Obesity and weight loss are on everyone’s lips today. President Obama recently launched a task force on the topic, citing obesity rates that put kids and adolescents at risk for adult-level health problems, such as cardiovascular disease, high blood pressure, and type 2 diabetes. It’s a $30-billion industry of pills and powders promising an easier path to fitness. Now, two teams of researchers from GW’s School of Public Health and Health Services are working to turn all of that lip service into action.

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From the Editors

As with any publication, there comes a time when some changes are due. With this issue, we are pleased to introduce a new design for Medicine + Health, the signature publication of The George Washington University Medical Center (GWUMC). We hope you will find that these changes in graphics, layout, typeface, and photography are pleasing to the eye and make reading the magazine a more engaging experience.

Look and feel, however, are only part of any publication’s success with its audience. What matters most is content — the substance of what you read and whether you find it informative. With this in mind, we have shifted the editorial direction of Medicine + Health to better reflect and illuminate the serious, significant, and exciting developments around the Medical Center. In particular, we have placed a new emphasis on the research that our faculty in the School of Medicine and Health Sciences and the School of Public Health and Health Services are conducting every day. They are working to overcome some of the most challenging and tenacious problems that confront the health of our society, and we intend to keep you informed of their progress.

GWUMC is a large, complex institution where a lot of interesting things happen daily. So we also plan to keep you updated on a range of other topics and activities that take place here: advances in clinical care by our physicians at The George Washington University Hospital and our physician practice, the Medical Faculty Associates, developments in our educational programs, achievements of our students and alumni, and the generosity of our philanthropic supporters, among many others.

Finally, we want to ensure that you, our readers, can maintain a connection to Medicine + Health. So we invite you to send your letters or e-mails to editor@gwumc.edu and let us know what you think. We welcome the chance to hear from you and look forward to publishing your comments in future issues.

Sincerely,
The Editors
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On the Cover: Photography by Holger Thoss
May marks the end of another academic year at The George Washington University Medical Center, and I’m pleased to report, as you’ll read in this issue of *Medicine + Health*, that this year was one of extraordinary accomplishments. Breakthroughs in research and advances in clinical care by our faculty, outstanding residency matches among our graduating students, and countless efforts by our staff to improve the way we do business at the Medical Center reflect our continuing progress as one of the nation’s leading academic medical centers.

This year, however, was especially important for the Medical Center as the president and Congress waged a contentious battle over reforming the nation’s health care and insurance systems. As you might expect, GWUMC did not stand on the sidelines and simply listen to the partisan exchanges. Instead, a number of our faculty and students were actively engaged in the debate, offering academic insights, innovative ideas, and well-researched opinions on a range of the many complex policy issues at the heart of the health care bill.

While there are still many skeptics who question the cost of the legislation and its impact on the way we deliver health care in this country, and while few would argue that the bill that was signed into law is perfect, I see it as an important first step in achieving what should be a primary goal of every modern, civilized society: comprehensive access to quality, affordable health care for its people. The question for me is not “How can we afford it?” Rather, it is “How can we afford *not* to take this step forward?”

My career in medicine, education, and public health has taught me that, at the end of the day, when an issue of vital national importance is finally brought to the forefront, we can find a way to make things work over time. But it requires determination, creativity, and a spirit of common purpose. This has been true with almost every major piece of legislation over the past century — from Social Security to Medicare and Medicaid, to civil rights and environmental laws, and others.

We are well positioned at GWUMC to have an impact on how this legislation unfolds in the years ahead. We have programs in wellness, prevention, and survivorship. We are teaching and training the next generation of physicians, scientists, nurses, and other medical, policy, and public health professionals who will carry out the bill’s new rules and regulations. We are conducting important research on the most vexing medical and public health problems. And I am confident that as changes become necessary in the future — and they most surely will — we will be in the middle of every debate to influence the outcome for the larger benefit of our society.

I look forward to what’s ahead and to partnering with all of you across GW’s campus, Washington, D.C., the nation, and the globe as we continue to make progress toward building a healthier world.

Sincerely,

JOHN F. WILLIAMS, M.D., Ed.D., M.P.H.
PROVOST AND VICE PRESIDENT FOR HEALTH AFFAIRS
THE GEORGE WASHINGTON UNIVERSITY MEDICAL CENTER
**Frozen in Time**

**OOCYTE CRYOPRESERVATION PAUSES BIOLOGICAL CLOCK**

They say that youth is wasted on the young; and for the many women belatedly confronting the ephemerality of fertility, this phrase hits close to home. While the modern woman postpones childbearing much longer than her foremothers, her biological clock nevertheless ticks at an anachronistic pace. But what if there was a way to hit “snooze” on the fertility of youth and awaken it during the maturity of age?

*There is,* say GW Obstetrics and Gynecology professors Paul Gindoff, M.D., director, Division of Reproductive Endocrinology, and Anil Dubey, Ph.D., director of IVF and Andrology Labs. Through the process of oocyte cryopreservation, offered at GW’s Medical Faculty Associates, a woman can have her eggs frozen in time.

First developed to preserve the fertility of cancer patients whose treatments prompted premature ovarian failure, egg freezing has since morphed into a personalized choice for women. A patient first takes fertility drugs to stimulate ovulation, then undergoes a procedure to extract dozens of eggs. When the woman is ready for conception, the eggs — which function at the age at which they were frozen — are thawed and fertilized via *in vitro* fertilization. Finally, the healthiest embryos are transferred to the uterus, where — if the procedure is successful — at least one will grow.

The promising future of fertility preservation is something in which Gindoff and Dubey not only believe but also have an influential hand. In conjunction with Travis O’Brien, Ph.D., director of GW’s Pharmacogenomics program, Gindoff and Dubey are pioneering research in personalized medicine and fertility drugs.

“By focusing on the unique genetic profile of the patient, we can maximize the safety and efficacy of the fertility treatment,” says Gindoff.

The doctors are also using genetics to obviate the need for multiple embryo transfers. “We are looking for some sort of clue to determine if an embryo has the potential of giving live birth,” explains Dubey. “If we can have those tools, we can reduce multiple pregnancies.”

As with any emerging technology, egg and embryo freezing comes with its share of caveats and criticisms. The process is expensive and invasive and requires weeks of intense medical management. Further, critics worry that the process — which filters out genetically unsuitable embryos — will unnaturally alter the gene pool.

But Gindoff sees it differently. “That misses the point of what being a physician is all about. We are in the business of removing disease from humanity,” he says. “We now have the opportunity to impact an individual’s life more than ever before.”

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**Frontiers in Medicine**

It’s not every day that the average person gets to discuss health care issues and concerns with national experts. But that’s changing at the GW Medical Center. “Frontiers in Medicine,” a lecture series launched in the fall, is granting the public the unique opportunity to gain firsthand insights from the brightest minds in medicine.

“Often, medical information is obscured by the myriad of information sources out there,” says James L. Scott, M.D., dean of the School of Medicine and Health Sciences. “We are excited to empower our community with knowledge that will help them make the best health care decisions.” Alan Wasserman, M.D., chair of the Department of Medicine and president of the GW Medical Faculty Associates, adds, “Our experts have already provided extraordinary insights to our community, and we look forward to future lectures.”

Series highlights have included a panel of GW women’s medical experts who discussed the truth behind drugs, herbs, and vitamins. During the flu outbreak, Gary Simon, M.D., Ph.D., Walter G. Ross Professor of Medicine and director of GW’s Division of Infectious Diseases, discussed “H1N1: What We Know and What We Don’t.” Opening the series was Pauline W. Chen, M.D., author of the *New York Times* best-seller *Final Exam: A Surgeon’s Reflections on Mortality*, while Stanford University’s Abraham Verghese, M.D., author of *My Own Country* and *Cutting for Stone*, presented the season finale.

For information about upcoming lectures, contact mcdtak@gwumc.edu.
A new study by Valerie W. Hu, Ph.D., professor of Biochemistry and Molecular Biology, has identified key genes that may influence the risk for autism, opening the door to early identification and the development of treatments to reduce or reverse the effects of the disorder.

The study was recently published in the online edition of the Federation of American Societies for Experimental Biology Journal. In it, Hu and her team have identified specific differences in certain chemical compounds on the DNA taken from cells of identical twins and sibling pairs in which only one of the twins or siblings in the pair received a diagnosis of autism. Among those differences was the number of methyl groups that tag specific regions of the genes and are very important to regulating activity in those genes. “We then compared the genes that showed changes in chemical tagging with the list of genes that showed different levels of expression [presence in cells] from these same individuals using data from our previously published studies,” says Hu.

One particular gene that showed an increased methylation state (chemical tagging) was retinoic acid-related orphan receptor-alpha (RORA), which affects multiple processes known to be defective in autism, such as development of the cerebellum.

The discovery is particularly important because it demonstrates the potential for developing a blood test to identify biomarkers for autism in tissue other than the brain, which is critical for diagnostic screening.

More important, the study identified “epigenetic” changes (outside of genetic mutations in DNA) that may contribute to autism by switching genes on or off, meaning changes in DNA tagging may be reversible by appropriate pharmacological treatment.

“If a deficiency in the RORA gene is responsible for a number of the symptoms associated with autism, and if its expression can be ‘normalized’ by adding or removing specific chemical compounds [methyl groups] to the gene with drugs that control methylation, it would constitute a form of targeted therapy for the disorder,” Hu explains. In fact, drugs that affect the tagging of genes are already being used in cancer treatment. “It may be possible to reverse or ameliorate at least some of the deficits seen in autism by the proper use of drugs that target the methylation state of specific genes,” she says.

This study builds upon Hu’s earlier work identifying several different subtypes of autism. She felt that genetic and other biological analyses of autism spectrum disorders, or ASD, have been hampered by the disorders’ wide range of symptoms and functional deficits. By grouping individuals with ASD on the basis of severity of over 60 behavioral and functional symptoms, the team was able to define four relatively homogeneous subgroups, each with a distinct profile of symptom severity. Different gene expression “signatures” were obtained for individuals from three of the subgroups studied so far, including one with severe language impairment, a second group with milder symptoms typical of Asperger’s syndrome, and a third with “savant” skills. The subgroup-associated gene signatures not only reveal information about the underlying biology of autism but also suggest the potential for developing diagnostic tests for autism based on these genetic “biomarkers.”
From the Lab to the Limelight

Research Day 2010

Research took center stage when The George Washington University Medical Center hosted the 15th annual Research Day on March 15, celebrating studies conducted by GW students, residents, and faculty. Posters and oral presentations spanned topics ranging from Kawasaki disease to the health care needs of East Baltimore youth.

With a focus on autism research, this year’s agenda featured keynote speakers Daniel Geschwind, M.D., Ph.D., professor of Neurology and Psychiatry at the UCLA School of Medicine, and Mark Batshaw, M.D., professor and chair of the School of Medicine and Health Sciences’ Department of Pediatrics and chief academic officer at Children’s National Medical Center. Along with an interdisciplinary panel of GW faculty, the speakers underscored the complexity of autism, a developmental disorder affecting as many as one in every 110 American children.

During the award ceremony, students, residents, and faculty from all schools within the Medical Center were recognized for their exceptional work, posters, and oral presentations. Annual prizes were also awarded, including the Doris DeFord Speck and George Speck, M.D., Endowed Prize, which was presented to Joshua Barocas; the Elaine H. Snyder Cancer Research Award, presented to Susan Ceryak, Ph.D., associate professor of Pharmacology and Physiology; and the 2010 Distinguished Researcher Award, which was presented to John Lachin, Ph.D., professor of Epidemiology and Biostatistics and of Statistics.

For a complete list of award winners, visit www.gwumc.edu/smhs/students/awards.html

A New Home for HEALing

GW STUDENTS EXPAND STUDENT-RUN CLINIC

Since GW’s student-run Health, Education, Active Living (HEALing) Clinic was founded in 2006, students have clamored to participate, requiring a lottery system for the 80 coveted volunteer spots. Demand is doubly overwhelming for patients, uninsured and underinsured D.C. residents competing for appointments during the clinic’s convenient evening hours.

Rahul Vanjani and Marissa Watts, second-year medical students and the clinic’s co-directors, found one answer to both issues: expansion. “The more I saw the role that the clinic filled in patients’ lives, the more I thought — how can we benefit these patients even more?” explains Watts. In January, the duo led the charge to open the second HEALing Clinic, making GW’s the most expansive student-run clinic network in the region.

Anacostia, the District’s most medically underserved neighborhood, and the Family and Medical Counseling Services clinic were a natural fit for the new location. The clinic draws mainly HIV-positive patients, though most are seen for co-morbidities such as hypertension or diabetes. “We thought we had seen underserved patients before, but this is a whole new level,” says Vanjani.

At both clinics, medical, health sciences, and public health students, under faculty supervision, provide comprehensive primary care and patient education services to local residents. While the clinic at Bread for the City in the District’s Shaw neighborhood schedules only one-time appointments, the new site’s larger facilities allow patients to return for follow-up care.

“Now, we can ask our patients to return, which allows for important continuity of care and chronic care management,” says Vanjani, noting that regular patient follow-up improves health behaviors, such as medication adherence. “The vast majority of the time, they do return. And they are so thankful for the care and information they’ve received.”

For Watts, that gratitude is reciprocated. “Our patients let us learn from their illnesses and symptoms and give us experiences we’ve never had. They are contributing to our education in such a valuable way.”

HEALing Clinic co-directors Rahul Vanjani, left, and Marissa Watts

FROM THE CENTER

HOLGER THOSS
Medical Education Goes Green

Concerns about the environment, its hazards, and its impact on human health are everywhere, including, increasingly, the doctor’s office.

“More and more, patients are asking their physicians about environmental health issues,” says Jerome Paulson, M.D., F.A.A.P., associate professor of Pediatrics and of Prevention and Community Health and research associate professor of Environmental and Occupational Health. “For example, I like to run outdoors. What should I do when the air quality is code red? Or, a school is being built next to an apple orchard in my community. What impact will the pesticides used in the orchard have on the children?”

It’s this trend that led Paulson, along with Benjamin Gitterman, M.D., associate professor of Pediatrics and of Public Health, and the Office of Student Opportunities at the School of Medicine and Health Sciences, to launch an Environmental Health track program this past fall. Through lectures, research projects, and specialized internships, students can customize their medical education and become specialists in this rapidly expanding field.

“Medical education, currently, does not adequately address the area of environmental health. Few institutions nationally have formal education in this area. Yet the impacts of the environment have already emerged as having significant impact on individual and community health,” says Gitterman. “This track will expand both the knowledge base and individual opportunities for future physicians.”

The track, which is funded for the first year by the National Environmental Education Foundation, will cover issues such as “greening” a hospital or practice, the impact of pollutants, and environmental health history. Course work will also integrate hands-on experience in basic, clinical, and community research opportunities. Finally, the track will place a strong emphasis on environmental health policy.

“Physicians need to be involved in the public policy process around environmental health.”

Leading the Exercise Revolution

For Loretta DiPietro, Ph.D., M.P.H., chair of the Department of Exercise Science, a graduate program that addresses the relationship between physical inactivity and chronic disease is long overdue. But for those who are only now awakening to the crippling effects of a sedentary lifestyle, the School of Public Health and Health Services’ new program in Physical Activity in Public Health is a major step forward.

“This program addresses a very important need in the public health arena right now,” says DiPietro. “Disuse and lifestyle-related diseases now comprise the majority of the public health burden.”

The second of its kind in the nation, the program—which offers both a Master of Public Health and a graduate certificate in Physical Activity in Public Health—adopts an interdisciplinary approach that bridges the gap between the traditional fields of Exercise Science and Public Health. Students enrolled in the program can choose from tracks in Epidemiology or Program Design and Evaluation.

“This program reflects our deep commitments to individuals, our community, and our nation,” explains SPHHS Interim Dean Josef Reum, Ph.D.
The GW Medical Center recently received a $15-million National Institutes of Health (NIH) grant through the American Recovery and Reinvestment Act (ARRA), the largest NIH grant in the University’s history, to create a modern research complex and establish the Research Center for Neglected Diseases of Poverty. The state-of-the-art center will be co-led by Peter Hotez, M.D., Ph.D., GW Distinguished Research Professor and chair, Department of Microbiology, Immunology, and Tropical Medicine, and Maria Elena Bottazzi, Ph.D, associate professor and vice chair for Administration.

“GW is the only institution in D.C. to receive an NIH ARRA construction grant, and the creation of this dynamic complex will transform biomedical research at GW,” explained John F. Williams, M.D., Ed.D., M.P.H., provost and vice president for Health Affairs, and principal investigator on the grant. The collaborative grant application process was led by Ronna Halbgewachs, M.B.A., M.A., assistant vice president for Planning and Health Affairs, and the team included Drs. Hotez and Bottazzi, Anne Hirshfield, Ph.D., associate vice president for Research; and David Wellman, A.I.A., LEED A.P., Facilities Management project executive, among others.

The center will conduct translational research for the development of new vaccines, therapeutics, and diagnostics for both neglected tropical diseases (NTDs), the devastating scourge of the “bottom billion” — the poorest people in the world who live on less than one dollar a day — and a unique group of neglected infections of poverty (NIoPs) in the U.S. which have been recognized as one of the greatest health disparities affecting the nation’s African American and Hispanic American populations. “The NIoPs in the U.S., like the NTDs overseas, occur in the setting of poverty, trapping people in poverty because they are often too sick to work or attend school,” explains Hotez.

In the next 12 months, extensive renovations will begin inside Ross Hall, covering 25,000 square feet over two floors to house the center and unite a multidisciplinary team of researchers currently scattered across GW’s campus. The project will obtain LEED certification — an internationally recognized green building certification system.

“The renovations made possible by this grant, we have the potential of becoming an international leader in this important field of biomedical research,” says GW Vice President for Research Leo Chalupa, Ph.D.
Breast Cancer Survivors Shoot Hoops for Health

It makes sense that combining two clinically proven ways to improve breast cancer survival — physical activity and group therapy — could bring better results than each approach on its own. But the George Washington Cancer Institute’s (GWCI) Office of Survivorship is the first to pursue such a sensible — and salubrious — endeavor.

Healing with Basketball, a free monthly clinic for breast cancer survivors, pairs the physical benefits of vigorous exercise with the emotional benefits of group therapy. The program’s founders, psychotherapist and breast cancer survivor Lynn Grodzki and personal trainer Andrew Weiss, use the team sport as a metaphor for survivorship, pushing program participants to their limits. But survival on the court translates to thriving off the court, and the strength, confidence, and friendships gained last long after the final buzzer.

Grodzki admits it was hard getting motivated to exercise after her mastectomy. When her trainer suggested basketball, she was reluctant because she had never played before. But once she started she never turned back. “I am thrilled that a sport that has helped me immensely is now helping many more breast cancer survivors,” says Grodzki.

“We are very excited about the program,” says Mandi Chapman, GWCI’s director of the Office of Cancer Survivorship and co-director of the Center for the Advancement of Cancer Survivorship, Navigation, and Policy. “GWCI is a leader in building community-based collaborations to improve the lives of cancer patients, and this program is another demonstration of our commitment to improving and expanding support for cancer survivors city-wide.”

GWCI will evaluate Healing with Basketball, a pilot program, to quantify its results. But for the participants, the real gains can’t be measured in statistics. “I know that the clinics heal my body and soul,” says clinic participant and GW Medical Center employee LaWanda Fountain. “And that’s what matters.”

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It’s a Match!

For fourth-year students in the School of Medicine and Health Sciences, everything comes down to one life-defining moment: Match Day.

At noon on March 18, 2010, medical students across the country simultaneously ripped open letters from the National Resident Matching Program, revealing where they will spend the next three to five years as residents in training.

“This is a monumental moment,” said Pascale Lespinasse, who matched with her top choice, an internal medicine residency at the New York University School of Medicine. “It is the foundation for the rest of your career. We work really hard, and now it is really all paying off.”

The day proved a remarkable success for GW, as students again matched above the national average of 94 percent.

“This is an absolutely remarkable match,” said Dean James L. Scott, M.D. “Not just the overall numbers, but the places you are going.”

For a complete list of Match Day results, visit www.gwumc.edu/matchday/.
Putting Quality First
GW’s Department of Nursing Education to Lead Alliance for Quality Care

By Anna Miller

When it comes to quantitative issues in health care, there is no shortage of statistics, polls, rates, or dates. Qualitative issues, however, are another story. While quality of care is of upmost importance, its evaluation and promotion are not so simple.

Thanks to The George Washington University’s Department of Nursing Education (DNE), the fight for quality care is about to get easier — or at least more organized. Through a recent grant from the Robert Wood Johnson Foundation, the DNE launched the Nursing Alliance for Quality Care (NAQC), a collaboration of the nation’s most prestigious nursing organizations that will give voice to the profession of nursing and bolster safe and effective care for patients.

“The role of nursing in health care quality improvement has always been critically important. It is even more important now as improving the quality and value of patient care takes center stage,” says Michael W. Painter, J.D., M.D., senior program officer at the Robert Wood Johnson Foundation.

“NAQC will help create a durable collaboration among nurses, patients, and other health care stakeholders that will help us all improve care.”

NAQC will work to ensure that patients receive the right care at the right time; that nurses actively advocate and are accountable for consumer-centered, high-quality health care; and that policymakers recognize the contributions of nurses in advancing high-quality health care for patients.

And who better than GW to spearhead this agenda? According to Jean Johnson, Ph.D., F.A.A.N., senior associate dean for Health Sciences Programs, no one.

“The Department of Nursing Education is particularly well situated to lead NAQC because of our commitment to improving nursing care at the bedside through research and education,” she says. “We are also a neutral party located in D.C., which will help us achieve our aim of bringing nursing’s view to policy decisions centering on quality of care.”

Johnson will serve as co-principal investigator of NAQC, along with Ellen M. Dawson, Ph.D., A.N.P., chair of the Department of Nursing Education. Jan Bull, program director of Health Care Sciences, will serve as the alliance’s administrative director.

“In the era of health care reform, recognizing the critical role of nurses in quality care is imperative,” says John F. Williams, M.D., Ed.D., M.P.H., provost and vice president for Health Affairs at the GW Medical Center. “This alliance will bring patient needs to the forefront of health care.”
Rakesh Kumar, Ph.D., breezes into the office, shakes my hand, whips off his coat, and gently thrusts a printed e-mail my way. He's just returned from Japan but brushes aside small talk about the trip. This e-mail has caught his attention. As if we're old friends, he looks me in the eye and says, “This is something I want to share with you.” A team of Swedish researchers has just published a breast cancer study involving 912 patients. The team’s results validate Kumar’s original prediction about a certain enzyme that overwhelms the breast cancer treatment tamoxifen, rendering patients insensitive to the drug. And the study lends weight to the hope that drugs blocking this enzyme might help hundreds of tamoxifen-resistant women. Last June, the pharmaceutical company Pfizer began clinical trials on a drug that inhibits one variation of the enzyme called Pak4. Pak inhibitors, designed to target Pak, are in development at other pharmaceutical companies as well.
Kumar’s parents had taught him and his five siblings that education was the route out of their small Indian town. With fierce determination, the young Kumar attacked schoolwork aggressively and strategically. High grades opened doors at universities, including graduate school at one of the most prestigious medical schools in India, the All India Institute of Medical Sciences in New Delhi. In 1984, Kumar received his Ph.D. in Biochemistry. Two years later, he began a postdoc at Memorial Sloan-Kettering Cancer Center in New York. After three years, he joined the renowned laboratory of John Mendelsohn, M.D., then the chair of the Department of Medicine at Sloan-Kettering and now the president of M.D. Anderson Cancer Center in Houston. “From the beginning, Rakesh worked harder than anyone I had ever seen in the laboratory,” says Mendelsohn. “He showed all the signs of someone who would make a new discovery. By the time we were both at M.D. Anderson, he was teaching me as often as I was teaching him.”

Kumar’s longtime collaborator at Baylor College of Medicine, Bert W. O’Malley, M.D., echoes the sentiment. “Rakesh has an imagination that sets him apart from other scientists. And he uses a combination of accurate laboratory science and imagination to predict the unknown.” O’Malley adds, “Those types of people who become so immersed in their scientific lives are the ones most likely to make major discoveries.”

PASSING THE TORCH
It was Kumar’s enthusiasm for education and passion for science that successfully took him from his small town in India to the highest ranks of cancer research in the United States. In less than two decades he had leapfrogged from Sloan-Kettering to Pennsylvania State University College of Medicine to M.D. Anderson, where he became deputy chair of the Department of Molecular and Cellular Oncology. In 2009 he was recruited to The George Washington University as the Catharine Birch and William McCormick Endowed Chair of the Department of Biochemistry and Molecular Biology. Over the course of his career, he has authored some 228 peer-reviewed manuscripts in prestigious journals. Kumar’s wife and two sons have followed him throughout his career. Neeta Kumar — whom Kumar fondly refers to as his major motivator, inspirer, and lifelong partner — says of him, “Rakesh is a good father and a good role model. He’s a good human being. Science is a passion for him, and I love to see him work hard. In the end, I know that everything he does is for us and to help patients with cancer.”

It was Kumar’s enthusiasm for education and passion for science that successfully took him from his small town in India to the highest ranks of cancer research in the United States.

Perseverance, originality, and careful planning work for Kumar, and now he impresses these ideals upon his children and students alike. He’s particularly fond of helping underdogs rise. He tells the stories of two of his former post-doctoral fellows, who had been labeled troublesome by their previous supervisors. But Kumar immediately saw a spark in them and, despite their history, decided to give them another chance. Within a year of joining the lab, one published a high-profile article. “When I can see a desire in an individual to work hard in science — no matter what I’ve heard about them — I believe in giving them an opportunity. And that second chance really motivates them. So this makes me believe that if you motivate such individuals, they will do even better than others.”

The George Washington University Medical Center was able to recruit Kumar from M.D. Anderson because after a decade of research there, Kumar longed to teach and interact with students. He had begun to crave a university setting yet wanted to continue to pursue original research at a prominent medical center. As a professor and chair of the Department of Biochemistry and Molecular Biology, he’d be able to do both. “This was my dream come true,” Kumar says. “At this point in my career, one more publication is not going to do anything for me. So the way I feel good now is to inspire and motivate students, fellows, and people around me and champion the cause of high-quality, meaningful, and original cancer research.”

In return, GW’s administrators looked to Kumar as someone who could strengthen research at the Medical Center. Kumar plans to revive research in biochemistry, molecular biology, genetics, cell biology, and bioinformatics. “My role as a new chair is to not only support and further strengthen
education but to build up the Medical Center’s research portfolio,” he adds. Kumar’s plan involves seeking out creative, young investigators in up-and-coming areas, such as signaling, DNA repair, and chromatin remodeling. With a long track record of spotting excellent talent, Kumar intends to hire investigators who will grow and nurture the department. “I try to get a sense of whether or not someone is looking for a job or has a genuine passion for research,” he explains. “I go with my gut. I look for someone who is dying to do something big in science. You can just feel it.”

A STRATEGIC MIND

Early on, Kumar realized that to succeed in the highly competitive world of cancer research, he’d have to approach problems from a different angle. (As he tells his students, “You either walk out of the game or play a better game.”) In the mid-’90s, he decided to focus on how cancer cells move and invade other areas. After all, cancer often kills when tumors invade new tissues. Nerve cells, he knew, relied on a family of protein-modifying enzymes called Pak (short for p21-activated kinases) to move. And Pak1 was controlled by proteins and hormones that stimulate growth, which were also associated with cancer. Kumar had a hunch that Pak1 could be used by cancer cells as well. In 1997, he and his small team at M.D. Anderson had evidence that Pak indeed helped breast cancer cells mobilize and invade. Kumar and his postdoc, Ratna Vadlamudi, now at the University of Texas Health Science Center, submitted the results to a scientific journal. Kumar’s enthusiasm for the project had been infectious, which made Vadlamudi wholly unprepared for rejection. One reviewer on their rejected manuscript commented that the team must be crazy to link Pak1 with cancer. “I was so upset,” Vadlamudi recollects. “I went to Dr. Kumar and said, ‘What should we do? We’ve put over a year into this and can’t publish.’ But he looked at me calmly and said, ‘This is how science works.’” Indeed, another journal, the Journal of Biological Chemistry, published the results in 1998. Since that time, Kumar and his collaborators have authored nearly 50 manuscripts on the molecule. Pak1 has been found in association with ovary, colorectal, thyroid, and pancreatic tumors as well. Kumar, in effect, built a field where there was none before.

Approximately 70 percent of all breast cancers involve abnormal signaling by the hormone estrogen. Estrogen acts by triggering estrogen receptors, and, therefore, a popular way to treat breast cancer is to intercept one receptor, estrogen receptor-alpha. When activated, the receptors send signals that tell cancer cells to multiply. By preventing the receptors from activating, drugs like tamoxifen slow cancer progression. But many patients fail

Lab work All important discoveries start with a good question, Kumar is fond of saying. He imbues a sense of perseverance, originality, and careful planning in his students.
Not Just a Fluke

STOPPING THE WORM THAT’S DEVASTATING SOUTHEAST ASIA

BY SAM KEAN

It should have been a routine sonogram. Health officials in rural Thailand, who had been tracking the presence of a parasitic worm in the local population, were checking a 50-year-old woman’s gall bladder for inflammation — a clear indication of the presence of the parasite — nothing more. Normally the gall bladder is a small organ, less than two inches by three inches. But that morning, something else filled the sonographer’s screen: a malignant tumor twice the size of the organ itself.

The shocking size and rapid growth of the tumor — until then, the woman had shown no symptoms — stood out in the minds of everyone involved. It also perfectly captured the nature of this cancer ravaging Southeast Asia: It’s slow to wake but mean when it does, taking people unawares. Some six million people in Thailand are infected with the cancer-causing worm. An additional 600 million throughout the region are at risk, and up to five percent of those infected develop tumors. What’s more, the cancer preys not only on the body but also on one of the most traditional aspects of Thai life: fish, a staple of the rural diet. It’s like telling Americans that burgers and fries cause untreatable cancer.

Paul Brindley, Ph.D., a tropical disease specialist and professor at The George Washington University Medical Center, dedicates much of his research to unraveling the dangers of the tiny flatworm at the center of all the destruction, *Opisthorchis viverrini*, or liver fluke. As part of a five-year, $2.75-million International Collaborations in Infectious Disease Research grant with Khon Kaen University, Thailand, he makes three to four trips per year to remote rural areas of northeast Thailand, near Laos. It’s a marshy area, saturated with creeks and pools, and it’s poor, with limited public hygiene. It also has the highest rate of bile-duct cancer in the world, a statistic that Brindley hopes to change.
The epidemiology of the liver fluke infection is clear. Fluke eggs float in marshland water, where snails feed on them. The flukes mature inside the snails, pass through their systems, and emerge as adults in the water. There, they seek out local fish like grass carp and burrow beneath their scales, forming cysts. Both the fish and snail are minuscule. The snail is “half the size of your little fingernail,” Brindley says, while the fish are smaller than a human hand. The flukes are correspondingly tiny, too, and the cysts on the fish are microscopic, invisible to human eyes.

That’s a problem because those fish form an integral part of the region’s diet. Cooking the fish easily kills the liver flukes, but Thai people have eaten the fish raw for hundreds of years. After trapping fish in bamboo baskets or nets, locals ferment and eat them with a sauce in a dish called pla-ra or mince them and mix in chili and Thai condiments as koi-pla (which translates to “raw fish”). Sutas Suttiprapa, a graduate student in Brindley’s lab, ate such dishes when growing up in Thailand, until a school-education program (long since neglected) warned him of the risks. He says both dishes are delicious — spicy and sour at once. But that’s only part of the reason he fears that persuading people to give up eating raw fish will prove difficult: “[People] don’t stop eating it because of the traditional aspect.” He adds, “When they have a festival and invite guests from another community, they’re going to welcome the guests with dishes of raw fish.”

What’s more, combating myths about the fish is hard. “People believe that fermenting will kill the parasite. But they only ferment it two or three days. It would take six months to kill it,” says Suttiprapa. Some also believe that drinking vodka with the dish destroys the worm. Others, he says, “believe if they eat the raw fish, it will make them stronger and healthier. It’s also a ‘guy thing’ — you’re going to be embarrassed if you cook it.”

Once ingested, the flukes worm their way from the small intestine to the liver, where they feed on the cells that line the bile duct. For most people — 70 percent of the population in some areas harbors the fluke — the infection is harmless. The worm grows to a half inch long, lays eggs that are passed through the feces into the watershed, and the cycle starts again. For a fraction of the population, however, the infection in the bile ducts morphs into an aggressive cancer.

One clue about susceptibility to the cancer lies in the treatment of the disease. The drug praziquantel seems to kill the fluke with few side effects. For some, however, “the liver damage — caused by the worm infection — does not resolve after the worm infection has been cleared,” explains Brindley. In fact, inflammation can last for decades, and “if the inflammation doesn’t resolve, they will get cancer.” Pinning down that link between inflammation and cancer has been the goal of Brindley’s study, which wraps up in 2012. In the meantime, his team will continue to screen people and determine the prevalence of the disease.

Brindley is also hunting for the molecular cause of the cancer. He notes that approximately one-fifth of all cancers are caused by infections, usually microbial. Examples include forms of cervical cancer (through HPV) and liver cancer (through hepatitis). The body’s immune system responds to infections by secreting substances that kill infected cells, but those substances can also damage the DNA of bystander cells, which go on to develop cancer. That collateral damage might be what is happening with the liver fluke, too. But the fluke does something more than microbes do. Brindley’s other major discovery was that the worm secretes chemicals that cause cells to divide more quickly than normal. That secretion suppresses the “programmed cellular death” that checks such uncontrolled growth. Both are classic signs of cancer.

No one expected a parasite to cause cancer, and the work is helping to open up an entire field of biological carcinogens, which had been limited to microbes. The International Association of Cancer Registries has recently become very interested in identifying how one living creature can give another creature deadly cancer. “And this little worm,” Brindley says, “is at the absolute top of the list.”

Stopping the worm itself is also at top of the list for the people of rural Thailand, including Suttiprapa. Like many, he has personal reasons for fighting to eradicate the cancer: Just last year, he lost his uncle to gall bladder carcinoma. In the future, Brindley’s research — determining who is vulnerable and perhaps even developing tests for early cancer detection — could help save lives. In the meantime, Suttiprapa is putting his hope in another key part of Brindley’s work — the very strategy that saved him from eating too much koi-pla and pla-ra as a youth — education. “We have to ask teachers to teach students . . . to educate younger people,” he says. “It’s very hard to change people’s habits after 20 years.” Not to mention a way of life hundreds of years old.
There is something special about the third floor of 2175 K Street. It is the feeling that for those here, an office is more than a workplace, a colleague is more than a co-worker, and a job is more than its title. “It” may not be quite tangible, but one thing is clear. There is much more to this place — home to GW’s Department of Health Services Management and Leadership — than what meets the eye.

With more than 3,000 alumni spanning 50 states and 19 countries, HSML has a presence that stretches far beyond its K Street confines. These alumni form an extensive network, linking current students to mentorships and professional development opportunities worldwide. Through its emphasis on experiential learning, community service, research collaborations, and relationships with policymaking and health care organizations, HSML has become one of the largest and most successful programs in the country.

But HSML has not always been so omnipresent. Born 50 years ago as a track in GW’s School of Business, the program was, like many around the country, developed in response to the booming number of hospitals after World War II. Over time, however, HSML evolved into a peerless department among public health schools nationally. With a wink to its past, HSML has maintained the slogan “The skills of business and the values of health care.”

Though HSML’s chair for only a fraction of its history, Robert Burke, Ph.D., Gordon A. Friesen Professor of Health Care Administration, has already proven to be an integral part of the department’s escalating success. In his six-year tenure, Burke has seen the department evolve from a quiet existence to an international presence. He has nurtured an esprit de corps rooted in a passion for care. He was recently awarded a $4.2-million training grant from the Department of Health and Human Services — the first award of this type in GW history. And through the writing of a management textbook for the School’s “Essentials of Public Health” series that is used...
in similar programs across the country, Burke continues to demonstrate that HSML’s influence is widespread.

Now more than ever, our nation’s health care system needs strong and responsive leaders in the field of health care management. In honor of the department’s 50th anniversary, Burke shares why his department is that special place that will answer the call.

Congratulations on your department’s 50th anniversary. Why is this significant?

Of the 65 accredited master’s programs in health care administration around the country, we are one of the top five that has been in continuous operation. We have developed multiple programs in addition to teaching hospital administration, including a strong track in nursing home administration and physician group practice. We’ll soon establish a track in community health center management.

Being in operation for 50 years also means we have trained more than 3,500 students and still have 3,100 alumni, many of whom are top executives in hospital and health care management. Our alumni network is an integral part of who we are, as they assist students with residency placements, mentorships, and other professional opportunities.

If you gave a textbook from this program 50 years ago to a current student, would the material still be relevant?

As a matter of fact, the same author is still writing the classic textbook in one of our courses. While the content changes over the years (like the format of the hospital, the number of surgical suites, and the advancing procedures in hospitals), there are still some basic skills that you have to master. Things like business writing, how to address people, and how to write a thank-you note are timeless skills that were really important in my own career. We teach our students how to hone those skills, because this profession is really all about building relationships.

So while we can teach a lot of the skills that are needed, it is really during the residency when the students can grow those skills. We rely very heavily on our alumni network to get our students into a residency program. At our last count, of the 66 accredited HSML programs, only five were still requiring a residency. Other schools don’t want the hassle or the risk of guaranteeing that their students will get into a residency, but we do. Without our alumni network, this would not be possible.

How does HSML adapt to the constantly changing health care industry?

Here is how I think our program works. The magic number is three. We have a three-year program: two years of didactic and one year of residency. Our courses are taught in three parts: theory, applications, and practice residency. And every course has a writing assignment, an oral presentation, and group work. Life in hospitals is all group work and primarily oral; so, if you don’t have those skills, you won’t succeed.

We have tremendous opportunities because we are in Washington, D.C. For example, our students can attend the National Alliance for Health Reform, a bipartisan program that trains new employees on Capitol Hill about current trends in health care. This way, the students can get up to date on the issues and meet the people who are thinking about these things here in the capital and around the country.

To keep up with changes within the field, we also have alumni come in to teach courses in current topics, like advanced hospital finance, issues in hospital management, and Six Sigma [business management strategy]. The alumni really like coming back and often say how great it is that we are teaching our students the skills that they can use when they start working.

What distinguishes GW’s HSML students and faculty?

The faculty and students here really want to be here and enjoy what we do. They have to have the passion to try to get an organization of very diverse people to work together to help people get well. They must understand that this is not a 9-to-5 job. It is a 24-7 world we live in, and care is always going on.

We also pride ourselves on being tactical. Other schools teach how to make the theory of management better; we teach our students how to do it. For example, every Friday morning we either have a current executive in health care come in and talk to the students or go on site visits to get inside the doors and really look at a hospital or a nursing home. It is this hands-on experience that really sets us apart.

What does the future hold for HSML?

We really want to enhance our scholarship offerings — it is the one area holding us back from being a top-ranked program. We hope to become the No. 1-ranked private university and among the top 10 for all health management programs.

Also, it is my goal to have a fully accredited executive training master’s program within four years. This would allow people who are already in the field to get a degree without taking time off from their jobs. The students would come in for long weekends and supplement some of that with distance learning. Although we don’t want everything to be on the computer, we have to be adaptive to the economy.

We are also working on developing international affiliations. There are few — if any — health services management programs in Europe. But we have an affiliation with a university in Holland, and we will be working with them to kick off some programs this summer. While some things really should be here at Foggy Bottom, we really need to take our place in the world.

We have come 50 years, and we are obviously going to go another 50. Health care is not going out of business — it will be changing, and we are going to be changing with it. It is how we move forward that is important.
RESEARCH PARTNERSHIP SEeks to RE-ENGINEER VOCAL CORD SURGERY

By Brian Vastag | Photography by Danuta Otfinowski
James Hahn, Ph.D., holds what he calls a magic wand — a slender, black piece of plastic about eight inches long. Hahn places the wand near an ersatz patient — really just a hunk of white plastic that replicates a real human neck — and waves it. As he does so, a nearby computer monitor displays a cutaway view of the internal structure of the plastic block, including the simulated cartilage, windpipe, and vocal cords. Hahn flicks the wand to the left, and the image on the monitor tracks the move, acting as a digital window into the hidden anatomy humans need to talk.

“You can see the patient from any vantage point and even take a look from the inside,” says Hahn, chair of the Department of Computer Science and director of the Institute for Biomedical Engineering.

While the patient may be artificial, the need for such X-ray vision during voice-restoring surgery is very real. And no one knows this better than Steven Bielamowicz, M.D., professor of Surgery and an expert throat surgeon at GW. In collaboration with Hahn, Bielamowicz is the principal investigator on an interdisciplinary research project between the School of Medicine and Health Sciences and the School of Engineering and Applied Science. The project aims to develop computer-based tools to improve a rehabilitative surgical procedure for patients suffering from voice disorders caused by vocal cord damage or paralysis.

About one percent of adults develop some kind of grave vocal problem during their lifetimes, says Bielamowicz. Among the most serious vocal problems are those caused by injuries to the vocal cords or to the nerves that feed them, injuries that diminish an individual’s speaking ability — and sense of identity. Intubation during surgery, certain viruses, strokes, spinal surgery, tumors, or other trauma can all lead to the kind of damage that significantly restricts or even paralyzes one of the two vocal cords. When this happens, a person’s voice becomes hoarse and breathy, and the person struggles just to get out a few words. “There’s a
great sense of effort and discomfort, and the quality of the voice deteriorates tremendously,” Bielamowicz says.

Fortunately, Bielamowicz enjoys vast experience performing a type of voice-restoring surgery called medialization laryngoplasty, which can remedy the problem. During the surgery, Bielamowicz makes an incision in the front of the throat and implants a thin sliver of plastic into the vocal cord. The implant supports the weakened or paralyzed vocal cord, pushing that cord into an ideal position for the opposing, healthy vocal cord to vibrate against to make sound.

Shaping and placing the implant are vital for a successful operation, but both tasks are tricky, as the anatomical details vary from patient to patient. “The surgery in its current form is very artful,” says Bielamowicz. “It’s only through a surgeon’s experience and his detailed understanding of vocal cord anatomy and function that he can restore vocal cord vibration and, thus, voice production.”

As the surgery gets under way, Bielamowicz has to track a wealth of information. He needs to characterize the exact type of abnormality that the patient has. “Currently we use very imprecise evaluation tools, when we look at the laryngeal anatomy and try to imagine how the system would work best,” Bielamowicz explains. Throughout the procedure the surgeon repeatedly looks down at the patient’s throat, then up at a monitor displaying data taken from an endoscope placed through the patient’s nose. The endoscopic images reveal the inner anatomy of the throat, showing Bielamowicz the position of the vocal cord. But the endoscopic image floats above the patient on a monitor — and the surgeon is left trying to imagine where, in the actual patient, the features seen in the endoscopic image are actually located. While the endoscopic image can serve as a guide, it’s not until the surgeon makes his incision that he knows exactly where his instruments are going to land in the anatomy.

And in vocal surgery, precision is everything. Placing the implant just a few millimeters too high or too low will render the device useless, and the patient’s voice won’t improve. In fact, despite Bielamowicz’s expertise — he has performed more than 1,000 medialization laryngoplasties over the past 15 years — about 20 percent of his patients need to make return trips to the operating room for minor adjustments of the implants. “That’s probably the most frustrating issue for the patients,” says Bielamowicz, who has operated on opera singers, famous radio hosts, and plenty of non-celebrities, too. “They come back for revision of the surgery, and we put in a larger implant or we shape the implant differently. If we had more information, I believe the need for these secondary surgeries would decrease significantly.”

Enter the biomechanical system, a surgical equivalent to X-ray vision that Hahn is developing. In 2005, he joined forces with Bielamowicz and engineering scientist Rajat Mittal, Ph.D., formerly of The George Washington University and now at Johns Hopkins University, to provide the extra information the surgeon needs to improve
“The ability to talk and to communicate is critical to our well-being.”

the success rate of vocal cord surgery. The team won a five-year, $2.8-million grant from the National Institutes of Health to develop the system. So far the project has progressed so steadily that the team has applied for a renewal of an NIH grant to continue its work.

The project has two main components. One is modeling the biomechanical systems for voice production through a computerized evaluation of airflow and tissue interaction. The second component is the development of a surgical image guidance system. The first will allow Bielamowicz to better plan his surgeries, while the second will direct him during the operation.

Mittal is developing the first component, an airflow simulator much like those used to design aircraft, to optimize the shape and placement of the plastic implant. During surgical planning, the patient will undergo a CT scan that builds a digital three-dimensional image of the throat from the top down. A second CT scan, taken as the patient speaks, provides a glimpse of how the compromised vocal cord is malfunctioning. “We then use the healthy vocal cord as a guide to see how the weakened cord should be moving,” Bielamowicz says.

Next, Mittal’s computer software simulates airflow through the windpipe during speech. The surgeon can then experiment with various virtual implants, moving different sizes and shapes around to restore normal vocal cord vibration and airflow.

These fluid dynamics simulations require a lot of number crunching — the software Mittal is developing renders the vocal cord as 300,000 data points that interact with many hundreds of thousands of moving air particles. Currently it takes about a day to crunch all the data to run the simulation, and the software needs more refining to be fully functional, says Hahn.

After the surgeon has settled on the perfect implant, it needs to be placed. This is when the second component of the project comes into play. The system Hahn is developing will provide Bielamowicz a real-time cutaway view of the interior of the throat during surgery. “This kind of image guidance will allow the surgeon to know exactly where he is with respect to the patient’s anatomy,” says Hahn. “In some sense, we’re giving the surgeon X-ray vision.”

The CT scan of the patient’s throat serves as the underlying basis of that vision. Inside a computer, Hahn’s software then layers two more images on top of the CT data. One image arrives from an endoscope, a small camera placed through the nose and into the throat, while the second image is sent from a stereoscopic camera placed above the patient. The software aligns the layers so that the endoscope image, which displays the inside of the throat in real time, perfectly aligns with the underlying cartilage and bone that the CT scan revealed (see caption, page 20). Likewise, the images from the camera are painted on top of the other two layers, and the entire “virtual throat” is displayed on a large monitor in the operating room.

By wiggling the endoscope’s magic wand, the surgeon can “fly” through the patient’s anatomy, burrowing beneath the skin and muscle, past bone and cartilage to the windpipe and the vocal cord. The wand — which is constantly tracked by the software — helps the surgeon pinpoint the exact spot on the voice box to make his incision and insert an implant.

“The goal is to provide a fusion of visual information,” says Bielamowicz. “Right now, it’s a lot to juggle in my mind. During surgery, I spend a lot of time looking up at the endoscopic image, then looking back down at the patient, then looking up again. If we can simplify that process, errors will decrease.”

Hahn and Bielamowicz have tested the system on cadavers, and they say it’s almost ready for prime time. One hurdle remains: As the surgeon makes his cuts and places the implant, the surrounding cartilage changes shape, throwing the three layers out of alignment. “Cartilage deformation is a real computational challenge,” says Hahn, who has enlisted several graduate students to help him find a software solution.

Once that problem is resolved, the team plans to test the system starting next year.

Bielamowicz predicts that, once operational, the system will dramatically reduce the need for repeat procedures while offering all patients better outcomes — and stronger voices.

“The ability to talk and to communicate is critical to our well-being,” says Bielamowicz. “It’s not just about singers or talk show hosts; it’s people who coach, people who are in sales and marketing, educators, lawyers, doctors. And even if you restore somebody’s voice, and it’s a functional voice but it doesn’t sound like them, that is unsatisfactory to the patient. They just want their voice back.”
Smoking on the Brain

A SCIENTIST’S SEARCH FOR THE ORIGINS OF ADDICTION

BY JENNY MARDER

Perry’s Nut House is a roadside attraction on the central coast of Maine known for its collection of bizarre items: seahorse water pistols, a large stuffed albatross, exotic nut seeds. It closed in 1997 but reopened a year later, not long before David Perry, Ph.D., no relation to the owners, visited the shop during a road trip up the eastern coastline. He returned with a collection of bumper stickers, displaying the name of the shop. One now hangs above his desk. Another graces the door to his Neuropharmacology lab at The George Washington University Medical Center.

The Perry’s Nut House stickers have become something of an emblem for the lab. “You have to be a little nutty to be in science,” Perry explains. “People have to be quick on their feet, be willing to accept a little chaos and randomness. Nuttiness.”

For more than 10 years, this lab has been home to studies on the neurobiology of cigarette smoking, an addiction that Perry says is unmatched: “Heroin and cocaine are addictive drugs that take a terrible toll, but in terms of the sheer numbers of health problems, nicotine completely dwarfs them.”

Perry, director of GW’s Pharmacology and Neuroscience graduate training program, is known for his research on the protein molecules at the surface of nerve cells that are activated by nicotine: nicotinic receptors. “He was one of the first people to work out exactly how to identify which subtype of nicotinic receptor you have in a certain tissue,” says Linda Werling, Ph.D., a close colleague and dean of Graduate Education at the Medical Center.

Within moments of taking a drag from a cigarette, a chain of events begins. As the lungs fill with smoke, nicotine races through the bloodstream and into the central nervous system. There, the chemical locks onto nicotinic receptors in regions throughout the brain. This binding often causes physiological changes in the nerve cells, opening channels and prompting signals to be sent from cell to cell. Nicotine docks to the same receptors as the neurotransmitter acetylcholine, which plays a role in breathing, learning, and memory. As these cells are stimulated, many of them release another neurotransmitter, dopamine, into the reward pathway of the brain, causing a rush of good feeling and energy.

“What nicotine seems to do is enhance the ability of a neuron to release its neurotransmitter,” Perry says. “The same amount of stimulus will cause more dopamine to be released if nicotine is present.” Over time, chronic smoking also causes the brain to sprout more nicotinic receptors, a phenomenon known as upregulation. This is believed to make the neurons more sensitive to the stimulant and increase its addictive characteristics.

More than 70 million people in the U.S. smoke cigarettes, and more than 20 percent of 12th graders and 12.3 percent of 10th graders have reported smoking, according to the
Within moments of taking a drag from a cigarette, a chain of events begins. As the lungs fill with smoke, nicotine races through the bloodstream and into the central nervous system.

National Institute on Drug Abuse. Those who begin smoking during adolescence may have the hardest time quitting, Perry says. Adolescence is a time of spectacular brain development. Synapses undergo a wild growth spurt followed by a pruning process: Brain connections that are used most are strengthened as the least-used are pruned away.

Perry’s focus on smoking during adolescence was piqued four years ago when a graduate student named Menahem Doura joined the lab. Doura wanted to integrate his previous work in genetics with the lab’s pharmacology focus, and liked the creative freedom of Perry’s lab. “He lets you be independent,” Doura says. “He’s accessible but allows you to take the project in the directions you feel are the most interesting.”

Together, Perry and Doura designed an animal study to explore how chronic smoking affects the brain at different ages. They focused on genes in a small region of the midbrain where dopamine is produced, the ventral tegmental area. Since they weren’t studying specific genes, they knew they’d generate large amounts of data. A “shotgun approach,” Perry called it. But their research produced startling results.

The study treated one group of adolescent and one group of adult rats with nicotine for two weeks. Corresponding control groups were treated with saline. Four more groups were treated the same way but allowed an additional 30 days to withdraw from the nicotine.

Using DNA microarray analysis, Perry and Doura were able to determine which genes were activated by nicotine. They separated the gene response into three categories. Among the genes that turned on immediately, some turned off just as quickly and some remained changed for at least 30 days after the end of nicotine treatment. Still others were not affected immediately but by 30 days later had turned on.

Further, the adults and the adolescents demonstrated very different types of gene changes. The adult genes were more likely to be immediately or transiently affected. But the adolescent genes, they found, were much more likely to stay turned on longer or to have a delayed reaction. Says Perry: “The adolescent brain is in the process of developing, and nicotine affects that. So it’s doing something to the brain. It’s changing the development of your brain.”

There was another interesting twist. Many of the genes affected were involved in learning and memory. Perry suspects this is because nicotine structurally changes the brain in a way that makes adolescents who smoke more powerfully addicted than they would be if they had started smoking later in life. “The most striking feature that jumped out at me was, my God, the adolescents seem to have this delayed response or persistent response way more than the adults,” Perry says. “That fits with the idea that something changes in your brain, and then it’s more difficult to give it up.”

Many questions remain, he admits. Cells have tricky ways of sometimes shutting down RNA before it translates into its encoded protein so it’s unclear whether the DNA they’ve studied will make protein, or if the protein would be located in the same brain region.

Data like these, he adds, open up endless possibilities for more research. There are behavioral studies to test whether an animal exposed to nicotine as an adolescent desires it more as an adult. There are studies that would allow rats to self-administer their nicotine.

This last one is a better model for human smoking than the traditional osmotic mini-pump used to deliver nicotine, and the closest thing to a gold standard for addiction, Perry says. Using a lever system, animals could choose the amount of nicotine they want. The chemical would enter the brain as an occasional surge rather than a continuous flow.

There are also studies to be done on specific genes to better understand their function. “If we get a specific gene that looks interesting, we can go in and manipulate that gene and see if it changes their behavior,” he says. He suspects that a better understanding of these genes would offer insight into all kinds of addictive behavior and provide clues on how to help people quit.

At the far end of his lab is a contraption that Perry calls a mad scientist’s dream. The device — made of Plexiglas tubes, needles, and superglue — measures the release of dopamine from cell tissue. He explains proudly how it was assembled, boxed up, and sent to him by a colleague. It’s a clumsy-looking contraption, but lab members report that it works better than more sophisticated versions. That is a source of pride for Perry; the fanciest isn’t always the best. And there is value here in the primitive, the homemade, the invention. The driving force behind the lab, after all, is just that:

“It’s the thrill of the chase,” Perry says. “It’s exciting to find something new. That’s why we all do science when it comes down to it. We play around, and sometimes we find something new that no one’s found before.”
The Biggest Conversation We’re Not Having

Bridging the Physician-Patient Gap in Obesity Management

By Adrian Granzella Larssen | Illustration by Francesco Bongiorni

It’s a problem of colossal proportions. The Centers for Disease Control and Prevention recently reported that more than two-thirds of U.S. adults are overweight or obese. The number of Americans at risk for chronic disease is not only a public health concern; it also puts a hefty burden on our nation’s health care budget. For most health care professionals, the debate is closed. Obesity must be addressed — and soon.

Despite the near unanimous agreement, Department of Health Policy researchers Christine Ferguson, J.D., and Jennifer Leonard, J.D., M.P.H., contend that the issue is being overlooked, and in a surprising place: physicians’ offices. In conjunction with the Strategies to Overcome and Prevent (STOP) Obesity Alliance, Ferguson and Leonard have exposed a serious disconnect between primary care practitioners and patients when it comes to one of the most significant health issues of our time.

WHAT’S (NOT) HAPPENING

Last August, the STOP Obesity Alliance, which enhances awareness and identifies barriers that fail to support successful obesity management, hosted a panel discussion focusing specifically on primary care. After compiling the experts’ recommendations and completing an extensive literature review, Ferguson and Leonard released a white paper outlining their findings. As a follow-up, a national survey was commissioned to uncover more information about gaps in communication, weight monitoring, and obesity management in primary care.

“We had a sense from some of the research that there’s a real failure to communicate between doctors and patients when it comes to this issue,” says Ferguson. “And that is exactly what we saw when we did the survey.”

That disconnect begins within the first minutes of an appointment. The survey revealed that more than two in five physicians do not regularly measure height and weight, the information needed to calculate body mass index (BMI). When the measurement is taken, it doesn’t always spur a conversation: Only 39 percent of surveyed patients with a BMI of 30.0 or higher recall their physician telling them that they were obese. Further, those who were informed said that they were encouraged to lose weight. But about one in three said their physician never discussed how.

The findings are startling, particularly because a majority of physicians surveyed recognized their responsibility to help patients lose weight. So what is preventing these vital dialogues from taking place?

There is no simple solution, Ferguson explains. “There are a tremendous number of patients who believe that the conversation belongs in the doctor’s office. But on the physician side, there is an equally large number that have no idea what to tell them.” Seventy-two percent of physicians surveyed reported that no one in their practice has been trained to deal with weight issues, and effective resources are equally lacking. “There’s very little in-between [diet and exercise or surgical intervention] in terms of good tools to help primary care doctors work with their patients,” she adds.
Ferguson also notes that a stigma is still attached to obesity. “People on both sides of the equation feel that it’s a futile conversation. People have tried to lose weight and have been unsuccessful. And doctors are often uncomfortable with the discussion.” Most patients surveyed felt that weight loss is a personal responsibility — but, like physicians, they struggle for effective solutions.

Additionally, practitioners cite a lack of time during appointments to effectively discuss obesity management. “Yet,” says Dr. Richard Carmona, the 17th U.S. surgeon general and the alliance’s health and wellness chairperson, “even if they had those precious extra minutes, many [doctors] would still be missing needed information about weight-loss tools and existing programs. It’s time to close that information gap.”

CLOSING THE GAP
That time is long overdue, which led the alliance to develop five areas for improvement. First, there must be increased efforts to consistently monitor not only BMI but also other health indicators, such as blood pressure, glucose, and cholesterol levels.

Secondly, physicians must assess and encourage patient motivation. Obesity is a complicated issue, and preparing to confront it can be challenging. But the experts urged that a lack, or perceived lack, of motivation shouldn’t deter physicians from broaching the subject. Encouraging patients to focus on a few small lifestyle changes, rather than a complete overhaul of current behaviors, can put them on the right track and redefine success, the third tenet of the alliance’s recommendations.

“There are a tremendous number of patients who believe that the conversation belongs in the doctor’s office. But on the physician side, there is an equally large number that have no idea what to tell them.”

“This is a health care issue, not a cosmetic issue,” says Ferguson, alluding to society’s often unrealistic definitions of weight loss, such as measuring at a “normal” BMI, reaching a “goal weight,” or achieving a celebrity-esque physique. A more practical objective, and a dramatically beneficial one in terms of improving health outcomes, is losing five to 10 percent of total weight, according to the National Heart, Lung, and Blood Institute. “Establishing [this amount] as a starting point for success could result in improved weight management outcomes,” she says.

Next, the report extolled increased integration and coordination of care. “Larger, more integrated, and multispecialty practices seem to be providing a more comprehensive solution to both prevention and treatment of obesity,” because of the network of other health care specialists, such as nurses, physical therapists, and dietitians, who can play a role in weight-loss efforts, says Leonard.

Finally, the implementation of electronic medical record systems, explains Leonard, could “make a big

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**Hitting the Reset Button on Childhood Obesity**

**Exergames Offer Phys Ed Teachers a New Weapon Against Weight**

By Thomas Kohout

Video games, with their hypnotic flashes of color and light; their promise of hours of distraction; their offer of competition without need for coordination, strength, or stamina, might seem to be the furthest thing from a pathway to peak fitness. The very thought of video games prompts visions of sedentary kids lounging on the couch, battling invading alien armies using little more than their thumbs. So it’s ironic that an activity commonly associated with lethargy might just become an integral part of the solution. But in the face of a national epidemic, where the obesity rate among adolescents has tripled since 1980, good ideas sometimes grow out of the most unlikely places.

A new study led by GW School of Public Health and Health Services’ Todd Miller, Ph.D., associate professor of Exercise Science, and Karen McDonnell, Ph.D., associate professor in the Department of Prevention and Community Health, and funded through a Robert Wood Johnson Foundation program, is exploring the possibility that video games might be the tool that helps fix the nation’s obesity problem. The yearlong study — part of Health Games Research, a program aimed at improving health through digital games and game technologies, and part of the RWJF Pioneer Portfolio — is comparing traditional physical education programs with video-game play.

Miller and McDonnell are partnering with administrators at Francis Stevens Education Campus, an inner-city school in northwest Washington, D.C., to survey children in first through eighth grades. They are comparing two types of exergames — Dance, Dance Revolution (DDR) by Konami and the Winds of Orbis, an active adventure game originally developed by students at Carnegie Mellon University — with traditional physical education activities.

In recent years, DDR has become a popular addition to PE programs nationwide. The game pairs a popular song with a sequence of movements that players are asked to repeat on the dance mat by stepping on patterned spaces. Proponents argue that the game doesn’t rely on complex skills like catching and throwing found in team sports and that it appeals to a wider range of children. “If you play something like basketball and you aren’t very athletically inclined,” explains Miller, “you’re going to spend most of class on the sidelines. Exergames are more appealing because they’re not so dependent upon athletic ability.”

The study breaks the comparison down into two parts — exertion and enjoyment. The first step is examining a formalized PE setting. Roughly 200 students will wear Actical accelerometers, measuring in all planes of motion and recording caloric expenditure.

The essential element of the study, however, is the hypothesis that exertion for the sake of exertion is not very effective. The key, the researchers say, is that concepts such as motivation, enjoyment, and social reinforcement are crucial determinants of physical activity and, therefore, useful to develop effective programs to improve health. To that end, the second piece of the project will focus on aspects of social cognitive theory to determine how children feel about exergaming as compared to traditional PE.

“You can burn energy in any manner of ways, but the key is whether or not you enjoy it,” says McDonnell. “If kids aren’t enjoying themselves, they are going to see the exercise experience as a chore.” The goal, she says, is discovering what encourages and motivates kids to engage in physical activity.

Until this point, interactive video games have been very fixed: Players have an objective, and there is really only one way to complete it. That leads to a serious problem, according to Miller: boredom. “DDR, for example, is pretty strict in what it wants the player to do,” he says. “You pick a song, you go until the song is over, and you can either do the steps or you can’t. There is no real immersion in the game. It can get very mundane very quickly.”

However, the Winds of Orbis is designed to be less restrictive, allowing players to decide the pace of the game. That, argues Miller, should make the game more
fun and offer a greater sense of accomplishment. The ability to maintain player interest is a huge advantage over DDR and conventional PE activities. “If you’re in pretty good shape and you want to sprint through the game as fast as you can, great. But if you are a little out of shape, you can go as slow as you need to and you’re not penalized for that. You can decide what you want to accomplish within the game, making the game appealing to everyone, regardless of fitness level.”

Part of the problem facing today’s children, according to McDonnell, is how often they have PE classes. Many school districts have cut gym class back to one day a week. When studies show children already aren’t getting as much activity at home, the idea of cutting back at school doesn’t make much sense to McDonnell. “We know that activity enhances cognitive and social ability,” she says, “so why are we cutting back on physical activity at our schools rather than enhancing it?”

Turning to video games to encourage kids to exercise is an obvious solution to Miller. The draw is clear to just about any parent today: Kids want to play video games. “Channeling that motivation into activity through exergaming seems to make a lot of sense,” argues Miller.

One false step in the delicate balance between fun and fitness, according to Miller, is the growing supply of virtual personal trainer games popping up on the market. It’s the video-game equivalent to chocolate-covered broccoli, he says, and that is a step in the wrong direction. “We know that people generally don’t like being hounded by real personal trainers, so there’s no reason to believe they’d feel any differently about an electronic one.” Developers have taken something intrinsically fun, video games, and paired it with something that is by nature laborious, exercise. The problem is that they’ve stripped out the game and all that is left is a simulation of what most people don’t like to do.

“They should stick with what they’re good at, making games, and find creative ways to incorporate physical activity into the game,” says Miller.

It’s possible that by removing the work from the workout and replacing it with a little adventure, children and adults alike will be left with something that makes exercise an enjoyable experience they can stick with.

“We are hoping that we can show that games like this could be another avenue by which school administrators and parents turn to help kids get active and start addressing the serious problem of obesity in this country,” explains McDonnell, adding that it’s not about finding a substitute for sit-ups, jumping jacks, and the 40-yard dash. “We need to start somewhere, and we want to give people tools that they feel like they can use.”

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**The Biggest Conversation continued from page 26**

difference because they prompt the physician to enter height and weight fields,” and also allow for better information sharing across multiple physicians.

**MOVING FORWARD**

The alliance hopes that its findings will be a wake-up call and spur real action from physicians, patients, and policymakers. “It will help physicians to understand that they need to have a proactive conversation with someone who falls in the overweight or obese category and that the conversation is one that will be welcomed by the patient,” says Ferguson. “We also hope it will lead patients to be the first to broach the topic with their physician if necessary.”

Ferguson has reason for hope: “There are some promising new technologies that might come down the pike that physicians can integrate into their practice and use effectively. We have surgical interventions, pharmaceutical interventions, and behavioral interventions, and the rate of discovery and use is accelerating.”
Over the next 26 years the renowned glaucoma expert dedicated himself to establishing a vibrant academic department while developing a foundation for significant clinical research into serious eye conditions, such as diabetic retinopathy and diabetic macular edema.

“The establishment of this fund is yet another demonstration of the unparalleled legacy of influence Dr. Armaly and his family have had on the Department of Ophthalmology,” says Craig E. Geist, M.D., professor and chair, Department of Ophthalmology. Dr. Geist should know. He has maintained a more-than-26-year relationship with the Armaly family, first serving as a resident under Dr. Armaly and later becoming a friend and contemporary of his early mentor.

“I watched as Dr. Armaly laid the foundation for scientific and clinical distinction at GW,” says Dr. Geist, “with the goal of preserving and restoring vision through excellence. This generous gift from the Armaly family will serve as a vital resource to support glaucoma research by members of the faculty, residents, and fellows in the department.”

GW Lures Top Researcher Thanks to Support from Shepard Family

GW’s Department of Medicine, Division of Nephrology recently welcomed Dominic Raj, M.D., as professor of Medicine, thanks to a $100,000 contribution from Dr. Dennis and Franziska Shepard. Matching funds from the School of Medicine and Health Sciences helped bolster the gift.

“Dominic Raj is a renowned expert in chronic renal failure,” said James L. Scott, M.D., dean of the School of Medicine and Health Sciences, adding, “his presence will significantly expand our clinical research efforts, as well as provide valuable mentoring for a group of very talented nephrologists.”

The Shepards have taken an academic venture capitalist approach to supporting the Medical Center’s goal of building its research platform. By contributing to the establishment of a broader research base, says Shepard, M.D. ’69, a former alumni trustee on GW’s board, there is a multiplying effect to their donation. The funds go toward attracting top young researchers, who attract talented graduate students and produce research that has an impact on the medical field.

“One thing we really prize is that the institution uses these resources for projects with an eye toward accomplishment,” explains Shepard. The couple, who recently celebrated their 50th wedding anniversary, reminisce about starting their lives together with little more than determination and self-sacrifice. “We appreciate that background, and we look for entities that reflect those values.”

PHILANTHROPY

Bringing Glaucoma Research into Focus

ARMALY FAMILY’S GIFT BUILDS ON A FOUNDATION OF RESEARCH

Inspired by the passion Mansour F. Armaly, M.D., showed for researching and treating serious vision problems, particularly glaucoma, his family knew something significant was in order to honor his life and work. The answer came easily: keep building where Dr. Armaly left off.

This spring Dr. Armaly’s widow, Aida M. Armaly, and their children, Raya Armaly, M.D., and Fareed Armaly, established the Mansour F. Armaly Glaucoma Research Fund at GW. Through a gift totaling $250,000, the family will support glaucoma research by members of the faculty, residents, and fellows in the Department of Ophthalmology.

Dr. Armaly joined The George Washington University School of Medicine and Health Sciences in 1970, becoming the first full-time chair of the Department of Ophthalmology.
Greenberg Receives APA’s Miller-Sarkin Award

Larrie Greenberg, M.D., clinical professor of Pediatrics, was awarded the 2010 Miller-Sarkin Mentoring Award by the national Academic Pediatric Association. The award recognizes his work in providing outstanding mentorship to students and colleagues and serving as a model to others who aspire to become mentors.

The award is named for and honors physicians Steven Miller and Richard Sarkin, who were killed in an airplane crash in Missouri in October 2004. Both were highly respected for promoting humanism and professionalism in medicine. They were the award’s first recipients, a joint honor bestowed upon them posthumously in 2005.

The award holds special significance for Greenberg because of his friendship with Miller and Sarkin. “The award is very special and meaningful to me, as the three of us had a wonderful and ongoing personal and professional relationship,” he said. “What brought us together was our passion for medical education.”

GW Professors Selected as Fulbright Specialists

Three GW Medical Center faculty members were among the more than 400 faculty and professionals chosen by the J. William Fulbright Foreign Scholarship Board to travel abroad this year through the program, which offers short-term academic opportunities to support curricular and faculty development.

Kimberly D. Acquaviva, Ph.D., M.S.W., assistant professor in the Department of Nursing Education and director of the National Collaborative on Aging at the School of Medicine and Health Sciences, was selected for a project in Thailand at Khon Kaen University.

Building upon her experience with the National Collaborative on Aging, Acquaviva will work with the Thai university’s Faculty of Nursing to establish an interdisciplinary Institute on Aging, develop the faculty’s skills in writing grant proposals, and enhance students’ capabilities for interdisciplinary collaboration.

Executive Director of International Medicine Programs Huda Ayas, Ed.D., M.H.S.A., M.B.A., received a Fulbright Scholarship to establish a Global Health Program at the American University of Beirut in Lebanon.

Through a modified model of GW’s student-focused and faculty-guided program of study, students will add to their understanding of international differences in health and health care at the policy, economic, cultural, public health, and direct health care delivery levels; understand and be able to discuss the Millennium Development Goals; demonstrate increased physical examination skills; and improve patient communication, educational, and teaching skills.

Nalini Singh, M.D., M.P.H., chief of the Division of Infectious Diseases at Children’s National Medical Center and professor of Pediatrics, Epidemiology, and Global Health, received her award to establish infection prevention programs and control programs for hospital-associated infections at two pilot hospitals in India: Amrita Institute of Medical Sciences and Research in Kochi, Kerala, and Fortis Health Care System in New Delhi.

Kurtzman Inducted Into American Academy of Nursing

The American Academy of Nursing welcomed Ellen Kurtzman, M.P.H., R.N., assistant research professor in the Department of Nursing Education, as one of its 2009 new fellows. She was nominated by two current academy fellows and selected by the academy’s 15-member Fellow Selection Committee for her outstanding achievements in the nursing profession. Kurtzman was formally inducted during the academy’s annual Awards Ceremony and Induction Banquet in Atlanta.

For the past decade, Kurtzman has been an advocate, policy adviser, and researcher in the fields of patient safety and health care quality. Her research explores the influence of national health quality policy directions on hospital nurses and identifies strategies to strengthen nursing’s policy voice. Previously, she was the architect of national consensus standards for measuring nursing’s contribution to quality endorsed by the National Quality Forum and also led national efforts to establish hospital and home health care quality and performance standards.

“Ellen has worked diligently to give nursing a strong voice in health care policy,” says Ellen Dawson, Ph.D.,
chair of the Department of Nursing Education. “This recognition from the academy is a strong endorsement of Ellen’s accomplishments and speaks to her leadership in the field.”

Michaels Confirmed as OSHA Assistant Secretary

David Michaels, Ph.D., M.P.H., epidemiologist, research professor in the Department of Environmental and Occupational Health, was unanimously confirmed by the Senate as assistant secretary for the Occupational Safety and Health Administration.

From 1998 to 2001, Michaels served as assistant secretary of Energy for Environment, Safety, and Health, where he was responsible for protecting the health and safety of workers, neighboring communities, and the environment surrounding nuclear weapons facilities. In 2006, he received the American Association for the Advancement of Science’s Scientific Freedom and Responsibility Award for his work on behalf of nuclear weapons workers and for his advocacy for scientific integrity. He received the 2009 John P. McGovern Science and Society Award given by Sigma Xi, the Scientific Research Society.

At GW, Michaels has conducted extensive research on the health effects of occupational exposure to toxic chemicals and has written extensively on science and regulatory policy. He also directed the department’s doctoral program and founded the Project on Scientific Knowledge and Public Policy.

Geelhoed Receives Surgical Volunteerism Award

Glenn Geelhoed, M.D., Ph.D., Ed.D., M.P.H., professor of International Medicine and of Surgery, was given the 2009 Surgical Volunteerism Award of the American College of Surgeons (ACS) and the Pfizer Medical Humanities Initiative in recognition of his career rooted in international surgical outreach activities. Geelhoed, along with six other ACS honorees, received the award during the ACS 95th annual Clinical Congress in Chicago.

The Surgical Volunteerism Award is presented “in recognition of those surgeons committed to giving something of themselves back to society by making significant contributions to surgical care through organized volunteer activities.”

“Dr. Geelhoed’s generosity of spirit and embrace of humanity, as evidenced through decades of service to those in need around the world, exemplifies the highest calling of the surgical profession,” said Kathleen Casey, M.D., F.A.C.S., director of the ACS Operation Giving Back program, which administers the awards. “We are grateful for the opportunity to share his story and his example by recognizing him with the 2009 ACS/Pfizer Inc. Surgical Volunteerism Award.”

For more than 30 years, Geelhoed led medical missions providing uncompensated care to medically underserved regions around the world. Along the way, he has passed his values of dedication and volunteerism to the hundreds of residents, medical students, and undergraduate students he has tapped for these missions.

The American College of Surgeons is a scientific and educational organization that aims to raise the standards of surgical practice and to improve surgical patient care.

Andrus Named PAHO Deputy Director

Jon Andrus, M.D., director of the Global Health M.P.H. program in the School of Public Health and Health Services, has been named and confirmed as deputy director of the Pan American Health Organization.

Andrus previously served as lead technical adviser for PAHO’s Comprehensive Family Immunization Project and chief of the Immunization Unit. In his new role, Andrus will oversee PAHO’s efforts in planning and resource coordination, external relations and partnerships, knowledge management and communication, and emergency preparedness and disaster relief. He also will direct PAHO’s Governing Bodies, Ethics, and Ombudsman’s offices.

An expert in vaccines, immunization, and primary care in developing countries, Andrus has served as an epidemiologist in the Centers for Disease Control and Prevention’s Global Immunization Division and head of the Vaccinology and Immunization Program at the Institute for Global Health at the University of California, San Francisco and Berkeley. In 2000, he received the Distinguished Service Medal, the highest award of the United States Public Health Service, for his work to eradicate polio in Southeast Asia. His widely published research focuses on accelerating control of vaccine-preventable diseases and expediting the introduction of vaccines in developing countries.
Infectious disease researchers strive to halt the harmful effects of viruses — and for Richard Whitley, M.D. ’71, the same was true, for the first 25 years of his career. “I used to try and keep herpes simplex out of people — particularly out of the brain,” he says. But since then, he’s also done exactly the opposite. Through a surprising finding, Whitley actually inserts the virus in the brain in order to combat a certain type of cancer.

This type of revolutionary, break-the-mold thinking has been the hallmark of Whitley’s career. As director of the Division of Pediatric Infectious Diseases at the University of Alabama at Birmingham, he has become legendary in the field, translating molecular biology to clinical application and developing antiviral therapies to fight elusive infections such as herpes simplex, congenital cytomegalovirus, and influenza. Most recently, he was installed as president of the Infectious Diseases Society of America, which establishes guidelines for treatment and prevention of infection and educates policymakers and the public on health issues.

“These diseases aren’t all that common, but they can be devastating when people get them,” says Whitley, who can pinpoint the exact moment when his passion for this field began. While a GW medical student on a pediatric rotation, he detected a baby who had congenital cytomegalovirus infection. “I became fascinated as to why a woman would transmit infection to her fetus in utero,” he explains. “It was that child, that experience, which started me on the road of being a clinical virologist.”

At the suggestion of his GW faculty adviser, Whitley continued his studies at UAB, where similar research was underway. While completing a pediatric internship, residency, and fellowship, he developed a further interest in the herpes simplex virus infections and went on to join UAB’s faculty.

Whitley soon became renowned for helping to develop vidarabine, the first treatment for herpes simplex encephalitis. His discovery opened the door to an entire field of antiviral therapy, guiding labs nationwide in the development of treatments for infectious diseases. After decades of research on herpes, Whitley discovered that a genetically modified version of the virus effectively destroys tumor cells in patients with glioblastoma multiformae, without harming surrounding normal cells. His studies have shown the ability to prolong survival in about 20 percent of recurring cases, an astounding statistic for the deadly disease.

Whitley humbly attributes these successes to those who came before him, including his GW professors. “I’ve been very lucky, and part of that luck came from being influenced by mentors and doctors who taught me both basic science and how to be a good doctor.”

Most recently, he was installed as president of the Infectious Diseases Society of America, which establishes guidelines for treatment and prevention of infection and educates policymakers and the public on health issues.
From Haiti Missions to Heart Disease Research

**GW STUDENTS PURSUE A WEALTH OF OPPORTUNITIES**

At first glance, Public Health student Maureen Collins and Medicine student Frederik Rebling couldn’t be more different. Collins’ marketing textbooks hold little appeal for Rebling, whose passion lies in molecular biology. Collins, a native Washingtonian, is foreign to Rebling’s home country, Germany. And, while Collins spent her spring break in Haiti, Rebling’s summer vacation found him in an on-campus lab.

These differences, however, are merely peripheral to the students’ core similarities: a compassionate heart, an intellectual curiosity, and a home they call GW.

**MAUREEN COLLINS, M.P.H. CANDIDATE 2010, PUBLIC HEALTH COMMUNICATIONS AND MARKETING**

With graduation approaching, Collins reflects on her GW experiences. “You don’t always get to be in a situation where everybody is working for a common goal and that goal being something good,” she says. “I couldn’t think of a better place to be.”

Collins’ medical mission to Haiti last spring epitomized her graduate career. Through the Medical Center’s International Medicine Program, Collins and 13 fellow students collaborated with Project Medishare to set up mobile health clinics and provide care to thousands.

While there, she was struck by the prevalence of children suffering from ringworm, which can be contracted through bare feet. Upon her return, Collins organized a shoe drive, planning to send the collection to Haiti with this year’s mission. But when the earthquake struck, the need for shoes was eclipsed by even more basic needs.

“When I heard about the earthquake, I was overcome with emotion,” she recalls. “My first thoughts went to the kind, appreciative Haitians I had met.” Collins shared her devastation with her mission team members, who collaborated to raise thousands of dollars for relief. “There is so much need but only so much you can do,” Collins says. “It’s just a matter of everybody doing whatever they can.”

**FREDERIK REBLING, M.D. CANDIDATE 2013, RESEARCH TRACK**

Neither the summer heat nor his stiff new shoes kept Rebling from walking to the White House after his GW interview two years ago. Having since grown accustomed to the city, he has yet to see his excitement fade. “Every day I walk through the gates of GW and feel very lucky,” he says.

Particularly, he has found reward in research. Under a Gill Fellowship last summer, Rebling worked with Tim McCaffrey, Ph.D., director of GW’s Catharine Birch McCormick Genomics Center, to identify aspirin-resistant (AR) biomarkers using whole blood genome profiling.

“After a heart attack, doctors may prescribe aspirin to prevent further coagulation,” Rebling explains. “But some people have another heart failure because they are unknowingly resistant to aspirin. We are trying to find a way to identify these patients in a clinical setting.”

Rebling’s research linked AR patients with several enzymes of interest. Though the research continues, Rebling’s findings hold great potential for personalizing cardiovascular disease treatments.

“It takes a long time to figure these kinds of things out, so I am excited that I was able to be part of it,” says Rebling. “I could not have had this experience anywhere else.”
1960s

EDWARD G. KOCH, M.D. ’69, a practicing OB-GYN in McLean, Va., was elected secretary-treasurer of the Medical Society of Virginia in October 2009.

RICHARD L. ABBOTT, M.D. ’71, was named the president-elect for the Board of Trustees of the American Academy of Ophthalmology. Abbott is the Thomas W. Boyd Health Sciences Clinical Professor of Ophthalmology at the University of California, San Francisco and research associate at the Francis I. Proctor Foundation.

ERIC KNUTSON, M.D. ’76, an infectious disease and internal medicine physician, was recently presented with the Distinguished Physician Award at HealthAlliance Hospital of Fitchburg, Mass., for setting the standard for the practice of medicine and serving as a role model for his fellow physicians.

YOLANDA OERTEL, M.D. ’76, was an invited speaker at the World Congress on Thyroid Cancer in Toronto in August 2009, moderating the Meet the Professors session “Fine Needle Aspiration of the Thyroid, Diagnostic Dilemmas.”

RUSSELL C. LIBBY, M.D. ’79, a pediatrician at Virginia Pediatric Group in Fairfax, Va., was elected vice president of the Medical Society of Virginia in October 2009.

1970s

YOLANDA OERTEL, M.D. ’76, was elected vice president of the Medical Society of Virginia in October 2009.

1980s

MARLENE K. TANDY, M.D. ’81, J.D., was a recipient of the Food and Drug Law Institute’s 2009 Distinguished Service and Leadership Award, in recognition of her contributions to the food and drug law field and for outstanding efforts on behalf of the organization.

ANN E. TRAYNOR, M.D. ’83, a medical hematologist and oncologist, has been appointed to the Central Maine Medical Center medical staff. She is practicing with Hematology-Oncology Associates in Lewiston, Maine.

EDWARD M. ZIMMERMAN, M.D. ’83, president of the American Board of Laser Surgery and owner of, and cosmetic surgeon for, Las Vegas Laser and Lipo, has been recognized by Cambridge Who’s Who for demonstrating dedication, leadership, and excellence in health care.

DAVID W. COHEN, M.D. ’86, a board-certified urologist and member of the American Urological Association, has joined the medical staff of St. Anthony Community Hospital in Warwick, N.Y.

FARDAD ESMAILIAN, M.D. ’87, a cardiothoracic surgeon and clinical professor of surgery at UCLA Medical Center, joined the advisory board of Cardiac Network Inc. in June 2009 and will be advising the company on its clinical programs and value-added services for the Cardiac Network’s HeartOne Club.

SUSAN S. WILDER, M.D. ’88, a practicing primary care physician in Phoenix, has been named medical director for Concierge Choice Physicians, the pioneer of the hybrid model of concierge medical care. In October 2009, she was among the 150 physicians invited to the White House to discuss President Obama’s proposed health plan.

REGINALD FRANCIOSE, M.D. ’89, trauma surgeon at Vail Valley Medical Center, was named Physician of the Year for 2009.

1990s

MICHAEL DACEY, M.D. ’90, has been named senior vice president and chief medical officer at Kent Hospital in Warwick, R.I.

ROSLYN M. BROCK, M.H.S.A. ’89

Roslyn M. Brock made history in February when she became the youngest-ever chair of the National Board of Directors for the National Association for the Advancement of Colored People. Over the past 25 years, Brock has served in several NAACP leadership roles, including securing more than $2.7 million in grant funding. She is currently vice president, advocacy and government relations, for Bon Secours Health Systems Inc. in Marriottsville, Md.

A recipient of numerous health care, community service, and leadership awards, Brock has received the Dr. Martin Luther King Jr. Medal for Human Rights from GW and a Future Leader Award from Ebony magazine. She was recognized as one of Good Housekeeping’s “100 Young Women of Promise.”

CHRIS BARLEY, M.D. ’93

Chris Barley wears many hats, including primary care physician, professor, and political adviser. And, in his most treasured role as the president of nonprofit organization Citta, he is part of the reason why thousands in the developing world receive health care.

An organization that backs hospitals, schools, and women’s centers in underserved areas of India and Nepal, Citta has become one of the most effective medical supports in the region. “It is extremely rewarding to know that all of these women and children now have all of these amazing opportunities,” says Barley. “Helping them get healthier and develop their potential is an incredible experience.”

Barley discovered his passion for the developing world as a rising second-year medical student at GW, when he worked at a clinic in rural India, and he could not shake his desire to return.

“My trip taught me just how important health care is to these regions. It forever changed the way I view medicine and the way I view life,” he says. Learn more at www.citta.org.
CLASS NOTES

In Memoriam

Gene Cohen, Ph.D., M.D., professor of Health Care Sciences and director of the Center on Aging, Health, and Humanities, died on Nov. 7, 2009, at age 65. Cohen’s career was dedicated to aging and geriatrics long before the field even existed. He began shaping the field at the National Institute of Mental Health in the early 1970s and continued when he became acting director of the National Institute on Aging in 1991.

Jack Kleh, M.D. ’44, longtime friend and supporter of the GW Medical Center, died Jan. 17, 2010, at age 88. An internist who specialized in cardiology and gerontology, he served as medical director of the regional Blue Cross/Blue Shield and the Presbyterian Home of Washington.

Gilbert Kombe, M.D., M.P.H. ’95, School of Public Health and Health Services alumnus and faculty member, died on Nov. 6, 2009, at age 49. Kombe was a leader in the international response to HIV/AIDS and tuberculosis, and ran a $200-million contract for Abt Associates to help organizations deliver HIV/AIDS prevention and treatment in 114 countries.

William McKelway, M.D. ’50, G.M.E. ’54, 87, a Washington obstetrician and a clinical professor at The George Washington University Hospital, died Jan. 31, 2010. A longtime GW friend, he graduated from the School of Medicine in 1950 and completed his residency in 1954.

Jeanette Michael, J.D. ’75, a member of GW’s Board of Trustees and a Law School alumna, died on Nov. 28, 2009, at age 59. She was the most recent recipient of the GW Cancer Gala’s Spirit of Life Award, which honors an individual whose story inspires courage and imparts hope to others fighting cancer.

Josiah Wedgwood, M.D. ’80, physician and expert on diseases of the immune system, died Nov. 27, 2009, at age 59. He was the chief of the Immunodeficiency and Immunopathology section at the National Institute of Allergy and Infectious Diseases, where he championed the growth of research on primary immunodeficiency diseases and autoimmunity.

ALUMNI

STEWART L. BAKER, M.D. ’45
CHARLES BERNESTEIN, M.D. ’41
ANNE CAESAR, M.D. ’83
ERNEST CASEY JR., M.D. ’45
J. PHILLIP FAIRCHILD, M.D. ’43
DE LAMAR JOHNSON
GIBBONS, M.D. ’59
JAMES L. GODDARD, M.D. ’49
RICHARD GOODSTEIN, M.D. ’65
MARIA CAROLINA HINESTROSA, M.P.H. ’01
RICHARD F. HOFFMAN, M.D. ’46
JAMES K. HOLLISTER, M.D. ’48
STANLEY M. KIRSON, M.D. ’47
PHILIP LAZAROFF, M.D. ’59
SIDNEY LOXLEY, M.D. ’68
EDWARD MCFARLAND, M.D. ’41
DANIEL SECKINGER JR., M.D. ’54
RICHARD WARCHOL, M.D. ’72
G.M.E. ’77
RICHARD WHELTON, M.D. ’47
KARL WIPPLINGER, M.D., G.M.E. ’67

FACULTY & STAFF

BARTON BRANSCUM, M.D.
FREDERICK CHAPMAN GREEN, M.D.
WILLIAM L. MARSH, M.D.

FRIENDS

NANCY M. ADAMS

ELANA MEYERS, B.S., EXERCISE SCIENCE ‘06 won a bronze medal as a member of the U.S. bobsled team at the 2010 Winter Olympics.

TAMARA WINDAU, M.P.H. ’07, a senior project officer at the White Ribbon Alliance for Safe Motherhood in Washington, D.C., received a Galaxy Award from the New York Women’s Agenda at its annual Star Breakfast in Manhattan in February 2010.

VERA ROSENTHAL, M.P.H. ’08, is a junior service fellow in health care IT at the Agency for Healthcare Research and Quality.

2000s

J. ZOE BECKERMAN, J.D. ’05, GRADUATE CERTIFICATE SPHHS ’05, was named a partner at Feldesman Tucker Leifer Fidell LLP in January 2010. Her practice focuses on the regulatory aspects of federally funded social service programs, with a particular emphasis on Head Start. She currently is a recent alumni trustee at GW.

MATTHEW GUMMERSON, M.D. ’05, B.A. ’01, B.S. ’01, was accepted as a clinical fellow in pediatric anesthesiology at Children’s Hospital Boston/Harvard Medical School.

ALLANA FORDE, M.P.H. ’07, was accepted into the doctoral program at the City University of New York.

ELANA MEYERS, B.S., EXERCISE SCIENCE ‘06

VERA ROSENTHAL, M.P.H. ’08,

In Memoriam

Gene Cohen, Ph.D., M.D., professor of Health Care Sciences and director of the Center on Aging, Health, and Humanities, died on Nov. 7, 2009, at age 65. Cohen’s career was dedicated to aging and geriatrics long before the field even existed. He began shaping the field at the National Institute of Mental Health in the early 1970s and continued when he became acting director of the National Institute on Aging in 1991.

Jack Kleh, M.D. ’44, longtime friend and supporter of the GW Medical Center, died Jan. 17, 2010, at age 88. An internist who specialized in cardiology and gerontology, he served as medical director of the regional Blue Cross/Blue Shield and the Presbyterian Home of Washington.

Gilbert Kombe, M.D., M.P.H. ’95, School of Public Health and Health Services alumnus and faculty member, died on Nov. 6, 2009, at age 49. Kombe was a leader in the international response to HIV/AIDS and tuberculosis, and ran a $200-million contract for Abt Associates to help organizations deliver HIV/AIDS prevention and treatment in 114 countries.

William McKelway, M.D. ’50, G.M.E. ’54, 87, a Washington obstetrician and a clinical professor at The George Washington University Hospital, died Jan. 31, 2010. A longtime GW friend, he graduated from the School of Medicine in 1950 and completed his residency in 1954.

Jeanette Michael, J.D. ’75, a member of GW’s Board of Trustees and a Law School alumna, died on Nov. 28, 2009, at age 59. She was the most recent recipient of the GW Cancer Gala’s Spirit of Life Award, which honors an individual whose story inspires courage and imparts hope to others fighting cancer.

Josiah Wedgwood, M.D. ’80, physician and expert on diseases of the immune system, died Nov. 27, 2009, at age 59. He was the chief of the Immunodeficiency and Immunopathology section at the National Institute of Allergy and Infectious Diseases, where he championed the growth of research on primary immunodeficiency diseases and autoimmunity.

ALUMNI

STEWART L. BAKER, M.D. ’45
CHARLES BERNESTEIN, M.D. ’41
ANNE CAESAR, M.D. ’83
ERNEST CASEY JR., M.D. ’45
J. PHILLIP FAIRCHILD, M.D. ’43
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to respond to tamoxifen because other pathways activate their estrogen receptors, resulting in a phenomenon termed hormone independence. In 2001, Kumar and his team suggested that Pak1 leads to hormone independence because it independently stimulates estrogen receptor-alpha. Sure enough, they later found that tamoxifen resistance in breast cancer patients correlates with high levels of Pak1.

Lucky guesses? Not at all. Kumar’s eyes flicker as he pulls a ragged notebook from the shelf. Yellow tape binds the book together, and slips of paper explode from within it, with scribbled symbols and arrows covering page after page.

“I draw cartoons whenever I have an idea about how something might work,” Kumar says, and he advises his students and fellows to do the same. “A prepared mind has a better chance of making a discovery. Putting it down on paper primes the system. You can’t plan everything in science. But having a direction gives you boundaries in which to think.”

Nonetheless, Kumar’s second great discovery sprouted from a happy accident. Kumar asked his colleague to ship him a clone of the gene encoding a protein, MTA1 (metastatic tumor antigen-1), which was associated with various types of aggressive cancer. But the clone never arrived, and Kumar’s team had to fish it out themselves. While cloning MTA1, they came across a previously unknown, short form of MTA1 which, unlike the long form, remained in the cell’s cytoplasm and intercepted ominous estrogen receptors as they traveled to the cell’s nucleus. At that time, breast cancer patients without signaling estrogen receptors in their nucleus were labeled “estrogen receptor negative” and considered to be poor candidates for anti-estrogen treatments. Kumar, however, revealed that when short MTA1 sequestered estrogen receptors in the cytoplasm, the receptors continued to be active, signal, and possibly drive cancer. These findings, published in *Nature* in 2002, suggest that a subset of so-called estrogen receptor-negative patients might in fact benefit from anti-estrogen drugs — perhaps even more so if short MTA1 can be stopped.

Helping breast cancer patients who don’t respond to available therapies remains one of Kumar’s priorities. But his strategy has evolved. In the past, he moved from bench to bedside, experimenting in the Petri dish and confirming the results in patients. Now, he wants patient health and cancer specimens to direct his lab work as well. Mysteriously, an increasing number of patients suffer from breast cancer that is resistant to three main treatments that target signaling molecules. Kumar hopes that by examining those patients’ cancer cells, he can learn how they skirt treatments. In typical fashion, Kumar is moving ahead full throttle. Already, he’s put five researchers on projects related to “triple-negative” breast cancer patients. And he has ongoing collaborations with like-minded investigators worldwide to help validate his findings. He’s also joined NURSA, the Nuclear Receptor Signaling Atlas, which is an interdisciplinary consortium spearheaded by the National Institutes of Health to generate a database that can be used for large-scale studies of signaling genes and proteins, putatively involved in diseases ranging from type 2 diabetes to hormone-dependent cancers.

Kumar has faith in the future of therapies that target signaling pathways. The real obstacle in fighting cancer, he says, will be to encourage researchers to share and strive for more than short-term rewards like publications and patents. “The most important thing is to carry the flag forward. There’s no point otherwise,” he says. Sporadic journal articles don’t always impress him; rather, long-term studies that plant fields of research win his respect. The pinnacle of Kumar’s personal success came when he saw his two sons off to college. Likewise, he rejoices in his mentees’ successes as much as his own. “The most rewarding part of science is to do something, step back, and watch it grow,” he says. Keep an eye on the Department of Biochemistry and Molecular Biology. Within a few years, it should be in full bloom.
Turn your Deed

INTO A GOOD DEED

If you want to make a lasting legacy at The George Washington University Medical Center, consider a gift of real estate. Your donation can support needed student scholarships, advance powerful research initiatives, or provide valuable funding for community or education programs. What’s more, by donating real estate to GW, you can achieve peace of mind and receive significant financial benefits for yourself or someone else.

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- Provide yourself with an annual income
- Continue to use the property for the remainder of your life
- Reduce your estate and income taxes

For more information, please contact:
Chase Magnuson, Director of Planned Giving for Real Estate
(202) 994-4979 or chasem@gwu.edu
or visit www.gwu.edu/give/realestate

The George Washington University
Office of Planned Giving - Real Estate
2100 M Street, NW, Suite 310
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Obesity and weight loss are on everyone’s lips today. President Obama recently launched a task force on the topic, citing obesity rates that put kids and adolescents at risk for adult-level health problems, such as cardiovascular disease, high blood pressure, and type 2 diabetes. It’s a $30-billion industry of pills and powders promising an easier path to fitness. Now, two teams of researchers from GW’s School of Public Health and Health Services are working to turn all of that lip service into action.