Doctors' Trial at Nuremberg, describing the forced sterilizations, the experimental sterilizations, and the euthanasia program created to deal with those "not worthy of living." The estimate is that more than 350,000 people were sterilized under the Nazi regime. In 1936, Moreno noted, Laughlin received an honorary degree from the University of Heidelberg.

As Moreno summed it up: "After World War II, the word *eugenics* acquired its current bad odor. Modern geneticists are loath to accept any association with the movement. Yet the fact remains that eugenics was considered legitimate science by influential academics and intellectuals irrespective of their other political views."

Much as medicine and science have moved beyond the bloodletting and purging favored by Benjamin Rush 200 years ago, it behooves today's doctors and scientists to make sure eugenics remains an illegitimate science. ●

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David Dinges, Ph.D., professor of Psychology in Psychiatry, has been working with NASA for more than 20 years in one of the most challenging problems of space exploration: how to keep astronauts alert, active, and able to do their enormously complex and dangerous jobs in the most extreme conditions human beings will ever face.