UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE | JANUARY 2003

PITTMED



MOONLIGHT SONATA

WHEN OUR RELATIONSHIP WITH SLEEP GOES UNREQUITED



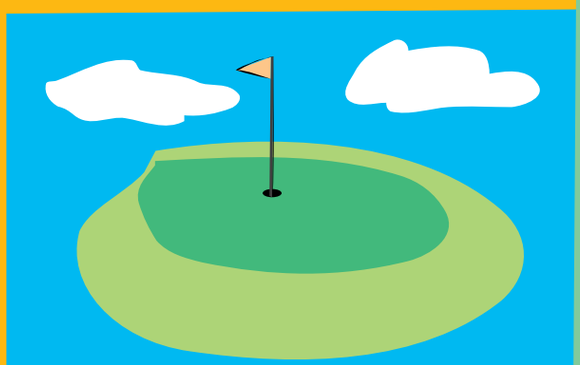
THEY DON'T FALL FAR FROM THE TREE

As part of a "family tree" in the April issue, we attempted to list heads of departments and divisions who trained with Dr. Ferguson. Another Fergie success story:

I very much enjoyed your recent article on my mentor—A. B. Ferguson (Ferg).

If another such tree is done, I would like my spot included, as I know it is a direct result of Ferg's teaching.

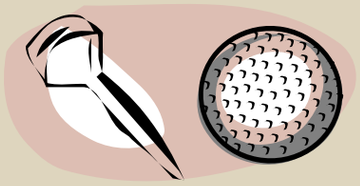
Matthew D. Putnam, Res '84
Hand Fellowship Director
University of Minnesota



TOUR DE FORCE

It's not on this year's PGA tour, but it should be on yours. Your entry fee to the Annual Pitt Med Golf Outing helps heavily indebted students who are active in the medical community. And the student-run event takes place at a premier course, not far from Pittsburgh.

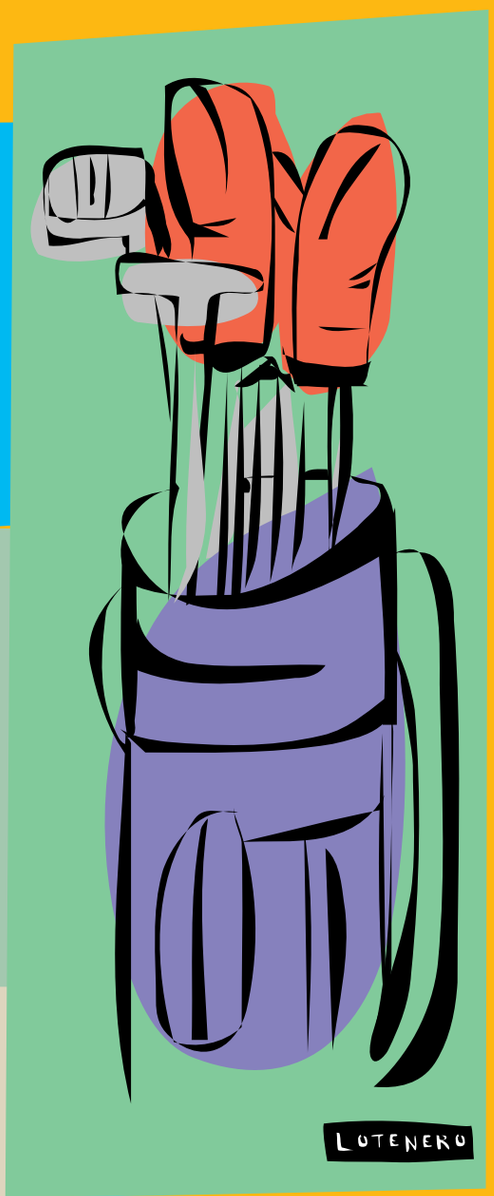
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Pitt Med
400 Craig Hall
University of Pittsburgh
Pittsburgh, PA 15260
Phone: 412-624-4147
Fax: 412-624-1021
E-mail: medmag@pitt.edu

www.health.pitt.edu/pittmed



Please send address corrections to the alumni office:

***Pitt Med* Address Correction**
ATTN: Crystal Kubic
M-200k Scaife Hall
University of Pittsburgh
Pittsburgh, PA 15261
Phone: 412-648-9090
Fax: 412-648-9500
E-mail: medalum@medschool.pitt.edu

2002 MAGAZINE HONORS

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Gold Medal, General Interest Magazines
2002 CASE District II Accolades

Gold Medal, Best Article of the Year
2002 CASE District II Accolades

Silver Medal, Periodical Staff Writing
2002 CASE District II Accolades

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Association for Women in Communications
Pittsburgh Professional Chapter

Matrix Award, Best Article of the Year
Association for Women in Communications
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Renaissance Award, External Publications
Public Relations Society of America
Pittsburgh Chapter

CLARIFICATIONS/CORRECTIONS

The name of W. Creighton McClintock III (MD '47), who died August 24, 2002, was spelled incorrectly in the October issue. We regret the error.

PITTMED

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE MAGAZINE | JANUARY 2003, VOL. 5, ISSUE 1



DEPARTMENTS

OF NOTE 3
A moose chased him, and look where Matt Vitale ended up. Botox's remarkable effect on stroke survivors. These Pitt med alumni go where miners are most vulnerable: down deep.

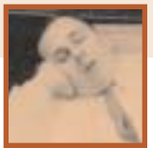
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Healing Families 32
Even if the operation goes well, in all likelihood the struggles aren't over for seriously ill children and their families once they leave the hospital. Pediatric surgeon Edward Barksdale Jr. helped found an agency to support them.
FOLLOW-UP BY JASON TOGYER

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JASON TOGYER—["Healing Families" and "Drumming Up Answers"] If you tune into Jason Togyer's WRCT oldies show on a Saturday morning, don't expect to hear Elvis' version of "Hound Dog," expect Big Mama Thornton's instead. This jockey is dedicated to original artists. Togyer, *Pitt Med*'s new senior editor, is a bit of a purist, which is evident in the way he wields a red grease pencil on our alumni section. You might recognize his byline from his career with the *Pittsburgh Tribune-Review*; he has adapted easily to his recent foray into the world of magazines. Last year, writing for *Pitt Magazine*, he garnered the Bronze Anvil award. DAVID POHL—[Cover and "More Than a Good Snooze"] An illustrator interested in Eastern spirituality and the impermanence of life, Pohl often creates art out of materials that will not last—leaves, Goldfish crackers, a tiny bird skull. He regularly shows his art in galleries and is also a commercial illustrator, completing nearly 1,000 commissioned pieces in the past 12 years. His client list includes *The New York Times* and *The Atlantic*. See his work at www.davidpohl.com.

COVER

Bring me a dream: Western Psychiatric Institute and Clinic researchers keep finding links between sleep and our mental and emotional health. They can even explain why your teenager won't go to bed, or at least begin to explain. (Illustration: David Pohl)

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PUBLISHER
Arthur S. Levine, MD

EDITOR IN CHIEF
Erica Lloyd

ART DIRECTOR
Elena Gialamas Cerri

SENIOR EDITOR
Jason Togyer

ASSOCIATE EDITOR
Dottie Horn

PRODUCTION COORDINATOR
Chuck Dinsmore

STAFF CONTRIBUTORS
Meghan Holohan, Megan E. Sofilka

OBITUARIES CONTRIBUTOR
Macy Levine, MD '43

CIRCULATION MANAGER
Crystal Kubic

CHIEF EDITORIAL ADVISOR
Kenneth S. McCarty Jr., MD, PhD

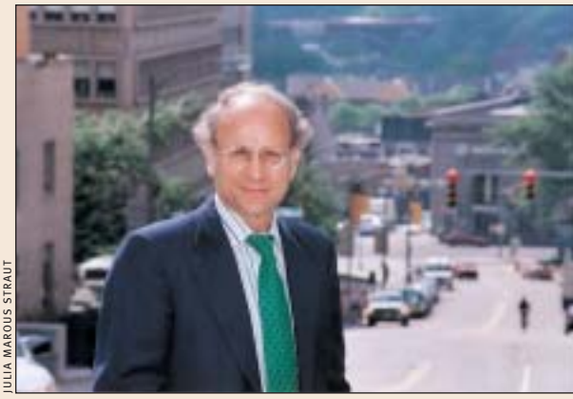
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JULIA MAROUS STRAUT

It was the best of times,
it was the worst of times. . . .
—Charles Dickens
A Tale of Two Cities

In an earlier issue, I wrote about the paradox inherent in the extraordinary recent advances in medical science and the crucial problems of health care access and cost. Since I wrote, the best has gotten better, but the worst has gotten worse. With the completion of the human genome project, we have moved quickly to proteomics—studying the structure and function of proteins—and it is there that we will have almost unimaginable opportunity for understanding and benefiting the human condition. However, the delivery of health care and its economics have become ever more chaotic. After a leveling of health care costs in the '90s, we are again seeing a dramatic increase, largely reflecting a backlash against the constraints of managed care. The drivers of the nearly $5,000 per year per person spent on health in the United States (double that in Switzerland, the next-highest country) include a rapid increase in the cost of technology and drug development; end-of-life care (where much of our health care dollar is spent); the overhead on commercial insurance; our failure to prevent "lifestyle" illness; the expense of non-evidence-based treatment; health care inefficiencies; and outlays for malpractice awards and premiums. (It is worth noting that if Americans would make a habit of constructing living wills, we would likely save enough money on end-of-life care to provide health insurance for the 42 million Americans who lack it.)

Uncontrolled health care costs greatly impact medical research—the "shortfall" in National Institutes of Health support having been compensated historically by clinical revenue. However, this revenue is dwindling with declining reimbursements; yet 50 percent of the uninsured are treated in the 6 percent of hospitals that support teaching and research. Most med school graduates are in debt ($200,000 at repayment, on average), making the choice of an academic career less likely. Malpractice insurance is a particular problem in Pennsylvania, where premiums aren't capped and there are no discounts for academic physicians. Friends in Congress hope to continue to increase the National Institutes of Health research appropriation, while the venues for research, and their researchers, are threatened in the extreme. Yet research has always been our only effective insurance against illness.

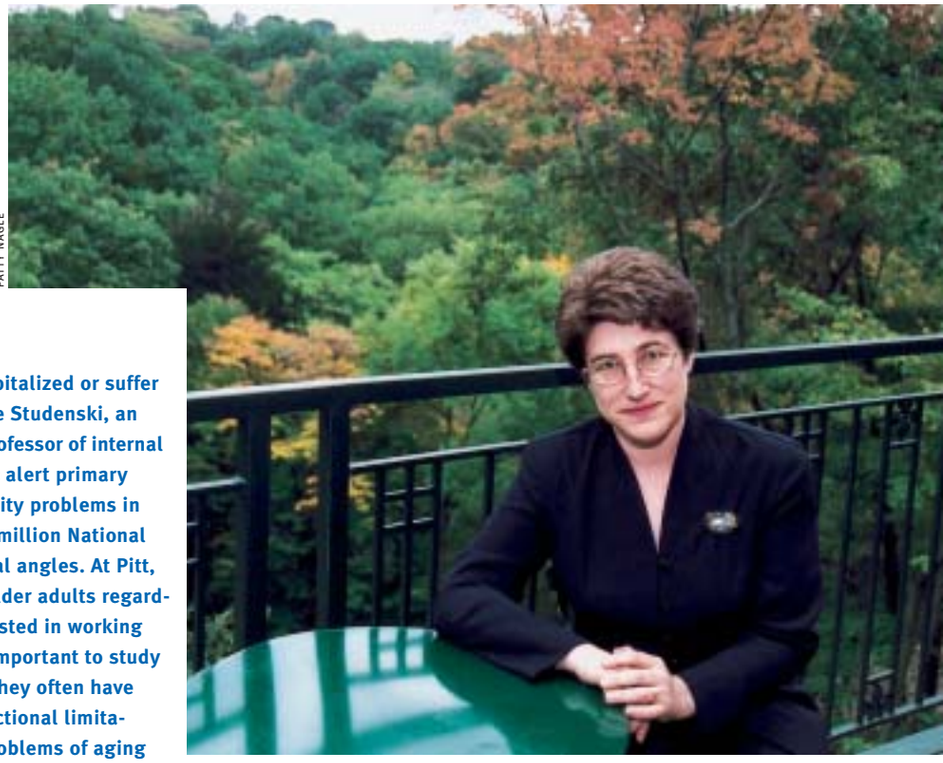
What are the possible remedies? As a start, single-payer national insurance for every American; fair but regulated malpractice awards and premiums; an increasing focus on prevention and a decreasing focus on end-of-life care; and loan forgiveness for medical graduates who spend a few years serving the nation's needs. We need desperately to overcome our national inertia and see health care as the public's right and as our moral obligation. Those who do not take the humanist's view might consider this: When full-time workers get sicker than they need to be, and stay sicker longer, the health of our national economy also suffers.

Arthur S. Levine, MD
Senior Vice Chancellor for the Health Sciences
Dean, School of Medicine



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PATTY NAGLE



Studenski

Every Walk of Life

How fast elderly people walk can predict whether they will be hospitalized or suffer a decline in health or function, according to a new study. Stephanie Studenski, an MD who joined the University of Pittsburgh faculty in August as a professor of internal medicine, designed the speed-of-walking test as a low-tech way to alert primary care providers to patients at risk. A specialist in balance and mobility problems in older adults, Studenski also is the principal investigator on an $8 million National Institute on Aging grant—a study that examines stroke from several angles. At Pitt, she will investigate the perceptions of health care providers and older adults regarding problems with and changes to mobility. "I'm particularly interested in working with people in their late 70s, 80s, and 90s," says Studenski. It is important to study this older population, she believes, because they often have multiple health problems and functional limitations, and because most problems of aging are multifaceted. ***—Dottie Horn***

FOOTNOTE

They call themselves "Geeks with Palms," a group of med students known to peck away at their PDAs. Of course, they have a Web site, www.pittmed.pitt.edu/palm, offering advice for using PDAs in medicine. Don't miss the link to BS-o-Matic, which promises the user will "never again be at a loss for words." The jargon generator comes in three "aromas"—buzzwords for technology, sports, and the arts.

A FIRST FOR THE DOMINICAN REPUBLIC

During the first liver transplant in the Dominican Republic, a 9-month-old girl received part of her mother's liver. The transplant was performed in November by University of Pittsburgh surgeons who brought needed equipment, paid for their flights, and donated their time for the operation.

It was not the first Pitt transplant mission abroad. On one trip, to Sudan, a Pitt team transplanted five kidneys. In Peru, China, and El Salvador, the doctors performed living donor kidney and liver transplants. So far, in teams of two or three, Pitt's John Fung, Victor Garrido, Jorge Reyes, George Mazariegos, and former Pitt prof Velma Scantlebury have performed a total of 10 transplants abroad. Eight of those patients are alive today.

Unfortunately, shortly after her operation, the Dominican girl died from a lung infection. ***—Megan E. Sofilka***



CAMI MESA

A&Q
with Matt Vitale

When Matt Vitale was in junior high school in Anchorage, he encountered a moose on the road. He did what anyone would have done—he screamed and ran. The moose followed him for a "stressful" hundred yards. He managed to bypass other wildlife roadblocks and is now a first-year med student and one of 13 Dean's Merit Scholars for 2002. (Vitale also happened to score in the 98th percentile in three of the four MCAT sections, but shrugs off the accomplishment, pointing out, "We all took them, and we ended up here, and that's where we're at now.")

On Pittsburgh:
"I like it so much better than I thought I would. I'm in Squirrel Hill, and I can walk 15 minutes and be in Frick Park, and I love that. Pittsburgh has such a good sense of itself. Every neighborhood has some sort of identity or character."

On apprehension about medical school:
"The thing I was most afraid of, at first, was cutting up the cadaver. That was strange at first. Eventually, you're really just looking for that nerve or vessel or muscle or whatever. You don't stop to think, 'This was a guy.' You still have those days where you're like, 'This is a guy,' and it's kind of hard to process. I wonder what his last day was like."

On his research as an undergrad regarding issues of consent in vulnerable populations like Alzheimer's patients:
"I think these issues are hugely important. . . . [especially] in terms of whether or not people can really even give consent or not because [they're] scared and so concerned about [what's happening to them].

"Do people really understand what they're getting into? People get so scared about their health and how things are going. They really are so ready to take any piece of hope."

His question for the world:
"What is the best way to spend a Saturday afternoon in Pittsburgh? There has to be something slightly better than studying. I know that's a hard bar to set, but—"

—Interview by Meghan Holohan

Faculty Snapshots

Relaxin is a female hormone named for its function: Late in pregnancy, it loosens ligaments, helping to facilitate safe delivery of the fetus. As it turns out, it's also a vasodilator—able to reduce vasoconstrictor responses in arteries—according to a new study by **Jacqueline Novak**, assistant professor of obstetrics, gynecology, and reproductive sciences, and **Kirk Conrad**, a professor in the same department. The hormone's vasodilator properties might someday lead to clinical applications. "Relaxin could possibly help in hormone replacement therapy, if it doesn't have some of the negative side effects of estrogen," says Novak. "Relaxin doesn't have the feminizing qualities of estrogen, so perhaps it could be applicable in men." In the future, the scientists will look at whether the hormone can increase blood flow to the uterus. "This could have implications for diseases such as preeclampsia, where blood flow to the placenta is compromised," Novak says.

FOR MORE INFORMATION: ajpregu.physiology.org (Search August 2002.)



Novak and Conrad

Many stroke survivors suffer from a condition called spasticity, in which muscles in their upper extremities pull in one direction with a force that may be 10 or 20 times what one is able to generate to oppose it. As a result, too often "the wrist remains flexed, the fingers remain flexed, the elbow is bent, and the shoulder is close in to the side," says **Ross Zafonte**, professor and chair of the Department of Physical Medicine and Rehabilitation. In a study published August 8 in the *New England Journal of Medicine*, Zafonte and collaborators reported that intramuscular injections of botulinum toxin type A (Botox) reduced spasticity in the wrists and fingers of stroke survivors. Some participants reported less pain after the treatment, and some had fewer difficulties using their upper extremities to clean or dress themselves.

In inflammatory bowel disease (IBD) circles, **Miguel Regueiro** is often called the baby of the group. Although only 36, the assistant professor of medicine has a national reputation—he is invited to speak at about 75 continuing medical education programs and another 75 patient-oriented symposia each year. Despite frequent travel, he sees the bulk of the 1,500 to 2,000 patients who come to Pitt's IBD clinic each year. Regueiro is also a researcher, leading clinical trials and conducting epidemiological studies on IBD. He was invited to edit a special journal issue titled *Gastroenterology Clinics of North America: Inflammatory Bowel Disease*. Published in August 2002, the issue provides information for physicians caring for IBD patients. *—DH*



Regueiro

Tunnel Vision

BY CHUCK STARESINIC

Rick Kunkle (MD '71), associate medical director at Latrobe Area Hospital, was on his July vacation in Tennessee's Smoky Mountains when he got word about nine coal miners trapped underground in Somerset County. That was a late Wednesday night; he was on site the next morning.

His was a mighty quick trip through the Appalachians overnight. But Kunkle performs well in the dark.

Twenty years ago, as chair of the emergency department at Latrobe, Kunkle was troubled by the number of coal miners dying of injuries that would not have been fatal above ground. So he and a paramedic created the Special Medical Response Team (SMRT) to offer emergency care where the miners were most vulnerable. The team developed expertise where none had existed before. Eventually they took on mine fires as far away as Utah. Their efforts with the Federal Emergency Management Agency led to the development of the first urban search and rescue teams, of which there are now 28 in the nation. When news of the "Quecreek Nine" hit, SMRT had 20 years of experience from which to draw.

Alum Jim Dickson (MD '85) is SMRT's chief medical officer. He meticulously laid out a procedure for getting the Somerset miners out of the rescue cage, onto stretchers, and into decontamination and decompression. In case the miners were unconscious, Dickson devised a means of suspending a person in the rescue cage using half a backboard and a come-along. (Pitt's assistant dean for medical education, John Mahoney, MD '90, was not at Quecreek, but also works with SMRT.)

Much of the three days SMRT was on site was spent thinking through possible responses once the rescuers reached the miners: How do you treat a severely hypothermic patient who has spent three days under pressure in an air bubble? And what if the rescuers broke through to the miners but received no response?

Kunkle describes the moment they learned all nine men were alive as "pure euphoria." He praises everyone involved in the rescue—from the governor to those who brought food for the team: "God gives you a certain amount of talent, and he expects you to use it, and he expects you to maximize it."



QUECREEK/SOMERSET POOL

Two Pitt med alumni were key members of the medical response team called in to aid the Quecreek Nine.

It's a Postdoc Life for Us

There are definite perks to his job, notes Steve Wendell, a postdoc in molecular genetics and biochemistry: "You have minimal obligations as far as committee meetings and other peripheral tasks that tend to take you away from bench work. So, scientifically, it's probably the best stage of your whole life and very rewarding." The postdoctoral life has drawbacks as well, he points out. Finances and the long hours needed to build a scientific reputation loom large as concerns. And the emotional strain of an uncertain future makes some wonder about alternatives to highly competitive academic careers.

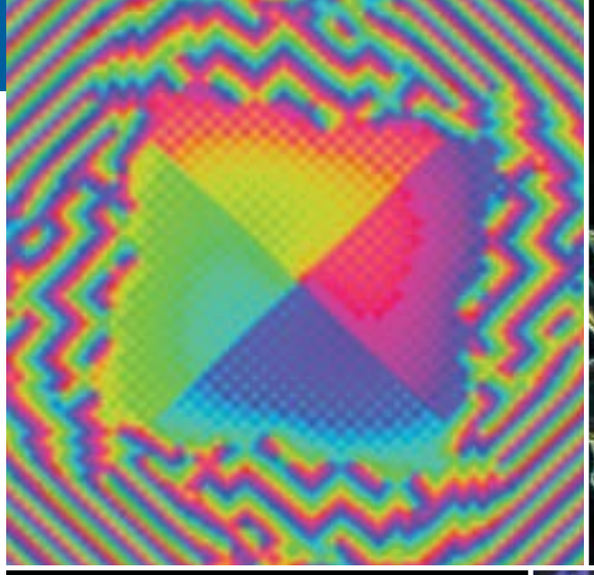
To build a support structure for themselves, Pitt postdocs have created the University of Pittsburgh Postdoctoral Association. (Pitt retains 1,100 postdocs in the health sciences schools alone, Wendell estimates.) Salary and benefits top their list of concerns. Organizers also want to ensure postdocs have access to career development programs, and they plan to create a handbook as well as a welcoming network for new postdocs, especially those coming from other countries. *—DH*

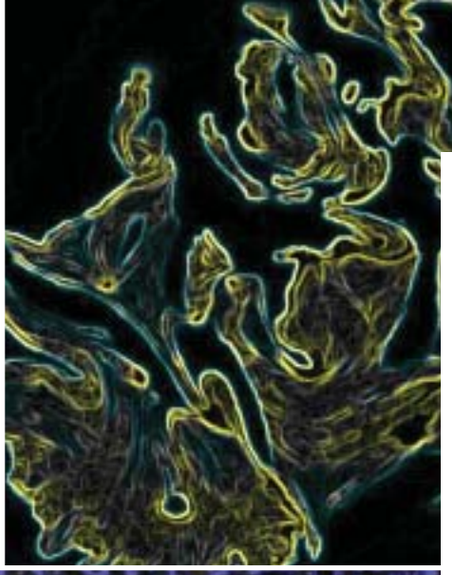
TWO PARTS DEWEY DECIMAL, ONE PART MOLECULAR BIO

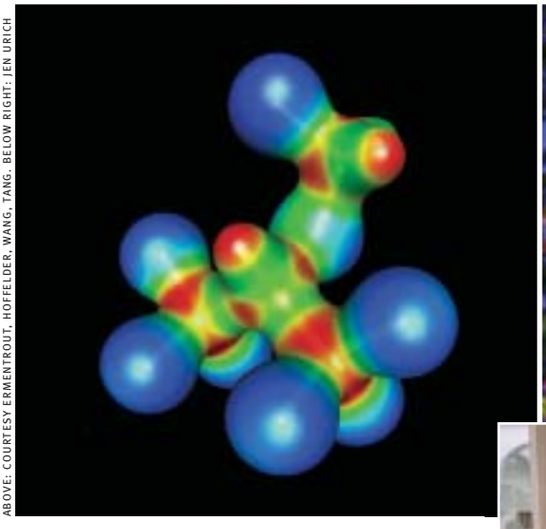
Let's say a researcher at Pitt comes across a protein she believes is involved in a disease. She can go to GeneLynx (www.genelynx.org), type in the name of the protein as the keyword, and instantly access a host of information—including the gene that codes for the protein and mutations identified in that gene.

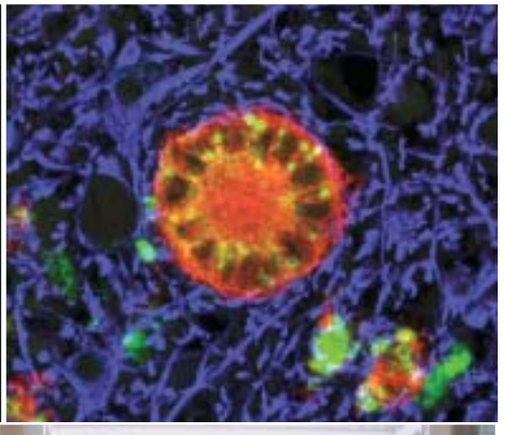
"GeneLynx is one-stop shopping for getting all the information for that particular protein," says Ansuman Chattopadhyay, a PhD in biochemistry who is the new information specialist in molecular biology and genetics at Falk Library.

The database is one of more than 100 related to biomedical research now on the Internet. It's Chattopadhyay's job to help Pitt scientists and students make sense of it all, to find and use the resources that best meet their needs. He teaches classes and offers individual consultations. Only three medical school libraries in the country retain a specialist like Chattopadhyay. *—MES*











ABOVE: COURTESY ERMENTROUT, HOFFELDER, WANG, TANG. BELOW RIGHT: JEN URICH

RIGHT: **The Science as Art exhibition at the Frick Fine Arts Building in September**
CLOCKWISE FROM TOP LEFT: **Work by Bard Ermentrout, Diane Hoffelder, Wanda Wang, and Pei Tang**

Cool Fusion

Standing by his poster—a sleek marketing display in a tasteful selection of blue and maroon hues—Timothy Mietzner looks slightly uncomfortable. The associate professor of molecular genetics and biochemistry's face brightens as he eases into a conversation about his "product" for managing bacterial and viral infections.

Mietzner was among those chosen by Pitt's Office of Technology Management to participate in Science 2002's Synergy in Science technology showcase held in September. He sheepishly admits he knew next to nothing about business until event organizers matched him with Philip Yeske of Fluorous Technologies, a chemical technology company. At the moment, Yeske, holding a drink (the festival's martini bar just opened) and handing out business cards, is engrossed in discourse with another man. Just a week ago, Yeske shook hands with Mietzner for the first time, and the two ended up spending hours brainstorming about how Mietzner could get his discovery on the market while still controlling its scientific applications. Their approach with the colorful poster seems to portend good things. As members of the local business and academic communities filter in, an interested crowd grows around Mietzner, who's now gesturing with ease.

Crowds gather again later at the festival's exhibition at the Frick Fine Arts Building, where science fused with art rather than business, and bold researchers offered scientific images and other "pieces" for display. Most of the work was tagged with painstaking description—e.g., the nuclear material from dead cancer cells stained with DAPI explained away ghost-like green circles floating in a sea of black. But cell biologist and professor Simon Watkins chose to offer why he'd selected an image of a dendritic cell: I love the way it sort of looks like a budding flower. *—MH*

Appointments



Kaminski

A lung typically suffers small, repeated injuries every day—a level of damage that most lungs can easily repair. In those with idiopathic pulmonary fibrosis (IPF), however, the repair mechanism malfunctions—leading to changes that impair the lung's oxygen processing capacity. **Naftali Kaminski**, an MD who recently arrived from Chaim Sheba Medical Center in Tel Hashomer, Israel, is slated to become the Simmons Professor of Pulmonary Research at the University of Pittsburgh. He uses microarrays and advanced computational tools to help describe how the normal repair mechanism goes awry. In a paper published last spring in the *Proceedings of the National Academy of Sciences,* Kaminski reported on a key regulator of IPF in both humans and mice. At Pitt, he will lead the Dorothy P. and Richard P. Simmons Center for Research and Education in Interstitial Lung Disease, overseeing both research and clinical initiatives.

Luis Ortiz will take on joint appointments in the Graduate School of Public Health (as director of the Division of Occupational and Environmental Medicine) and the School of Medicine (in the Division of Pulmonary, Allergy, and Critical Care Medicine). Ortiz studies pulmonary fibrosis that results from occupational exposure to particles or chemicals. His work at Tulane University shed light on the role of a protein, tumor necrosis factor, in regulating inflammation of the lung. Ortiz hopes that his studies of the basic biology of lung disease will lead to clinical protocols where none currently exist.

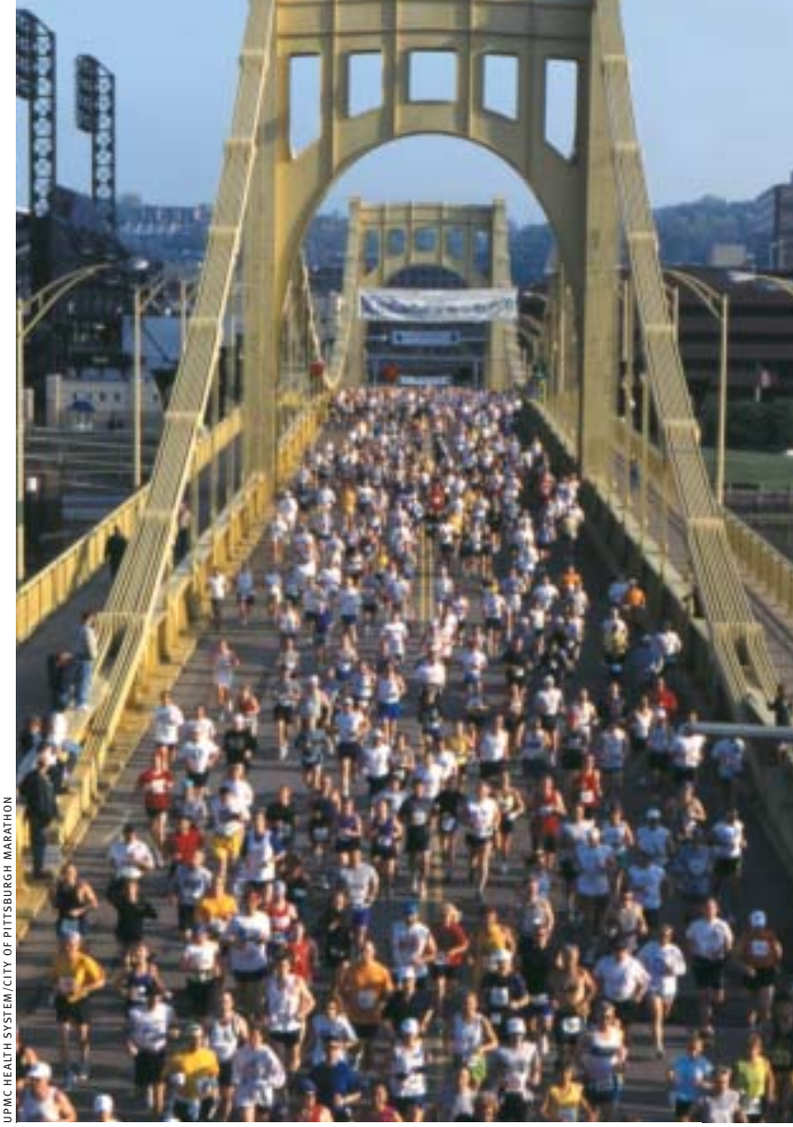
You'll find maybe only 200 board-certified pediatric rheumatologists in the United States. These are the doctors consulted on diseases such as juvenile rheumatoid arthritis and childhood lupus. Of those 200, only a handful conduct research, including standout **Raphael Hirsch**, who will head Pitt's new Division of Pediatric Rheumatology. In one recent and exciting study, Hirsch was able to both prevent and cure arthritis in mice by delivering therapeutic genes to joints. As division chief, Hirsch will recruit new faculty, develop a fellowship program, and expand the clinical program to better meet the needs of Pittsburgh's children. *—CS & DH*



Hirsch

ALUMNI CHECKUP: ELLEN ROH

BY MIKE RANSDELL



UPMC HEALTH SYSTEM/CITY OF PITTSBURGH MARATHON

Runners begin the 2001 marathon at the Roberto Clemente Bridge in downtown Pittsburgh.

Race day. The ritual begins. The number two is significant. Exactly two hours before the start, Ellen Roh, MD '02, grabs two bagels from the kitchen and retires to the bedroom in her Shadyside apartment for her morning meal. She plays a Madonna CD and prepares her mind and body for the challenge of running. She reads an inspirational letter that her college track coach wrote to her when she was an undergrad at Williams College in Williamstown, Massachusetts. It gives her confidence, strength. She then dresses, always sure to wear her lucky socks, and knot the laces of her Asics—twice.

When she arrives at the course she wanders off for some alone time. Must focus. Roh runs to warm her muscles and joints and free some nervous energy: two miles. As the start nears, she clears her mind and readies her body.

One such morning in May 1999, the Pittsburgh Marathon starter's gun cracked, and Roh was off—her 5 foot, 90-pound frame lurching forward among the swarm of pumping arms and legs. Three hours later—2:59:27 to be exact—she was the sixth woman to cross the finish line and 83rd runner overall. Not bad for her first marathon.

Now Roh, 26, has her sights set on bigger races—most notably the US Olympic Trials set for April 4, 2004, in St. Louis, a dream she harbors with guarded ambition.

"I'm trying to see my true potential [as a runner]," she says. "I don't want to be disappointed if I don't make it. I want to just see how far I can go."

In order to get invited to the trials, Roh needs to shave her time to 2:48:00 in a qualifying race. She's capable of that, says her coach, Joe Sarver: "I think she has a pretty good shot if she can stay healthy."

Only the fastest two marathoners at the trials will make the Olympic team.

It's now or never, according to Roh. She is postponing a residency in dermatology for two years to "pursue things that I might never get a chance to again. And running is one of them." While she trains, she is also studying medical informatics, thanks to a fellowship, under the guidance of Drazen Jukic, assistant professor of dermatology and pathology. Along with Jukic, she credits her major sponsor, Freddie Fu, chair of the Department of Orthopaedic Surgery, for making it all possible.

In the running world, Roh is either a late bloomer or a natural. She didn't start racing until her first year in college, and that was by accident. The cross-country coach saw her running during preseason conditioning for soccer and convinced her to switch sports. Roh narrowly missed qualifying for nationals in the 5K run as a freshman, then decided to rededicate herself to the sport by training harder.

"I remember thinking I didn't want that to happen again," she says.

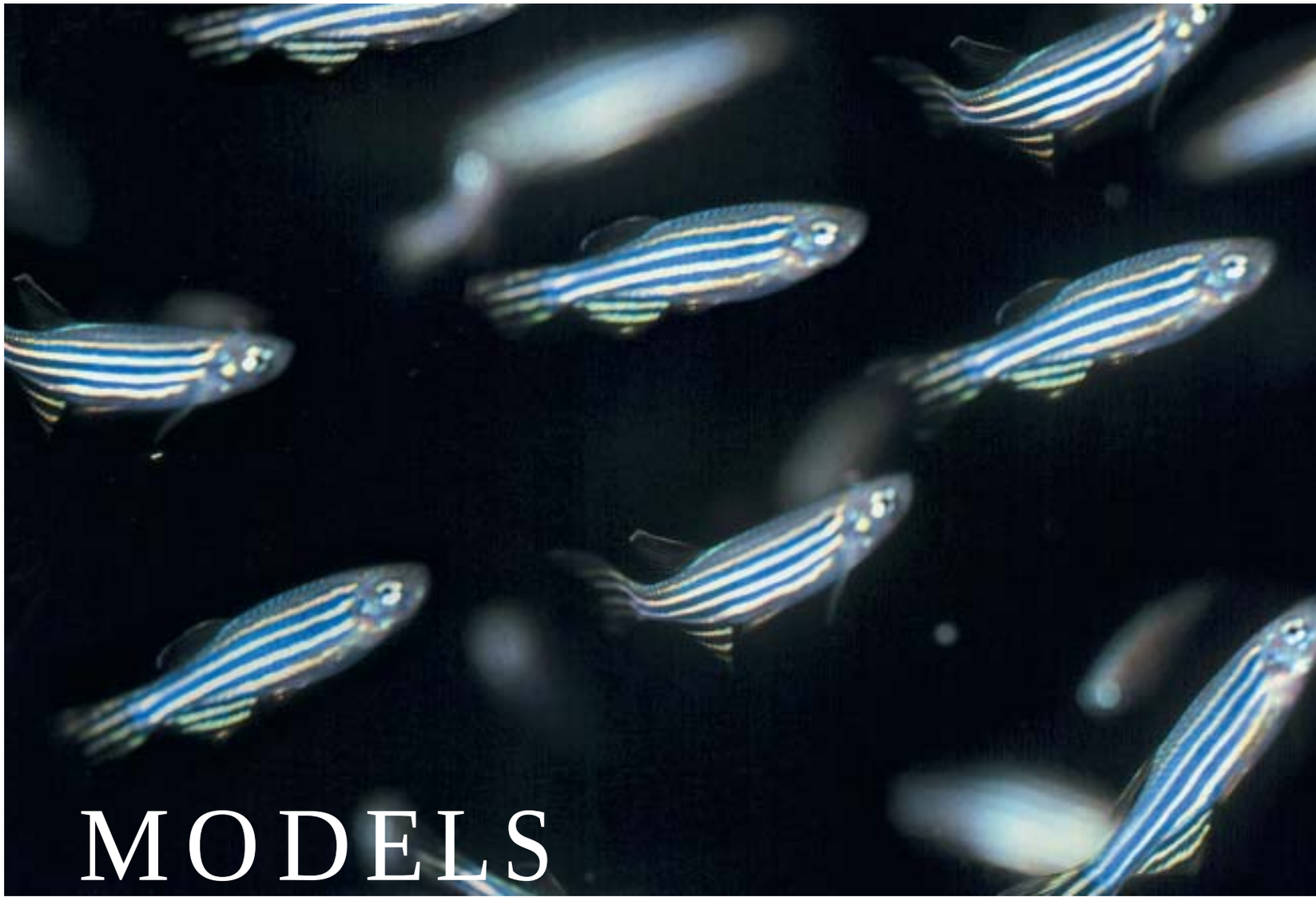
It didn't. Her conditioning paid off as she qualified in the 5K the next three years and in the 10K her junior and senior years.

Maybe the time is right for her bid for the US Trials and the US Olympic Team. She does have two years to prepare.

FLASHBACK

Hippocrates (400 B.C.E.) on "The Sacred Disease," believed today to be epilepsy:

"And the disease called the Sacred arises from causes as the others, namely, those things which enter and quit the body, such as cold, the sun, and the winds, which are ever changing and are never at rest. And these things are divine, so that there is no necessity for making a distinction, and holding this disease to be more divine than the others, but all are divine, and all human."

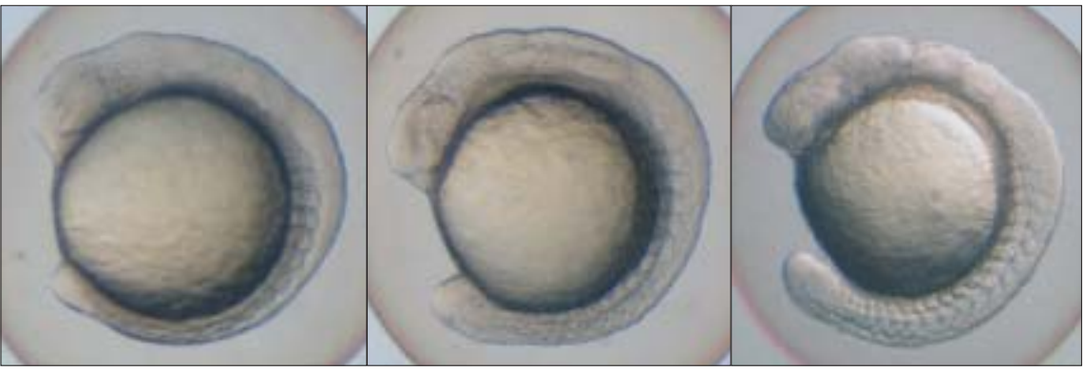


MODELS WITH GILLS

ZEBRA FISH DO SWIMMINGLY | BY DOTTIE HORN

After the first flickers of light, the courtship begins. Two zebra fish swim in still water. The male nudges the female. She emits her eggs, a few at a time, each visible to the naked eye. The male follows the female, exuding invisible sperm. In the wild, the fish usually turn around and eat their would-be progeny. In the lab, the descending eggs pass through a screen to safety.

It is a ritual soon to become commonplace at the School of Medicine. And, to many scientists, all those new zebra fish may be the best thing since sliced fruit flies.



LEFT, ABOVE: COURTESY BAHARY

The zebra fish's transparent and quickly developing embryo has caught scientists' attention. ABOVE: Every 40 minutes or so, these zebra fish embryos grow another somite—which later develops into a single vertebra and its associated muscle. Look closely in the images and you can count the individual somites. In the first picture, about 13 hours after fertilization of the egg, the embryo has 10 somites. About two-and-a-half hours later, it has 14; in just another two-and-a-half hours, it has 18. The embryo is curled around a large round yolk sac, which contains enough food for its first five days of life.

Nathan Bahary and Neil Hukriede, assistant professors of molecular genetics and biochemistry, have joined the faculty at the University of Pittsburgh and will oversee Pitt's first large-scale zebra fish facility. (The researchers recently completed postdocs at Harvard University and the National Institutes of Health, respectively.) When the facility's construction is complete, a handful of rooms located in the Biomedical Science Tower will house about 2,500 tanks and 35,000 fish.

The zebra fish, a relatively new animal model first used in the mid-1980s, has become increasingly popular in laboratories. In 2005, it will become the third vertebrate to have its genome completely sequenced, joining the human and the mouse. Because it's a vertebrate, the fish shares more genetic similarities with us than the fruit fly, a longtime reigning lab model.

Why are scientists, particularly those studying how organisms develop, so taken with the zebra fish? In fish, the embryo grows outside the mother's body—and in zebra fish, the embryo and its egg sac are transparent. Those accessible, optically clear embryos are a boon. "You can literally watch the heart start beating or the brain start to grow," says Bahary. Zebra fish also develop quickly. In the first 24 hours of life, a single cell becomes an embryo with a tail, heart, blood vessels, circulating blood, and a brain. By its third day, the fish has a complete digestive system and can eat—a level of development that takes 30 days in the mouse. Another advantage: You can house about 50,000 zebra fish in the space it would take to accommodate a few hundred mice.

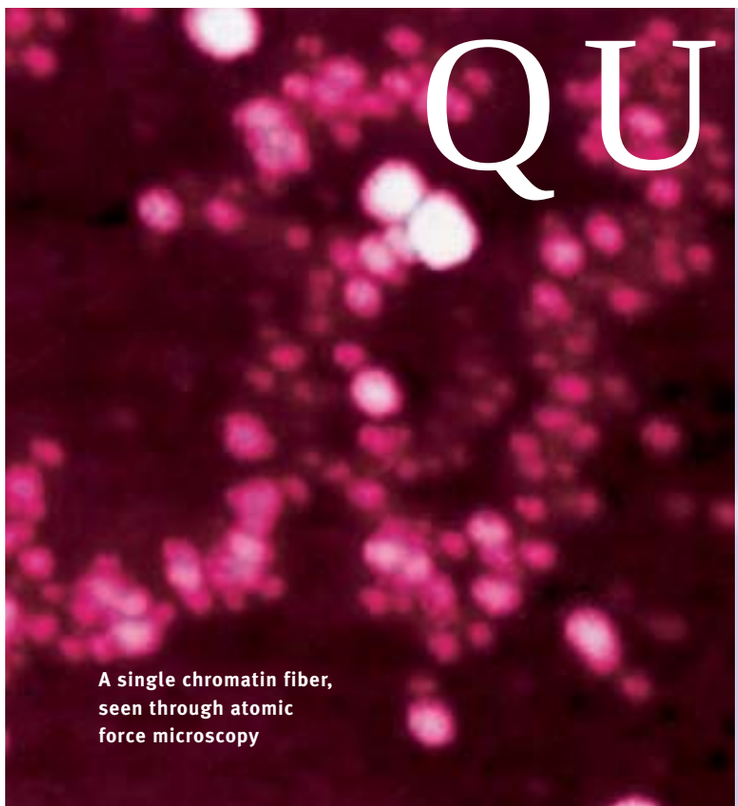
Perhaps most importantly, zebra fish allow scientists to do research that would be difficult in some species. In one study, the male zebra fish is soaked in ethylnitrosourea before it is bred; the chemical induces mutations in its DNA. By breeding its offspring with each other, scientists generate slews of fish with random single mutations. In one, the brain may be malformed; in another, the heart. "You can find many different mutations involving pretty much any organ system that you want," says Bahary.

Some of the embryos are so deformed they will survive only a day or two, but while they live, researchers can watch as development goes awry. Scientists can take DNA from a mutated fish—say, one that has an abnormal liver—and find the gene responsible for the malformation. They then can look to see if the same gene is found in humans—and it usually is. The next step: Find out if the gene is mutated in people who have a disease affecting the organ system in question. Through such tests, zebra fish are helping researchers identify genes involved in human disease.

Hukriede uses zebra fish to study how kidneys develop. Bahary was drawn to the model in the hope that new cancer treatments might emerge from studying it. The oncologist examines the development of blood and the gut. He has a mutant zebra fish that is bloodless and is working to clone the gene, named cloche, responsible for the mutation.

"If we can figure out how organs normally form," says Bahary, "we'll be able to then find targets for therapies in humans." ■

COURTESY LEUBA



A single chromatin fiber, seen through atomic force microscopy

QUIET TIME

TUCKING IN DNA | BY ERICA LLOYD

On one of Oregon's many damp January days, Sanford Leuba found himself under his Chevette, not an odd place to find him during those graduate student years. Leuba was in the midst of changing his clutch plate and at a particularly tricky point. He lay on his back with the transmission resting on his chest, attempting to slide a piece back into a pilot bearing on the flywheel, but he couldn't feel where the pilot bearing was. After hours in that position,

searching millimeter by millimeter of a Chevrolet void—*slip*, the piece fell into place. Now, in Leuba's heart of hearts he knew a few things: 1) If he dared to do anything but attach the needed bolt right then and there, his chances of locating the pilot bearing again at that point were infinitesimal. 2) He really should be spending more time on his PhD and less under cars. 3) If he could change a clutch plate in a Chevy, he could do just about anything.

He handily finished the clutch-plate job and, eventually, his PhD in biochemistry and biophysics at Oregon State University (OSU) in Corvallis. Thereafter, Leuba would become known for some highly sophisticated tinkering, most notably, his dexterity with new tools that are teasing apart our understanding of biology at the nanometer level.

In popular media, DNA is represented as a telltale double-helix figure, standing alone. But if you were to look at the molecule in a human cell, you would find it wrapped around thousands of histones and other proteins that coil and bind the 2-meter-long strand so that it fits into the cell nucleus. "Our DNA is not naked," Leuba asserts.

This complex that surrounds all nonbacterial DNA—known as chromatin—is more than packaging. It plays a role in DNA transcription, replication, and repair.

"We're realizing that all of the biological processes that deal with DNA have to occur within the context of chromatin," says Leuba, now an assistant professor of cell biology and physiology at the University of Pittsburgh. One of chromatin's key jobs seems to be keeping DNA "quiet" by keeping the molecule tucked in, so to speak. "Most genes in your cells are turned off," says Leuba. "You want that. Aberrant processes are typically cancerous."

Chromatin activity, or lack thereof, already has been linked to ovarian, cervical, and colon cancers, to leukemia—the list is broad. In fact, if you type "chromatin and cancer" into the National Library of Medicine's online literature search engine, you'll get more than 5,000 hits.

Still, Leuba points out, "Little is known about how [DNA] processes occur within a chromatin template." For example, modifications to histones are likely to play important roles; but researchers, for the most part, tend to study chromatin by looking at batches of DNA, rather than just one molecule at a time. That tells you little about what an individual histone might be up to. Such approaches aren't very satisfying to Leuba. Ken van Holde, Leuba's mentor at OSU and author of *Chromatin* (known to some as "The Green Bible"), remembers his student being an "instigator," pushing the lab to apply atomic force microscopy, a single molecule technology, to chromatin studies.

"It became clear that Sanford was comfortable with new technologies; they didn't intimidate him in any way," says van Holde. ("I have no fear," admits Leuba.) The esteemed OSU professor says he himself might have shied away from trying the new tool at first; instead, his group soon became known for showing the world that one can, indeed, examine chromatin molecule by molecule.

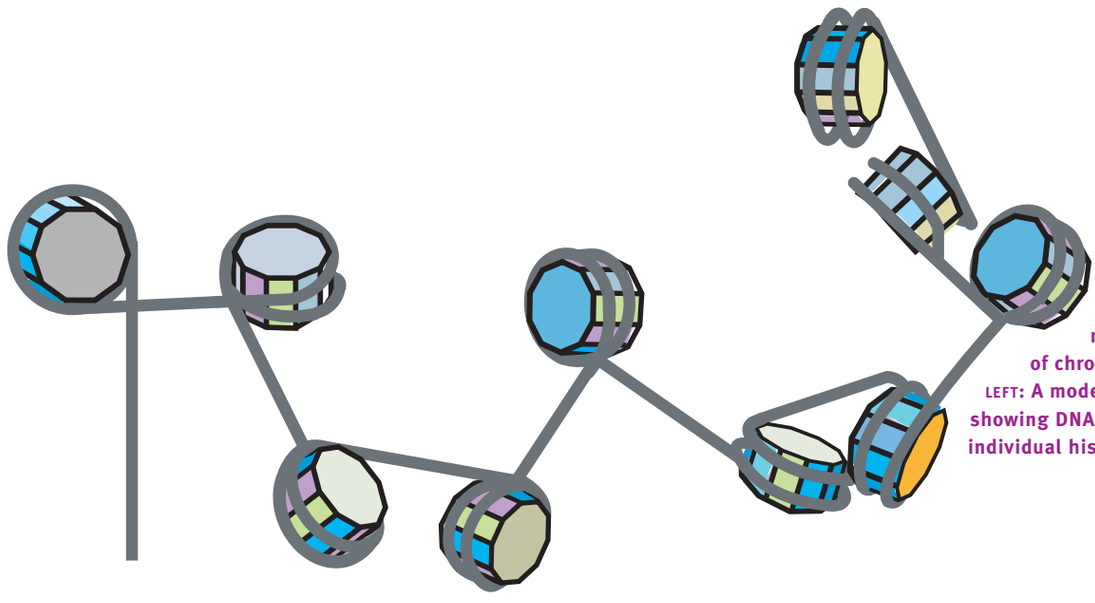
Two years ago, as a National Cancer Institute scholar, Leuba went on to unravel chromatin. Literally.

With Dutch collaborators, he tethered a tiny polystyrene bead to each end of a strand of bare DNA and then bathed the strand in a flow of frog-egg extract. By holding one bead in place (with suction from a pipette), the group could record the change in the length of the strand as the flow passed through. What they saw made sense: The strand shortened—the DNA appeared to bind to proteins and further coil and compress itself into a size that could squeeze into a cell nucleus. They had, in effect, assembled a chromatin fiber.

After that, they held the free-floating bead with "laser tweezers," which would allow them to measure any change in force precisely. Then they pulled on the other bead, very carefully. The amount of force needed to unravel the fiber increased and gave slack suddenly, in increments of about 65 nanometers. That was a magic number to Leuba and associates. Why? Nucleosomes, which can be thought of as popcorn balls of histones (eight of the proteins bunched together make up a nucleosome) are understood to occur about every 200 DNA base pairs, which translates to 60-some nanometers. Leuba and colleagues had managed to tease apart a key structural component of chromatin, at the same time recording the biological forces that held it in place.

"It was beyond any result we'd hoped to see," Leuba says, happily. ■

FOR MORE INFORMATION:
cbpmedia.cbp.pitt.edu/leuba/leuba.html



M. KARYMOV AND C. H. ROBERT, RENDERED BY LOTENERO

A 2-meter-long strand of human DNA fits into a cell nucleus with the help of chromatin.
LEFT: A model chromatin fiber showing DNA coiling around individual histones (colored discs)



DIGITAL VISION

CRASH TESTS

MANY HIGH SCHOOL ATHLETES SUFFER CONCUSSIONS—WHAT'S THE LONG-TERM DAMAGE? | **BY TRINA WOOD**

Coaches and trainers rush across the football field toward the teenager lying motionless on the grass. Seconds before, he had been flying through the air after a leather ball. Then came the big crash into another body jostling for the coveted prize. With no sign of consciousness from the high-school athlete, a coach calls for the medical emergency helicopter.

The young man's brain had rocked back and forth inside his skull—he'd suffered a concussion. He was in danger of experiencing confusion, disorientation, dizziness, and amnesia. If his case proved to be particularly severe, he might end up with brain swelling or cell or blood vessel damage. His crash could even prove fatal.

Approximately 10 percent of high-school athletes in contact sports such as football and hockey experience concussions each season, says Mark Lovell, a PhD, assistant professor of orthopaedic surgery at the University of Pittsburgh, and director of the UPMC Center for Sports Medicine Concussion Program.

"Teens are the largest group of at-risk athletes," Lovell says. "Given that their brains are still developing, we think it is particularly important to protect their health."

About five years ago, Lovell, then in Detroit, began collaborating with Joseph Maroon, Pitt clinical professor of neurological surgery, to develop a computerized version of ImPACT (Immediate Post-concussion Assessment and Cognitive Testing)—a test used to evaluate concussions. The new ImPACT is a 25-minute assessment that measures brain processing and speed, memory, and visual motor skills.

Seventy high schools in the Pittsburgh area and more than 100 college and professional sports teams now use the program to monitor their players. At the beginning of the season, team athletic trainers and physicians collect and store baseline ImPACT data on athletes' neurocognitive functions. If an athlete experiences a concussion during the season, he or she can be retested to help physicians assess a concussion's severity and determine when and if an athlete should return to contact sports.

Animal studies conducted at the University of California–Los Angeles have shown that, until the brain returns to normal following a concussion, there is an increased risk and vulnerability to another injury.

"We want to make sure we're not putting people back into play when they're in that vulnerable period," says Lovell.

Pitt recently received $2.8 million in funding from the National Institutes of Health to conduct a five-year study using functional MRI (fMRI) on 250 high school athletes from western Pennsylvania schools. Study participants are athletes who've taken a baseline ImPACT test and then suffer a concussion during the season. If an ImPACT conducted within 72 hours of the injury indicates decreased neurocognitive function, the teen is sent to Pitt's Center for Sports Medicine for an fMRI.

Michael Collins, an instructor of orthopaedic surgery and PhD psychologist, explains that during the fMRI, researchers re-administer part of the ImPACT. Each question measures an aspect of brain function that is vulnerable to concussion. During the fMRI, researchers can spot irregularities in patterns of brain activation.

"When we use specific parts of our brain—for example, to talk, remember, or to think—there are measurable changes in brain chemistry and blood flow," Lovell says. "Using the fMRI, we can measure those changes and link the athlete's performance on ImPACT to what is actually happening in the brain." Preliminary results show increased metabolic activity in the cerebellum in those suffering from a concussion (even if the impact was to another brain area).

Are males or females more vulnerable to concussions? Do concussions make a person more vulnerable to dementia later in life? Those who lose consciousness or have amnesia due to a concussion—is their outcome likely to be worse? Lovell and Collins will use the data collected on local high-school athletes as they consider these and other questions. The answers, they hope, will translate into better care for athletes—especially teens.

Fortunately, the high-school football player who was flown off the field to an emergency room demonstrated no neurocognitive damage 10 days after his injury. This was his first concussion, and, after a period of rest, he was cleared to return to the field. ■



THE SANDMAN'S VISITS HAVE A LOT TO DO WITH OUR MENTAL HEALTH | BY DAVID R. ELTZ

MORE THAN A GOOD SNOOZE

Plato believed that vapors, rising from the stomach during digestion, gathered at the base of the brain, blocked its pores, and cut the brain off from the body to induce sleep. The process is a little more complicated than what Plato described 2,400 years ago, but, in some ways, he wasn't all that wrong.

The onset of the sleep process indeed seems to be the gathering of *something*—perhaps a substance like the neurochemical adenosine building up in our basal forebrain during the day while our body's natural, 24-hour clock cycles toward sleep. The two processes may or may not combine to flip an elusive "sleep switch" in our hypothalamus; no one can quite say for sure—yet. What is known: Sleep is crucial for our physiological and

ILLUSTRATION | DAVID POHL
PORTRAIT PHOTOGRAPHY | TOM ALTANY

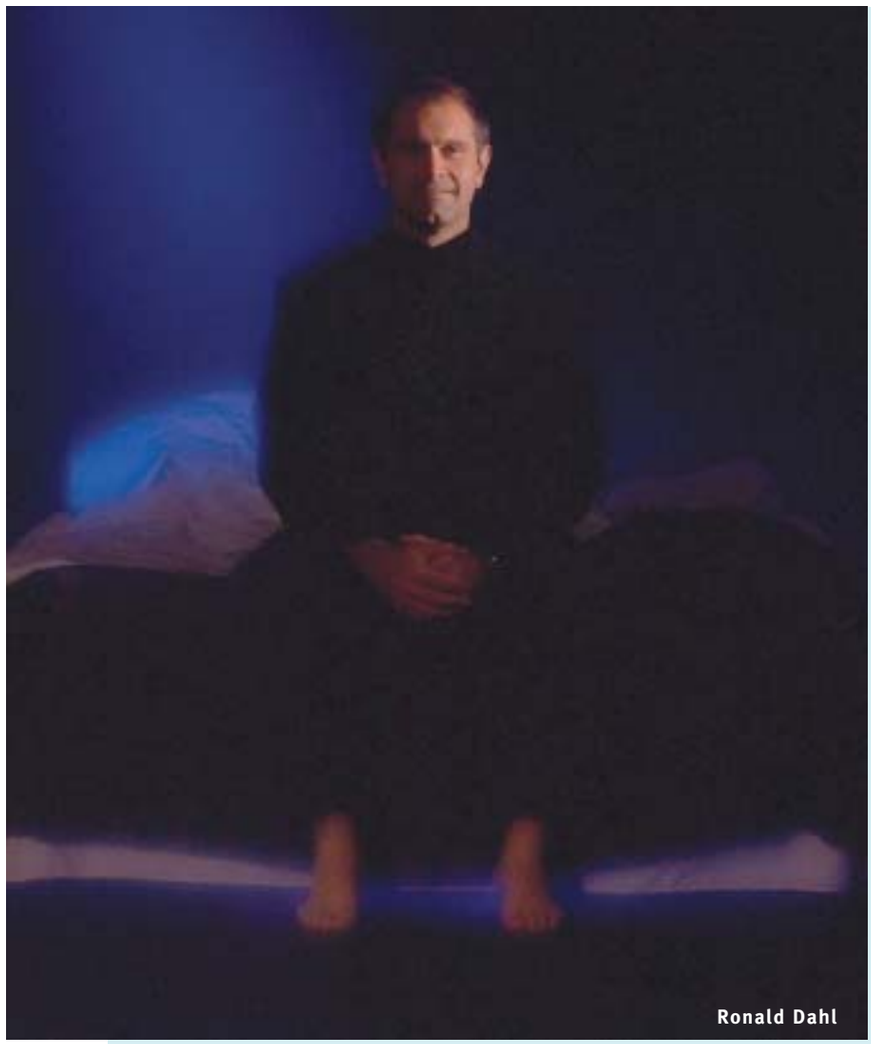
mental restoration and for strong memory. It keeps emotional outbursts in check, our immune systems humming, our motivation replenished.

Human beings maintain a curious relationship with sleep, an intimacy beyond physiological necessity. When we sleep well, we are more likely to accomplish, to thrive. Yet sometimes we cheat sleep, pushing the limits of endurance to carve more from life; a drug named modafinil can keep one awake for nearly two days without bringing on physiological mutiny. When our courtship with sleep goes unrequited, pharmaceutical interferences aside, we complain of sluggishness, we lack focus. To recover, we might even visit the Web's sleep chat rooms, sleep services, sleep seminars, and sleep malls. We take power naps and sleep in on weekends.

We organize around sleep. Governments place sleep requirements on airline pilots and truckers (yet, interestingly, not on doctors and politicians). In November, the National Science Foundation hosted a Drowsy Driving Summit in Washington, DC, for good reason: The National Highway Traffic Safety Administration estimates that driver fatigue causes 100,000 crashes annually, translating into 1,550 deaths and 71,000 injuries.

In 1910, Americans averaged nine hours of sleep a night; today, we're lucky if we get seven. The National Institutes of Health (NIH) reports that 70 million Americans suffer from sleep problems, 60 percent of them from chronic disorders, adding $15.9 billion annually to the cost of health care. The NIH believes sleeplessness is so pervasive, the agency is attempting to educate children about the importance of adequate sleep, enlisting the cartoon tomcat Garfield on a "Star Sleeper" mission online.

At the University of Pittsburgh, for the better part of 30 years, scientists at Western Psychiatric Institute and Clinic (WPIC) have disassembled and reassembled the workings of sleep, offering insight into adolescent mood swings, circadian rhythms, and then some. Their hallmark, though, has been giving wake-up calls on sleep's relationship to depression. What they've found gives credence to the Welsh proverb, "Disease and sleep keep far apart."



Ronald Dahl

EMOTIONAL RESCUE

Alum Ronald E. Dahl (MD '84) began his research in the early 1980s during medical school under, among others, David J. Kupfer, chair of psychiatry. (By then, Kupfer had put WPIC on the sleep-research map with discoveries like the finding that depressed people slip into REM sleep about 20 minutes sooner than those who aren't depressed.)

But Dahl was interested in the circadian rhythms of beta-endorphin, an opiate-like peptide that increases pain thresholds. He found sleep to be "this messy thing on this beautiful side of the

rhythms of hormones." Yet Dahl had a notion that this messiness played a role in the development of regulatory systems, including the regulation of emotions. Soon he was asking, *What is this sleep stuff?*

"We had *no idea* what the purpose of sleep was," Dahl says, holding out both his palms with typical dramatic emphasis.

After heading to Duke University for his pediatric residency, Dahl returned to Pitt in 1987. He spent the next 10 years looking at sleep in relation to depression, à la Kupfer. Dahl's research, which focuses on children and adolescents, has shown that, in youth, sleep problems are strongly linked to emotional and behavioral problems. His questions focused increasingly on changes to sleep and emotions that are tied to puberty.

From his early work, Dahl, today the director of the child and adolescent sleep laboratory at WPIC, knew that people who slept fewer hours than they needed had difficulty regulating their emotions. "This system that controls the level of arousal for emotions and the system that controls the level of arousal related to sleep regulation share some of the same machinery in the brain," Dahl says.

Hints about what's happening in that machinery and how to understand depression, in particular, appear during adolescence. Teenagers' bodies are flooded with hormones. Their biological tendency is to stay awake later and rise later. Social pressures also mount. They stay up to chat with friends on the Internet but still need to be up at, perhaps, 5 a.m. for school. They require some nine hours of sleep a night but are running on six. They become sleep deprived. Their moods, already in flux, arc wildly. Sleep deprivation impairs their ability to curb behavior to meet social situations, to focus on music and other interests. They are tired and touchy.

"Most adolescents get by," Dahl says. "Particularly if they're smart, have social support, or push themselves. But for some, the burden of sleep deprivation tips the balance the wrong way. Kids who have trouble regulating their emotions may be especially vulnerable."

In one study (*NeuroReport*, January 5, 1998), Dahl and Mark Redfern, a Pitt professor of bioengineering, otolaryngology, and rehabilitation science, examined the effects of sleep deprivation on postural balance. The researchers asked sleepy teens to stand on a platform that measured how much they swayed back and forth, even when they thought they were standing still. When the teens performed a single task—i.e., reacting as quickly as possible to a light—no problem. But when they needed to do a more difficult task, one that required judgment, their balance became unstable. (When the teens had plenty of sleep, however, they were able to keep their balance during the difficult task.) The results parallel studies showing that sleep deprivation can interfere when people balance challenging mental and emotional tasks. In other words, the results mirror what's going on in a teen's life, according to Dahl. Teens cope with intensely competing social and emotional tasks every day. Throw in sleep loss, and, says Dahl, "you couldn't design a more powerful way to destabilize the system."



Eric Nofzinger

DREAM WEAVING

In many ways, Eric Nofzinger (Fel '93, Res '91) began his career as a dream chaser. As a psychology major in the early 1980s at Miami University of Ohio, Nofzinger made a connection one day: Delusions, of grandeur, of being chased—the typical manifestations of schizophrenia—are also the occasional narratives of dreams. That seemingly strange relationship set Nofzinger, an associate professor of psychiatry, on a journey to see what was happening inside the brain during sleep. About six years ago, he had his first look—one of the very first neurobiological elucidations of sleep.

Naturally, Nofzinger started with dreams. Previous studies combining patient observation with the electroencephalogram (EEG), until about a decade ago the only scientific measure of sleep activity, indicated that the sleep of depressed people was disturbed during REM sleep, when dreams typically occur. But in the early 1990s, Pitt invested in new types of imaging, particularly positron emission tomography (PET), a technique that illuminates brain function through the injection of radioactive nuclides. Nofzinger knew from animal studies that REM sleep activated the limbic system, the "emotional brain," one of the places in the human brain thought to be affected by depression. He was able to develop a technique in which a tagged glucose nuclide revealed what happened in the limbic system as people slept.

By 1997, Nofzinger was making public one of the first reports indicating that, in healthy individuals, the limbic system was active during REM sleep, *but not in depressed people*. The sleep disturbances and lack of neurological activity in those who are depressed, Nofzinger concluded, are due to a change in function in the frontal cortex—the area of the brain from which we get our focus and

Nofzinger was making public one of the first reports indicating that, in healthy individuals, the limbic system was active during REM sleep, *but not in depressed people.*

motivation. The findings seemed to confirm what clinical observation had long led psychiatrists to believe: Depressed people lose motivation and can't regulate their emotions because their brains aren't functioning properly.

Nofzinger has since been thinking about not only identifying where brain abnormalities occur, but also targeting treatments. In one study, he has shown that the drug sustained-release bupropion restores function to the limbic system of some depressed people [*Psychiatry Research: Neuroimaging*, 2001, 106 (2)].

"In future studies we want to look at, for instance, 'Does psychotherapy do the same thing, or is this simply a neurochemical imbalance?'" Nofzinger says, gazing out the window of his office in WPIC at the unfolding urban landscape of Oakland. "It's very intriguing to think that, just by talking with somebody, you can change the underlying structure and function of the brain."



Martica Hall

DORMEZ-VOUS?

It was early 1998, and Martica Hall was receiving attention from the press about her work. She'd published a study indicating that disrupted sleep weakened the immune systems of elderly widows and widowers. This was the first direct evidence associating sleep disruptions with the stress-immune relationship in humans. The new faculty member at WPIC was about to be interviewed for a Pittsburgh evening news show. The office joke that day was that, with Pope John Paul II making a historic visit to Cuba, something would happen to bury Hall's work. "Monica Lewinsky happened," Hall says, laughing.

She made the news for about three seconds that night, but has done much since then to spread the word to scientists about the relationship between stress and sleep loss. When Hall, an assistant professor of psychiatry, came to Pitt in 1995 to complete a PhD in biopsychology, sleep researchers rarely asked subjects what was happening in their lives and how they felt about it. Now it's routine to use stress measures in such studies at the University.

Hall prefers to study people in their natural environments—their homes. Sleep labs tend to be alien to a study participant's experience. There are no family distractions. Room temperature is constant. "It's actually like a vacation," Hall says. "We have a VCR. People read books. The lab is sterile. It is not reality."

As the principal investigator of the Pittsburgh portion of a four-center study funded by NIH, she is looking at the relationship between sleep and menopause. The study will measure sleep and stress in 430 black, white, and Chinese-American women at the onset of menopause. "We'll be able to look at their sleep across their cycles as they approach menopause," Hall says.

A separate and recent pilot study Hall conducted with caregivers of men with Alzheimer's disease showed the caregivers (who were women) took a half-hour longer than normal to fall asleep and were awake more often throughout the night. Hall gave the women speed-dial telephones with programmed support numbers, taught them muscle relaxation and visualization, and encouraged them to establish strict sleep schedules. The women, as a result, took less time falling asleep, slept longer, and doubled their amount of delta wave, or deep, sleep (the physiologically restorative part of snoozing). Hall now awaits funding for a larger study. The best news: The pilot study results tell her that stress-related sleep disturbances are likely treatable.

FASCINATING RHYTHMS

Daniel J. Buysse (Fel ’89, Res ’87) remembers a conversation that changed the course of his career. One day in the late ’80s, when he was a senior psychiatry resident at WPIC, he was talking with David Jarrett, a former faculty member in the Department of Psychiatry. Jarrett was elucidating circadian rhythms—the machinery of the human biological clock.

“It was this entire aspect of human biology that was never discussed in medical school,” Buysse says. “To think that there was this time dimension to our biology in our mental processes was just cool.”

The past president of the American Academy of Sleep Medicine, Buysse has spent 15 years tracking biological rhythms in sleep, especially in older adults. His work has shown that young adults have a much stronger circadian drive to fall asleep at night than do older people. Yet older people typically go to bed earlier than their younger counterparts.

Using EEG, Buysse has been able to demonstrate that both adults who are younger (20- to 30-year-olds) and adults who are older (people who are 70 and up) experience the same rhythmic patterns in their brain throughout the night. Somewhere between 3 and 5 a.m., adults in both age groups fall asleep fastest. As we age though, the intensity of the circadian patterns during sleep decreases, probably because the function in the areas of the brain thought to be associated with that phantom sleep switch deteriorates from cell loss. Many older adults still arrive at what Buysse calls the “sweet spot” of sleep in the early morning hours, but their sleep until then is restless, interrupted.

They may be able to alleviate the problem. In his studies, Buysse has older adults turn in for the night later than they usually would. His results show the revised bedtime schedule produces more effective sleep.

To Buysse, the idea that people could improve their sleep efficiency seemed important also in combating insomnia. The disorder, loosely defined as difficulty falling or staying asleep, affects some 10 percent of Americans. Buysse has discovered that insomnia is one of the first symptoms of depression, particularly in people who suffer from recurring depression. The finding could have major public health ramifications.

“If it turns out that identifying insomnia and treating it prevents even a portion of the cases that might have gone into depression, you’ve really reduced human suffering, and you’ve reduced health care costs substantially,” says Buysse.

Soon, Buysse, who sometimes has study participants carry PDAs so they can keep sleep diaries, will begin visiting primary care offices throughout Pittsburgh as part of a new study. He’ll be asking elderly patients to stay awake longer before trying to fall asleep, and to record the results.

He also has begun PET studies to test his hypothesis that insomnia is a disease of overarousal, in which brain activity refuses to decrease with the onset of sleep, an aberration in the rhythms of sleep.

If Plato only knew. ■



Daniel Buysse

“To think that there was this time dimension to our biology in our mental processes was just cool.”


SHUMAN

THE SPECTER OF MENTAL ILLNESS LOOMS OVER JUVENILE DETENTION | BY JOSIE FISHER

ELEPHANTS IN THE COURTROOM



Studies undertaken by Elizabeth Cauffman (left) may be an important step in getting delinquent kids and their wards the help they need.

"I go into this kid jail. The last stop for delinquent adolescent girls in the California Youth Authority. In walks this very sweet-looking girl. 'What the %&*# do you want?' she says to me. 'I'm not answering your %&*#$@# questions.' Finally she warmed up; after I told her she didn't need to answer my questions and was free to go, she decided to participate. I asked her if she'd ever experienced any trauma. 'No, no, no.' I asked her, 'So nothing bad ever happened to you?' She says, 'Oh, I was gang-raped by some boys in a field when I was 9.' Now she acts out when the grass is cut. Classic signs of post-traumatic stress disorder—the smell of grass is the trigger. So this attractive girl likes to hang out outside Arby's and catch a ride with a boy, then sticks an ice pick into his neck, forces him out, and steals the car.

PHOTOGRAPHY | CAMI MESA



Shuman Juvenile Detention Center has been swamped with mentally ill kids who've offended their way into the justice system.

"Yes, her behavior is inexcusable," continues Elizabeth Cauffman, Western Psychiatric Institute and Clinic (WPIC) researcher and assistant professor in the Law and Psychiatry Research Program within the Department of Psychiatry at the University of Pittsburgh. "But if we only treat her aggression, without understanding what's underlying it, she will be released without the skills and tools to handle life."

Cauffman lays out the facts in a soft, high-pitched voice. Petite and pretty, she doesn't strike you as someone who would sally into secure confinement to chat up violent offenders. Yet that's the kind of tête-à-tête on which this developmental psychologist cut her teeth before joining the faculty at Pitt in 1998. Cauffman interviewed the worst behaved of California's delinquent girls for her postdoctoral fellowship with Stanford University's Center on Adolescence; her work revealed poignant factors accompanying the girls' delinquency.

At the outset of the study, Cauffman had taken a preliminary look at the girls' mental health symptomatology. Alarmed, she told Youth Authority staff, *Hey, your girls have got real problems*. "They looked at me like I had two heads," says Cauffman. "They'd always known that." The 1998 study put the problem in stark relief. More than 70 percent of the 96 female juvenile offenders interviewed had been badly hurt or raped, witnessed another person being severely injured or killed, or said they'd lived in constant physical danger. Many exhibited symptoms of post-traumatic stress disorder (PTSD). The data prompted the Youth Authority to screen girls for PTSD and to offer survivor support groups in its secure facility.

Cauffman says that quantifying what's obvious to staff does more than prompt internal modifications. Empirical data can translate the experience of those working on the front line with youth and, in some way, may give voice to the youth themselves—in a language policymakers and fund allocators can understand. In the juvenile justice system, says Cauffman, you make changes by showing hard data.

At Pitt, Cauffman continues to shine a resolute light into dark corners of the juvenile justice system, including the specter of mental illness that haunts more than 50 percent of kids in detention. (About 20 percent of kids in the larger population suffer from a mental illness.) As a member of the multidisciplinary John D. and Catherine T. MacArthur Foundation's Research Network on Adolescent Development and Juvenile Justice, Cauffman examines issues of youth culpability

and competence to stand trial, especially when preteens or teens are charged as adults in criminal court. In another MacArthur Network initiative, Cauffman shares coprincipal investigator duties with her old grad school adviser, Laurence Steinberg, professor of psychology at Temple University. Together with principal investigator Edward Mulvey, professor of psychiatry at Pitt, and a research team working in Pittsburgh, Philadelphia, and Arizona, they will follow felony youth offenders in the years approaching adulthood, hoping to identify the pathways that divert predisposed youth from joining the ranks of adult criminal offenders.

Cauffman made waves with the results of a two-year, 9,000-subject study, which she finalized in September, assessing mental health problems among youth in Pennsylvania's detention facilities and secure youth development centers (YDCs). She revealed that thousands of kids are floundering in detention with mental health scores off the deep end. *Pittsburgh Post-Gazette* reporter Steve Twedt profiled her work in a series addressing the plight of mentally ill youth in the justice system. Cauffman's data articulated a crisis, and Twedt's series took the issue public: Cauffman found that a startling 20 percent of boys and 33 percent of girls in the study have considered suicide. Further, 40 percent of boys and fully half of the girls exhibit thought disturbance, such as hearing voices no one else hears. One girl spent a day huddled under a blanket to avoid germs she believed were falling from the ceiling.

At Shuman Juvenile Detention Center in Pittsburgh, big glass panels flood the inside with light. Founding benefactor Anna Jane Shuman wanted kids to feel as though they were outside even though they were locked in. Shuman, one of Cauffman's sites for the Pennsylvania study and the largest facility in the state, is considered to be among the 10 most progressive detention centers in the country. Boys and girls are housed in small groups, with a staff ratio of one to six. They attend a fully operating school and have many programs available to them. But make no mistake, they're in a correctional facility. Staff members escort youth to meals and classes. Fights break out often and at random. Residents are youth at some point charged with a felony who are awaiting trial and youth who have been judged delinquent and are awaiting "disposition"—placement in a residential treatment center, drug and alcohol rehabilitation program, or secure lockup in one of the state's YDCs. For some time, it has been a loaded situation that hardly needed a last straw. Then, in the last several years, Pennsylvania, following a national trend, closed the adolescent wards of state mental hospitals. Shuman has since been swamped with admissions of mentally ill youth who've offended their way into the justice system.

"We were getting more and more kids who have major depression with psychosis or schizophrenia, and no help to go along with this," says Terri DeFazio, manager of health services at Shuman and a 20-year veteran staff member. Shuman had a terrible year in 2000. That October, Twedt reported, three residents tried to kill themselves in one day. One used a shoelace as a noose, another a bed sheet. The third banged her head against a wall and told the staff she wanted to die. Another day, four teenagers tried to commit suicide—one actually tried to flush his head down the toilet, and DeFazio found a girl with a wet sweat sock cinched around her neck so tightly her face was purple. "A psychotic boy tried to bite his veins open in front of us," says DeFazio. "We were screaming that we needed something for these kids."

A special meeting was called among representatives from the Allegheny County behavioral health office, juvenile court, and area mental health providers. Frantic for hard data to state her case, DeFazio sought out Cauffman. "Beth and I put our heads together," said DeFazio. "You know these kids are mentally ill, but how do you operationally define that? Dr. Cauffman came in one Saturday, and we gave every kid in detention the MAYSI." The MAYSI is the Massachusetts Youth Screening Instrument, a 52-question screening that flags youth with mental health symptoms or traumatic experiences that can be precursors to mental illness. "The MAYSI does not diagnose," says Cauffman. But the preponderance of suicidal thoughts and thought disturbance detected by the MAYSI was enough to astonish the assembled group, says DeFazio. "Beth's presentation at the meeting really moved the county." Before the presentation, Shuman had a psychiatrist on the grounds two days a week. Now it also has a full-time therapist and an on-call psychiatrist. A WPIC resident assists, and the center has access to a mobile mental health crisis team.

It's not enough. Each week, the therapist and psychiatrist assess 25 to 40 Shuman residents in response to suicidal comments, gestures, and self-injurious behavior.

Shuman has a high-impact unit for aggressive kids; it's separate from the rest of the population. Mentally ill kids seem to find their way in there, either by defending themselves from being picked on or acting out. And when a kid "goes off," staff members are trained to try to de-escalate the situation cognitively, to "talk them down."

More than 70 percent of the 96 female juvenile offenders interviewed had been badly hurt or raped, witnessed another person being severely injured or killed, or said they'd lived in constant physical danger.

"But with a mentally ill kid, you can cognitively try to de-escalate until you're blue in the face," says DeFazio. "The only restraint here is physical restraint. The mentally ill kid may need a change of medication, but the kid is not in a psychiatric setting."

Shuman and Pennsylvania are hardly anomalies. "This is a national phenomenon," says Cauffman, citing a recent study by Northwestern University Feinberg School of Medicine's Linda Teplin. Teplin reports that, excluding conduct disorder, which is highly common among detained youth, nearly 60 percent of males and more than two-thirds of females in a Chicago detention center met

diagnostic criteria for one or more psychiatric disorders.

In Pennsylvania, the privately owned residential treatment facilities that replaced state-funded hospital wards can refuse children they don't want. "A child can be mentally ill," says Cauffman, "but maybe his delinquency is too difficult for the facility to handle, so they deem him inappropriate for their program." Pennsylvania has no locked-door facility for mentally ill violent kids, and there's strong opposition in the state to establishing one, DeFazio points out. "People don't want to place sick kids in a locked facility." Ironically, these same kids remain in detention for five or six weeks because they're so difficult to place. Then the only option may be an out-of-state mental health lockup.

"People don't want to place sick kids in a locked facility." Ironically, these same kids remain in detention for five or six weeks because they're so difficult to place. Then the only option may be an out-of-state mental health lockup.

Largely in response to Cauffman's data, Pennsylvania counties have hired additional therapists, consulting psychologists, and mental health caseworkers for the detention population. Allegheny County created a walk-in crisis center for Shuman residents. The state's 13 YDCs have enacted a new policy: Teens whose MAYSI scores indicate mental health problems—currently 87 percent of boys and all girls—will undergo a psychological evaluation. "This is one of the most aggressive plans in the country," says Cauffman.

Traditionally, detention has been a boy's arena, but nationally, the percentage of girls in the population in juvenile detention has risen from 5 to 20 percent in recent years, according to Cauffman. And girls present the most alarming cases. Seriously delinquent girls in Cauffman's study surpass boys in levels of anger and irritability (leading to aggression) and in depression and thoughts of suicide. As with her California study, the MAYSI identified staggering numbers of girls who've survived traumatic episodes. "They already feel like they can't trust anyone," says DeFazio. "And here they're in a setting where paranoia is actually a healthy response. Well, when they're acting out, they're not taking any prisoners. It can take eight men [to restrain] one acting-out girl, because in her mind, she's going to do what she has to do."

Look at how girls typically act, says Cauffman, who is also conducting research focused on understanding the female offender. "Girls typically tend to internalize, whereas boys tend to externalize. So when a girl has reached this level of acting out, she's a very different type of girl."

The bottom line is that the system has little understanding of girls at any level of delinquency and little in the way of services available to them. Cauffman remembers her first encounters with girls in locked units. "Boys are fairly matter-of-fact about things. But the girls were so needy. They'd say, 'Come sit by me, let me do your hair.' The things these girls lived through. Frankly, I'm surprised they even walked or talked."

If you ask Cauffman about a TV news report on a group of kids in Pittsburgh who stalked and beat a man to death, she says, *Send them to me.*

"Where are these super predators? I can't find any for my study on juvenile psychopaths." As a researcher wading in issues of youth violence and criminality, Cauffman knows better than to deduce conclusions about youthful offenders based on the random, violent act that gets covered in the media. "That is not the norm," she says. "But it's interesting how policies are made in response to such an incident."

Throughout the past decade in the United States, "getting tough on crime" has included getting tough on juvenile offenders, says Cauffman. States have rolled back the age limit at which a child may be tried as an adult. In Michigan, the age is 14; in Vermont it's 10. The District of Columbia and 23 states, including Pennsylvania, have at least one provision on the books (in murder cases, for example) for transferring juveniles to a criminal court with *no* minimum age limit.

Adolescence as a developmental stage is accorded a certain plasticity of interpretation when placed in the context of the judicial system: It's a murky area. Cauffman's interest in juvenile justice began by addressing that plasticity as a PhD student working with Steinberg. "We were asking, 'Where do you draw the line on trying a juvenile as an adult? When do kids look developmentally the same as adults—emotionally and in decision making, not just in knowing right and wrong?'

"With youth, it's always the elephant in the courtroom." Cauffman draws this analogy from the Indian folktale about seven blind men, each of whom define an elephant by the one part of its body they've touched: One man feels the elephant's sturdy leg and says an elephant is like a tree. Another touches its trunk and says an elephant is like a snake. "With these kids, you only know one piece of it, and there's so much you don't know," she notes.

Cauffman admits to a chasm between her study subjects' experience and her own. "There are so many children affected by abuse, so many who live in decrepit housing with all manner of hardships, so many who've witnessed violent acts." When she worked as a counselor with kids in troubled communities, she would tell them, "I don't know how it is to live your life. You teach me.

"I took these kids on the Scared Straight tour of the jail, and I'm the only one who's scared straight!" she says. "They see someone there from their neighborhood, and they're like, 'Hey man, what's up? What are you doing here?'"

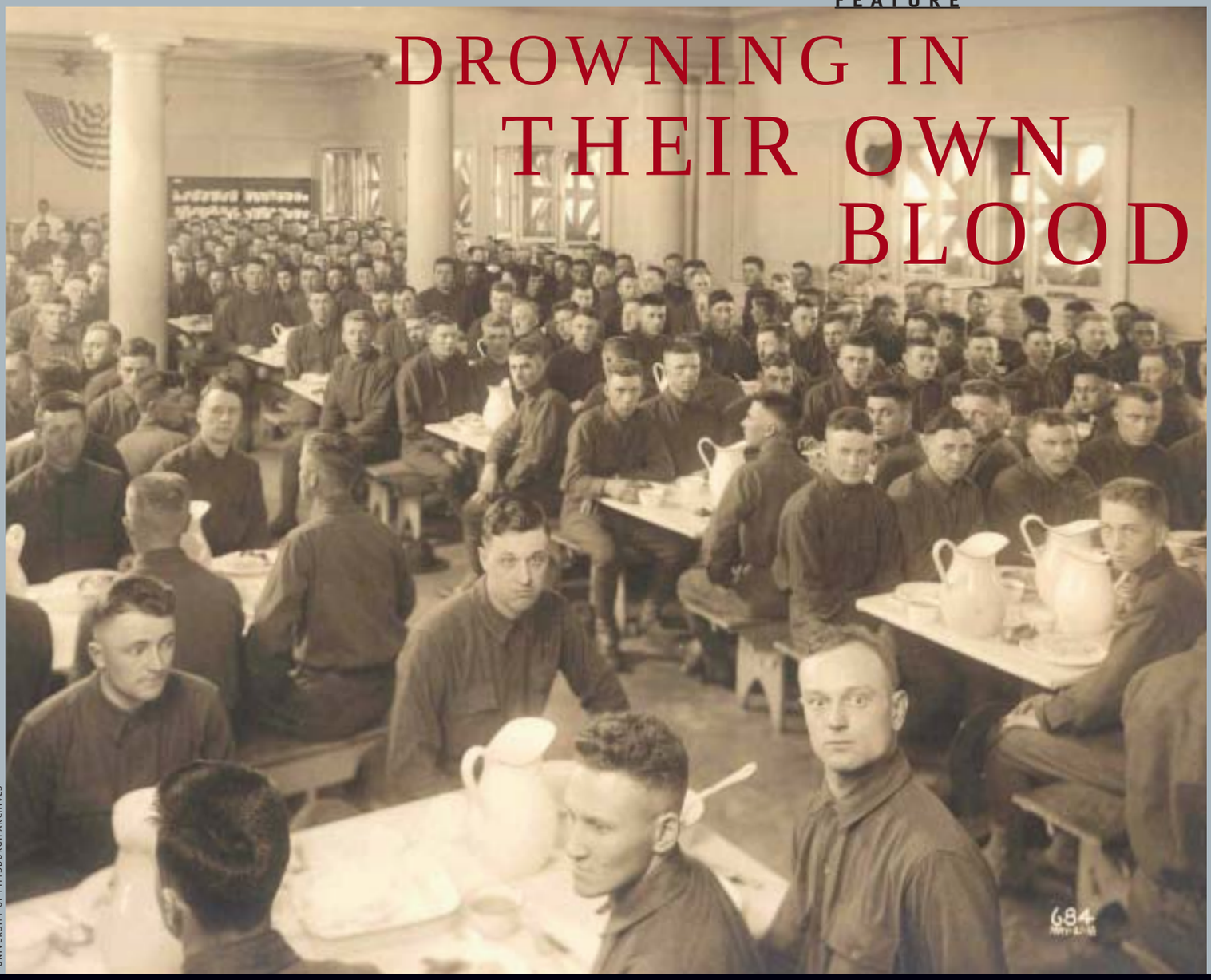
Trying to do research with this population has been an awakening, she notes: "We'll call up a parent to get consent to interview their child, and you hear, 'Hold on.' Then it takes a really long time for the parent to come to the phone because it's actually a neighbor's phone and the neighbor had to go get [the parent]. The family doesn't have a phone."

Through her undergrad years, Cauffman planned on being a clinician. During grad school, a stint as a counselor at a shelter in New Jersey changed all that, after an 8-year-old girl recanted her story of sexual abuse. With no other proof to hold the child, Cauffman was forced to sign her back over to her alleged abuser father. "That day, I decided I would be a researcher," says Cauffman.

"I have the most tremendous admiration for the people who work with children every day, but I could not do it.

"In academics, the level of detachment is much greater. But I also learned so much from the children at the shelter. Wonderful, positive things. I've met incredible kids over the years. It has made me realize how powerful children's voices can be in teaching us." ■

DROWNING IN THEIR OWN BLOOD



UNIVERSITY OF PITTSBURGH ARCHIVES

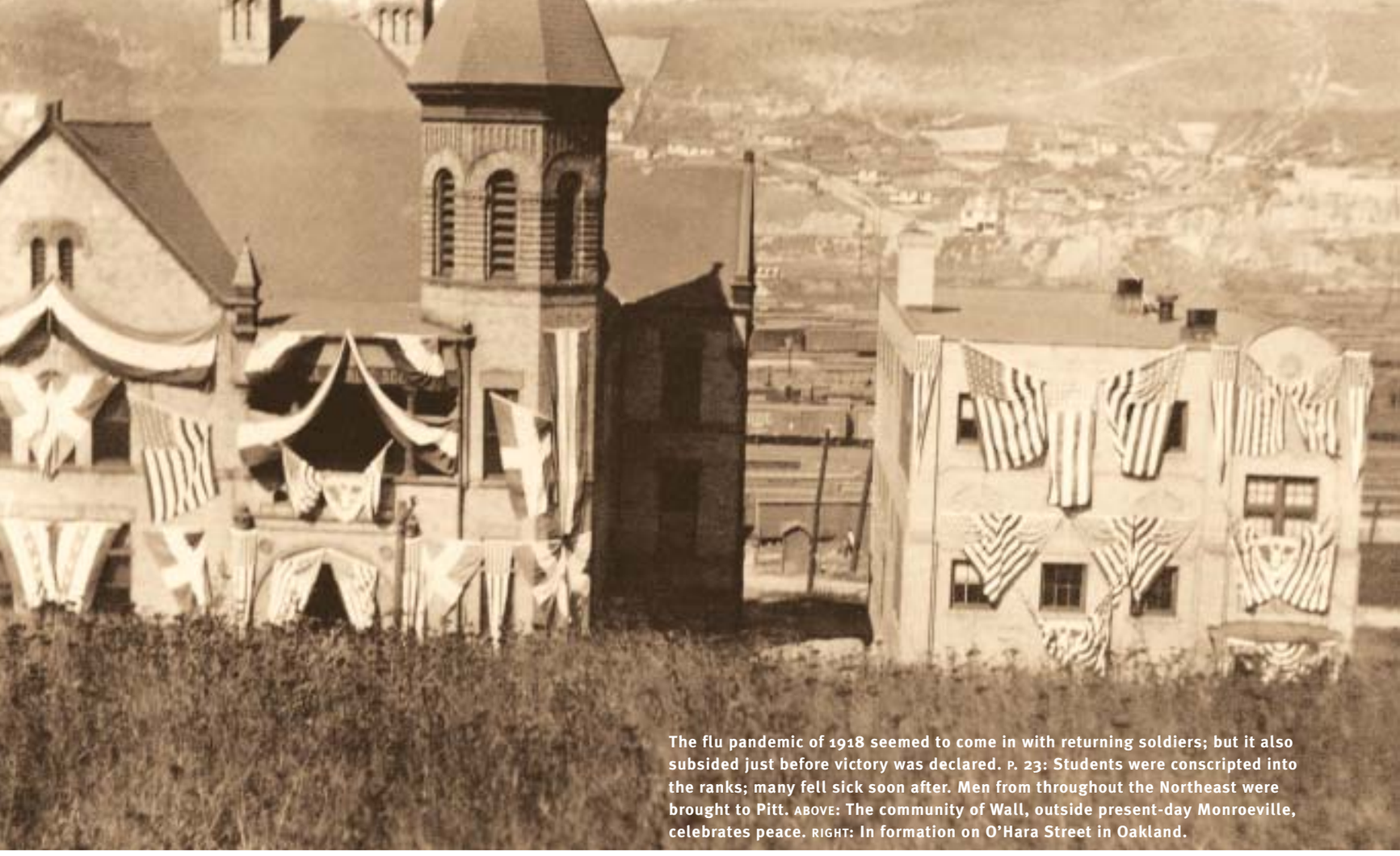
IT WAS FUNERALS ALL DAY AND AMBULANCES ALL NIGHT

BY EDWIN KIESTER JR.

The student body was the very picture of robust good health in mid-September 1918. Indeed, all draft-eligible University of Pittsburgh male students had been pronounced physically fit for military service and conscripted into the Student Army Training Corps for the war in Europe. As the academic year began, the students were issued uniforms and officially sworn into military service.

A few weeks later the Oakland campus was transformed. By state order, the entire campus was placed under quarantine.

PHOTOGRAPHY | UNIVERSITY OF PITTSBURGH ARCHIVES AND HISTORICAL SOCIETY OF WESTERN PENNSYLVANIA



The flu pandemic of 1918 seemed to come in with returning soldiers; but it also subsided just before victory was declared. P. 23: Students were conscripted into the ranks; many fell sick soon after. Men from throughout the Northeast were brought to Pitt. ABOVE: The community of Wall, outside present-day Monroeville, celebrates peace. RIGHT: In formation on O'Hara Street in Oakland.

Guards at Bigelow Boulevard and Fifth Avenue prevented anyone from entering or leaving. The football schedule was canceled—in a year when Pitt again expected to be national champions under Pop Warner—along with all other gatherings, indoors and out. The medical school, like the rest of the University, suspended classes. Sixty-three juniors and seniors performed emergency intern duty at hospitals. And the students who were presumably healthy in September were now coughing, wheezing, doubling over in pain, shivering with fever, dropping where they stood—and dying.

That was the horrifying fall of 1918, when a pandemic of the most virulent influenza anyone had ever known swept across the world. Eight million died in the preceding four years of ugly trench warfare. Striking in the closing months of World War I, the "flu" directly claimed nine million lives worldwide, according to the National Library of Medicine. In total, more than 20 million were lost to the pandemic, including deaths from pneumonia and other illnesses associated with the flu. Some 548,000 victims were Americans, 20,000 of them servicemen. Because of crowded quarters, unsanitary conditions, and the transfer of troops between continents, the flu spread like wildfire among military personnel. Before it had fully subsided, more than 23,000 men, women, and children had been sickened in Pittsburgh, and about 5,000 had died. During the worst days, one Pittsburgher fell ill every 70 seconds, and someone died every 10 minutes.

The pandemic occurred almost 85 years ago. But those dreadful days still haunt many families and the few survivors still alive. My own father shook off the flu in a military camp, but my grandfather's lifelong aftermath was postencephalitic parkinsonism, which brings about tremors and rigidity associated with Parkinson's disease. An old colleague of mine died recently who'd been orphaned by the flu at age 5 and was brought up by two unmarried aunts. He was not unique. Seven hundred Pittsburgh children were orphaned by the pandemic.

On June 9, 2002, others remembered the flu victims at a simple ceremony in a sun-baked, overgrown field in Winfield Township, near Saxonburg, in Butler County. While a Ukrainian Catholic priest chanted prayers and lit incense, community members erected a new granite cross to replace the rotted railroad ties marking five mass graves from 1918. The graves were believed to hold the bodies of 24 Eastern European immigrant miners buried hastily, to prevent further infection, with neither ceremony nor identification. Some had been simply wrapped in sheets and dumped because of the shortage of coffins.

Jonathon Erlen, a medical historian at the School of Medicine, helped a Saxonburg women's club prepare for the ceremony. "It was touching," he says, "how people turned out to honor these poor unknown fellows who died in the prime of life and whose families back home may not even have been aware of their deaths."

Pittsburgh and western Pennsylvania were late victims of the pandemic. Actually, its classic pattern of headache, fever, muscle pain, and raspy breathing was considered a regular visitor everywhere. Flu appeared every winter, like Santa Claus. People expected—even accepted—a few days of misery, including a few deaths among the very young and the elderly. So when the first European cases turned up in the spring of 1918, no one was terribly alarmed. But as the disease spread, and began to fell ostensibly healthy young soldiers on both sides of the war, its ravages could no longer be glossed over. Millions of Europeans were sickened, more than eight million in Spain alone, including King Alfonso XIII. (Because the first indications of a pandemic came from Spain, the disease was called "the Spanish Flu." There's

little evidence that the flu originated in that country; it may instead have been brought by sailors from Asia. Still, the name stuck.)

The first US case turned up at Camp Funston (now Fort Riley), Kansas in March and leapfrogged through the civilian population. And then, as mysteriously as it had arrived, it disappeared.

As if it had merely taken a summer vacation, the flu returned in September, this time with a vengeance, roaring across Europe. The US Congress had declared war on Germany in April 1917, but the flu almost stopped the war in its tracks. German Major General Erich von Ludendorff was so short of manpower, he was forced to postpone the last grand offensive that was to win the war for Germany. The first American troops had gone into battle, and the commander in France, John J. Pershing, called for reinforcements. In vain. There were no healthy men to send.

Unlike previous flu strains, which targeted the very young and the very old, the 1918 version struck heavily among the 25–34 age group, devastating many young families as well as military personnel. The toll was particularly high among pregnant women.

And the students who were presumably healthy in September were now coughing, wheezing, doubling over in pain, shivering with fever, dropping where they stood—and dying.

They called the devastation "The Purple Death." Victims became cyanotic—their faces turned as "blue as huckleberries," one doctor wrote, then a darker, purple hue, sometimes accompanied by blisters. Victims complained of chills, headache, fatigue, pain from head to toe, and raging fever. Swaddled in blankets, previously healthy young draftees dropped dead while lined up for sick call.

When the flu ravaged Camp Devens, Massachusetts, where divisions were being assembled for shipment to France, the surgeon general of the army, William Gorgas, dispatched the country's most prominent pathologist, William Henry Welch of Johns Hopkins, and a blue-ribbon team of physicians to investigate. Welch's first autopsy, on a 19-year-old, left him aghast. "Gentlemen, I believe we are facing a new infection," he told his colleagues grimly as he peered at the victim's devastated lungs. "Or plague."

Ordinary flu sometimes develops into pneumonia. The tiny air sacs in the lung, where carbon-dioxide rich blood is exchanged for the oxygenated variety, become inflamed and swollen. Breathing is difficult and labored. What Welch saw went dangerously further. The air sacs were being destroyed, leaking—pouring—blood into the lungs, filling them with fluid. Victims were drowning in their own blood.

Within a few days, half the 45,000 troops at Devens were ill. Bodies were "stacked like cordwood" outside the autopsy room, according to one description. The flu spread among Boston's civilian population, then throughout Massachusetts and beyond, moving south and west, advancing 100 miles a day. New York caught the flu, then Trenton. And then Philadelphia. Of all the flu-ravaged American cities, the City of Brotherly Love was hardest hit. More than 3 percent of its residents died within a few weeks. At the peak, 300 Philadelphians were dying each day.

How the flu came to Pittsburgh is uncertain. One version says a soldier from Blawnox, who was home on emergency leave, fell ill, was confined to the military cantonment hospital at Point Breeze, and the disease spread from there. Pittsburgh's first flu death was recorded on October 5. (It is possible flu deaths had occurred earlier, because doctors were not yet required to report flu cases.) Four others died that week, 22 more the next. City health department Director William H. Davis sought to be reassuring, declaring that the flu was mostly of the mild variety and had already peaked. Still, he urged anyone with a cough to stay home.

The industrial suburbs and small nearby communities were hit harder. My own hometown of Turtle Creek had so many cases that local residents frantically built and equipped a 70-bed hospital in 48 hours—and filled it up. In the mining hamlet of Unity, population 1,000, 500 fell ill, including the only doctor.

Adolph Koenig, Allegheny County medical supervisor, warned, "There is a danger that some small, isolated settlement might be completely wiped out before help could reach them." By October 10, Davis called the situation "very grave."

As cases mounted across the state, Pennsylvania Deputy Health Commissioner B. Franklin Royer enforced a draconian anti-contagion program. He ordered all public gathering places closed, including saloons, movie and vaudeville theaters, dance halls, poolrooms, swimming pools, and skating rinks. Restaurant diners could eat but not



LEFT: HISTORICAL SOCIETY OF WESTERN PENNSYLVANIA. RIGHT: UNIVERSITY OF PITTSBURGH ARCHIVES

THESE FEATHERS WEREN'T RUFFLED

Almost everyone had opinions about treating the flu, but not everyone had clout. One of the city's social leaders decided that what the hospitalized victims needed were eggs to rebuild their strength. "I cannot think why this has never occurred to me before," she wrote the executive committee of Shadyside Hospital, "but I do believe it would be an excellent idea for the hospital to have chickens." The committee had its hands full at that point, but was loath to refuse one of its most generous benefactors. They agreed to purchase the chickens if she would furnish the coops, which the good citizen did. The patients had their fill of fresh eggs and probably some clucking and squawking as well. —*EK*

YET JUST ACROSS THE STREET

The Western Pennsylvania Institute for the Blind was surrounded by the barracks of the Student Army Training Corps in 1918. When the flu arrived in the neighborhood, the institute's medical officer immediately issued a total quarantine. Children were not allowed visitors and could no longer go home for weekends. The school was flu-free until students went home for the Thanksgiving holiday, after which 15 cases occurred, and the school closed. —*EK*



When armistice was declared, people poured into the streets, rejoicing. An official celebration followed—as did a spike in flu cases.

drink nor "congregate." Churches could hold services, but anyone with a cough or visible illness was to be turned away. Trolley operators were instructed to keep all windows open at least six inches. The trolleys were to be swept, mopped, and fumigated after each trip. Schools remained open. Pittsburgh's 112,000 pupils were supervised by 64 doctors and 18 nurses and were said to be safer in classrooms than in public.

Pittsburghers at first complied with the restrictions, then began to chafe under them. After all, many wage earners were still going to work and were as likely to be exposed to disease there as in taverns afterward. Some protested that the open-windows rule allowed noxious infected air inside. Further, open trolley-car windows brought Pittsburgh's autumn rains onto the passengers. Dampened passengers slammed the windows shut.

The problem was, no one knew what had caused the flu, how to treat it, or how to stop it. (Not until 1933 did scientists discover a flu virus.) There were a thousand explanations and a thousand home remedies. Slice red peppers into half-inch strips and eat them in a sandwich twice daily to burn out coughs, colds, and fever, it was said. Sprinkle sulfur in your shoes each morning to become immune to infection. Sixty years later, in an oral history interview, Pittsburgher Benjamin Green recalled how children were equipped to fight off the disease: "Everybody went to school wearing these little flannel bags with camphor in them. Foul smelling. The more foul smelling, the better. You'd pull it out and say, 'Mine smells worse than yours.'"

Physicians emphasized keeping the bowels open, getting plenty of fresh air, and going to bed at the first symptom. They dosed patients with quinine, coal tar products, gum camphor, and opium. Koenig ordered sheets hung between patient beds, certainly no barrier to passage of a virus, and recommended that everyone wear a gauze mask over nose and mouth. The Pittsburgh Red Cross dutifully ordered 10,000 masks, but flu rates in cities where masks were worn and where they were not amounted to the same.

Royer's edict shut down Pitt, Duquesne University, and Carnegie Tech. At all three campuses, the Student Army Training Corps (SATC) was walloped by the flu. The Pitt infirmary was quickly overwhelmed; so the army commandeered Elizabeth Steel Magee Hospital, first occupying a floor and eventually 300 beds. Soon, St. Francis and Mercy Hospitals were taken over, too.

The military combined morbidity and mortality figures for student-soldiers for all campuses, so exact totals for Pitt are unclear. But figures were, generally, astronomical, doubling and even tripling day by day. One report shows 1,392 flu cases in a detachment of 7,000. At one point, 673 of Pitt's SATC contingent were hospitalized. Of those whose cases developed into pneumonia, 99 died, a mortality rate of 44 percent. Three student-soldiers died in a single day at Magee, along with their physician, W. L. O'Hagan (MD '07). Many other physicians treating flu victims were themselves stricken, including, for a time, health department Director Davis. One group of 11 physicians was directed to establish a new convalescent hospital; all were patients before the hospital opened.

Physician ranks were already thinned because many doctors had entered military service, including 58 of the medical school's part-time faculty. Health authorities urged specialists to suspend their specialty practices to treat flu victims.

Davis mobilized hospitals into a single consortium to house the ill. Yet neither hospitals nor specialists helped much. Koenig had been placed in charge of recruiting physicians. (Sadly, "for all his medical skill, he could not save his 20-year-old son, Eugene," wrote Kenneth A. White in the *Western Pennsylvania Historical Society Magazine*.)

Other key personnel were in short supply, too. Drug prescriptions increased up to 800 percent, and pharmacists intermittently had to stop filling them; pharmacy students normally counted on for part-time assistance were either ill or quarantined. Overwhelmed morticians simply let bodies pile up, partly because harried doctors hadn't time to file death certificates. At one point, 33 bodies awaited burial at a cemetery because grave diggers were ill. Family members dug graves and buried loved ones themselves.

As October wore on, the shortage of facilities turned acute. The courthouse annex in downtown Pittsburgh was turned into an emergency hospital. Churches, convents, even fraternity houses became convalescent facilities. Tent hospitals were set up on city playgrounds. With one-third of students absent either because of illness or because parents feared exposure, the Pittsburgh schools were finally closed.

The area's economic base came to a standstill, along with public services. Some firehouses had only one man available. Coal production was cut in half. Steel mills banked furnaces or operated with skeleton crews. Stores and offices emptied.

The desperate quest for some treatment, any treatment, went on around the clock. The medical school assigned two of its most respected scientists, Oskar Klotz and W. L. Holman of the Departments of Pathology and Bacteriology, to set up a flu laboratory to investigate the cause of the disease, its mode of transmission, and possible treatments. Their work first focused on Pfeiffer's bacillus, historically found in many flu cases. The frustrated scientists concluded that Pfeiffer's piggybacked on the flu, but wasn't the cause.

Scientists elsewhere strove to develop a vaccine to protect those not yet exposed. The most popular serum was made from victims' blood. Doctors were dubious, but the effort answered the call to "do something." The Red Cross ordered 10,000 doses, and Carnegie Steel Corporation announced plans to inoculate all workers.

Florence Marcus of Shadyside Hospital, who was a nursing student in 1918 and later became an MD, recalled in 1991: "Hundreds of sufferers arrived at the hospital by ambulance. . . . I remember one family. The whole family died on the way in—except one little boy. We all felt dreadful about it."

"It was funerals all day, and ambulances all night," wrote Katherine Anne Porter in her magnificent novella set during the pandemic, *Pale Horse, Pale Rider*. "Everybody is sick at the present time and you're almost out of style if you're okay," one Pittsburgher wrote a relative at the flu's height. "I wish this terrible 'Spanish' would disappear. It is some menace."

Then, around October 25, Pittsburgh's siege began to lift. Although deaths continued, new cases steadily declined. Pittsburgh Mayor E. V. Babcock decided that the state's more stringent regulations against crowding could be relaxed. The restrictions, including the quarantine, were lifted on November 9.

Two days later, on November 11, armistice was declared. Thousands of Pittsburghers poured into the streets, rejoicing. An official city celebration followed. The two mass gatherings apparently caused a new spike in flu cases. The horrors of the past weeks, however, were quickly shouldered aside with newfound jubilation.

But neither the city nor the country could be considered back to normal. An official tally of the flu's ravages in the nation's 46 largest cities showed that Pittsburgh was among those suffering most. The 1918 death rate was 25.4 deaths per 1,000, more than double that of the year before. Only Baltimore and Nashville had a higher per capita rate. Including the nearly 4,600 Pittsburgh fatalities, more than 35,000 died in Pennsylvania.

Six months after the plague was officially over, members of the medical school faculty produced a 293-page report on their clinical and research observations of the flu's run in Pittsburgh—a remarkable piece of work, considering how stressed they'd been during that awful period. Edited by Oskar Klotz, of the Pfeiffer's project, the report analyzes treatment, possible causes, prevention, bacteriology, and pathology. It contains few surprises but does question a few myths about the spread of the disease—that cases increased in cold or rainy weather (not true) and that the ban on crowding in public places was valuable (dubious).

Sixty years later, Pittsburgh added a footnote to the flu story. Although scientists have never been able to identify the exact virus responsible for 1918, they did conclude that it jumped from animals, and that the pandemic might be traced to influenza in swine. A new "swine flu" popped up in 1976, so a crash program was launched to develop and stockpile a human swine flu vaccine. In September, the first human cases appeared. Amid fears of a new pandemic, President Gerald Ford ordered a national inoculation program.

Inoculations had scarcely begun when the first reports of death subsequent to swine flu shots came in—from Pittsburgh. Three elderly persons who had been vaccinated died a few days later. Authorities called the deaths coincidental, but the news caused an uproar. The media labeled the office that had administered the shots a "death clinic." Allegheny County Coroner Cyril Wecht (MD '56) ordered a halt to inoculations in the county. Nine states followed suit. A few weeks after that, the vaccine was blamed for an increase in Guillain-Barré syndrome. The flu caseload that winter, as it turned out, was nothing out of the ordinary.

Slice red peppers into half-inch strips and eat them in a sandwich twice daily to burn out coughs, colds, and fever, it was said.

Pittsburgh may draw attention again in the pandemic realm. Since 1918, scientists have successfully isolated each new flu virus as it appears and developed vaccines against it. Pitt virologist Julius Youngner is continuing research on a simple, nasal-spray flu vaccine, which preliminary tests show might stave off any future pandemic. If Youngner succeeds, there'll be less need for ceremonies like the one last June in Butler County, so thoughtfully put on by the women of Saxonburg. ■

Kris Murawksi contributed to this story.

LAST DANCE

Among many instances of the flu's introduction to a community and its swift spread, the experience of Masontown, south of Pittsburgh, was typical. A dance was held in the town and musicians were brought in from other communities. One musician fell ill and was subsequently hospitalized. Within a few days, flu had swept completely through the town. —*EK*

HISTORICAL SOCIETY OF WESTERN PENNSYLVANIA



Pitt pediatric surgeons Henri Ford (right) and Edward Barksdale Jr. have blazed new ground with basic science research and innovative procedures, all the while taking motherly admonishments to heart.

MOM WAS RIGHT | BY DOTTIE HORN

CAREFULLY TENDED

Thirteen-year-old Henri Ford thought he was going to Brooklyn just for the summer. That's what his parents told him and his siblings when they left Haiti. As autumn approached, Ford learned the family wasn't going back. His father, a preacher who'd been outspoken against socioeconomic inequities in Haiti, had removed his family from the country because he feared reprisals. Ford missed his friends. He realized he was stuck forever.

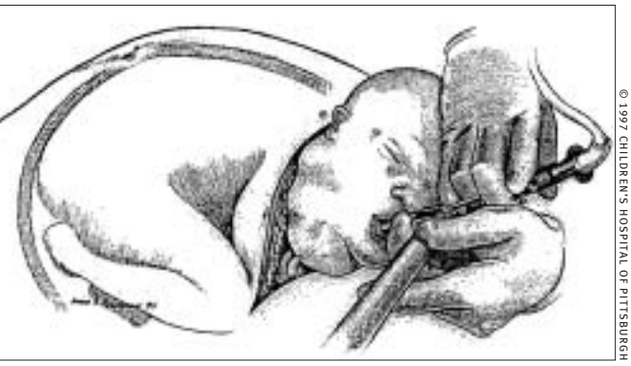
But real culture shock didn't hit until Ford left the Haitian community in Brooklyn to start as an undergraduate at Princeton. Ford's family couldn't afford a car in New York; he had always used the bus and subway. Now, teens who owned late-model Benzes and BMWs surrounded him.

Shock hit again when Ford got back the first exam he took at Princeton. The class was chemistry. "Tragic" is the word Ford uses to describe the C he made on that exam. *This is where the game is being played*, he thought. *You've got to get up there.* Never did he

PHOTOGRAPHY | C. E. MITCHELL

entertain self-doubt or accept mediocrity. Instead, he adjusted his study habits and went on to graduate with honors.

As a member of a men's group at an East Liberty church, Ford now tries to inspire youth. His message: *The only issue is how badly you want something. I am here to teach you the rules of the game.* He invites teens to shadow him for a day or work in his lab. Sitting in his office, his degrees and licenses neatly arrayed on one wall, Ford talks about the importance of being a role model, envisioning two plants—one that has been carefully tended for a long time, another that has been ignored: "If you provide the same nurturing to the neglected plant, it may not catch up, but it will be almost as beautiful."



© 1997 CHILDREN'S HOSPITAL OF PITTSBURGH

Before they cut the umbilical cord, Pitt pediatric surgeons, working with doctors at Magee-Womens Hospital, intubate newborns who have neck masses that would otherwise obstruct breathing.

As chief of the Division of Pediatric Surgery in the University of Pittsburgh School of Medicine, Ford can talk for hours about his division—the minimally invasive initiatives, the surgical oncology program, the intestinal care center, the trauma program, the National Institutes of Health grants. But his list doesn't end with the standard parameters of academic success: "If they were the sole measure of my pride, then I'd have seriously screwed-up judgment." He boasts about associate professor Edward Barksdale Jr.'s involvement with a program to help critically ill children and their families (see p. 32). He can't leave out the division's extensive injury prevention initiatives—funded in part by the Robert Wood Johnson Foundation—which take surgeons and staff into the community for education and advocacy. "I don't know of too many other divisions where people are as engaged," he says.

An ultrasound showed the fetus had a large, noncancerous tumor visibly bulging from the neck. The mass would obstruct breathing at birth. Inserting a tube to supply the newborn with oxygen would not be easy. Ninety percent of babies born with such neck masses die. Even with special equipment, intubation is often too tricky to accomplish within the few minutes the baby can survive without breathing.

So Barksdale and colleagues took another approach. They intubated the baby after he was partially removed from the uterus by cesarean and *before* the umbilical cord was cut. This gave them a 45-minute window before the placenta would separate on its own from the uterus—buying them precious time while the child still received oxygen from his mother. "You get 45 minutes to get the breathing tube in, or if you can't, to do a tracheotomy," says Barksdale.

The surgeons likely saved the baby's life by performing this rare EXIT (Ex-Utero Interpartum Therapy) procedure. EXIT is now standard procedure at Magee-Womens Hospital for treating neck anomalies that obstruct breathing at birth. And Pitt pediatric surgeons believe they can help expecting families by treating disorders even sooner. At a few American medical centers, surgeons are operating on fetuses to treat spina bifida, holes in the diaphragm, and other serious conditions. Ford is betting fetal techniques will become more widely accepted and wants Pitt to be at the forefront of fetal surgery if that happens. Drawing on the school and medical center's strengths in obstetrics, maternal and fetal medicine, among other areas, he plans to create a center for fetal surgery.

The boy growing up in Lynchburg, Virginia, imagined himself as D'Artagnan, the sword-fighting adventurer in *The Three Musketeers*. Barksdale admired the esprit de corps of the band of four. "I was inspired by that camaraderie, that ability to have a group of close-knit friends working together for good things," he says.

The would-be D'Artagnan took up fencing while a sophomore at Yale. He was lousy. Every day, his hard-nosed coach would yell at him: *You're a big, strong guy, but you're just a sissy.* In his junior year, one of the leaders of the team quit, and Barksdale took his place. Afterward, he overheard his coach say, *Gee, we're going to do poorly this year. We've got Ed.*

"I was convinced that he had underestimated my ability," says Barksdale. He practiced four to six hours a day. His junior year, he did well; his senior year, he finished fourth in the country. In Barksdale's office, along with many photographs of children he has treated over the years, is a shot of him, taken just after winning one of several medals he amassed his senior year.

When the year was over, he gave up fencing. But his affinity for D'Artagnan has not abated, perhaps because those old movies resonate with messages he has received since his earliest days. As he's advanced in his career, acquiring funding for his basic science research on the childhood cancer called neuroblastoma and becoming codirector of the intestinal care center at Children's Hospital of Pittsburgh, his mother continues to tell him: *Make sure that you're doing things to help those in the community who are less fortunate. There are things that are more important than where you end up in your career.*

When he was brought to the emergency department, the 6-year-old was awake and talking. He wasn't supposed to drive the family all-terrain vehicle, but while his parents were at work, he decided to go for a ride. He hit a tree. The boy's abdomen was only a little bruised, but his CT scan revealed a split liver. Barksdale and Ford operated together, trying to save the liver. The boy died in the operating room. "I always remember him smiling and being awake before we took him back and the devastation of telling his parents," Barksdale says.

More than 50 percent of deaths in children are caused by trauma—falls, motor vehicle and pedestrian accidents, abuse, and other such injuries. Children's Hospital has the busiest pediatric trauma center in the country, according to Ford. Its 10 pediatric surgeons will treat about 1,700 trauma cases this year. About 20 percent of those cases will be potentially life threatening.

The greatest gains in saving the lives of injured children can be made through prevention, says Ford. He codirects the Benedum Trauma Program with Barbara Gaines. Last year, its outreach program held nearly 200 events, including sessions in schools to teach head-injury prevention. At 45 car-seat checks, offered at fire stations and other neighborhood centers, trained staff members helped parents determine if they had age-appropriate safety restraint devices and how to properly position their children within them. Sometimes the approach to prevention is less hands-on. In 1999, a Pittsburgh 2-year-old watching *Teletubbies* tried to hug the television. The TV fell off its stand, onto the boy, killing him. In response, Barksdale held a press conference, resulting in national media coverage of the incident. He also wrote to the US Consumer Product Safety Commission. Soon after, that TV stand design was taken off the market.

"If [academic successes] were the sole measure of my pride, then I'd have seriously screwed-up judgment."

New York City, 1976—Ford and Barksdale met for the first time. The two 17-year-olds were attending a summer program for underprivileged minority students interested in medicine who would be starting at Ivy League schools in the fall. At first glance, Barksdale was not particularly impressed with Ford, with his booming voice and "persona": "I'm being polite when I say 'persona' because there's a three-letter word that begins with 'e' and ends with 'o'— I'll just say, he has such a booming persona, I was a little taken aback initially." To Ford, Barksdale seemed like a country boy from Hicksville—quiet and provincial. Yet, the two became friends that summer.

Harvard Medical School, 1980—Ford and Barksdale enrolled. If a friend was in danger of failing a medical school exam, Ford would stay up late and sacrifice getting an honors grade in order to make sure that his friend passed. "That selflessness was attractive," says Barksdale. The two learned that they were so much alike, it was sometimes uncanny. Several times, when Barksdale was walking around Boston, Haitians would come up to him and start speaking Creole. He *looked* Haitian, Ford's family thought when they met him.

Eighteen years have passed since they graduated from Harvard. Every year, the Fords go to the Barksdales for Christmas dinner. Barksdale's parents are there, up from Lynchburg. Ford calls Barksdale's mother "Mom." "There is a bond between me and Ed that is really stronger than anything we could have even envisioned," says Ford. "We're always striving for the same goal." Both surgeons have received teaching awards and both were named Healthcare Heroes by the *Pittsburgh Business Times*.

The premature infant began vomiting after her feedings. She suffered from necrotizing enterocolitis (NEC), a disease that affects 7 to 10 percent of premature infants born in the United States each year. The disease is fatal in 10 percent of those who develop it.

An x ray showed a hole in the baby's bowel. During an emergency operation, Ford found that feces had leaked out of the bowel into the abdominal cavity. He washed out the contamination and removed the perforated section of the bowel as well as the surrounding damaged tissue. He gave the baby a temporary ileostomy, redirecting the feces so the intestine would have time to heal.

Ford also is familiar with NEC at the cellular and molecular levels. In adults, he explains, the cells that line the inside of the intestines—the enterocytes—are stuck together as if with crazy glue, forming an impenetrable barrier. In infants, the gut barrier is immature—the glue doesn't work, which permits "antigen sampling." In other words, a few foreign particles need to enter the gut during a newborn's early days so that the immune system can become primed to recognize invaders.

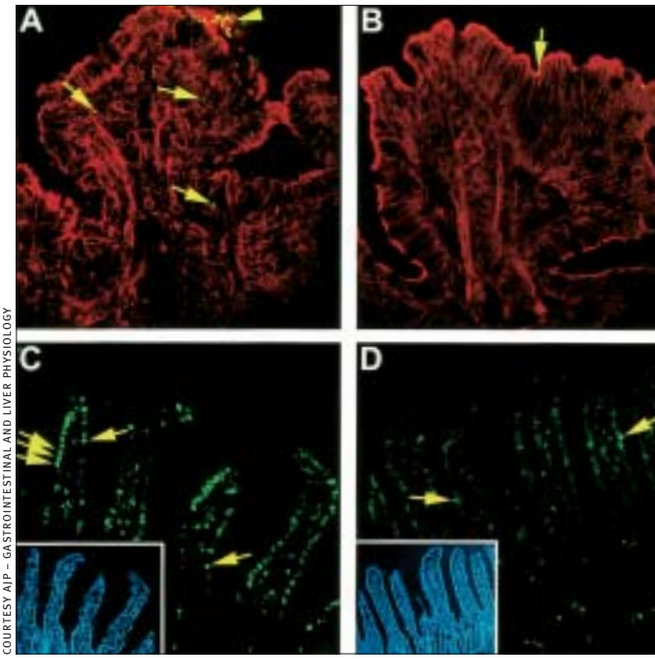
In premature infants, however, because the lung is immature, some enterocytes may die from insufficient oxygen. Just one of those dead cells can create a gap in the gut barrier, allowing too many antigens and bacteria to enter. What was supposed to be limited antigen sampling turns into overstimulation of the immune system. The toxins released as part of the immune response eventually attack the enterocytes themselves. As cells die, a hole may form in the intestine large enough to spill out stool or fluid.

Ford's research has shown that nitric oxide (NO) plays a key role in the escalation of the immune response. His main findings: NO is overproduced in infants with acute NEC. By inhibiting NO production, you get a more effective gut barrier. That work has helped to reveal possible therapeutic strategies for NEC, says Gail Besner, of Children's Hospital in Columbus, Ohio. "I would say only five pediatric surgeons in the country can do what Dr. Ford can do," says Besner. "He can go to the research lab and compete with the most highly trained of scientists, in terms of his skills and productivity and success in basic science."

In all, four of the 10 surgeons in Pitt's division pursue basic science research—in addition to Barksdale's work on neuroblastoma, assistant professors Jeffrey Upperman and David Hackam study NEC. "The concept of pediatric surgeons doing research is relatively novel," says Ford. "In most institutions, this is not feasible, mostly because the clinical work load is so immense." Pitt's is among the top pediatric surgery divisions in the country in terms of research funding.

Culture shock hit again when Ford returned to Haiti in 1997. It was his first time visiting since he left at the age of 13, and he witnessed a level of poverty he hadn't imagined while growing up there. "When you see a tiny little room with no toilet, just one single room, and 12 people have to live in it—and six or eight of them may be under 7—it's just horrific," he says. During a week of operating at the Hôpital Albert Schweitzer, he saw other moving realities: a lack of resources, malnutrition, despair.

"The toughest part, after you come back from Haiti, you ask yourself, 'How can you seriously focus on doing basic science research, getting millions of dollars from the NIH to kill rats and mice, when you know there are people out there dying from malnutrition?'" says Ford. At the same time, he realizes his research could have important applications in places like Haiti—for example, better understanding how the gut barrier fails in NEC might lead to new ways of treating gut origin sepsis, a serious problem in developing countries.



COURTESY AJP – GASTROINTESTINAL AND LIVER PHYSIOLOGY

Ford found that inhibiting nitric oxide production (B and D) can thwart destruction of gut barrier cells and prevent bacterial invasion (indicated by yellow arrows) seen in necrotizing enterocolitis.

In the meantime, Ford supports fund-raising activities for the hospital in Haiti and hopes to return. And he keeps competing priorities in check by asking himself: *Where am I going to make the biggest difference?*

"Applying my skills in a place like Haiti brings a tremendous amount of good," he says. "Being involved with disadvantaged kids, letting them know they can achieve or surpass what I've achieved, that's where the satisfaction comes. That's big." ■



HEALING FAMILIES

OUTSIDE THE HOSPITAL, HE TREATS MATTERS OF THE HEART

BY JASON TOGYER

C. E. MITCHELL

Pediatric surgeon Edward Barksdale Jr. remembers the infant well. He was born with gastroschisis—his lower intestines outside of his body. And though Barksdale and his colleagues at Children's Hospital of Pittsburgh were able to treat the child's medical problems, it seemed that nothing in their power could close the family's wounds.

The baby's mother was 15, with a history of heroin use; his father was 16 and incarcerated. Over the next few months, Barksdale watched with mounting frustration as the mom came to the hospital alone—clearly still abusing drugs.

"This child was born with a devastating problem and a mother who was ill-prepared for a child that required care," he says.

Two years later, the mother's new boyfriend shook the infant to death. Barksdale went to the funeral home. "There were about 300 people there, crying," he says. "Unfortunately, I saw none of those people there in the two years previous, caring for the child." There was one bright light: Barksdale was impressed by a social worker who had tried to ensure the child received medical care. He wrote a lengthy letter of praise to the social worker's boss, Susan Davis.

The letter stuck in Davis' memory. When she founded a new agency for families with critically ill children, she knew who could lend a strong hand. Barksdale helped plan the new agency, Every Child Inc., and since 2000 has chaired its board of directors. His work with Every Child led to his recent appointment as an adviser to Allegheny County's children and youth bureau.

"His warmth, his humbleness, and his strong values," says Davis, executive director of Every Child, "that's what makes Ed stand out." And his reputation as a surgeon makes it easier to raise money for Every Child, she says: "Ed is always out there championing it."

Every Child serves children who need continuing medical care and are from "stressed" families—kids with single parents, or kids living in poverty, or kids whose mom or dad has a substance abuse problem. The agency tries to "wrap around" families in need, teaching parents how to care for their sick child while simultaneously addressing the mental, physical, or emotional problems of other family members.

That's important, says Barksdale, because evidence suggests that parents of critically ill children are at greater risk of divorce: "You begin to focus your efforts on the disease and not on the family relationship."

In severe cases, when birth parents are unable or unwilling to care for a child, Every Child helps find foster or adoptive families. Since its formation, the agency has helped more than 650 children, spending on average five to nine months helping families get back on their feet, Davis says.

One of Barksdale's former PhD students, Ronna Campbell, studied Every Child's track record. She found that, overall, children received more preventive care, and had fewer emergency room visits, after Every Child's involvement. Campbell, now a third-year medical student at Pitt, found the time she spent with the agency and Barksdale rewarding. "They're doing something so trailblazing, something not being done in most places," she says.

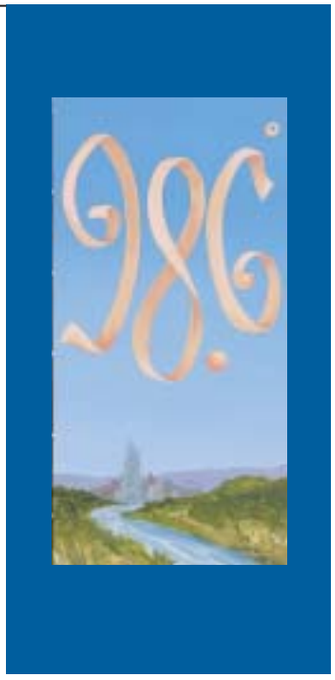
Yet Every Child's approach is "relatively simple," says Barksdale: "Our goal is not to take over the family's care of the child, but to empower them, so they won't break up under the stress." For his efforts, the surgeon was given a Distinguished Public Service Award by Pitt Chancellor Mark A. Nordenberg in 2002.

Public service started early in the Barksdale home in Lynchburg, Virginia. When Barksdale's older sister was in seventh grade, she investigated and found that teens in the city's black high school were being taught one-third as many subjects as students at the white high school. In 1962, Barksdale's parents sued to integrate the district and won, persevering in the face of taunts and threats.

Barksdale says his dedication to Every Child stems from examples like that in his own childhood.

"We have plenty of opportunities to be selfish," he says. "We have to set goals to make a difference in this world." ■

People and programs that keep the school healthy and vibrant



MARCHING IN STEP

WHEN A CLASSMATE CALLS

BY MIKE RANSDELL

The "clomp-clomp-clomp" of 60 pairs of boots smacking the concrete echoed through the hills surrounding the University of Pittsburgh. After a long day of medical school, Private Sidney Busis (MD '45) and his company, all doctors in training, marched steadily across campus under the forceful command of "real sons of guns" army lieutenants. As they passed the old Municipal Hospital on Terrace Street, women—rumored to be members of the world's oldest profession and being treated for sexually transmitted diseases—leaned out the windows and yelled encouragement to the tired young men. "Come on fellows! Come on up here!"



Busis

A decade later, Busis would get called to Municipal Hospital—site of today's Salk Hall—frequently. Rather than for dubious invitations from ladies of the evening, it was for the gravest of reasons: to perform emergency tracheotomies on polio-stricken children.

"Those were scary days," Busis says. "We would pull [the children] out of the iron lung, and start working on them; operating 'til they turned blue. Then [we would place] them back in the lung to ventilate them again, to get pink again, and then pull them out again and do more. It was very tough."

At the same time that Busis was at Municipal—starting his long career as an ear, nose, and throat specialist—a University of Pittsburgh undergrad named Charles Copeland was working his way through school as an elevator operator in the Cathedral of Learning. The part-time job paid $1.10 an hour—about 50 cents more than other student jobs. By living with his parents in Jeannette and taking the bus to school, he made enough to cover books, lunch, and the $320 tuition bill each year.

Copeland's days began when he got out of bed at 6 in the morning. By 7, he was on a bus for an almost 90-minute commute to campus. From 8:30 until 4, with a break for lunch, he was in class or studying. After a quick change into a blue sports coat and tie—required attire for the job—he was off to the Cathedral, where he shuttled visitors from floor to floor until 8:30 p.m. During the rare slow times on the job, he studied class notes that he wrote on cards and kept in his pockets. After work, he would dash off to catch the 8:50 bus back to Jeannette, where he'd grab some dinner and then hit the books until he went to bed, usually around 1 a.m.

After surviving this sleep-deprived schedule as an undergraduate, Copeland was well suited for a career as a doctor. He graduated from the University of Pittsburgh School of Medicine in 1958 and is now a surgeon at Mercy Hospital.

Although Busis and Copeland took different paths on their way to becoming MDs, they're now marching together as part of a group of 24 medical school alumni charged with stepping up fund raising for their alma mater. Led by Bebe Miller (MD '55), these Chancellor's Circle volunteers will be calling 200 medical school alums. The volunteers will encourage alumni to join them in pledging at least $1,000—the Chancellor's Circle level—to the School of Medicine, especially to sponsor student programs organized by the Medical Alumni Association that run the gamut from scholarships to the White Coat ceremony.

Busis, a long-time Chancellor's Circle contributor, says his 9-year-old grandson, Ethan, played a key role in his decision to join the group. Ethan asked his grandfather to take him to a Panther football game. When Busis visited campus to pick up the tickets, he was treated to a tour of the John M. and Gertrude E. Petersen Events Center—right next to the site of the old Municipal Hospital, where Busis spent many hours as a young doctor. The tour stirred Busis' pride for his alma mater; he says he felt the need to help the school raise money to train its next generation of doctors.

FOR MORE INFORMATION: 1-877-MED-ALUM

BOOSTER SHOTS

Local singer-songwriter **Chuck Navasky** was discouraged when he lost part of his vocal cords to cancer. But the Philipsburg native, whose family business supplies high-end clothing to rock stars and other celebrities, realized his connections could help raise money for cancer research. The resulting all-star CD, *One Less Tear,* features inspirational songs by artists ranging from Olivia Newton-John to Mötley Crüe's Vince Neil. The proceeds, which Navasky hopes will clear $10 million, are being divided among four research centers, including the University of Pittsburgh Cancer Institute (UPCI). **Jonas Johnson**, professor of otolaryngology and radiation oncology, treated Navasky; he'll apply the funds to search for new ways to spot high-risk cancer patients.

Scleroderma, meaning "hard skin," is a painful disease in which the body's immune system attacks its own tissue, causing internal organs and skin to become stiff and inflexible. The form that strikes during childhood is relatively rare, which makes it difficult for researchers to obtain blood and DNA samples for examination. **Thomas A. Medsger Jr.**, director of Pitt's Scleroderma Research Program, has received a $150,000 grant from the **Scleroderma Foundation** to develop the first National Registry for Childhood Onset Scleroderma. With this new database, researchers will have access to samples from patients all over the country, which could lead to a new understanding of a disease that can have life-threatening complications. —*MES*



The face that moved a thousand—make that a few million—parents to action

COURTESY CHILDREN'S HOSPITAL OF PITTSBURGH

IT'S NOT EASY BEING GREEN

THE FORMIDABLE MR. YUK

BY SALLY ANN FLECKER

One day recently, when Richard Moriarty, pediatrician and founder of the poison center at Children's Hospital of Pittsburgh, took his money clip out of his pocket, he got an ear-beating from the grocery clerk. *That's Mr. Yuk,* she said, recognizing the redoubtable image. *That should only go on things that are poisonous.* Moriarty (MD '66), a longtime Pitt associate professor of pediatrics, did his best to look remorseful. But in point of fact, he was pleased. The reproach was a sign of success. After more than 30 years, Mr. Yuk was still alerting adults and children to the dangers that lurk in everyday substances. Moriarty's proudest achievement was intact.

Time was when round green faces, with tongues stuck out in a universal sign of distaste, could not be found under the kitchen sink. Crucial information, what to do if your toddler ate a tin of shoe polish for example, wasn't always as close as the phone. When the first poison center was established in 1953 at the behest of the American Academy of Pediatrics and funded by eight hospitals in Chicago, it was little more than an office with a part-time secretary. Each morning the secretary would call the ERs, according to William Robertson, director of the Washington Poison Center in Seattle, to "find out what kids had eaten the night before." Then she would cajole the manufacturers into revealing the product's ingredients. Soon, she had large index cards with the trade name and ingredients of almost a thousand items. A committee of doctors and pharmacists got together to describe the symptoms and treatments for accidental ingestions, and that information was added to the cards. Eventually, when one of the hospitals was faced with a poisoning, they would ring the secretary, and she would pass on the information. The surgeon general, Robertson recalls, heard about these cards and decided to mimeograph them to distribute cards across the country. Poison centers sprang up all over. In less than six months, the state of Illinois alone had 104 poison centers.

But index cards are easy to carry off. Before long, the information was scattered all over hospitals. The chore of actually locating all of a poison center's cards and then keeping them current was not a task for the faint of heart.

This was the sorry state of affairs that distressed a young Moriarty, a resident at Children's in the late 1960s. "When that number rang," he remembers, "whoever happened to be in the emergency room suddenly was *the* poison center." The illusion of expertise troubled him. So in 1971, after a fellowship in clinical pharmacology and a year as chief pediatrics resident, he took on the role of director of Children's poison center.

Moriarty calls himself "an organizer." He hired clerks to get the files in shape and developed a dedicated nursing staff to handle the center's calls. One night at dinner, he mulled over the best way to share the center's expertise with other hospitals. Should the center copy its now-efficient information base and let that suffer the same fate as the original Chicago-designed system? Or read the information over the phone and hope nothing was misheard? The answer came in a stroke of luck—the kind that the charismatic Moriarty often seems to attract. As it happened, one of the men at the table worked for Xerox, which had an exciting new machine—a telecopier. So years and years before "fax" became an everyday word, Moriarty had telecopiers to link Presby—and soon other hospitals—to the poison center.

As the center at Children's became more and more of a resource, Moriarty turned to outreach. After another dinner with friends (he didn't eat dinner at home much in those days, he notes, laughing), Moriarty found himself hooked up with the Vic Maitland Agency and its stable of artists and advertising experts, including Dick Garber, a marketing wizard. The partnership gave birth to Mr. Yuk—one expressive little icon. (Moriarty, by the way, refers to the icon simply as "Yuk" in the comfortable way that one might refer to, say, a poker buddy or a pet.)

Last year, Children's filled requests for 42 million Mr. Yuk stickers.

To come up with Yuk, the project team went directly to its audience. They asked kids: If you get into a poison, what happens? *Your mother will yell at you. You'll get sick. You'll die*—Moriarty remembers the children telling him. "So we had a yelling face. We had a sick face. We had a dead face. We went back to the kids and asked them, 'Which one don't you like?' And they didn't like the sick face."

The finishing touch: When the artists made the sick face fluorescent green, after testing several other colors, one of the kids said, "That looks yucky." And that was that.

Robertson still remembers the stir that Yuk created when Moriarty presented it at the national meeting of the American Association of Poison Control Centers in the mid-'70s. "[Children's was] the first to use mass media," Robertson says. "For a minimum amount of dollars you could influence the population in a hurry." The Washington Poison Center was the first to sign on to the Mr. Yuk program. In a short time, 96 percent of the people in the Seattle area could identify Mr. Yuk. "It had an amazing impact," says Robertson.

"Some of our colleagues said stickers can't do much good to keep a 2-year-old out. Well, it's true! The 2-year-old doesn't pay attention. But the parents who put the sticker on learned a lesson."

By 1978, the number of poison centers had swelled to 700. Edward Krenzelok, a Pitt professor of pediatrics as well as pharmacy and therapeutics is current director of the Pittsburgh Poison Center. (Moriarty stepped down in 1983.) He says that Moriarty was ahead of his time in developing a network of regionalized poison centers. "Dick promoted the idea that we should have a number of strong centers rather than a million little centers that weren't necessarily meeting everybody's needs. His was one of the very first poison centers to provide 24-hour-a-day, seven-day-a-week coverage."

Today, the United States has 65 poison centers. Last year, Children's filled requests for 42 million Mr. Yuk stickers and answered 82,000 poison-inquiry phone calls. In January 2002, Mr. Yuk started advertising a national number—1-800-222-1222—that routes calls to the nearest center.

Meanwhile, Moriarty still runs into parents who tell him Mr. Yuk saved their child's life. So if every once in a while he has to endure a scolding when he pulls out his treasured money clip (a gift from former Department of Pediatrics chair Tim Oliver), so be it. ■



CLASS NOTES

'60s

David Mendelson (MD '64) is enjoying his partial retirement from the family planning clinic he founded in 1973—one of the first established after *Roe v. Wade*. Someone once threw a Molotov cocktail into his California office, which provides a full range of gynecological services. Luckily, it didn't go off. He still works at the Santa Clara County office a few times a week, but he has been busy collecting abstract expressionist art and volunteering at the Golden Gate Raptor Observatory. Mendelson says a bout with Guillain-Barré syndrome—which caused him to be paralyzed from the neck down for almost a year—helped him better understand what it is like to be a patient.

Gerald Merenstein (MD '66) is the senior associate dean, education in the University of Colorado's medical school and directs the child health associate/physician assistant program. He's excited because the medical school is moving to the former Fitzsimons Army Medical Center. With the move, the school will have room to grow. Although he's busy helping figure out how to best make use of 100,000 square feet of educational space for a new curriculum, he recently coedited the fifth edition of *Handbook of Neonatal Intensive Care* and teaches in the nursery and in problem-based learning sessions. Merenstein says the studiousness of his older brother, Joel Merenstein (MD '60), inspired him to do well in med school, to teach, and to participate in clinical research.

Richard Colletti (MD '68) visited the pyramids in Egypt, the Roman Colosseum, and the Great Wall of China in the past year. While still an active pediatrics professor at the University of Vermont College of Medicine, he's lecturing worldwide while serving a two-year, peer-elected position as president of the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition. He continues to write clinical pediatric guidelines for the *Journal of Pediatric Gastroenterology and Nutrition*. Two new articles will be published later this year.

'70s

RESIDENTS AND FELLOWS

Marshall Webster (General and Thoracic Surgery Resident '69–'70) recently became president and CEO of University of Pittsburgh Physicians. He recalls the excitement of working with Hank Bahnson in the operating room. Training under such a meticulous surgeon in his prime helped Webster improve his own surgical skills. Though he won't be a practicing clinician in this new position, Webster, who has been at the University for almost 30 years, looks forward to the challenges of helping all 21 departments of the medical school reach a consensus on how best to provide clinical care.

Arthur McTighe (Pathology Intern '69–'71, MD '69) is vice president for medical affairs at Evangelical Community Hospital in Lewisburg, Pennsylvania, where he serves as the liaison between doctors and administrators. He also works on reducing medical errors. McTighe recently studied a problem that plagues many hospitals—namely, miscommunication leading to patients' receiving the wrong medication. His research and many other studies show that when doctors enter orders directly into a computer, rather than giving oral or handwritten orders, fewer mistakes are made.

Bruce Coull (Internal Medicine Intern '72–'73, MD '72), is head of the neurology department in the University of Arizona College of Medicine, a position he has held for the past seven years. Throughout his career, he has researched ways to prevent and treat strokes. Recently, Coull has been investigating how hypothermia can best prevent brain tissue damage after cardiac arrest. While researchers like Pitt's Peter Safar already know that lowering a person's body temperature prevents some damage, Coull is using pig models to find more effective ways to cool the body. He's trying to find the optimal use of hypothermic treatment after cardiac arrest.

'80s

Eric Klein (MD '81) is busy randomizing thousands of subjects for a 15-year study. Klein, head of urologic oncology in the Urological Institute at the Cleveland Clinic, is the national study coordinator of the Selenium and Vitamin E Cancer Prevention Trial, which will follow 16,000 healthy men. A $179 million grant from the National Cancer Institute will allow Klein to investigate whether selenium and vitamin E can prevent prostate cancer. Microscopes have played a role in Klein's life both professionally and personally: While seated in anatomy labs at Pitt,

NANCY AND WILLIAM LASCHEID
GOOD NEIGHBORS



Feted by the White House, Senate, and Supreme Court

One morning, shortly after he retired from his private dermatology practice in Naples, Florida, William Lascheid (MD '50) and his wife, Nancy, were sitting in their living room, talking about a problem in the news—many of their neighbors couldn't afford health insurance. Collier County was growing, but the businesses moving in—hotels, restaurants, landscapers—offered low wages and no health insurance. The employees earned too much to receive government assistance, but not enough to pay for health care. The county's economic development center, chamber of commerce, and medical society were all concerned.

The Lascheids sat down with a tablet and went to work, drafting plans for a clinic for the working poor. Maybe their friends—including accountants, social workers, lawyers, and other physicians—would help, donating money or volunteering their time. That was 1998. Within three years, the Neighborhood Health Clinic Inc. of Collier County, which started out in a storefront, moved into a new $2.5 million facility. The 400 doctors and nurses who vol-



Aesculapian, 1995

Klein spied **Susan Kerins** (MD '81) sitting nearby. "It was an accident of the alphabet!" says Kerins—now Susan Kerins Klein—of her marriage. She's working part-time at the Rainbow Babies and Children's Hospital at Case Western Reserve University as a pediatric neurologist and full-time as the mother of 6-year-old Mira. Susan Kerins Klein is interested in the relationship between behavior and brain function, how neurology and psychology interact. She hopes to secure a grant for a family study of inhibition in Tourette's syndrome.

John Werber (MD '84) and his roommate **Ed Giovannucci** (MD '84) hung a poster of an owl at their Bouquet Street apartment to inspire them to study into the wee hours. Those all-nighters prepared Werber well; in 1996, he became head of dermatological inpatient and outpatient services at St. Clare's Hospital and Health Center in New York City. Having previously worked as the head of dermatology for New York's Spellman Center—one of the first clinics in the United States to care exclusively for AIDS patients—Werber still sees a number of HIV-positive patients at the clinic, in addition to running a busy private practice in Manhattan.

Jill Baren (MD '89) splits her time between the Hospital of the University of Pennsylvania and the Children's Hospital of Philadelphia treating emergency department patients. An assistant professor of emergency medicine and pediatrics at Penn, Baren researches why some people come to the emergency department for asthma treatment rather than going to a primary care physician. Baren hopes to reduce the number of patients who continually return to the emergency department because of their lack of access to follow-up care. She has studied the effect of giving patients free medication and transportation vouchers for visits to primary care physicians.

John McConaghy (MD '89) is the new residency director for the family medicine program at Ohio State University. He's already planning leadership opportunities for his residents—encouraging them to participate on committees as well as in research and clinical activities. Ohio State residents work in either rural, urban, or traditional family medicine residencies. McConaghy plans to strengthen the program by establishing an academic track to entice faculty and residents to conduct research in family medicine.

unteer to staff the clinic tend to the most common health care needs, including minor surgeries, and see many patients with chronic conditions. Patients are charged one hour of their wages, an average of about $6.

The clinic's 7,000 patients know how valuable the Lascheids' work has been. Now, others have taken notice. In June, the Lascheids were honored with a national Jefferson Award for Public Service; they were feted at a DC award ceremony and also recognized at the White House, the US Senate, and the Supreme Court. The Robert Wood Johnson Foundation gave the Lascheids $100,000 for the clinic, and a benevolent businessman from Chicago donated $1.5 million. The benefactor told the Lascheids that when he and his wife started out, they, too, would have qualified for such a clinic. *—MH*

'90s

Robert Zimmerman (MD '91) has been interested in scientific research since he tried

Continued on next page

THE WAY WE ARE: CLASS OF '67



In the 1960s, medical students at Pitt might have dreaded cutting sutures for J. R. Watson. He'd often bark, "too long," or "too short," making the student in question recut the sutures to the correct length.

John J. Lamberti Jr. (MD '67) was scrubbing in with Watson when he turned to the veteran surgeon and asked, "How would you like the sutures today? Too long or too short?" Enraged, Watson threw him out of the operating room.

Thirty-five years later, Lamberti, who attended his class reunion during Pitt's homecoming in October, laughs at the memory, and says he doesn't know what he would do now if one of his students acted like him. He directed the Children's Hospital and Health Center Cardiovascular Institute in San Diego for 10 years before moving to Cornell University's Weill College of Medicine, where he's an associate professor of cardiothoracic surgery. Though he has participated in many clinical trials and published numerous articles about cardiothoracic surgery in children, Lamberti says his participation in the separation of conjoined twins garnered the most widespread attention.

As one of only seven women to graduate from the school in 1967, Ethel Barnoon, another reunion attendee, also attracted her share of attention. After completing a Masters of Public Health degree at Pitt, and then working in San Francisco for a few years, she and her husband moved to Israel. Barnoon soon noticed there wasn't much health care designed specifically for women's needs there. She approached the National Sick Fund, a government health insurance plan serving about 80 percent of the population, and told them women's health centers were needed. It wasn't easy to convince the organization. Her persistence won out, however, and Barnoon soon had funding to establish a network of clinics. She treated a variety of patients, from Russian women who fought in the waiting room to Bedouin women whose entire families camped next to the hospital while they gave birth. The gynecologist is now back in the States.



Babs and David Sharp

The reunion was a trip down memory lane for western Pennsylvania native David Sharp (MD '67). As a teen, he helped his uncle, Fred Zaidan (MD '44), in his rural Westmoreland County office. Years later, Sharp was surprised to learn that his own son, Gregory Sharp, used to sneak into his office to play with the equipment. Gregory Sharp is now finishing his residency at the University of Missouri. David Sharp practices in tiny Houghton Lake, Michigan, where he chops his own wood to fuel the stove in the waiting room of his office. Working on the Class of '67 Scope and Scalpel production *Maim* sparked his love of local theater, says Sharp, who volunteers his time building sets and helping with the lighting during plays at the nearby high school.



Jon Brillman (left), Ethel Barnoon, Tom Hughes

Jon Brillman (MD '67), organizer of the reunion weekend, chairs the Department of Neurology at Allegheny General Hospital. He has served as director of the hospital's stroke program since 1988. *—MH*

Continued from p. 37

growing a cloud out of water as a child. An assistant professor of pathology and laboratory medicine at the University of Pennsylvania, he is studying whether two-color immunostains might help cancer diagnoses. Conventional solid-brown stains used during liver biopsies cannot always identify whether a cancer started there or was a result of metastasis. Zimmerman is trying to develop new immunostaining methods to give physicians more detailed information about where a cancer started, so they'll know whether to investigate further or concentrate their efforts on treating the liver.

Kevin P. Hayes (MD '90) was recently promoted to vice president and medical director of psychiatry at UnumProvident Corporation, Los Angeles, after graduating from the University of California at Irvine with an MBA. His classmates nominated him Best Team Player, an award that makes him smile every time he thinks of it. Hayes enjoyed the emphasis on teamwork he experienced as a business student—a change from his forensic psychiatric practice, where he works alone. While he still testifies in a few civil cases, Hayes devotes most of his time to his corporate position, where he evaluates mental health claims. At the end of October, Hayes joined a delegation of US psychiatrists visiting China to lecture about Western psychiatric practices. He says the Chinese hosts peppered the US doctors with questions about psychoanalysis. Hayes was interested to learn that Chinese therapists prescribe drugs more frequently than Western doctors and that PhDs can administer drug treatments.

S. Tonya Stefko (MD '97) says that after being a chemist for five years, she was ready for a career as a pediatrician. Then she landed an eight-week fellowship with Pitt ophthalmologist Michael Gorin, who predicted she would abandon pediatrics for a career in ophthalmology. A year later, she did. After a residency and fellowship at the Wilmer Eye Institute at Johns Hopkins University, Stefko has returned to Pitt to work with Gorin. While she misses the weather in Maryland, she's busy as an assistant professor and editing an oculoplastics section of a friend's online ophthalmology resource, www.redatlas.org. Stefko says she's happy to be back working at Pitt, in part because she sees her husband every day. For the past four years, Stefko and her husband, the principal double bass player in the Pittsburgh Symphony, commuted between Baltimore and Pittsburgh.

'00s

RESIDENTS AND FELLOWS

Guillermo Quetell (Hand and Microsurgery Fellow '99–'00) is division chief of plastic surgery at State University of New York Upstate Medical University in Syracuse. There hasn't been a division of plastic surgery at that hospital for 20 years, and Quetell enjoys the challenge of creating one. He's busy hiring surgeons, treating patients, and establishing a clinical research program. Quetell is interested in testing agents to improve wound healing and in re-establishing a training program in plastic surgery at the hospital. It's hard work, but fulfilling, he says, to be able to create and nurture a program. *—MH & MES*

PAUL O. KEVERLINE
FEBRUARY 6, 1943–OCTOBER 3, 2002



Keverline

For 25 years, he treated hundreds of patients at his clinics in Pennsylvania and New York. But many folks around Warren, Pennsylvania, knew Paul Orville Keverline (MD '69) best for his flights overhead in a self-propelled parachute.

"People would wave at us," says his wife and copilot, Linda Keverline, of their trips over downtown Warren or the county fair. "They'd stop right in the middle of the road and stare."

Keverline built the craft—a cross between a parasailing rig and small airplane—with his son Andrew Keverline (Res '03, MD '00), one of three who followed their father to Pitt and into medicine. Keverline's oldest son, Pitt College of Arts and Sciences grad Jeffrey Keverline, is now an orthopaedic surgeon in North Carolina; another son, Michael Keverline (MD '97), is an ophthalmologist in Virginia. A fourth son, Doug Keverline, went into business.

"He never pushed them into medicine," says Linda Keverline. "I think they saw how much satisfaction and pleasure it gave Paul—being in medicine—and they felt that it was something they wanted to do also."

The founder of Seneca Eye Surgeons, Paul Keverline died October 3 flying his twin-engine Piper Aerostar. The airplane went down for unknown reasons near the Allegheny National Forest as he returned, alone, from a hunting trip in New Mexico. *—JT*

NATHAN J. STARK
NOVEMBER 9, 1920–NOVEMBER 11, 2002



Stark

German U-boats terrorized Allied shipping in the Atlantic Ocean, sinking more than 500 cargo vessels in 1942. Among those aboard SS *Potlatch* when it was torpedoed was cadet midshipman Nathan J. Stark, less than two years out of junior college. Adrift in a lifeboat, Stark and his comrades survived for 32 days, collecting rainwater and eating chocolate malted-milk balls until they navigated 900 miles to the Bahamas. The ordeal cost each man about 40 pounds.

Stark showed the same persistence the rest of his life. He was Pitt's vice chancellor for health sciences from 1974 to 1984. And though he helped create Medicare, and the University of Missouri's medical school in Kansas City, Stark was not a physician. He was trained as an attorney and came to Pitt from a senior vice presidency at Hallmark Cards. His appointment was controversial, but Stark earned the faculty's respect, says William M. Cooper, former chair of the Department of Medicine at UPMC Shadyside. "He knew what he wanted and what the institution needed," says Cooper, an associate dean of continuing medical education under Stark.

Stark took an 18-month leave of absence from Pitt to serve as undersecretary of Health and Human Services in the Carter administration. After retiring from Pitt, he joined a Washington law firm, specializing in health care policy. *—JT*

IN MEMORIAM

'30s

JOHN C. SHAVER SR. (MD '34)
OCTOBER 17, 2002

REGINALD A. HANCOCK (MD '35)
OCTOBER 4, 2002

BENJAMIN F. BRYER (MD '37)
AUGUST 20, 2002

JOHN E. KURTZ (MD '38)
NOVEMBER 10, 2002

'40s

ROY C. MONSOUR (MD '43)
SEPTEMBER 21, 2002

JOHN M. SADLER (MD '44)
SEPTEMBER 4, 2002

ELSIE MAY LOGAN REID (MD '46)
OCTOBER 2, 2002

'50s

SHERMAN W. POCHAPIN (MD '51)
SEPTEMBER 17, 2002

GEORGE K. DAVAULT (MD '52)
JUNE 19, 2002

HERBERT L. HANNA (MD '55)
OCTOBER 3, 2002

FRED S. KLEIN (MD '56)
AUGUST 12, 2002

CAROLE JEAN ASKEY SKELLY (MD '59)
AUGUST 28, 2002

'80s

LARRY J. PAPINCAK (MD '81)
OCTOBER 24, 2002

PATRICIA FERRIERI: DRUMMING UP ANSWERS

BY JASON TOGYER



Ferrieri studies the more insidious form of strep.

TOM ALTANY

Strep infections are common among children. But Patricia Ferrieri, who grew up with her share of ear and throat infections, had an unusual curiosity about the microbes that made her sick. And for good reason: Her father's sister died of rheumatic heart disease at a young age after coming down with strep throat. The stories he told about the aunt Ferrieri never knew were "sort of the shadow of my childhood," she says. Before she graduated high school in North Braddock, Ferrieri had made up her mind: "I wanted to go into medicine."

These days, Ferrieri (MD '65) is a professor of laboratory medicine and pathology as well as pediatrics at the University of Minnesota medical school in Minneapolis. She directs the clinical microbiology lab at the university hospital.

The streptococci responsible for many childhood doctor visits are known as group A; Ferrieri is searching for the key to a more insidious variety—group B. Between 10 and 30 percent of the population carries group B strep (GBS) in their gastrointestinal tract, and most never get sick. It's part of our normal microbial flora. Yet for those with weakened immune systems, group B strep can cause life-threatening diseases, from meningitis to sepsis. For infants, the statistics are grim—if GBS in the vaginal tract is passed to a newborn during delivery, the child stands a good chance of becoming ill within hours of birth. One in every 20 babies with GBS disease dies from the infection, according to the Centers for Disease Control and Prevention.

Antibiotics given during labor lower the risk—this, however, "is not a perfect approach," Ferrieri says. Some strains of GBS are becoming resistant. Antibiotics also kill beneficial bacteria in the GI tract. Ferrieri will tell you the best bet is a GBS vaccine. Through genetic sequencing, her lab has identified new protein antigens of GBS; now, she and her colleagues are profiling these antigens and others in GBS.

Her work has been crucial to a team at Magee-Womens Research Institute studying an experimental GBS vaccine, says Sharon Hillier, MWRI senior investigator and a Pitt professor of obstetrics, gynecology, and reproductive sciences. Beginning this month, 600 women in a clinical trial at Magee will be vaccinated—300 with a conventional tetanus shot and 300 with an experimental GBS inoculation. All cultures collected will be sent to Ferrieri's lab to see which strains of GBS are emerging and which the vaccine is controlling.

"She has helped researchers around the world understand group B strep," Hillier says. "She's someone who's extremely meticulous and extremely committed."

Adnan Dajani, retired professor of pediatrics at Wayne State University School of Medicine in Detroit, remembers Ferrieri as an infectious diseases fellow at the University of Minnesota. In 1968, she spent three months with him on an Ojibwa reservation, studying the spread of group A strep among children. Though the days were grueling, the data they gathered led to the discovery of a new strain, and Ferrieri "was a major player in that," he says. Dajani was impressed even then by Ferrieri's persistence.

The Food and Drug Administration and the National Institutes of Health have tapped Ferrieri several times to evaluate vaccines. In her most recent appointment, she is serving on a blue-ribbon NIH panel evaluating new anthrax vaccines.

Ferrieri warns, no matter how much you love your work, you have to carve out time for yourself: "It's very easy to become resentful." Her latest pursuit is taiko—an intense and athletic Japanese drumming style. "I can't define for you why I like it," she says. "It touches your soul." ■

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Maybe Western Psych sleep researchers don't need to work so hard to recruit subjects for their studies. Maybe they could just look around Scaife Hall, as these yearbook photographers did (clockwise from top left: 1995, '63, '53, '54, '95). Let's hope these photos weren't all taken while the same professor was talking.

PHOTOGRAPHY | *HIPPOCRATEAN* AND *AESCULAPIAN* YEARBOOKS

CALENDAR

OF SPECIAL INTEREST TO ALUMNI AND FRIENDS

C. F. REYNOLDS MEDICAL HISTORY SOCIETY

JANUARY 21
Scaife Hall, Lecture Room 5
6 p.m.
John Lazo, PhD, Speaker
"History of Anti-Cancer Drug Therapy: Crystal Balls and Rear View Mirrors"
For information
erlen@pitt.edu

FEBRUARY 27
Scaife Hall, Lecture Room 5
6 p.m.
Stephen Peitzman, MD, Speaker
"A Door of Opportunity in Pennsylvania: Women and Men of Woman's Medical College"
For information
erlen@pitt.edu

MARK M. RAVITCH HISTORY OF MEDICINE LECTURE

APRIL 10
Scaife Hall, Lecture Room 5
6 p.m.
Shelley McKellar, PhD, Speaker
"Operating Beyond the Boundaries: Cardiac Surgery from Blue Babies to Artificial Hearts"
For information
erlen@pitt.edu

MATCH DAY

MARCH 20
Scaife Hall, Lecture Room 4
Noon
For information
Student Affairs Office
412-648-9040
student_affairs@medschool.pitt.edu

16TH ANNUAL BLACK BAG BALL

APRIL 25
Pittsburgh's Cathedral Hall
McKees Rocks, Pennsylvania
For information
Medical Alumni Association
412-648-9090
medalum@medschool.pitt.edu

FOURTH ANNUAL PITT MED GOLF OUTING

APRIL 26
Quicksilver Golf Club
8:30 a.m.
Midway, Pennsylvania
For information
rptst7@pitt.edu
412-648-9090

STARZL LECTURE

APRIL 2003
For information
Kathleen Haupt
412-647-5314
www.surgery.upmc.edu

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SENIOR CLASS LUNCHEON

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ANNUAL ALUMNI DINNER DANCE

MAY 16
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GRADUATION CEREMONY

MAY 19
Carnegie Music Hall, 10 a.m.
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TO FIND OUT WHAT ELSE IS HAPPENING AT THE MEDICAL SCHOOL, GO TO www.health.pitt.edu.



NONSTOP HIT PARADE

If you remember dancing to the theme song from *Moulin Rouge* (the one with Jose Ferrer, not the one with Nicole Kidman), the tune that spent 19 weeks at Number 1 on *Your Hit Parade*, you might be a member of the Class of 1953.

If so, join your classmates—along with the Classes of '38, '43, '58, '63, '73, '78, '83, '88, '93, and '98—for the annual Alumni Dinner Dance, May 16. It all takes place during Reunion Weekend at the School of Medicine. We promise you won't hear that other 1953 *Hit Parade* favorite, *How Much Is That Doggie in the Window* (12 weeks at Number 1—arf, arf!).

For more information, call the Medical Alumni Association: 1-877-MED-ALUM.

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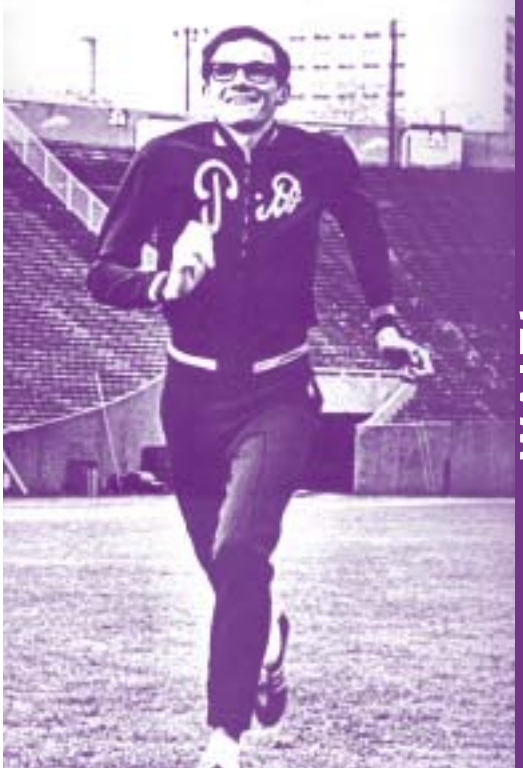
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